

The Society of Chiropodists and Podiatrists

A guide to the benefits of podiatry to patient care



The Society of
Chiropodists and
Podiatrists

www.feetforlife.org

Contents

Section 1	Background	2
Section 2	Self care	3
Section 3	Footcare	3
Section 4	Core podiatry	4
Section 5	Orthotic and footwear provision	5
Section 6	Specialist podiatry	8
Section 7	Extended scope podiatry practice	12
Section 8	Podiatric surgery	16
Section 9	Conclusion	17

Acknowledgements

Appendix 1	Contributors	17
Appendix 2	References	18



The Society of Chiropodists and Podiatrists

The Society of Chiropodists and Podiatrists
1 Fellmongers Path
Tower Bridge Road
London. SE1 3LY

Tel: 0845 450 3720
Fax: 0845 450 3721
Email (general enquiries): enq@scpod.org
Website: www.feetforlife.org

Designed by: Harvest Digital Imaging Ltd. www.hdiltd.co.uk
Copyright © 2010 Society of Chiropodists and Podiatrists

1.1 Background.

The Society of Chiropodists and Podiatrists has developed this guidance in response to the challenges facing the NHS and Independent Practice to increase quality, innovation, productivity and prevention (QIPP) whilst continuing to deliver services in this time of austerity.

This guide will focus on the importance and benefits of podiatry in:

- reducing secondary care intervention
- maintaining independence of vulnerable groups through good foot health
- preventing mobility difficulties through earlier intervention allowing patients to remain in their own homes.

The guide will also highlight the different specialist and clinical modalities delivered through a comprehensive podiatry service and will cover the various health education and promotion strategies used to arrest and stop the development of preventable foot problems and empower patients towards self-care. The guide takes into account current healthcare policy and all the information given is based on existing research evidence and current practice.

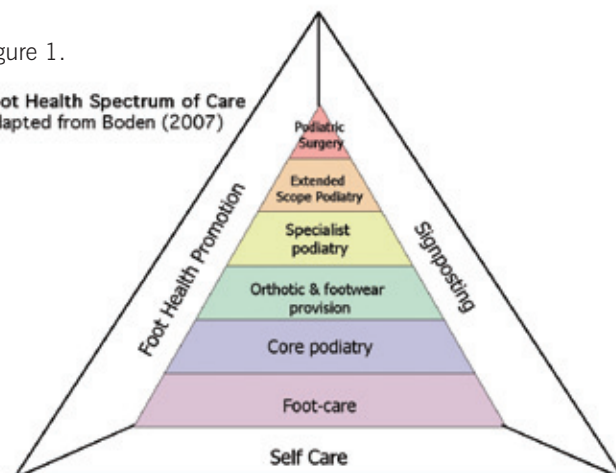
The document offers commissioners and managers of healthcare services guidance on the different clinical aspects of podiatry provided in both in the NHS and the private sector. Examples are given using case studies and good practice models that have been developed to meet local needs and innovate services in response to different challenges.

These examples have demonstrated measurable improvements in meeting the QIPP agenda including patient care and waiting times, quality and productivity increases and whole systems transformation, “to do things differently” and “do different things” with demonstrable cost benefits across the health economy.

The following diagram (Figure 1) illustrates the full spectrum of foot health care and each section in this document reflects the different levels of care shown. Foot health promotion is an integral part of delivery at all levels of podiatric care and will be considered under each section.

Figure 1.

Foot Health Spectrum of Care
Adapted from Boden (2007)



2.1 Self care

Many foot conditions can be appropriately and safely managed by individuals themselves without ever becoming 'patients' if they have the confidence to do this safely and are equipped with the necessary skills and knowledge. There are many foot health advice leaflets available from the Society of Chiropractors and Podiatrists (SCP) and other sources. A number of NHS Trusts have introduced innovative ways of empowering patients to self care ranging from planned one to one opportunities through to area wide strategies.

Case example: Patient Empowerment

In 2000, Sheffield PCT Podiatry Service introduced an empowerment project to reduce pressure on the service and to manage a four-year waiting list of over 2400 patients.

The project provided empowerment talks for low risk patients to promote self-care and to improve access for high-risk patients to within two weeks of receipt of referral.

Implementation

- Staff were diverted from normal clinical duties
- These staff were trained in empowerment techniques with help from other disciplines (including psychologists and physiotherapists)
- New patients were triaged by paper assessment. Those not at risk were invited to an empowerment session, then discharged after being shown how to self-care. This tuition included advice about when to seek professional advice
- A short research study was undertaken to evaluate and refine the approach

Outcomes of the project

- Elimination of the podiatry waiting list
- Improved access to the podiatry service was improved
- The resulting service was based on clinical need
- Improved satisfaction with the service among patients, carers and GPs
- As the service has developed, the podiatry team have learned how to deliver empowerment sessions more effectively and have therefore reduced the likelihood of poor self care
- Supporting research has shown how to improve the patient experience by widening the assessment process to include social and mental health factors instead of concentrating on the medical status of the patient alone.

Cost Benefit:

- The project resulted in savings to the service and did not cost money
- A regional benchmark exercise demonstrated that the service was able to see a higher number of patients per podiatrist than other comparable services.

For details contact Professor Wesley Vernon, OBE., wesley.vernon@sheffieldpct.nhs.uk

2.2 Footwear

There is evidence that footwear can cause significant foot problems and that by helping patients and the public to recognise and make good choices appropriate footwear can prevent falls, make treatment plans more effective and help prevent the development of new, or the deterioration of existing foot conditions such as ulceration. During treatment, podiatrists routinely assess and provide expert information on the patients footwear. Footwear advice also forms part of the patient empowerment sessions described in section 2.1 and is a specialist podiatry role in some areas (see section 5.5).

3.1 Footcare

Simple footcare is defined as toenail cutting and skin care including the tasks that healthy adults would normally carry out as part of their everyday personal hygiene. For various clinical, medical and physical reasons some individuals are unable or it would be too risky for them to undertake this themselves. Footcare is therefore an extremely important aspect to support an individuals ability to remain at home, mobile and pain free whilst the regular check during appointments act as a early detection system ensuring prompt treatment and prevention of more serious foot health problems from developing. Footcare also includes footwear advice, health promotion and signposting when problems arise such as a deterioration in health status, support of hospital discharge and the reduction of readmissions to secondary care and the resultant costs incurred.

Different examples of footcare service delivery have been described in 'Footcare Services for Older People: a resource pack for commissioners and service providers', (DH, 2009) The range of examples outlined include, NHS and private sector provision of footcare services using podiatry assistants or generic workers, the voluntary or third sector such as Age Concern and private practitioners offering footcare.

4.1 Core podiatry

Foot and lower limb problems are common and are a significant cause of ill health, pain and disability and can lead to impaired balance increasing the risk of falling. It is estimated that eighty per cent of older people have foot related problems (Harvey *et al.*, 1997) and in an ageing society the prevalence of chronic foot problems will rise significantly (Levy, 1992). It is also reported that the prevalence of more serious foot pathologies increase with increasing age (Campbell, 2006).

Although health economic assessments (Donaldson and Mooney, 1991) suggest that the cost effectiveness of podiatry surpasses other intervention (Bryan *et al.*, 1991) there is evidence of a number of NHS Trusts disinvesting in this vital area of health care.

General health and/or social problems are often detected by podiatrists who signpost patients to the appropriate agency. The self referral process and community accessibility for these patients often proves to be first point of contact for treatment and the podiatrist may be the first healthcare professional to assess their care needs. A lack of adequate core podiatry services will inevitably lead to escalating cost burdens elsewhere in the NHS.

Core podiatry is defined as, 'the assessment, diagnosis and treatment of common and more complex lower limb pathologies associated with the toenails, soft tissues and the musculoskeletal system with the purpose of sustaining or improving foot health' (Farndon, 2006). Core podiatry forms a significant part of the treatments provided by NHS podiatry services and 56% of all patients treated in England are older people (DH, 2001a; DH 2009)

The findings from foot surveys undertaken in the UK and elsewhere suggest that the main foot conditions affecting older people requiring core podiatry are (Farndon, 2006):

- Nail problems
- Corns and calluses
- Toe deformities

These conditions are managed successfully by podiatry services in the NHS and in private practice, using a range of treatments including sharp debridement, pharmacology and therapies in conjunction with footwear advice and the provision of orthoses (specialist devices to alter foot position and walking) where appropriate. Problematic nail conditions such as ingrowing toenails are subject to a standard treatment as detailed in 4.2.

