Foot, ankle, and leg problems in Australian primary care: consultation patterns, management practices and costs

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Research Article

Keywords: foot, diabetic foot, foot injuries, foot diseases, primary health care, general practice, health care costs

Posted Date: February 3rd, 2022

DOI: https://doi.org/10.21203/rs.3.rs-1322389/v1

Abstract

Background: Foot ankle, and leg problems are highly prevalent in the general population. The objective of this study was to explore consultation patterns, management practices and costs of foot, ankle, and leg problems in Australian primary care. Methods: We analysed encounter data from the Bettering the Evaluation and Care of Health program, April 2000 to March 2016 inclusive. Foot, ankle, and leg problems were identified using the International Classification of Primary Care, Version 2 PLUS clinical terminology. Data were summarised using descriptive statistics and 95% confidence intervals around point estimates, and multivariate logistic regression was used to determine general practitioner (GP) and patient characteristics independently associated with a foot, ankle or leg problem being managed at an encounter. Cost to government was estimated by extracting fees for GP consultations, diagnostic imaging, and pathology services from the Medicare Benefits Schedule (MBS) database. Costs for prescription-only medicines were extracted from the Pharmaceutical Benefits Schedule, and for non-prescribed medications, large banner discount pharmacy prices were used. Results: GPs recorded 1,568,100 patient encounters, at which 50,877 foot, ankle or leg problems were managed at a rate of 3.24 (95% CIs 3.21 to 3.28) per 100 encounters. The management rate per head of population increased by 34% between 2000 and 2016. Management of a foot, ankle or leg problem was independently associated with patient characteristics (increased age, having a health care card, and being English-speaking) and GP characteristics (male sex, younger age, and Australian graduate). The most frequently used management practice was the use of medications, followed by procedures/physical medicine and imaging. The average cost (Australian dollars) per encounter was A$52, with the total annual cost estimated at A$256m. Of this total cost, MBS items comprised $139m, followed by imaging (A$69m), medications (A$29m) and pathology (A$18m). Conclusions: Foot, ankle and leg problems are frequently managed by GPs, and the costs associated with their management represent a substantial economic impact in Australian primary care.

Background

Foot and ankle problems are highly prevalent in the community and a common reason for consultation in primary care. Population-based studies have estimated that 24% of people aged over 45 years have foot and/or ankle pain [1], and 18 to 75% of people in different age groups have specific foot problems such as hallux valgus, corns and calluses, and nail disorders [2-4]. Furthermore, foot and ankle problems are also highly prevalent within those with specific chronic diseases, with 20 to 50% of people with diabetes, for example, reported to have peripheral neuropathy, foot ulceration or amputation [5].

Management of foot and ankle problems is largely the domain of the podiatry profession, although a range of other health professionals contribute, including physiotherapists, rheumatologists, endocrinologists, orthopaedic surgeons, vascular surgeons, infectious diseases specialists, and general practitioners (GPs) [6, 7]. In countries where GPs play a gatekeeper role in the health care system, the burden imposed by different conditions can be estimated using consultation data. For example, in the UK, it has been estimated that 3% of all GP consultations involve foot and ankle pain [8] and 8% of GP

musculoskeletal consultations involve foot or ankle problems [9], while in Australia, high rates of GP consultations have been reported for foot osteoarthritis [10], hallux valgus [11], heel pain [12] and venous leg ulcers [13]. Thus, the overall management of foot and ankle problems is likely to account for substantial health care consultations and costs given the apparent high prevalence and frequent GP consultation rates for specific problems.

Studies investigating foot and ankle problem costs to date have focussed on specific conditions (such as diabetes-related foot ulcers [14] and ankle fractures [15]), specific population groups (such as US Medicare recipients [16]), or inpatient settings [17, 18]. For example, in the English National Health Service, the annual cost of managing diabetes-related foot ulcers has been estimated at between £837 (A$1,592) and £962 (A$1,358) million, with 60% incurred in primary care [19], and in the Netherlands, the annual cost of managing foot and ankle injuries has been estimated at €162 (A$254) million, with less than 10% in GP consultations. However, to our knowledge no studies have explored the overall consultation patterns and costs incurred for all foot and ankle problems in primary care in Australia.

Understanding the consultation patterns, management practices and costs associated with foot and ankle problems in primary care would help quantify the workload, inform future workforce planning decisions, and assist in the development of improved, cost-effective management pathways for these conditions. Therefore, the objective of this study was to explore consultation patterns, management practices and costs of foot, ankle, and leg problems in Australian general practice by analysing data from the Bettering the Evaluation of Care of Health (BEACH) program [20], a continuous cross-sectional study which provided detailed information regarding GP activity in Australia 1998–2016 inclusive.

