An Inner City Integrated Diabetes Care Project

The Establishment &
Evaluation of
Community Podiatry Services
for People with Diabetes in the
Inner City Area of Perth

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Eastern Perth Public and Community Health Unit

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The community podiatry service in the inner city of Perth is one of the many services developed as part of a comprehensive service using an integrated service delivery model. The development and evaluation of this service was financed by the Health Department of Western Australia and administered through the Eastern Perth Public and Community Health Unit. The service sites were located at Australian Pensioners League and Mercy Hospital, supported by Diabetes Australia Western Australia (DAWA) and the Perth Division of General Practice. I would like to express gratitude to all of the people and organisations that have made this project possible.

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1. Executive Summary

This report describes the evaluation of community podiatry services developed specifically for people with diabetes with high risk foot problems, pathology, infection or foot deformity. As a component of a comprehensive integrated diabetes service, podiatry services were identified as a priority service need, based on an audit of the inner city area which identified that 3% of the estimated population of people with diabetes in this area could access podiatry services. Two sessional community podiatry services were developed in 1999.

The aim of the service delivery model was to identify persons with diabetes who have foot pathology and/or high risk foot conditions and appropriately refer them to quality community podiatry services for assessment and treatment.

In 2000, after the two community podiatry services had been operating for eight and 12 months, evaluation of the service was undertaken. The methodology included a retrospective, descriptive study using data from client records to measure effectiveness. A postal survey was sent to all clients who had accessed the service in the first twelve months of operation to ascertain client satisfaction. Financial records of service costs were used to evaluate efficiency.

The evaluation identified that many of the clients seen by the community podiatrists were living alone with no social support and on low income. A large proportion (30%) were over the age of 70 years, were not in the workforce (72%) and of those not in the workforce, 54% had very little social or family support. In addition, 33% of clients had been diagnosed with diabetes for longer than five years and 64% were seeing a podiatrist for the first time since diagnosis. Anecdotal information indicated that for a large proportion it was the first diabetic foot assessment.

A large proportion of the clients attending the service (70%) were very high-risk clients who require ongoing, intensive maintenance and treatment. The risk factors included potential barriers to self-care, peripheral vascular disease, peripheral neuropathy, foot deformities, pathology, infection and ulceration. Despite the high risk client profile, less

than three percent of clients in the study period required referral to a tertiary centre for treatment.

Results of the survey indicated that consumers were highly satisfied with the service in relation to access and quality of service. The consumers recommended that the service be expanded to the wider diabetes community.

Based on the results of the evaluation a number of recommendations have been developed to improve and expand the service. These include monitoring of the referral process, treatment practices, and the development of educational materials to support and reinforce self- management practices for foot-care. Further investigation is needed on the feasibility of the Health Insurance Commission providing reimbursement for community podiatry services that are specific to high risk diabetic foot conditions.

2. Recommendations

Recommendation 1: Expand and improve access to community podiatry services

High-risk feet are 36 times more likely to develop an ulcer (University of Texas Diabetes Foot Risk Classification system) unless high quality interventions are available.

- Community podiatry services for people with diabetes should expand to areas in Western Australia where podiatry services are not available.
- Further investigation needs to be undertaken on the feasibility of the Health Insurance Commission providing reimbursement for specific podiatry services for people with high risk foot conditions
- In relation to access, the most consistent requirements were convenient parking, being close to home and close to public transport. In future development of podiatry services consideration of location for consumers' needs will be important.
- Monitoring of existing podiatry services should continue to ensure that there are enough services open at the right times.
- Need to advocate for improved voluntary transport services from local government for clients with potential barriers to self-care.

Recommendation 2: Streamline referral process and systems for co-ordinating and monitoring community podiatry services.

- A referral process should be outlined which encourages referral to services closer to clients' homes or to easily accessible podiatry services by public transport. This should include information dissemination on location and times of service for service providers referring clients.
- Investigate why clients with high-risk feet and major self care deficits (treatment group 4), who are referred from tertiary care, are not attending the service as frequently as expected. Determine ways to increase regular attendance.
- Investigate why clients with no risk factors and minor self care deficits (treatment group 2) used the service more than recommended, and ways to decrease low risk clients' demands on the service.
- A recall system needs to be established. Treatment group 2 clients should be discharged to self-care and recalled at six monthly intervals for assessment by the community podiatrist.