4.2 Nail surgery

The incidence of nail problems requiring surgical intervention under local anaesthetic annually is reported variously as 0.02% (Sykes, 1986) of the population and approximately 8 cases per 1000 GP

patients (0.8%) (GP. Notebook, 2008) and there is recognition that such prevalent conditions require effective, non-recurring treatment.

Since the 1970s partial or total nail avulsion has become a standard podiatry procedure and involves the removal of all or part of the nail under local anaesthesia in order to treat acute or chronic nail problems such as in-growing, thickened or misshapen nails. The risk of regrowth and recurrence of the problem is almost zero with the application of phenol (or other substance) to the nail bed (nail bed ablation) (Bostanci *et al.*, 2001). A variety of surgical techniques for nail bed ablation are undertaken by surgeons and GPs, however a Cochrane review concluded that the podiatric procedure of phenolisation is more effective in preventing regrowth and thus effecting a cure than the more invasive surgical procedures which can have a recurrence of up to 81% (Robb and Murray, 1982) and are significantly more costly.

4.3 Warts and verrucae

Warts are small growths that are caused by infection with the human papilloma virus (HPV). 'They are common in childhood; about 5% of children and adolescents in the UK have warts' (Health Protection Agency, 2008). Verrucae are warts found on the foot and although generally harmless, can become painful at which stage patients often present at podiatry clinics. Most verrucae clear up without treatment but sometimes this can take two years or more. There are several different types of treatment that podiatrists can offer to help clear verrucae more quickly ranging from cryotherapy (freezing with nitrogen) to the application of chemicals such as salicylic acid. Evidence for the optimal treatment is inconclusive but current research suggests that salicylic acid is the more effective treatment in clearing up verrucae (Gibbs and Harvey, 2006). A randomised trial (The EVERT (effective verruca treatments) Trial) is currently being undertaken to evaluate cryotherapy versus salicylic acid for the treatment of verrucae.

4.4 Long-term and neurological conditions

Podiatrists working in NHS community clinics and in private practice frequently treat patients with long-term conditions such as diabetes, rheumatoid arthritis and neurological conditions such as stroke and Parkinsons Disease. The treatment for these patient groups often involves the management and prevention of escalating foot problems and the provision of screening programmes and foot health education support (National Collaborating Centre for Primary Care, 2004). NICE guidelines for Diabetes (DH, 2004a) standard 10 clearly identifies the critical role for podiatry services in the foot health management of people with diabetes. Core podiatry is vital in maintaining the integrity of the foot in patients whose medical condition places them at risk of developing complex problems. Patients at 'High Risk' in the NICE classification are more often seen by podiatrists who specialise in diabetes or extended scope podiatry practitioners usually working as members of a multi-disciplinary team (see sections 6.1 and 7.1).

4.5 Falls prevention

Foot problems in older people are associated with impaired balance and mobility and, patients who have a history of multiple falls have greater foot impairment. Research suggests that foot problems are a significant risk factor in Falls (Menz *et al.*, 2007).

Dolinis *et al.*, (1997) found that the presence of a corn, bunion or poor footwear were significant independent risk factors for patient falls which can all be moderated with podiatry intervention.

Core podiatry is a key intervention in the prevention of falls in older people and in 2001 the Department of Health recommended in the National Service Framework for Older People (DH, 2001a) that podiatrists should be members of the multi-disciplinary falls prevention team.

Podiatrists are actively involved with local “Sloppy Slippers” campaigns and other falls prevention initiatives in which older people were encouraged to swap their inappropriate old slippers and footwear for better fitting ones to prevent falls. It is estimated that falls were reduced by 37% by the second year of this initiative which was implemented by the Healthy Communities Collaborative. The Office of the Deputy Prime Minister (ODPM) estimated in 2006 that if this scheme operated across the Country £500 million could be saved through a reduction in the number of falls and subsequent treatment that would have been required not to mention the loss of life associated with falls.

4.6 Homeless people

Homeless people experience poorer levels of general physical and mental health than the general population but do not readily have access to local health services. Their foot problems tend to result from minor repetitive trauma due to walking long distances in inappropriate footwear, standing or sitting for long periods leading to venous stasis, oedema and infection, frost bite, skin anaesthesia due to alcoholic peripheral neuropathy, and poor hygiene. To help meet their podiatric needs some services and Trusts offer core podiatry services for homeless people. In addition, podiatrists from both the public and private sectors work with homeless charities such as Crisis at Christmas, providing respite over the holiday period. Podiatry is a very flexible and accessible service reaching the population and meeting local needs irrespective of location.

5.1 Orthotic (corrective foot devices) and footwear provision

Musculo-skeletal biomechanics is an important component of podiatry practice and links with other areas of podiatric practice such as patients with diabetes, rheumatoid and osteo arthritis often involving multi and interdisciplinary work across primary,

secondary and tertiary care. This collaboration can extend to hospital prosthetists and orthotists in surgical appliance and therapeutic footwear provision within secondary care.

5.2 Musculo-skeletal provision

‘There are over 200 musculoskeletal conditions affecting millions of people, adults and children and it is estimated that up to 30% of all GP consultations are about musculoskeletal complaints’ (DH, 2006a).

Many podiatry patients present with pain caused by biomechanical problems which can involve the foot, knee, hip and lower back, affecting gait. These symptoms are often part of a multi-pathological problem exacerbated by diseases such as the many forms of arthropathies and diabetes. The most cost effective and appropriate intervention to treat and prevent these symptoms is by the provision of foot orthoses, which modify or correct the biomechanical problem. Many types of foot orthoses can be provided by podiatrists according to patient needs and the presenting condition. Foot orthoses can range from a simple heel raise or cushioning insoles through to complex bespoke devices, which are made to prescription to alleviate symptoms or provide function realignment and change of gait.

5.3 Podopaediatrics

Podopaediatrics is an area of podiatry that focuses on maintaining the independence of children through improved mobility and preventative foot care, treatment and correction of early signs of foot deformity and the improvement of general paediatric foot health. Neurological conditions such as cerebral palsy can present children with severe mobility problems and orthoses can help in walking (Romkes *et al.*, 2006). Podiatrists play an integral part of paediatric multiprofessional teams improving the gait, mobility and independence of children with special needs.

Many deformities that develop in later life can often be tracked back to early abnormal foot growth and development in children. With early diagnosis it is often possible to prevent these problems from developing. Podiatry interventions such as foot orthoses have been shown to reduce pain and improve functional status in children with juvenile idiopathic arthritis (Powell *et al.*, 2005) and to play a significant role in improving the locomotor skills of children with gross motor delays (Pitetti *et al.*, 2005).

Orthoses can also help children presenting with conditions such as in-toeing and out-toeing, ‘knocked knees’, clubfoot (talipes equinovarus), and osteochondritis dissecans e.g. Severs Disease.

Case example: Multidisciplinary Podiatry/Physiotherapy Paediatric Clinic

In 2007, as a response to many cross service referrals, a need for integrated working for the holistic benefit of the vulnerable children in Stockport and to reduce the paediatric physiotherapy waiting list, Stockport PCT piloted a joint podiatry and physiotherapy clinic.

Implementation

- This change in service delivery needs to be implemented and led at a strategic level involving managers of podiatry and physiotherapy services
- Two sessions per week respectively of a physiotherapist's time and a podiatrist's time were focussed on this new service provision
- Patients who were selected were the ones in greatest clinical need and who would benefit from joint and holistic assessment
- Discussions were also held with referrers such as GPs, consultants, health visitors, CNAs, and colleagues to establish two way pathways to enable referrals to and from the service when necessary
- Improved liaison with diagnostic services such as imaging established a seamless service for diagnostic tests.

Outcomes

- An audit of 110 random case notes was carried out between October and December 2009 approximately 50% of the Footsteps caseload. The audit included the presenting symptoms, whether it was resolved by the intervention and the intervention given. The following illustrates the results

Percentage of cases	Symptom Reported	Percentage resolved
40	Pain	66
35	Trips/Fall	68
19	Clumsiness	76
11	In toeing	83
6	Wearing Pedro's	100
19	Toe walking	62
1	Decreased confidence	100
1	Poor self esteem	100
24	Parental concern	77
24	Other	65

- Won Stockport PCT innovation award for service 2009
- Reduction in paediatric physiotherapy waiting list from two years to six weeks
- Reduction in the number of appointments for patients who are already attending many such appointments from multiple services
- Increase in skills for both podiatrist and physiotherapist from learning outcomes whilst working jointly which cascades to departmental staff
- A resource for student placement and colleague shadowing.