Methods

Population and setting

We analysed data from the Bettering the Evaluation and Care of Health (BEACH) study, a continuous, nationally representative study of GP clinical activity. The BEACH study methods have been described in detail elsewhere [20]. Briefly, in each data year, approximately 1,000 randomly sampled GPs recorded the content of 100 consecutive GP-patient encounters on structured paper recording forms with consenting patients. Details collected include the patient’s reason/s for the encounter, problems managed, medications (prescribed, advised or supplied), pathology or imaging tests ordered, referrals made, and any other clinical or procedural treatments provided. All management actions were directly linked to the problem being managed by the GP. Non-pharmaceutical data were classified according to the International Classification of Primary Care, second edition (ICPC-2) [21], and coded more specifically using the Australian GP interface terminology known as ICPC-2 PLUS [22]. Pharmaceutical data were coded using the Coding Atlas of Pharmaceutical Substances (CAPS), an inhouse pharmaceutical classification system that enables recording of medications at the product level [23]. CAPS is also mapped to the Anatomical Therapeutic Chemical Classification System [24]. BEACH data have been shown to be representative of GPs and their patient encounters across Australia [20]. The BEACH

program was approved by the Human Research Ethics Committee of the University of Sydney (Ref: 2012/130) and (from 2000 to 2010) the Australian Institute of Health and Welfare Ethics Committee.

Data elements

We selected ICPC-2 PLUS terms primarily related to problems specifically affecting the foot and ankle, but also included conditions that manifest in the lower leg below the knee (such as ischaemia and varicose veins), neurological conditions associated with foot symptoms (such as peripheral neuropathy and foot drop), and congenital lower limb conditions that may alter foot and ankle function (such as clubfoot and genu valgum). The list of terms is provided (see additional file), and we refer to these conditions as 'foot/ankle/leg' problems throughout the manuscript. We examined the management rate within data collected from April 2000 to March 2016. We then used the most recent five years of BEACH data (April 2011-March 2016) to examine patient and GP characteristic specific management rates, how foot/ankle/leg problems were managed and to estimate the cost of managing these problems by GPs.

Cost estimates

We estimated the cost to government of managing foot/ankle/leg conditions by extracting fees for GP consultations, diagnostic imaging and pathology services from the Medicare Benefits Schedule (MBS) database [25]. Overall, we took a conservative approach based on the following assumptions. First, where there were multiple documented problems managed at the encounter (i.e., one foot/ankle/leg-related and one not related), we only attributed the proportion in which the foot/ankle/leg problem accounted (i.e., half if it was one of two problems, a third if it was one of three problems, etc). Second, for GP home visits and residential aged care facility attendances, we assumed that the number of patients seen was two and six, respectively. Third, where detail was missing related to diagnostic imaging, we selected the least expensive MBS fee (e.g., for CT scans, if not specified, it was assumed that a contrast agent was not used, as this attracts a higher fee). Fourth, for pathology tests, we only selected the three most expensive items ordered for the management of the foot/ankle/leg problem and excluded subsequent items. Finally, although we report the frequency of GP referrals to other health professionals, we were not able to ascertain costs associated with these subsequent consultations.

For prescription-only (Schedule 4 or 8) medications, we used the dispensed price for maximum quantity from the Pharmaceutical Benefits Schedule (in 2016, $38.30 for general beneficiaries and $6.20 for health care concession card holders) [26], and assumed that patients did not exceed the annual safety net (in 2016, $1,475 for general beneficiaries and $372 for health care concession card holders). For non-prescribed (Schedule 2) medications, we estimated the current cost for each item from a large banner discount pharmacy [27] and adjusted this for inflation (6.5%, over four years, assuming an average annual inflation rate of 1.6 %) [28]. This approach allowed us to estimate both the cost to government and the cost to the patient (i.e., the safety net plus any non-prescription costs).

All costs are reported in Australian dollars. At the time of publication, A$1 was worth approximately €0.63, £0.53, and US$0.71.