- Regular review of the service should be undertaken, including client treatment profile, client feedback, audit of clinical documentation and new costs.
- Refinement of the data collection system for recording information on risk factors such as low social support and inappropriate footwear. In addition provision of systems to ensure collection of information on all interventions, such as orthotic devices needs to be developed.

Recommendation 3: Increase clients access to education materials and resources to enhance understanding of foot problems and improve self-care skills.

- Education materials and resources for client education should be provided to podiatrists to increase clients' understanding of foot problems and to improve self-care.
- Reinforce self-care practices in the clinical setting by the provision of more material eg. information about shoes, socks, nail care and creams.

3. Introduction

In 1998 the Eastern Perth Public and Community Health Unit (EPPCHU) established the Inner City Integrated Diabetes Care Project (ICIDCP). The purpose of the project is to pilot an integrated model of service delivery which provides comprehensive care services at the primary, secondary and tertiary levels, for people with diabetes living in the inner city area of Perth, Western Australia.

To conduct the pilot project EPPCHU has established partnerships with inner city diabetes service provider organisations in the public and private sector. These include Royal Perth Hospital (RPH), Mercy Hospital, Swan Health Service, Diabetes Australia of Western Australia Incorporated (DAWA), professional organisations representing allied health practitioners, and the Perth Division of General Practice.

The project is guided by a Local Advisory Committee (LAC), which represents the eleven key stakeholder organisations. (Appendix 1). In 1998 the LAC identified the lack of community podiatry services appropriate to the needs of people with diabetes.

In 1998 a pilot study was conducted that has guided the development of Inner City Podiatry Services. It was found that the inner city area lacked primary and secondary health services. The service delivery model involved identifying sites for sessional podiatry clinics, training and the development of foot assessment clinics.

The sites were developed in 1999 using existing community podiatry services in the private and aged care sector. This model of service delivery was required because of a lack of mainstream podiatry services in the inner city area.

This report describes the evaluation of the recently established community podiatry services after eight and 12 months of operation. The overall evaluation plan includes:

- A client feedback questionnaire,
- Effectiveness evaluation of the service by a retrospective analysis of routine clinical & demographic data recorded by the community podiatrists in the clients' records and
- Estimate of the service costs using through put and financial records.

It is intended that this evaluation plan will be repeated for comparative analysis.

4. Background & Rationale

This project addresses the priority areas identified in the National Diabetes Strategy and Implementation Plan (Colagiuri, Colagiuri & Ward, 1998). Currently the cost of treating ulcers, a complication of diabetes, in traditional hospital care is $7.5 million per year. This can be reduced by preventive outpatient treatment. It is estimated that annually there are 2,800 amputations performed in Australia for diabetic foot problems at an estimated cost of $48 million each year. The National Diabetes Foot Management Program aims to reduce lower limb amputations on people with diabetes by 50% by 2005. This could result in a reduction in the cost of lower limb amputations by $24 million. Other studies identified that prophylactic foot care is highly effective in reducing ulcers and amputations. One study reduced amputations by 43% resulting in a saving of $265 000 per year. (Colagiuri et al, 1998)

The inner city area has a population of 79,000 people (ABS, 1996) and an estimated population of 3,400 people with diabetes. The only podiatry service available to residents of the Inner City is the tertiary service provided by Royal Perth Hospital. This is a state-wide service and only 3% (Unsworth, 1998) of people with diabetes from the inner city were able to access it. There was no secondary hospital, multi-disciplinary community health centre or regional diabetes clinic available.

In 1998, a podiatry assessment study (Schox, 1997) was conducted to investigate the proportion of people who had diabetes with high risk foot problems, and their access to clinical podiatry services in inner city area. There were 32 subjects in the study with duration of diabetes ranging from 1-12 years. It was found that 19% of the subjects had attended a podiatrist since diagnosis for treatment, however none had received the recommended podiatry assessment for people with diabetes. Furthermore it was noted that two thirds of the subjects did not know how to find a podiatry service. According to Armstrong, Lavery and Harkless (1998) insensate foot with foot deformities increases the risk of ulceration and amputation by 12 times. The subjects were assessed for high risk foot problem, as part of the study. It was found that 49% had an insensate foot with foot deformities and 3% had insensate feet.