Cost Benefit

- There were no direct cost savings but a more efficient use of funding resulted in improved outcomes for the patients
- A significant saving to patients was experienced as they attended far fewer appointments which resulted in lower personal cost and less inconvenience.

For details contact Simon Jones, Podiatrist simon.Jones@nhsstockport.nhs.uk

5.4 Sports injuries

Sports medicine specialises in prevention, diagnosis and treatment of injuries related to participating in sports and/or exercise. Problems often arise in relation to the abnormal rotation or deformation of joints and/or muscles caused by engaging in physical activities (SCP, 2010). Treatment involves a physical 'biomechanical' assessment with perhaps the provision of orthoses, advice about stretching and strengthening exercises and footwear specification.

5.5 Footwear provision

Podiatrists have an important role to play in the provision of bespoke and therapeutic footwear and there are examples of where services have been redesigned to ensure that people with foot problems associated with long term conditions receive comprehensive foot health care to meet their needs. Using foot health interventions and modalities such as orthoses (see para 4.2) and specialist footwear provision in a 'one stop shop' service these services are well received by patients and commissioners alike as centres of excellence. Computer Aided Design and other scanning technologies have increasingly become common place in the practice of providing specialist footwear and custom made orthoses.

These redesigned services have led to a reduction in inappropriate referrals for costly bespoke specialist footwear and in the number of specialist shoes made but not worn. Again the 'One Stop Shop' model provision results in improvements in the quality of care, appropriateness and speed of treatment provided, reduction in the number of return appointments for patients and an overall cost efficiency for commissioners of services.

Case example: Multidisciplinary footwear clinic

In 1998, Salford Royal Hospitals NHS Trust set up an orthotic/footwear service within the podiatry department which involved the orthotist working alongside podiatrists.

Implementation

- This change in service delivery needs to be implemented and led at a strategic level involving managers of podiatry and orthotic services
- Three sessions of an orthotist's time were redeployed to the podiatry department
- Patients who were selected were the ones in greatest clinical need and who agreed to wear the footwear.

Outcomes

- 50% of the patients referred for specialist footwear by hospital consultant staff were assessed and referred for suitable retail footwear. This decision was based on clinical need and/or potential lack of compliance with the footwear due to its appearance
- The quality of the footwear from the company contracted by the NHS was improved following advice and monitoring by the podiatry team
- More choice for the patients was included in the initial consultation
- The patient usage of the footwear improved and the patients reported more satisfaction with the service and the footwear
- As footwear was demonstrated to be a successful intervention, it was replaced when worn out.

Cost Benefit

- Cost savings could not be identified however there was a more efficient use of funds resulting in improved outcomes for the patients
- Further improvements can be made through the adoption of scanning technology within this service setting.

For details contact Dr Anita Williams, a.e.williams1@salford.ac.uk

6.1 Specialist podiatry

Specialist areas in podiatry relate mainly to long term conditions, which form the headings for the different paragraphs in this section.

6.2 Diabetes

100 people a week lose a limb in the UK through diabetes. (Diabetes UK, 2009a)

The mortality rate for diabetic foot ulcers is third only to pancreatic and lung cancers at five years. (Robbins *et al.*, 2008; Armstrong *et al.*, 2007)

It is estimated that 15% to 20% of patients with diabetes will develop a foot ulcer in their lifetime (Frykberg *et al.*, 1998; DH, 2001b). Foot complications account for more hospital admissions than any other complication of diabetes, with considerable morbidity and mortality. Foot ulceration precedes 85% of amputations whilst 51% of amputees require a second amputation within 5 years. It is estimated that around 85% (International Diabetes Federation, 2005) of these amputations could be avoided by early detection of foot complications, timely intervention, involvement of a diabetic foot care team, good diabetes control and patient education (Cheer *et al.*, 2009).

The delivery of high quality specialist foot management is an essential component of every local diabetes service and the challenge for the NHS in reducing the incidence of amputation is to ensure these services are in place. There is clear evidence that collaboration between primary, secondary and social care can reduce hospitalisation and crucially, provide better care to patients and carers alike. Effective management of foot disease in diabetes requires effective integration of the input of different healthcare professionals, who together have the skills necessary to assess and treat foot lesions (Diabetes UK, 2009b).

The Department of Health and others such as Diabetes UK have established clinical guidelines and standards which require specialist podiatric intervention and podiatrists are key to the delivery of this care to children and adults with diabetes. These interventions can range from foot screening, structured education in groups or on a one to one basis and structured care including core podiatry,

specialist care and assessment and treatment of different lesions of the foot, including the appropriate antibiotics, debridement, wound management, and off-loading.

The National Institute for Clinical Excellence (2004a) guideline standard 10 states that, 'ongoing care of an individual with an ulcerated foot should be undertaken without delay by a multidisciplinary foot care team' 'The Team includes specialist podiatrists, nurses and diabetologists with additional support from radiology and vascular surgery. There is significant evidence that care in a multidisciplinary clinic reduces major amputations and in one retrospective study the number was reduced by 75% following the introduction of such a clinic and the improvement of vascular surgery facilities (Holstein *et al.*, 2000).

The following cost benefit analysis illustrates the potential savings that can be made by investing in podiatry in diabetes care:

Cost benefit analysis

STRATEGIC OPTION	BENEFITS	COSTS	RETURNS
Status Quo	No initial increase in financial outlay	Cost of amputations per annum 2006 ^a £43.5 million Cost of 20 specialist podiatrists per year £540k ^b Cost of amputations 2012 ^c £67.5 million Total £68.04m	Costs increase by £24m per year
Funding Foot Clinics (No investment in podiatrists)	Small initial outlay Clinics expand by 12.5% to match demand Reduced waiting times Amputation rates stay the same	16 acute health boards in Scotland require 32 specialist podiatrists (band 6) £864k Consultant time 2 clinics per week £300k ^d Cost of amputations 2012 ^e £56.25million Total £57.41m	Benefits £10.63m over status quo
Maximising the Workforce (Investment in podiatrists)	Reduced amputation rates Lower need for consultant time due to podiatry autonomy Increased staff morale Improved patient outcomes	Training costs and salary per podiatrist £40k Training costs and salary for 30 podiatrists over 5 years £1.2m Consultant time 1 clinic per week £150k Cost of amputations 2012 ^f £45million Total £46.35m	Benefits £21.69m over status quo Benefits £11.06m over option 2 funding foot clinics

a Based on figures from Scottish Diabetes Survey 2005 and 2006- Amputation rate 0.5% of diabetes population in Scotland

b Number of diabetes specialist podiatrists in Scottish Workforce Group Survey 2007

c Based on estimated rise of amputations of 0.1% and rise in diabetes patient numbers to 225000 (12.5 % rise five years, 50% increase estimated in 20 years Diabetes Action Plan 2006) 2006 prices

d Based on average 10 pa consultant salary of £70 plus on costs

e Based on maintaining amputation rate at 0.5% and a rise in diabetes population of 12.5% to 225000

f Based on reduction of amputation rate by 0.1% to 0.4% and a rise in the diabetes population of 12.5% to 225000 people

For details contact Joanne McCardle - Joanne.McCardle@luht.scot.nhs.uk

Case example: Multidisciplinary team caring for inpatients with Diabetes in Southampton

Implementation

- The initiative was supported by Workforce Development Confederation and received 3 year funding (March 2004 – March 2007)
- A dedicated Diabetes Foot Protection Team (DFPT) was established comprising a lead podiatrist, specialist nurse, dietitian and a specialist podiatrist
- Dedicated Diabetes Podiatry clinics were set up by the Diabetes Foot Team and are run within the PCTs to enable more complex cases to be seen in the primary care rather than in secondary care
- The team developed a diabetes education programme specifically for health professionals working within the Acute Trust similar to that of the diabetes Programme of Learning which had been delivered in Primary care since June 2004.

Outcomes

- In line with NICE (2004a) recommendations the team respond to new foot problems within 24 hours and with links to appropriate secondary care teams offer a mobile telephone service that patients and staff can ring for advice and support if problems/concerns arise/emergency access.
- Increased access for people with diabetes in primary care
- The length of inpatient stay has fallen from 50 days to 18 days over a period of 36 months. Issues, such as community access to Topical Negative Pressure systems, advanced wound care and improved management of diabetes, that previously had delayed discharge have been highlighted and acted on.

Cost Benefit

A saving of £1.2 million over a 36month period was made as a result of the direct impact that the Team has had on the reduction in length of stay of inpatients with Diabetes.