Statistical analysis

BEACH has a single-stage cluster sample study design with the GP as the sampling unit and the GP-patient encounter as the unit of inference. The survey means procedure in SAS V9.4 statistical software (SAS Institute Inc, Cary, North Carolina) was used to adjust for the cluster effect. Significant statistical differences were judged by non-overlapping 95% confidence intervals (CI). This is a conservative estimate of significance compared with a traditional alpha of <0.05 [29]. To calculate the number of foot/ankle/leg problems managed per 100 head of population for each year, we extrapolated the rate of management at encounters in BEACH to the number of non-referred Medicare Benefits Schedule GP attendances claimed each year [30] divided by the annual population [31]. We used multivariate logistic regression to determine GP and patient characteristics independently associated with a foot/ankle/leg problem being managed at an encounter. All GP and patient characteristics were included in the model, and backward elimination was performed until a parsimonious model was achieved.

Results

GP management rate for foot/ankle/leg problems

Between April 2000 and March 2016, 15,681 GPs recorded 1,568,100 patient encounters, at which 50,877 foot/ankle/leg problems were managed at a rate of 3.24 (95% CI 3.21 to 3.28) per 100 encounters. The management rate of foot/ankle/leg problems increased 18% across the study, from 3.0 (95% CI 2.9 to 3.1) in 2000-01 to 3.5 (95% CI 3.4 to 3.7) per 100 encounters in 2015-16 (Figure 1). When extrapolated to the rate per head of population, the increase was 34%, from 15.8 (95% CI 15.1 to 16.6) in 2000-01 to 21.2 (95% CI 20.2 to 22.3) per 100 people in 2015-16.

GP and patient characteristics associated with management of foot/ankle/leg problems

Between 2011-16, 4,881 GPs recorded 488,100 encounters at which 16,949 foot/ankle/leg problems were managed at a rate of 3.5 per 100 encounters (Table 1). The management rate significantly increased with patient age from 1.8 among 0-14 year-olds to 6.6 per 100 encounters in patients aged 85+ years. Other patient groups that had a significantly higher foot/ankle/leg problem management rate (per 100 encounters) were patients from the most disadvantaged socioeconomic areas (3.7) compared with those from higher advantaged areas (3.4); patients who held a Commonwealth health care concession card (CHCC) (4.2) compared with those who did not (2.9); patients from an English speaking background (3.6) compared with those from a non-English speaking background (3.1); and non-Indigenous patients (3.5) compared with Indigenous patients (2.9).

Male GPs managed foot/ankle/leg problems at a significantly higher rate (3.7 per 100 encounters) than female GPs (3.2). GPs aged less than 45 years managed foot/ankle/leg problems significantly less frequently (3.2) than those aged 45-54 years (3.5) or 55+ (3.6). GPs who graduated medical school in Australia managed foot/ankle/leg problems at a significantly higher rate (3.6) than those who graduated overseas (3.3).

After adjusting for all other variables, the multivariate logistic regression analysis found that the chance of a foot/ankle/leg problem being managed at an encounter increased 2.3% each year (Table 1). Patients aged 85 years or older were 3.7 times more likely to have a foot/ankle/leg problem managed than patients aged less than 15 years. Patients with a CHCC were 9.2% more likely than those without a CHCC, and those from an English speaking background were 12.4% more likely than those from a non-English speaking background. Patient sex, socioeconomic status, and Indigenous status did not have a significant effect on the management rate after adjustment.

Male GPs were 10.4% more likely to manage a foot/ankle/leg problem than their female peers. GPs aged less than 45 were 5.9% and those aged 45-54 years of age were 6.9% more likely to manage a foot/ankle/leg problem than those aged 55+, and GPs who were Australian graduates were 5.4% more likely than those GPs who graduated overseas.

Management rate of specific foot/ankle/leg problems

The management rate of the most commonly-encountered foot/ankle/leg problem groups is shown in Table 2. The most frequently managed problem group was infection (6.4 per 1,000 encounters), followed by injury (5.4), musculoskeletal disorders (4.4) and ulceration (4.4). The most frequently managed individual conditions were leg/venous/varicose ulcers (3.5 per 1,000 encounters), plantar fasciitis (2.1) and cellulitis of the leg (1.9).

Management actions for foot/ankle/leg problems

The most frequently used management actions by GPs for foot/ankle/leg problems is shown in Table 3. The most frequently used management action was the use of medications (46.0 per 100 foot/ankle/leg problem encounters, primarily antibiotics and analgesics), followed by procedures/physical medicine (24.5), and imaging (19.2, primarily x-ray). Specialist or allied health referral was undertaken for 15.0 per 100 foot/ankle/leg problems and primarily involved podiatrists (5.6) and orthopaedic surgeons (2.1).