Research (Sheridan & Boyages, 1996) has indicated that well organised care, incorporating patient education and early detection of complications will reduce the

impact of diabetes. EPPCHU investigated the feasibility of developing an integrated model of care for the delivery of diabetes services in the inner city area. The project is based on the work of Sheridan and Boyages (1996) for the NSW Integrated Diabetes Care Project. A priority strategy was the development of a podiatry service for people with diabetes living and working in the inner city area.

5. Establishment of Community Podiatry Services

Support from consultant podiatrists from the tertiary hospital was obtained to establish the community podiatry service. Their role was to identify and inspect suitable service sites in aged care facilities and private sector service providers' suites in the inner city area. The criteria for site selection were: suitability of equipment; venue; location and qualification of podiatrists.

Expressions of interest were called for from local sites. Letters of agreement were signed in relation to the number of sessions, the costs incurred and the respective roles of the project coordinator, the Royal Perth Podiatry Service and the local community podiatrists. The local podiatrists were provided with training by the consultants in the level of care and documentation that was required for people with diabetes. Job description forms were established for the community podiatrists and the Royal Perth Hospital consultants. Data collection, stationery and referral processes were developed for the podiatry sites. In the first year two sites were developed. These sites are referred to in the report as Site 1 and Site 2.

A referral system was implemented to ensure appropriate referral to the community podiatry service. Community diabetes educators (n=18) were trained to conduct foot assessments using the national training package produced by the National Association of Diabetes Centres. Foot assessment clinics were established and all people attending community education programs were referred to foot assessment clinics. This was to improve integration and co-ordination between podiatry and other diabetes services. People with foot pathology, symptoms or signs of peripheral vascular disease, neuropathy or foot deformity were referred to community podiatry. The community educators referred people without foot abnormality to general practitioners with an invitation for their patient to return in six months for regular foot assessment.

An imprest system for the community podiatry sites to order consumable items directly through the tertiary hospital's supply department was implemented. An agreement was made with Curtin University School of Podiatry to provide custom made orthotic devices to those clients who required them.

The Perth Division of General Practice, Diabetes Australia Western Australia (DAWA) and Royal Perth Hospital follow set criteria for referral to community podiatry service.

The aim of the community podiatry service is to provide accessible foot care to people with diabetes who are referred because foot problems have been identified.

6. Purpose

The purpose of the community podiatry service is to:

- improve access to quality podiatry services for people with diabetes living and working in the inner city area;
- integrate podiatry services with other diabetes services and other case managers for diabetes;
- standardise services by podiatrists for the best practice management of the diabetic foot.

7. Evaluation Outline

In 2000, evaluation included:

- ***Effectiveness evaluation*** using a retrospective descriptive study to analyse clinical and demographic data recorded by the community podiatrists;
- ***Efficiency evaluation*** using throughput and financial records to estimate the service costs.
- ***Client feedback*** using a postal survey which was sent to all clients who had accessed the service.

8. Objectives of the Community Podiatry Service Evaluation

To describe the demographic characteristics of the users of the services.

To describe the diabetes-related characteristics of the users of the services (eg. diabetes duration).

To describe the effect of demographic and diabetes-related characteristics on access to, and use of the services.

To describe the patterns of referral to and from the community podiatry services

To describe the appropriateness of the referral system (ie. high risk clients vs low risk clients).

To describe the types of foot problems seen at the clinic.

To report the return rate for 6 monthly foot checks.

To describe at one point in time the proportion of clients discharged, maintained and referred onto tertiary care.

To report the proportion of clients prescribed orthoses or special foot wear.

To describe the impact of the service on decreasing 'at risk' clients' foot pathology.

To estimate the cost per client of providing the service.

To assess the efficiency of the referral process to community podiatry services.

To assess client satisfaction with access to community podiatry services and the treatment provided.

To assess transfer of knowledge on foot care.

To assess clients' response to having to pay a small fee for service.

9. Methodology

9.1 Descriptive Study

The routine clinical and demographic data recorded on the client data collection form (see Appendix 2) by the community podiatrist, foot assessors and referrers have been analysed to evaluate the effectiveness of the community podiatry service.