For details contact Graham Bowen –
Graham.Bowen@ports.nhs.uk

Case analysis

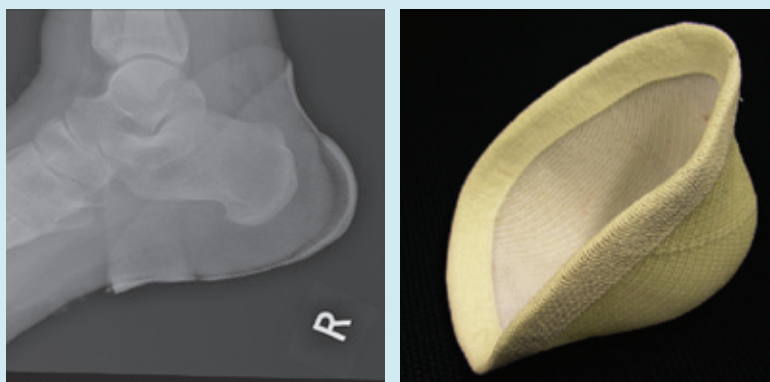
Following a nine week stay in hospital, Peter, a 67 year old gentleman was discharged with pressure ulcers over both heels, these photographs were taken the week after discharge when the ulcers measured 13x14mm (L) 23x31mm (R)



Brief medical history includes Type 2 diabetes diagnosed 20yrs ago HbA1c 9.6%, heart failure, bilateral oedema, history of poor concordance and poly pharmacy associated with diabetes and other long term conditions

Off loading heel devices were made from flexible and rigid cast materials, which were fitted into the patient's footwear. X-rays were taken to eliminate osteomyelitis and they clearly show the area of offloading in relation to the ulcer site

This patient had repeated readmissions to hospital for ongoing treatment for heart failure, the left heel ulcer healed after 15 weeks and the right heel ulcer was 4x4mm, superficial and granulating when the patient was re-admitted to hospital



For details contact Helen Tyrer, helen.tyrer@manchester.nhs.uk

6.3 Peripheral arterial disease (PAD)

In Europe and North America it is estimated that 27 million people have PAD and in the UK around 100,000 people are diagnosed every year. PAD increases markedly with age, affecting 3% of people at 60 years rising to over 20% in people greater than 75 years of age. (Belch *et al.*, 2007a). Patients with diabetes are 2-3 times more likely to suffer from PAD than the general population. As up to 50% of people with PAD do not present with any symptoms it is important that those with the risk factors are screened early to enable lifestyle changes to take place. By introducing lifestyle changes people with PAD can expect an improved quality of life and life expectancy. Hospital admissions and amputations are reduced and there are fewer premature deaths.

Patients with undiagnosed PAD present in core and specialist podiatry clinics. Using the diagnostic tools available such as taking ABPI (ankle brachial pressure index) and Doppler scanning podiatrists can identify patients with the condition. Current referral pathways are via the general practitioner, however some Trusts have set up multi-disciplinary teams (which include podiatrists) with access to diagnostics and direct referral to vascular surgeons.

The following two examples illustrate the savings that can be made by offering a lower limb vascular assessment/triage service in the community:

Tameside and Glossop PCT, 2005 – Lower limb vascular triage

- 76% of patients seen in community at cost saving of £65,000 after initial funding of triage service at £35,000.
- Led to reduced waiting times and patient choice.

Cardiff and Vale UHB 33% inappropriate referrals:

- 396 patients @ £217 (payment by results out-patient tariff 09/10)
- Initial saving of £85,932
- Reduced waiting, increased throughput, use of screeners

6.4 Systemic musculo-skeletal disorders (such as rheumatoid arthritis)

Patients with inflammatory arthritis have an increased need for a range of basic foot care services. Up to 90% of people with rheumatoid arthritis have some form of disease related foot involvement. Long standing inflammation leads to structural deformity and soft tissue lesions, which in turn generates areas of pressure that result in callus and corn formation and foot ulceration.

Foot problems may arise directly from joint/soft tissue disease such as rheumatoid arthritis, or may be secondary to change in structure or function where musculoskeletal conditions lead indirectly to an increase in the prevalence or severity of associated conditions. Plantar callosities occur in 66% of people with musculoskeletal/

connective tissue disease, digital corns/callus in 24% and ulcerations in 17%. (Podiatry Rheumatic Care Association, 2008).

Although evidence shows that early podiatric intervention can improve long term outcomes, foot health services for patients with musculo-skeletal problems in England lack integration and consistency. The National Institute for Clinical Excellence paper, '*Rheumatoid arthritis The management of rheumatoid arthritis in adults*', (NICE, 2009b) recommends referral to a podiatrist for assessment and periodic review if patients have foot problems but only half of all rheumatology departments report adequate basic foot care services for their patients and less than 1 in 10 have formal care pathways or mechanisms for referral to foot care services. Trusts need to review and develop systems to ensure adequate care for people with rheumatoid arthritis.

6.5 Dermatology

Dermatology of the foot could be considered as part of core podiatry as many common skin problems arising on the foot are amenable to podiatry treatment. However, increasingly podiatrists are becoming more interested in this area. Skin pathology on the foot is very common affecting around 58% of the adult population (Burzkowski *et al.*, 2003). This can range from minor skin infections such as tinea pedis to the more serious conditions such as malignant melanoma. Good podiatry care can prevent many of the skin infections like tinea developing into more serious conditions such as cellulitis through simple advice and the use of topical drugs, as well as screening patients for the presence of systemic conditions manifesting in the foot such as diabetes or recognising more serious skin pathologies such as melanoma.

6.6 Forensic podiatry

Forensic Podiatry utilises podiatry-based knowledge in the identification of human beings, usually in criminal or disaster-type investigations. Examples of work in this field include identification from footwear, from footprints, from gait patterns captured on CCTV footage and from the records made by podiatrists during the course of their treatment. This service is currently offered by Sheffield PCT Provider Services Podiatry Department and Independent private practice.

6.7 Advanced Technology

Podiatrists are leading the way utilising modern technology in areas such as diabetes care and orthotic provision. For example a number of services are using hydrojet technology for deep debridement, a commonly used product is the Versajet in the treatment of diabetic foot ulceration (see p11) with significant results in healing rates. Foot scanning is being used to produce accurate orthotics with the aim of reducing sports injuries.

Case example of Diabetes and the use of the Versajet

A patient was admitted to secondary care with a complex acute infected diabetic foot with multiple plantar ulceration and Charcot in 2008.

- Male aged 62 with type 2 diabetes – 15 years duration
- Neuropathic and Charcot foot
- Previous plantar ulceration
- Acute ulceration of the right foot
- Admitted for deep infection over weekend; had vascular review and IV antibiotics for four days

Versajet debridement of the foot by the in-reach Podiatry team enabled early discharge home from secondary care, and prevented unplanned surgical debridement and a long length of stay in secondary care.

The care following Versajet was provided by Podiatry with support from nursing teams. The cost implication of the wound care up to healing was reduced compared to traditional methods in both time and products used.

Patient wound progressed to full healing and patient remains healed.

Implementation

- Advanced wound care business case underaken by Podiatry in Portsmouth using the Versajet and Topical negative pressure on complex foot wounds
- Versajet provide in a community setting
- Access to appropriate service in time
- Rapid and aggressive nature of foot ulceration
- Increasing older and vulnerable people
- Changing workforce to support public health agenda
- Demand for prevention of vulnerable limb.

Outcomes

- Improved healing
- Reduction in reulceration
- Early discharge from secondary care
- Shorten healing time ▼£ and ▼antibiotics / dressings ▲ capacity
- Improved wound healing
- Team working.

Cost Benefit

- Reduction in costs with increase in activity / capacity
- Avoidance of admissions
- Change admission from Non-Elective to Elective
- Shorten healing time ▼£ and ▼antibiotics / dressings ▲ capacity.

For details contact Graham Bowen – Graham.Bowen@solent.nhs.uk



7.1 Extended scope podiatry practice

Podiatrists working in extended scope services or advanced practice have undergone extra training in their clinical areas such as non-medical prescribing and are working beyond the recognised scope of practice. Examples include requesting blood tests, scans and interpreting the results of these investigations to assist clinical diagnosis and appropriate management of patients care undertaking injection therapy often using ultrasound to guide the procedure and listing for podiatric and orthopaedic surgery. Podiatrists are also requesting and interpreting advanced vascular investigations such as Dopplex and waveforms. In many cases these practitioners have assumed roles previously undertaken by other healthcare professionals including doctors and surgeons. The introduction of these roles has led to reduced waiting times for patients and a more effective use of resources (Department of Health 2008. Framing the contribution of allied health professionals: delivering high-quality healthcare).