Cost estimates

The estimated cost of GP management of foot/ankle/leg problems in 2015-16 is shown in Table 4. The average cost per foot/ankle/leg encounter was A$52.30, with the total cost A$255m, based on an estimate of 4,880,000 foot/ankle/leg encounters in 2015-2016 (using GP attendances claimed each year

[30] divided by the annual population [31]). Of this total cost, MBS items comprised most of this cost (A$139m), followed by imaging (A$69m), medications (A$29m) and pathology (A$18m). For medications, the cost to the patient was A$24m and the cost to the government was A$5m.

Discussion

The objective of this study was to explore consultation patterns, management practices and estimate the costs of general practitioner (GP) management of foot/ankle/leg problems in Australian primary care. Between 2000 and 2016, GPs managed 50,877 foot/ankle/leg problems at a rate of 3.24 per 100 encounters, which increased by 18% over the study period. The most frequently used management action was the use of medications, followed by procedures/physical medicine and imaging. We estimated the annual cost at A$256m, which was primarily attributable to consultation fees, followed by diagnostic imaging, medications, and pathology services. These findings confirm that foot/ankle/leg problems are commonly managed by GPs, and the costs associated with their management represent a substantial economic cost in Australian primary care.

Consultation for foot/ankle/leg problems was independently associated with increased age, which is consistent with the strong association between age and the prevalence of foot problems reported in population-based studies [32-34]. Holders of health care concession cards (which includes age pensioners, disability support pensioners, and those on lower incomes) had a higher management rate than those without, as did those from an English-speaking background. GP characteristics also influenced the management rate, with male, younger and Australian-trained GPs more likely to see patients with foot/ankle/leg problems. However, the influence of GP age and sex appears to vary across specific conditions. For example, while younger GPs are more likely to manage heel pain [12], age does not appear to influence the management rate of foot/ankle osteoarthritis [10], hallux valgus [11] or venous leg ulcers [13]. Similarly, male GPs are more likely to manage heel pain [12] and venous leg ulcers [13], although no GP sex differences have been identified in relation to the management of foot/ankle osteoarthritis [10]. Further studies are required to understand the underlying reasons for the variable impact of GP age and sex on the management of lower limb conditions.

The most frequently used management action by GPs for foot/ankle/leg problems was the use of medications, primarily antibiotics and analgesics. This is to be expected given that the most common presenting conditions were infections, followed by injuries and other musculoskeletal conditions. The use of procedures/physical medicine, imaging (primarily x-ray), pathology referral (primarily full blood count) were also commonly used. Specialist or allied health referral was also frequently undertaken, with patients most likely to be referred to podiatrists. Interestingly, referral patterns for foot/ankle/leg problems also seem to be influenced by the specific presenting condition, with previous studies using BEACH data finding that GPs are more likely to refer to orthopaedic surgeons for foot/ankle osteoarthritis [10] and hallux valgus [11], and more likely to refer to podiatrists for heel pain [12].

The costs associated with GP management of foot/ankle/leg problems were substantial, estimated at a quarter of a billion Australian dollars per annum. As we took a conservative approach to the assumptions underpinning this calculation, this figure is likely to be a considerable underestimate. Furthermore, our data pertains only to the bulk-billed GP management of these problems, and therefore excludes out-of-pocket expenses incurred by patients who are not bulk-billed, the significant costs associated with specialist and allied health consultations, and the costs of inpatient or outpatient care. For example, Medicare subsidies for private podiatry services under the chronic disease management program cost A$189 million in 2020 [35] (which represents only a small proportion of the private cost to patients), while the annual cost burden of managing foot disease in the Australian public hospital system was estimated at A$4 billion in 2017 [36]. It is not possible to compare our cost estimate to previous studies, due to differences in methodology and health care funding models used in other countries. However, to place this figure in the context of estimates for other health conditions from similar Australian primary care studies, the average costs per GP encounter for pneumonia [37], genital warts [38] and herpes zoster [39] (the only other conditions for which cost estimates are available from BEACH data) are higher than our estimated cost of managing a foot/ankle/leg problem (A$52), yet due to the much higher prevalence of foot/ankle/leg problems, our total cost estimate is considerably larger (A$256m versus A$20m for pneumonia, A$9.6m for genital warts and A$4.2m for herpes zoster).