9.2 Data Collection Form Development & Quality Audit

The client data collection form was developed by EPPCHU for the community podiatrists to complete at each consultation. Four podiatrists, a literacy expert, a project officer and a research officer (n=7) reviewed the data collection forms for content validity.

After 12 months operation at Site 1, a podiatrist, independent of the community podiatry service, audited a convenience sample of 35 completed client data collection forms from both sites. This audit identified data recording inconsistencies between the two community podiatrists and provided an opportunity to improve the form eg layout changes and new data items needed. A session was held with the community podiatrists about the audit findings and they gave further suggestions on how the data collection form could be improved. As a result of this discussion the client data collection form was revised (see Appendix 3) as was the stationery for discharge planning, appointments and progress report notes. A statistics collection sheet was designed in order to improve efficiency. The community service podiatrists and the tertiary service podiatrists met to address barriers as they arose. Stationery has been printed and distributed to service sites and a systematic re-ordering process has been established.

9.3 Questionnaire Development & Testing

The survey was developed by EPPCHU (see Appendix 4). Four podiatrists, a literacy expert, a project officer and a research officer (n=7) reviewed the survey tool for content validity.

In addition, a pilot study was conducted with ten clients from each of the two service sites, ie. twenty clients in total. The service receptionists gave questionnaires to clients who attended the clinics on 29th March 2000 at Site 1 and on 27th March 2000 at Site 2. The clients were handed a covering letter, the questionnaire, and a preaddressed and prepaid envelope to return the completed questionnaire to EPPCHU. People who returned

the questionnaire became eligible for a chance to win a prize, and this was used as an incentive to increase the return rate of the questionnaire. The pilot study tested the questions' face validity and the prize draw process. Fourteen of the 20 pilot questionnaires were returned. Minor adjustments were made to the questionnaire and methodology.

9.4 Client Feedback Questionnaire

All clients of the two services (N = 123) were approached to complete a questionnaire, either during the pilot or final study. On 14th April 2000, all clients not involved in the pilot study (n = 103) were posted a questionnaire with a pre-addressed and pre-paid envelope to return the questionnaire. More questionnaires (n = 66) were sent to Site 1 clients than Site 2 clients (n = 37) due to the difference in their time of operation.

In order to increase the response rate, all respondents were offered the chance to be in a draw for a pair of "Kumfs" shoes. A coloured separate sheet was enclosed with the survey, for respondents who wanted to be entered into the draw for the shoes. In order to protect anonymity an additional envelope was provided for the draw, separate from the anonymously completed survey.

10. Results

10.1 Descriptive Study

The client data collection form data were reviewed for all clients seen at the community podiatry services since their commencement to 31 March 2000, that was in total 123 clients, with 79 seen at Site 1 over 12 months and 44 seen at Site 2 over eight months.

In some cases there were no data available or a particular item was not relevant for a client. The following results are based on the number of available responses for each item and therefore the reported denominators may vary.

10.1.1 Demographic Characteristics

Postcode

Both of the community podiatry services are located within the Inner City & Royal Perth Hospital (RPH) Health Service. Thirty five percent (43/123) of all clients seen had a residential postcode in the Inner City & Royal Perth Hospital (RPH) Health Service, 30 were seen at Site 1 and 13 were seen at Site 2. Sixty five percent (80/123) of clients seen at the community podiatry services did not live in a suburb with a postcode that was within the boundaries of the Inner City and RPH Health Service.

Clients were divided into four groups according to residential postcode (see table 1). Firstly clients whose residential postcode was within the boundaries of the Inner City and RPH Health Service. The second group of clients seen lived close to the border of Inner City and RPH Health Service, in suburbs such as South Perth and Subiaco. The third group were clients whose residential postcode was closer to alternative secondary level podiatry services available elsewhere, for example a client from the suburb of Serpentine-Jarrahdale could access services at the secondary hospital in Armadale. The clients in the fourth group had a residential postcode that was close to both the Inner City health service border and an alternative service.