7.2

Podiatrists are increasingly becoming involved in or leading different aspects of health care provision such as public health. In Portsmouth a team have been funded and trained to level two to provide brief interventions (Royal Society for Public Health Level 2 Award in Understanding Health Improvement).

Podiatry Prevention Team

Foot ulceration is a common predisposition to amputation which has a significantly high mortality. Substantial expenditure is incurred to support inpatients with foot ulceration and infection as well as primary and community care involvement. This service aims to prevent ulceration and admission by looking holistically at improving the general health of the most vulnerable by working with Public Health as brief intervention therapists. As well as by increasing access to podiatry for assessment and monitoring of high risk groups who would not previously receive intervention unless symptomatic. The Portsmouth Prevention service commenced October 2008.

Five podiatrists have been trained as brief intervention therapists in six key public health initiatives. The team have a level 2 qualification in Health Improvement accredited by the Royal Society of Public Health. The Public Health Initiatives include smoking cessation, weight management, alcohol misuse, falls awareness, winter warmth and flu vaccination. The team address these subjects with tact and confidence; planting the seed of behaviour change to eventually

alter the patient's social habits. All with the view of improving quality of life and reducing the risk factors associated with foot health complications.

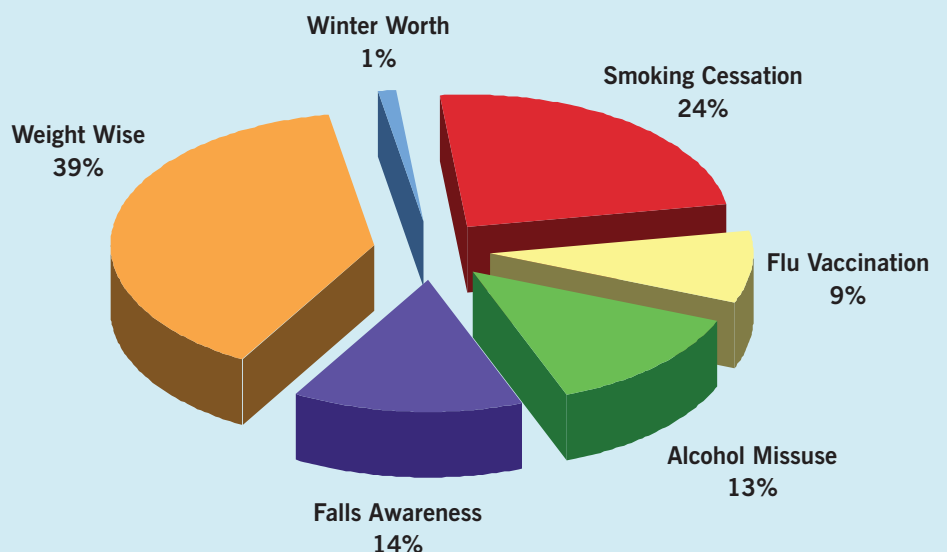
The following represents the number of public health intervention recorded this financial year:

	PH Brief Intervention
Smoking Cessation	199
Flu Vaccination	82
Alcohol Misuse	108
Falls Awareness	115
Weight Wise	320
Winter Warmth	9
Total	833

As you can see from the results so far a large proportion of our patients require education and advice on their weight.

A great number of our patients are clinically overweight, increasing the risk of Diabetes, which is the highest cause of foot related Hospital admission.

PH Brief Intervention



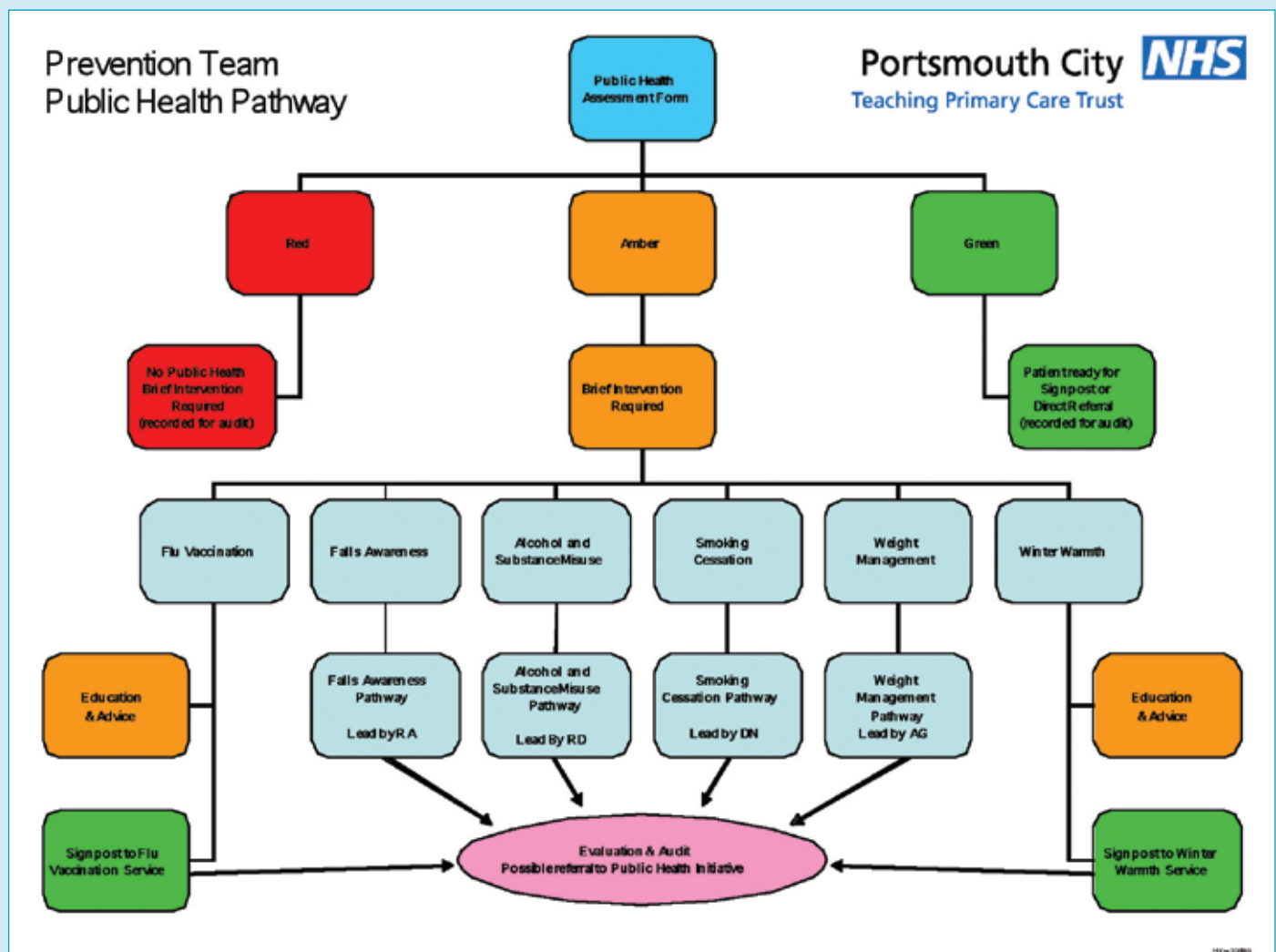
The majority of the weight management initiatives are concerning obesity but this section of public health also encapsulates malnutrition which impacts hugely on wound care management.

Smoking cessation intervention is also a high requirement amongst our patients. With 60% of PAD patients being asymptomatic (Belch *et al.*, 2007b) this section of public health is vital in our quest of reducing hospital admissions as a result of foot complications.

Strong links have been made within the community to develop group education sessions. These sessions are targeted towards the vulnerable patients within the community who may not be known to the department. This work is aimed to educate and advise patients on foot health to avoid potential foot complications in the future.

Each member of the team is allocated an area of public health to champion and each member has been actively pursuing schemes within the local community such as exercise on prescription, green gyms and smoking cessation groups. The team are able to help the PCT achieve their public health targets by working in partnership.

The following diagram represents the public health pathway patients follow when receiving lifestyle choice advice and intervention. The pathway is designed around a traffic light system to distinguish what level of intervention is required. Patients have been referred directly to local public healthcare initiative teams where as other patients are signposted to the initiatives on a self-referral basis as requested by some initiatives.