These findings have important implications in relation to the design of cost-effective models of care for foot/ankle/leg problems. Firstly, although these conditions frequently present to GPs, the cost associated with managing foot disease in the public hospital system is substantially higher [36], which suggests that improving access and optimising foot and ankle problem management in primary care could help prevent more costly downstream effects on the health care system. Secondly, while GP referrals to podiatrists have increased five-fold since the introduction of Medicare funding [40], expansion of this program to cover more consultations and the cost of evidence-based treatments such as wound dressings and offloading devices could significantly improve the management of foot problems associated with diabetes [41]. Thirdly, the relative merit of GP referral of patients with foot problems to podiatrists or orthopaedic surgeons needs to be evaluated, as experience in the public hospital system suggests that a podiatry-led triage service is cost-effective and improves the utilisation of orthopaedic surgeons and other specialists by screening out those unlikely to require operative intervention [14, 42].

Key strengths of this study include the large, representative sample of GPs and the direct linkage of management actions to specific conditions. However, our findings need to be interpreted in the context that the BEACH study is cross-sectional and provides consultation data rather than patient-longitudinal data, and it is not possible to identify how GPs manage the care of individual patients over time [20]. Furthermore, because the assumptions underpinning our cost analysis were conservative, and we were unable to incorporate other primary care-related costs (such as consultations with other health professionals) into the calculation, this figure is likely to be a considerable underestimate of the actual costs of foot/ankle/leg problems in primary care.

In summary, this study of national patient-encounter records has shown that foot/ankle/leg problems are a relatively common reason for consultation with GPs in Australia, and the costs associated with their management are substantial. Further studies are required to determine whether the management of these conditions in primary care is both clinically effective and cost-effective, or whether more efficient models of care can be developed and implemented.

Declarations

Ethics approval and consent to participate

Not applicable.

Consent for publication

Not applicable.

Availability of data and materials

Not applicable.

Competing interests

None to declare.

Funding

The BEACH project was funded through arm's length research agreements with the following organisations: AstraZeneca Pty Ltd (Australia); Australian Government Department of Health; Novartis Pharmaceuticals Australia Pty Ltd; bioCSL (Australia) Pty Ltd; Sanofi-Aventis Australia Pty Ltd; Australian Government Department of Veterans' Affairs; AbbVie Pty Ltd; Merck, Sharpe and Dohme (Australia) Pty Ltd; Pfizer Australia; National Prescribing Service; GlaxoSmithKline Australia Pty Ltd; Bayer Australia Ltd; Janssen-Cilag Pty Ltd; Abbott Australasia Pty Ltd; Wyeth Australia Pty Ltd; Roche Products Pty Ltd; Aventis Pharma Pty Ltd. The funding organisations had no influence on the conceptualisation, design or conduct of the research, nor on the preparation of this paper.

Authors' contributions

HBM and CH conceived the idea for the analysis. HBM, CMW and PAL selected the relevant ICPC-2 PLUS terms under guidance from JG and CH. CMW extracted medication cost data. CH extracted the

consultation data and performed the analysis. HBM drafted the manuscript. All authors contributed to the interpretation of the findings, and read and approved the final manuscript.

Acknowledgements

The BEACH team would like to thank the GPs who participated in the BEACH project for their generosity. The BEACH study was conducted by the University of Sydney, and from April 1998 to March 2000, this was in collaboration with the Australian Institute of Health and Welfare. HBM is currently a National Health and Medical Research Council (NHMRC) Senior Research Fellow (ID: 1135995), PAL is currently a NHMRC Early Career Research Fellow (ID: 1143435), and CH is currently a NHMRC Early Career Fellow (ID: 1163058).

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Tables

Table 1. Patient and GP specific management rate of foot/ankle/leg problems per 100 encounters, 2011-16.