Table 1: Clients residential postcode proximity to Inner City & RPH health service and alternative podiatry services

Proximity of clients residential postcode	Site 1 (n = 79)	Site 2 (n=44)	Total (n= 123)
Within Inner City & RPH health service	30 (38%)	13 (30%)	43 (35%)
Close to Inner City health service border	21 (27%)	16 (36%)	37 (30%)
Alternative podiatry services closer elsewhere	19 (24%)	13 (30%)	32 (26%)
Both close to Inner City health service border and alternative services	9 (11%)	2 (4%)	11 (9%)

When clients' residential postcodes are examined by Perth Metropolitan Health Zones, 54% of clients seen at the services were from the East Metropolitan Health Zone and 27% were clients from the North Metropolitan Health Zone.

Table 2: Clients' residential postcodes within Perth Metropolitan Health Zones

Perth Metropolitan Health Zones	Site 1 (n = 79)	Site 2 (n=44)	Total (n= 123)
East	39 (49%)	28 (64%)	67 (54%)
North	19 (24%)	14 (32%)	33 (27%)
South East	14 (18%)	2 (4%)	16 (13%)
South West	7 (9%)	0 (0%)	7 (6%)

Gender

Overall slightly more males (54%, 67/123) than females (45%, 45/123) were seen at the community podiatry services. Equal proportions of males and females were seen at Site 2. At Site 1, 57% (45/79) of clients were males and 43% (34/79) were females.

Age

Eighty seven percent of clients (107/123) seen at the community podiatry services were 50 years and older and 31% (38/123) were 70 years or older.

Table 3: Age & gender of community podiatry service clients

Age	Site 1 (n = 79)		Site 2 (n = 44)		Total
	m	f	m	f	
30 – 39 years	1	2	2	1	6 (5%)
40 – 49 years	3	1	2	4	10 (8%)
50 – 59 years	12	6	9	7	34 (28%)
60 – 69 years	11	14	5	5	35 (28%)
70 – 79 years	17	8	3	4	32 (26%)
80 + years	1	3	1	1	6 (5%)
Total	45 (57%)	34 (43%)	22 (50%)	22 (50%)	123

Employment Status

Thirty three clients (28%) were in paid employment in a variety of jobs as seen in the table below.

Table 4: Employment status of community podiatry service clients

Paid Employment	Number	Unpaid Employment	Number
Professional	6	Retired or Pensioners	67
Trades, Labourer & Service	14	Home duties	14
Office / Stores	11	Unemployed	5
Transport	2	Student	1
Total	33	Total	87

The majority of the clients (87, 72%) seen at the community podiatry service were not in the workforce. Sixty seven were retired or pensioners (56%), 14 reported they did home duties, five clients were unemployed and one client was a student.

No Social Support and Low Income

Of the 87 clients not in the workforce, 47 (54%) had no social support and lived alone. At Site 1, 18 of the 56 (32%) clients not in the workforce had no social support and at Site 2, 29 of the 31 (94%) clients not in the workforce lived alone without any social support.

10.1.2 Patterns of Referral

Referring Agency

Table 5 lists the sources of referral to the community podiatrists. Forty five percent (56/123) of all referrals to the service were made through the Foot Assessment Clinic at Diabetes Australia Western Australia (DAWA) and all of these clients were seen at Site 1. Thirty percent (37/123) were referred through the Foot Assessment Clinic at Perth Division of General Practice (PDGP) and the majority (35) of these clients were seen at Site 2. Royal Perth Hospital referred 14% (17/123).

Table 5: Referring agency to community podiatry service

Initial Referrer	Site 1 (n = 44)	Site 2 (n = 79)	Total (N = 123)
PDGP	2 (2%)	35 (80%)	37 (30%)
DAWA	56 (71%)	0 (0%)	56 (45%)
Community Podiatry	10 (13%)	0 (0%)	10 (8%)
Royal Perth Hospital	11 (14%)	6 (14%)	17 (14%)
Self referral	0 (0%)	3 (7%)	3 (2%)

10.1.3 Diabetes-related Characteristics

Diabetes Type

The majority of clients (95%, 117/123) seen at the community podiatry service had Type 2 diabetes of whom three required insulin treatment. A total of six clients (5%) that had Type 1 diabetes were controlled by insulin injections.