For details contact Mathew King: Mathew.King@solent.nhs.uk

7.3

Evidence shows that between 10% and 40% of new orthopaedic referrals do not need a surgical opinion, and of patients on a waiting list, between 5% and 15% do not want or need surgery. *Improving Orthopaedic Services: A Guide for Clinicians, Managers and service Commissioners* (Action on Orthopaedics and the Orthopaedic Services Collaborative), NHS Institute for Innovation and Improvement (2003). Historically these patients would be placed on a waiting list to see the consultant only to be referred on for further tests, physiotherapy and/or podiatry, which also involved being placed on another waiting list. To reduce waiting lists, inappropriate referrals and admissions to secondary care a number of NHS Trusts have introduced multi-disciplinary orthopaedic triage teams comprising extended scope podiatrists and physiotherapists. Orthopaedic referrals (urgent including red flag referrals) are triaged usually following an agreed clinical pathway and protocol. Referrals are managed in the most appropriate way effectively directing patients to the right place at the right time in a primary care setting. Those patients needing secondary care intervention are referred directly to the local acute hospital.

7.4

The following case examples illustrate the different advanced roles of extended scope practitioners in diabetes and musculo-skeletal practice.

Case example: A weekly podiatrist led, multidisciplinary community based high risk foot clinic in South Manchester providing holistic management that includes specialist wound care and off-loading, blood glucose management, cardiovascular risk factor management, nutritional advice and weight management

Implementation

- The weekly clinic was initially funded as part of a NW Tier 2 initiative for improving care for people with diabetes in primary care
- The clinic is staffed by a lead podiatrist - non-Medical prescriber, specialist podiatrist - non-medical prescriber, specialist dietitian and an advanced practitioner in diabetes (DSN) - non-medical prescriber
- Access was negotiated to pathology, radiology and surgical appliances/orthotist and pharmacy and the funding found
- To ensure appropriateness of referral all primary care staff undertook the University of Warwick Certificate in Diabetes Care led by the clinic team and community DSNs

Outcome

- An audit at 6 months showed that 52 patients seen who would normally be referred to secondary care, 50% with a diabetic foot ulcer and the rest for non-invasive vascular assessment or neuropathic assessment
- Emphasis in this primary care service is placed on high quality care, prevention and self-care, providing timely and comprehensive assessments, diagnostics and education, patient focused solutions that promote active patient involvement and therefore increased concordance
- Delivering high quality timely care for people with diabetic foot problems in primary care reduces unnecessary referrals to secondary care and therefore reduces unnecessary hospital stays and admissions
- Positive comments made by patients in the satisfaction survey.

Cost Benefit

- Potential savings of £46,000 pa by providing care in the community
- Research published in 2008 (Young *et al.*, 2008) concludes that cardiovascular risk factor management reduces morbidity and mortality therefore increasing long-term savings

For details contact Helen Tyrer, helen.tyrer@manchester.nhs.uk

Case example: The use of Non-medical prescribing (NMP) within podiatry practice in Central Lancashire

Working with patients with long-term conditions the podiatrist, in partnership with an Independent Prescriber (IP), has made supplementary prescribing work to the benefit of patients and the benefits have been actively promoted to other professionals

Implementation

- NMP has been included into the Trust's existing secondary care pathways
- As the initiative bridged a primary/secondary care interface agreement was needed with all stakeholders that the clinical pathway needs to include an NMP
- Specialist podiatrists were trained as prescribers which required time away from the workplace
- The cost of prescription pads and the budget for drugs and dressings was identified
- Patients were given an extended appointment with the podiatrist to ensure enough time for a full history to be taken
- Access was required to an independent prescriber who was willing to mentor the podiatrist whilst undertaking the NMP course.

Outcomes

- By incorporating NMP into existing podiatry pathways the quality and timeliness of patient care has been improved
- The number of appointments in secondary care reduced
- It enables appropriate care to be delivered to the patient nearer to their home
- It helps the IP's by reducing their routine workload so that they can concentrate on more complex cases and provide support to many future NMPs
- Patients were empowered to change dressings themselves.

Cost Benefit:

- A reduction was achieved in secondary care appointments for patients from weekly to up to a six weeks return interval with podiatry treating the patients in between in primary care
- Dressings used by all professionals treating the patient
- The patient is empowered to change their dressings at home and therefore the number of times they have to attend the podiatry clinic is reduced.

For details contact Susan Popadiuk,
susan.popadiuk@centrallancashire.nhs.uk

Case Example: Multidisciplinary Tier 2 MSK Triage Interface Clinic

In 2005, South Manchester Primary Care Trust (now Manchester Community Health) established this service to triage referrals from local GP's to secondary care orthopaedic departments.

Implementation

- Supported by the Greater Manchester Strategic Health Authority as one of a range of Tier 2 (extended primary care) specialities
- Service evolved in conjunction with partners in secondary care with initial pilot clinics being consultant led with independent AHP caseloads. Waiting times reduced from 18 months to seven weeks
- The Tier 2 MSK team consisted of extended scope physiotherapy and podiatry practitioners (ESPs) (2.0WTE) and administrators based at Withington Community Hospital
- Provide patients with assessments, diagnostic tests and treatments for a wide variety of conditions in primary care settings.

Outcome

- To reduce referrals to secondary care, 2009/2010 predicted referrals 4800 with 85% managed in primary care
- To reduce waiting times for patients, waiting times typically two to three weeks
- Bring care closer to patient's home
- Focusing efforts on self-management and prevention
- Improving patient outcomes through more effective and efficient assessment, diagnosis and treatment
- High patient satisfaction.

Cost Benefit

- Difficult to estimate, however an increased spend in primary care has resulted in reduction of referrals to secondary care
- Unmet demand? Service has proved extremely popular with GP referrers as referral numbers have increased each year hence service cost also. Cost per case however has reduced.

For details contact Steve Boag -
Steve.Boag@manchester.nhs.uk

8.1 Podiatric surgery

Podiatric Surgery is the surgical treatment of the foot and its associated structures. It is carried out by a podiatric surgeon, usually as a day case procedure and under local anaesthetic. Podiatric surgery is available in many NHS trusts as well as in private hospitals and clinics. A podiatric surgeon manages bone, joint and soft tissue disorders. There are presently 46 NHS podiatric surgery units led by consultant podiatric surgeons. Podiatric surgeons also work in many private hospitals.

Research suggests that quality and productivity improvements could be achieved by providing podiatric day-case foot surgery in all NHS trusts and as this service is usually performed under local anaesthetic, there is rarely any need for anaesthetic cover or inpatient stay.

Direct management within a primary care trust rather than in the acute sector significantly reduces the cost of each procedure, delivering real savings against tariff at a local level whilst maximising patient care. Analysing Hospital Episodes Statistics (HES) data (2005-06) indicates that 50-60% of foot cases which could be suitable for day case surgery are performed with an inpatient stay. This is equivalent to 45,000-60,000 procedures nationally.

Case example: Podiatric Surgery unit in a Community Hospital Diagnostic Treatment Centre.

In 1994, South Derbyshire Community Trust set up a podiatric surgery service which involved a podiatric surgeon with a team of three podiatric support staff and theatre nursing staff providing a comprehensive range of foot surgery in a community hospital day case unit.

Implementation

- This change in service delivery from the usual orthopaedic surgery services was implemented and led at a strategic level involving managers of podiatry, GPs and service commissioners
- Three outpatient sessions and two theatre sessions were organised. The hospital provided x-ray and phlebotomy. Other diagnostic investigations were provided by a nearby acute unit. One general anaesthetic session was provided every six weeks, the rest were all local anaesthetic sessions
- Patients were all referred by their GPs who were advised of the development by the Trust and quickly began to use the service because of long waiting times in Orthopaedics.

Outcomes

- The service provided day case surgery for many conditions that previously would have required a hospital stay. The location of the service meant that no cases were cancelled in favour of trauma or because no ward bed was available
- Because of the staff structure, non-surgical orthotic treatment as well as surgical treatment was available to patients which proved very popular with GPs who found it convenient to refer all foot cases to one location
- A number of outcomes including activity, patient satisfaction, and adverse outcomes were recorded and reported to GPs in 3 monthly reports. Specific operations and conditions were more closely audited and reported in peer-reviewed journals
- The department quickly grew to two consultant podiatric surgeons, a specialist registrar in podiatric surgery and a podiatric surgical trainee.