Patient characteristics	Sample size (n=488,100)	Number of problems managed (n = 16,949)	Distribution (%) of problems managed by patient and GP characteristics	Characteristic specific rate of problems per 100 encounters	Adjusted odds ratios of a problem being managed at encounter (95% CIs)
Sex *(missing)*	*(4,261)*	*(154)*			p = 0.2004
Male	195,991	6,976	41.5 (40.6-42.4)	3.6 (3.5-3.7)	1.025 (0.987-1.063)
Female	287,848	9,819	58.5 (57.6-59.4)	3.4 (3.3-3.5)	Reference group
Age *(missing)*	*(4,146)*	*(110)*			p < 0.0001
0-14 years	55,289	990	5.9 (5.5-6.3)	1.8 (1.7-1.9)	Reference group
15-24 years	39,075	1,058	6.3 (5.9-6.7)	2.7 (2.5-2.9)	1.522 (1.380-1.679)
25-44 years	107,575	2,542	15.1 (14.5-15.7)	2.4 (2.3-2.5)	1.363 (1.251-1.484)
45-64 years	132,027	4,610	27.4 (26.6-28.1)	3.5 (3.4-3.6)	2.017 (1.862-2.184)
65-84 years	123,224	5,871	34.9 (34.0-35.7)	4.8 (4.6-4.9)	2.624 (2.421-2.844)
85+ years	26,764	1,768	10.5 (9.9-11.1)	6.6 (6.3-7.0)	3.679 (3.348-4.043)
Socioeconomic level *(missing)*	*(10,464)*	*(338)*			p = 0.1712
Most disadvantaged	189,031	6,915	41.6 (40.2-43.1)	3.7 (3.6-3.8)	1.030 (0.987-1.075)
Most advantaged	288,605	9,696	58.4 (56.9-59.8)	3.4 (3.3-3.4)	Reference group
Health care card *(missing)*	*(41,176)*	*(1,203)*			p < 0.0001
Health care card	200,495	8,501	54.0 (52.9-55.0)	4.2 (4.1-4.3)	1.092 (1.047-1.138)
No health care card	246,429	7,245	46.0 (45.0-47.1)	2.9 (2.9-3.0)	Reference group
Language background *(missing)*	*(48,528)*	*(1,419)*			p = 0.0006
Non-English speaking	38,901	1,199	7.7 (7.1-8.4)	3.1 (2.9-3.3)	Reference group
English speaking	400,671	14,331	92.3 (91.6-92.9)	3.6 (3.5-3.7)	1.124 (1.051-1.201)
Indigenous status *(missing)*	*(48,417)*	*(1,418)*			p = 0.7715
Indigenous	8,820	254	1.6 (1.3-1.9)	2.9 (2.5-3.3)	0.979 (0.846-1.132)
Non-Indigenous	430,863	15,277	98.4 (98.1-98.7)	3.5 (3.5-3.6)	Reference group
GP sex *(missing)*	*(0)*	*(0)*			p < 0.0001
Male	278,700	10,304	60.8 (59.2-62.4)	3.7 (3.6-3.8)	1.104 (1.058-1.152)
Female	209,400	6,645	39.2 (37.6-40.8)	3.2 (3.1-3.3)	Reference group
GP age *(missing)*	*(2,900)*	*(69)*			p = 0.0129
<45 years	128,300	4,129	24.5 (23.0-25.9)	3.2 (3.1-3.3)	1.059 (1.006-1.116)
45-54 years	143,000	5,024	29.8 (28.2-31.3)	3.5 (3.4-3.6)	1.069 (1.019-1.121)
55+ years	213,900	7,727	45.8 (44.1-47.5)	3.6 (3.5-3.7)	Reference group
Practice location *(missing)*	*(1,300)*	*(36)*			p = 0.9946
Major cities	343,500	11,657	69.0 (67.4-70.6)	3.4 (3.3-3.5)	0.998 (0.931-1.070)
Inner regional	95,800	3,545	20.9 (19.5-22.3)	3.7 (3.5-3.9)	0.996 (0.925-1.074)
Outer	47,500	1,711	10.1 (9.0-11.1)	3.6 (3.4-3.8)	Reference group

regional / remote					
Country of graduation *(missing)*	*(1,700)*	*(50)*			p = 0.0156
Australian graduate	323,100	11,567	68.4 (66.9-70.0)	3.6 (3.5-3.7)	1.054 (1.010-1.100)
Overseas graduate	163,300	5,332	31.6 (30.0-33.1)	3.3 (3.2-3.4)	Reference group
Year					p = 0.0022
					1.023 (1.008-1.038)
Total	488,100		100.0%	3.5 (3.4-3.5)	

Table 2. Management rate of specific foot/ankle/leg problem groups per 1,000 encounters, 2011-16.