Cost Benefit

- Elective foot surgery provided in the community setting by a podiatry team offers substantial cost savings over orthopaedics in an acute unit. Because the majority of patients are fit with good social support they do not require the infrastructure present in an orthopaedic department that provides for the frail and elderly
- Day case surgery is popular with patients and by focusing a dedicated team on foot surgery, excellent outcomes and high patient satisfaction follow.

For details contact Dr Tim Kilmartin PhD. mail: kilmartin@footsurgeryservices.com

9.1 Conclusion

Foot health has a fundamental link to health and wellbeing of individuals and the economy. Infection, ulceration, amputation and disabling foot pain have a significant impact on mobility, independence, quality of life and a person's ability to work or care for others. NHS community podiatry services have been innovative in the way they have developed both specialist and core podiatry provision. Whilst there is significant evidence for the value, benefit and cost effectiveness of podiatric surgery and of podiatry interventions in clinical areas such as diabetes, peripheral arterial disease and systemic musculo-skeletal disorders the evidence base is still developing in other areas of practice. Core podiatry is a much valued service and for older people is pivotal in maintaining mobility in this group.

Podiatry services are a modern, cost effective way of transforming community services and in collaboration with Private Practice, helping the financial burden faced by the NHS without compromising quality.

This guide will be updated annually to reflect new models of care and examples of high quality cost effective practice.

9.2 Acknowledgements

The Society of chiropodists and Podiatrists commissioned and funded this guidance to support managers and private practitioners in the delivery of high quality podiatry services. I would like to thank all those who so generously and freely contributed to this document and in particular to Helen Tyrer, Neil Simmonite, Mike Townson and Wesley Vernon for commenting on and reviewing the drafts.

Liz Salem
June 2010

Appendix 1

Contributors

Morag Bardsley
Dr John Bevans
Steve Boag
Dr Chris Boden
Graham Bowen
Ivan Bristow
Professor Jackie Campbell
Scott Crawley
Dr Lisa Farndon
Martin Fox
Dr Tim Kilmartin
Matthew King
Simon Jones
Joanne McCardle
Simon Otter
Susan Popadiuk
Trevor Prior
Helen Tyrer
Professor Wesley Vernon OBE
Jeremy Walker
Dr Anita Williams
David Wylie

Appendix 2

References

- Armstrong, D. G., Wrobel J. and Robbins J. M. (2007) Guest Editorial: 'Are diabetes-related wounds and amputations worse than cancer?' *International Wound Journal* 4(4), 286–287.
- Audit Commission (2000) 'Testing Times. A Review of Diabetes Services in England and Wales'.
- Audit Commission (2004). Quicker treatment closer to home: Primary care trusts' success in redesigning care pathways. [online] Available from: http://www.audit-commission.gov.uk/health/nationalstudies/primarycare/Pages/quickertreatmentclosertohome_copy.aspx [accessed 23rd June 2010]
- Belch, J., Stansby, G., Shearman, C., Brittenden, J., Dugdill S., Fowkes, G., Jarvis, S., McCann, T., Mimmagh, A., Monkman, D., Morrell, J., The Target Pad Group (2007) 'Peripheral arterial disease – a cardiovascular time bomb' *The British Journal of Diabetes and Vascular Disease* 7(5), 236–239
- Bostanci, S., Ekmekci, P. and Gurgey, E. (2001) 'Chemical matricectomy with phenol for the treatment of ingrowing toenail: A review of the literature and follow-up of 172 treated patients', *Acta Dermato-Venereologica*, 81(3), 181–183.
- Bryan, S., Parkin, D. and Donaldson, C. (1991) 'Chiropody and the QALY: a case study in assigning categories of disability and distress to patients', *Health Policy*, 18(2), 169–185.
- Burzykowski, T., Molenberghs, G., Abeck, D., Haneke, E., Hay, R., Katsambas, A., Roseeuw, D., van de Kerkhof, P., van Aelst, R. and Marynissen, G. (2003) 'High prevalence of foot diseases in Europe: results of the Achilles Project', *Mycoses*, 46(11–12), 496–505.
- Campbell, J. A., Patterson, A., Gregory, D., Milns, D., Turner, W., White, D., Luxton, D. E. A. and Cooke, M. (2002) 'What happens when older people are discharged from NHS podiatry services?', *The Foot*, 12(1), 32–42.
- Campbell, J. A. (2006) 'Characteristics of the foot health of low risk' older people: A principal components analysis of foot health measures', *The Foot*, 16(1), 44–50.
- Certificate in Diabetes Care Intermediate (Level 2) Certificate, Warwick Medical School, The University of Warwick, [Online] Available from: http://www2.warwick.ac.uk/fac/med/study/cpd/subject_index/diabetes/cidc/wms_cidc_95514.pdf [accessed 26 July 2010]
- Cheer, K., Shearman, C. and Jude, E. B. (2009) 'Managing complications of the diabetic foot', *British Medical Journal*, 339, 1304–1307
- Department of Health (2001a) '*National service framework for older people*', London: The Stationery Office.
- Department of Health (2001b) '*National service framework for diabetes: standards*', London: The Stationery Office.
- Department of Health (2005a) '*Supplementary prescribing by nurses, pharmacists, chiropodists/podiatrists, physiotherapists and radiographers within the NHS in England*', London: The Stationery Office.
- Department of Health (2005b) '*KT23 Report NHS chiropody performance summary for 2004/05*', [Online] Available from: http://www.dh.gov.uk/en/Publicationsandstatistics/Statistics/StatisticalWorkAreas/Statisticalhealthcare/DH_4092125 [Accessed 23rd June 2010]
- Department of Health (2006a) '*The Musculoskeletal Framework - A joint responsibility: doing it differently*', London: The Stationery Office.
- Department of Health (2006b) '*Diabetes commissioning toolkit*', London: The Stationery Office.
- Department of Health (2006c) '*NHS National Diabetes Support Team Diabetic Foot Guide*', [Online] Available from: http://webarchive.nationalarchives.gov.uk/+www.dh.gov.uk/en/Publicationsandstatistics/Bulletins/Medicaldirectorsbulletin/Browsable/DH_5910460 [Accessed 23rd June 2010].
- Department of Health (2008) '*Framing the contribution of allied health professionals: delivering high-quality healthcare*', London: The Stationery Office.
- Department of Health (2009) '*Prevention package for older people resources*', London: The Stationery Office.
- Department of Health (2010) '*Six years on: Delivering the Diabetes National Service Framework*', London: The Stationery Office.
- Diabetes UK (2006) '*National Minimum Skills Framework for Commissioning of Footcare services for people with diabetes - A joint initiative from Foot in Diabetes*', London: Macleod.
- Diabetes UK (2009) '*Putting feet first Commissioning specialist services for the management and prevention of diabetic foot disease in hospitals*', London: Macleod.
- Drew, C. (2007) 'Expert Group Criteria for the recognition of healthy footwear', *British Journal of Podiatry* November, 10(4), 127–133.
- Dolinis, J., Harrison, J. E. and Andrews, G. R. (1997) 'Factors associated with falling in older Adelaide residents', *Australian and New Zealand Journal of Public Health*, 21(5), 462–468.
- Donaldson, C. and Mooney, G. (1991) 'Needs assessment, priority setting and contracts for healthcare – an economic review', *British Medical Journal*, 303(6816), 1529–1530.
- Farndon, L., Barnes, A., Littlewood, K., Harle, J., Beecroft, C., Burnside, J., Wheeler, T., Morris, S. and Walters, S. J. (2009) 'Clinical audit of core podiatry treatment in the NHS', *J Foot Ankle Res*, 2, 7.
- Farndon, L., Vernon D., Parry, A. (2006) 'What is the evidence for the continuation of core podiatry services in the NHS: A review of foot surveys.' *British Journal of Podiatry*, 9(3), 89–94.
- Farndon, L. J. and Sheffield Hallam University. (2006) *The function and purpose of core podiatry : an in-depth analysis of practice*, PhD., Sheffield: Sheffield Hallam University.
- Frykberg, R. G., Harvey, C., Lavery, L. A., Harkless, L., Pham, H. and Veves, A. (1998) 'Role of neuropathy and high foot pressures in diabetic foot ulceration', *Diabetes Care*, 21(10), 1714–1719.
- General Practice Notebook (2010) [online] Available from: <http://www.gpnotebook.co.uk/homePage.cfm> [accessed 23rd June 2010]
- Gibbs, S. and Harvey, I. (2006) 'Topical treatments for cutaneous warts', *Cochrane Database of Systematic Reviews*, (3) [online] Available from: <http://www.mrw.interscience.wiley.com/cochrane/clsysrev/articles/CD001781/frame.html> [accessed 14th June 2010]
- Health Protection Agency (2008) '*School Health Matters - A guide to communicable diseases and infection control*', [online] Available from: http://www.hpa.org.uk/web/HPAwebFile/HPAweb_C/1227774026456 [accessed 23rd June 2010].
- Holstein, P., Ellitsgaard, N., Bornefeldt Olsen B., Ellitsgaard, V. (2000) 'Decreasing incidence of major amputations in people with diabetes', *Diabetologia*, 43, 844–847
- Hospital Episode Statistics (2010) Total procedures and interventions, England 2005–06 [Online] Available from: <http://www.hesonline.nhs.uk/Ease/servlet/ContentServer?siteID=1937&categoryID=210> [accessed 26 July 2010].

- Harvey, I., Frankel, S., Marks, R., Shalom, D. and Morgan, M. (1997) 'Foot morbidity and exposure to chiropody: population based study', *British Medical Journal*, 315(7115), 1054-1055.
- King, T., Biley, A., Birch, I. (2006) 'The impact of the slipper exchange programme for older people', *Podiatry Now* 10 (5), 28-31
- Kuwada, G. T. (1991) 'Long-term evaluation of partial and total surgical and phenol matrixectomies', *J Am Podiatr Med Assoc*, 81(1), 33-6.
- Levy, L. A. (1992) 'Prevalence of chronic podiatric conditions in the US. National Health Survey 1990', *J Am Podiatr Med Assoc*, 82(4), 221-3.
- Menz, H. B. and Hill, K. D. (2007) 'Podiatric involvement in multidisciplinary falls-prevention clinics in Australia', *J Am Podiatr Med Assoc*, 97(5), 377-84.
- Menz, H. B. and Lord, S. R. (2001) 'The contribution of foot problems to mobility impairment and falls in community-dwelling older people', *Journal of the American Geriatrics Society*, 49(12), 1651-1656.
- NHS Diabetes (2010) 'Commissioning diabetes footcare services', [online] Available from: http://www.diabetes.nhs.uk/commissioning_resource [accessed 27 July 2010].
- National Institute for Clinical Excellence (2004a) 'Type 2 diabetes Prevention and management of foot problems- Update of the guideline entitled Clinical Guidelines and Evidence Review for Type 2 Diabetes: Prevention and Management of Foot Problems published by the Royal College of General Practitioners in 2000', [online] Available from: <http://www.nice.org.uk/nicemedia/live/10934/29241/29241.pdf> [accessed 14th June 2010].
- National Institute for Clinical Excellence (2004b) 'Falls - The assessment and prevention of falls in older people', [online] Available from: <http://www.nice.org.uk/guidance/index.jsp?action=article&o=29548> [accessed 14th June 2010].
- National Institute for Clinical Excellence (2009) 'Rheumatoid arthritis The management of rheumatoid arthritis in adults', [online] Available from: <http://www.nice.org.uk/nicemedia/live/12131/43326/43326.pdf> [accessed 14th June 2010].
- NHS Institute for Innovation and Improvement (2003) 'Orthopaedic Services Collaborative - Improving Orthopaedic Services: A Guide for Clinicians, Managers and Service Commissioners', London: The Stationery Office. [online] Available from: http://www.institute.nhs.uk/index.php?option=com_joomcart&Itemid=194&main_page=document_product_info&cPath=67&products_id=232&Joomcartid=q95oqico7m96bhoi5s1cfq9264 [accessed 26th July 2010]
- The National Clinical Guidelines Centre for Acute and Chronic Conditions (2009) [online] Available from: http://www.rcgp.org.uk/clinical_and_research/clinical_guidelines_ncgc.aspx [accessed 14th June 2010].
- Office of the Deputy Prime Minister (2006) 'Making life better for older people An economic case for preventative services and activities- An economic case for preventative services and activity', Wetherby: ODPM.
- Pitetti, K. and Wondra, V. (2005) 'Dynamic Foot Orthosis and Motor Skills of Delayed Children', *JPO: Journal of Prosthetics and Orthotics*, 17(1), 21.
- Podiatry Rheumatic Care Association (2008) *Standards of Care for people with Musculoskeletal Foot Health Problems* [online] Available from: <http://www.prcassoc.org.uk/files/Full%20Colour%20Foot%20Health%20Standards.pdf> [accessed 27 July 2010]
- Powell, M., Seid, M. and Szer, I. S. (2005) 'Efficacy of custom foot orthotics in improving pain and functional status in children with juvenile idiopathic arthritis: A randomized trial', *Journal of Rheumatology*, 32(5), 943-950.
- Redmond, A. C., Waxman, R. and Helliwell, P. S. (2006) 'Provision of foot health services in rheumatology in the UK', *Rheumatology*, 45(5), 571-576.
- Robb, J. E. and Murray, W. R. (1982) 'Phenol cauterisation in the management of ingrown toenails', *Scottish Medical Journal*, 27(3), 236-239.
- Robbins, J.M., Strauss, G., Aron, D., Long, J., Kuba, J., and Kaplan, Y. (2008) 'Mortality Rates and Diabetic Foot Ulcers Is it Time to Communicate Mortality Risk to Patients with Diabetic Foot Ulceration?' *Journal of the American Podiatric Medical Association*, (98)6, 489-493
- Romkes, J., Hell, A. K. and Brunner, R. (2006) 'Changes in muscle activity in children with hemiplegic cerebral palsy while walking with and without ankle-foot orthoses', *Gait and Posture*, (24)4, 467-474
- Rounding, C. and Bloomfield, S. (2003) 'Surgical treatments for ingrowing toenails', *Cochrane Database of Systematic Reviews*, (1) [online] Available from: <http://www.mrw.interscience.wiley.com/cochrane/clsysrev/articles/CD001541/frame.html> [accessed 12th June 2010]
- Royal Society for Public Health Level 2 Award in Understanding Health Improvement
- Scottish Intercollegiate Guidelines Network (2001) 'Management of Diabetes: A national clinical guideline 55', [online] Available from: <http://www.scotland.gov.uk/Publications/2002/04/14452/1980> [accessed 23rd June 2010]
- Society of Chiropodists and Podiatrists (2010), [online] Available from: <http://www.feetforlife.org/> [accessed 27th July 2010]
- Sykes, P. A. (1986) 'Ingrown toenails, time for critical appraisal', *Journal of the Royal College of Surgeons of Edinburgh*, 31(5), 300-304.
- Tompkins, H. (2009) A review of the role of the podiatrist in falls prevention', *Podiatry Now*, 12(5), 17-22
- Vernon, D. W. and Sheffield Hallam University. School of Social Science and Law. (2000) *The functional analysis of shoe wear patterns theory and application*, PhD., School of health and Social care: Sheffield Hallam University.
- Vernon, W., Borthwick, A., Walker, J., Hardy, B., Dunning, D., Denton, C., Drew, C. and Nunn, M. (2007) 'Expert Group Criteria for the recognition of healthy footwear', *British Journal of Podiatry*, 10(4), 127.
- Vernon, W., Parry, A. and Potter, M. (2004) 'A theory of shoe wear pattern influence incorporating a new paradigm for the podiatric medical profession', *Journal of the American Podiatric Medical Association*, 94(3), 261-268.
- Waxman, R., Woodburn, H., Powell, M., Woodburn, J., Blackburn, S. and Helliwell, P. (2003) 'FOOTSTEP: a randomized controlled trial investigating the clinical and cost effectiveness of a patient self-management program for basic foot care in the elderly', *Journal of Clinical Epidemiology*, 56(11), 1092-1099.
- Williams, R., and Airey, M. (2000). 'The size of the problem: Epidemiological and economic aspects of foot problems in diabetes. In The Foot in diabetes 3rd ed. Boulton, A.J.M., Connor, H., and Cavanagh, P.R. (Eds.)
- Wright, N. M. J., and Tompkins, C. N. E., (2006) 'How can health services effectively meet the health needs of homeless people?', *British Journal of General Practice*, 56(525), 286-293.
- Young, M. J., Randall, L. E., McCardle, J. E, and Barclay, J. I., (2008) Improved Survival of Diabetic Foot Ulcer Patients 1995-2008: Possible impact of aggressive cardiovascular risk management. *Diabetes Care* (31)11, 2143-2147
- Zaborszky, Z., Fekete, L., Tauzin, F. and Orgovan, G. (1997) 'Treatment of ingrowing toenail with segmental chemical ablation', *Acta Chir Hung*, 36 (1-4), 398-400.