Specific foot/ankle/leg problem group	n	Rate per 1,000 encounters (95% CIs)
Infection	3,100	6.4 (6.1-6.6)
Cellulitis of the leg	917	1.9 (1.7-2.0)
Onychomycosis/fungus nail	763	1.6 (1.4-1.7)
Tinea/fungal skin infection	685	1.4 (1.3-1.5)
Infected ingrown toenail	281	0.6 (0.5-0.6)
Injury	2,652	5.4 (5.2-5.7)
Sprained ankle	861	1.8 (1.6-1.9)
Injury ankle	251	0.5 (0.4-0.6)
Fracture metatarsal	241	0.5 (0.4-0.6)
Musculoskeletal	2,127	4.4 (4.2-4.6)
Plantar fasciitis	1,028	2.1 (2.0-2.2)
Arthritis ankle	279	0.6 (0.5-0.6)
Arthritis foot/feet	279	0.6 (0.5-0.6)
Ulceration	2,164	4.4 (4.2-4.7)
Leg/venous/varicose ulcer	1,705	3.5 (3.3-3.7)
Foot ulcer	459	0.9 (0.8-1.0)
Unspecified pain	1,640	3.4 (3.2-6.5)
Pain foot/feet	690	1.4 (1.3-1.5)
Pain leg	551	1.1 (1.0-1.2)
Pain ankle	297	0.6 (0.5-0.7)
Venous/swelling	1,501	3.1 (2.9-3.3)
Oedema of ankle/foot/feet	243	0.5 (0.4-0.6)
Dermatological	905	1.9 (1.7-2.0)
Ingrown toenail	515	1.1 (1.0-1.2)
Corns/callosities	376	0.8 (0.7-0.9)
Neuropathy	848	1.7 (1.6-1.9)
Restless leg syndrome	383	0.8 (0.7-0.9)
Ischaemia	844	1.7 (1.6-1.9)
Peripheral vascular disease	575	1.2 (1.1-1.3)
Non-specific foot/ankle/leg problem	297	0.6 (0.5-0.7)
Cramps	290	0.6 (0.5-0.7)
Management of foot/ankle/leg	269	0.6 (0.5-0.6)
Congenital	238	0.5 (0.4-0.6)
Amputation	69	0.1 (0.1-0.2)
Total	16,949	34.7 (34.1-35.4)

Table 3. Management actions used by GPs per 100 foot/ankle/leg problems, 2011-2016.

Management action	n	Rate per 100 problems (95% CIs)
Medication	7,799	46.0 (44.9-47.1)
Antibiotics for systemic use	*1,938*	*11.4 (10.9-12.0)*
Cephalexin	1,063	6.3 (5.9-6.7)
Flucloxacillin	248	1.5 (1.3-1.7)
Dicloxacillin	165	1.0 (0.8-1.1)
Analgesics	*1,370*	*8.1 (7.6-8.6)*
Non-opioid analgesic	696	4.1 (3.8-4.4)
Paracetamol	628	3.7 (3.4-4.0)
Opioid	674	4.0 (3.6-4.3)
Codeine/paracetamol	259	1.5 (1.3-1.7)
Oxycodone	182	1.1 (0.9-1.3)
Anti-inflammatory and antirheumatic products	*938*	*5.5 (5.1-5.9)*
Ibuprofen	330	1.9 (1.7-2.2)
Meloxicam	222	1.3 (1.1-1.5)
Antifungals for dermatological use	*835*	*4.9 (4.6-5.3)*
Oral terbinafine	209	1.2 (1.1-1.4)
Clotrimazole	168	1.0 (0.8-1.1)
Diuretics	*398*	*2.3 (2.1-2.6)*
Furosemide	330	1.9 (1.7-2.2)
Anti-Parkinson	*213*	*1.3 (1.1-1.4)*
Procedures/physical medicine	4,153	24.5 (23.6-25.4)
Imaging	3,246	19.2 (18.4-19.9)
X-ray	2,031	12.0 (11.4-12.5)
Ultrasound	956	5.6 (5.2-6.0)
Pathology	3,156	18.6 (17.4-19.8)
Full blood count	477	2.8 (2.6-3.1)
Other microbiology	298	1.8 (1.5-2.0)
Electrolytes, urea, creatinine	279	1.6 (1.4-1.8)
Multi-biochemical analysis	205	1.2 (1.0-1.4)
Fungal ID/sensitivity	196	1.2 (1.0-1.3)
Liver function	167	1.0 (0.8-1.1)
Counselling/advice/education	2,613	15.4 (14.7-16.1)
Referral	2,547	15.0 (14.4-15.7)
Podiatrist	945	5.6 (5.2-6.0)
Orthopaedic surgeon	354	2.1 (1.9-2.3)
Physiotherapist	317	1.9 (1.7-2.1)
Vascular surgeon	208	1.2 (1.1-1.4)

Table 4. Estimated cost of GP management of foot/ankle/leg problems in 2015-16.

Cost type	Average cost per encounter	Total cost nationally in 2015-16*
MBS items	$28.54	$139,293,000
Medications	$6.05	$29,500,000
Cost to patient	$4.93	$24,066,000
Cost to government	$1.11	$5,434,000
Imaging	$14.16	$69,088,000
Pathology	$3.68	$17,963,000
Total	$52.30	$255,844,000

*based on estimate of 4,880,000 foot/ankle/leg encounters in 2015-16

Figures

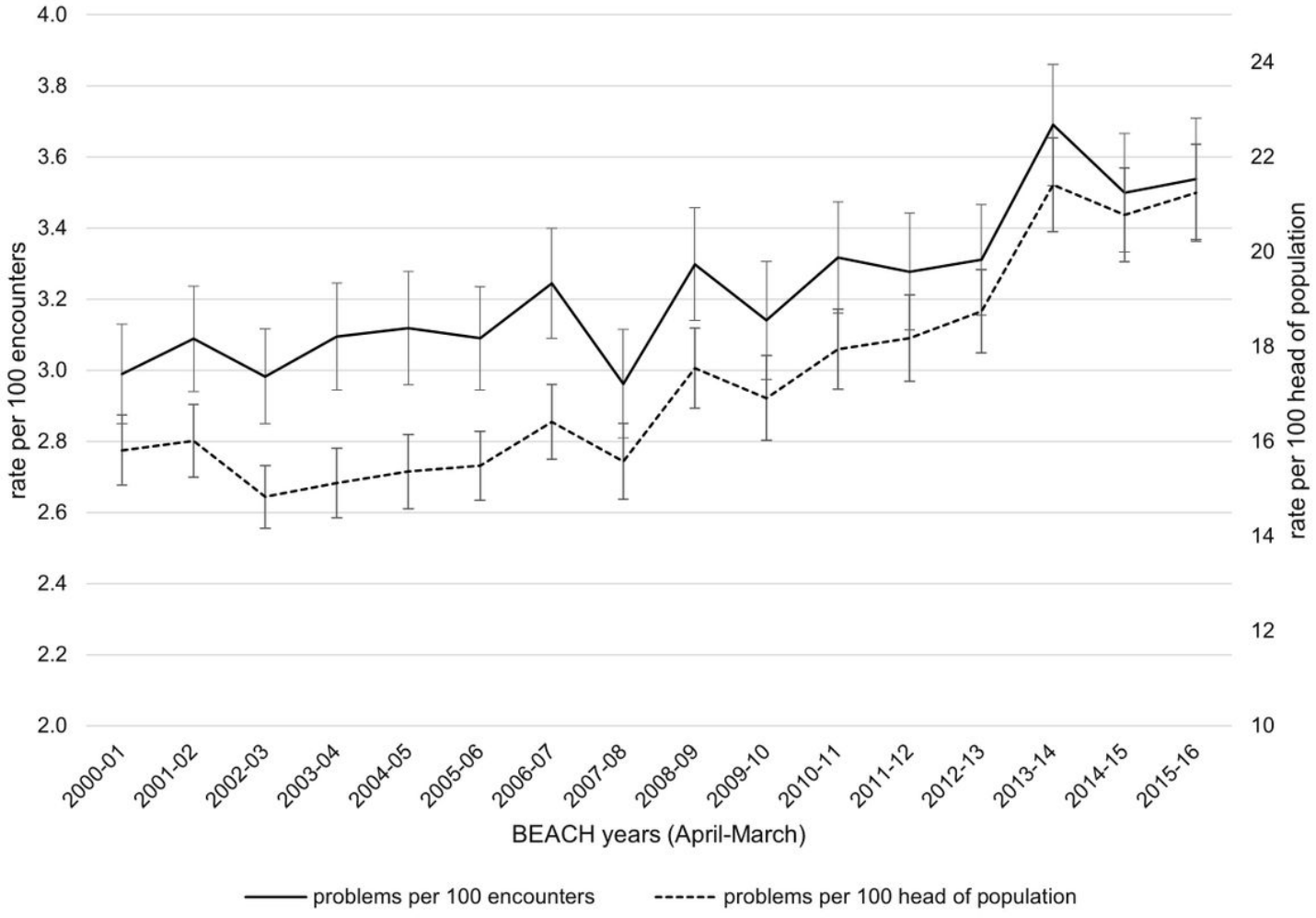

Figure 1

The management rate of foot/ankle/leg problems by Australian general practitioners between April 2000 and March 2016. Solid line represents problems per 100 encounters, dashed line represents problems per 100 head of population.

Supplementary Files

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