Diabetes Control

Due to some ambiguity in the interpretation of a prompt asking for information on diabetes control, Site 1 provided information and Site 2 did not.

For 17 clients, the Site 1 podiatrist recorded both diet and medication as the methods for diabetes control. A total of 45/72 (62%) of Site 1 clients were using medication to control their diabetes, 41/72 (57%) used diet to control their diabetes and 3/72 (4%) seen at Site 1 used insulin.

Time Since Diagnosis

Seventeen percent (20/117) of clients seen at the community podiatry service were diagnosed with diabetes less than a year ago. Table six shows that 67% (79/117) of all clients seen at the community podiatry service were diagnosed within the last 5 years.

Table 6: Time since diabetes diagnosis

Time since diabetes diagnosis	Site 1 (n = 73)	Site 2 (n = 44)	Total (n = 117*)
< 1 year	16 (22%)	4 (9%)	20 (17%)
1 to < 2 years	18 (25%)	13 (29%)	31 (26%)
2 to < 5 years	15 (20%)	13 (29%)	28 (24%)
5 to < 10 years	11 (15%)	6 (14%)	17 (14%)
10 to < 15 years	6 (8%)	1 (2%)	7 (6%)
15 to < 20 years	2 (3%)	3 (7%)	5 (4%)
20 to < 50 years	5 (7%)	4 (9%)	9 (8%)

* Six of the 123 clients did not have recorded data on year of diagnosis.

10.1.4 Podiatry Treatment Profiles

For the purpose of this program clients were classified into five treatment groups to represent the intensity of podiatry treatment and follow-up required. At each visit, the podiatrist rated the client's foot conditions (resolved, improving, static or deteriorated) and gave an action plan code (discharged, regular screening, high maintenance, referred to RPH). Clients were classified into one of five treatment groups depending on the foot condition and action plan codes for each consultation, as well as the presence or absence of pathology, risk factors, ulcer or infection and barriers to self-care. Treatment group 1 required the lowest level of treatment, at the first visit to the community podiatrist the presenting problem was declared resolved and the client was discharged to self-care. The highest intensity treatment group 5 presented with high-risk foot (ie. insensate foot, peripheral vascular disease or previous ulcer) and/or major barriers to self-care, (ie. inability to see or reach their feet or impaired comprehension), and when deterioration occurred, were referred to a tertiary hospital for podiatry care.

Treatment group 1 – Resolved & discharged at the first community podiatry visit

Sixty two percent (10/16) of these had one or more foot pathologies (foot abnormality, nail disorder) and 75% (12/16) had potential barriers to self-care such as lives alone.

Three of all the 123 (2%) clients seen were referred to the community podiatry service with no pathology, no risk factors, and had potential barriers to self-care present and were discharged to self care by the community podiatrists at their first visit. Two of the three were seen at Site 1. One was referred by a community podiatrist and the other by Diabetes Australia Western Australia (DAWA). The third was referred by a general practitioner to Site 2.

Treatment group 2 – No risk factors and potential barrier to self care

None of treatment group 2 clients had risk factors (previous ulcer, peripheral vascular disease or insensate foot). Ninety four percent (17/18) had one or more foot pathologies (eg. corn, callus, foot abnormality, nail disorder) and 17% (3/18) had potential barriers to self-care, such as poor footwear. Three clients had a current infection, and another had a problem with an ill-fitting orthotic device.

All but one treatment group 2 clients were seen at Site 1. The 18 clients were seen overall on 63 occasions by the community podiatrist. Clients in treatment group 2 had on average 3.5 visits over the year. Only three of the clients had been discharged to self care at the time of the service evaluation.

Treatment group 3 – High maintenance intervention

The majority (56%, 69/123) of the clients were in treatment group 3. Most of treatment group 3 clients had one or more pathologies (96%, 66/69) and potential barriers to self care present (94%, 65/69). Thirty five percent of these clients (24/69) had high- risk foot (ie. insensate foot, peripheral vascular disease or previous ulcer) and ten percent (7/69) had current infection or an ulcer. Similar proportions of treatment group 3 clients were seen at each site (Site 1 = 42/79, 53%; Site 2 = 27/44, 61%). The average number of community podiatry attendances by treatment group 3 clients was 2.9 visits.

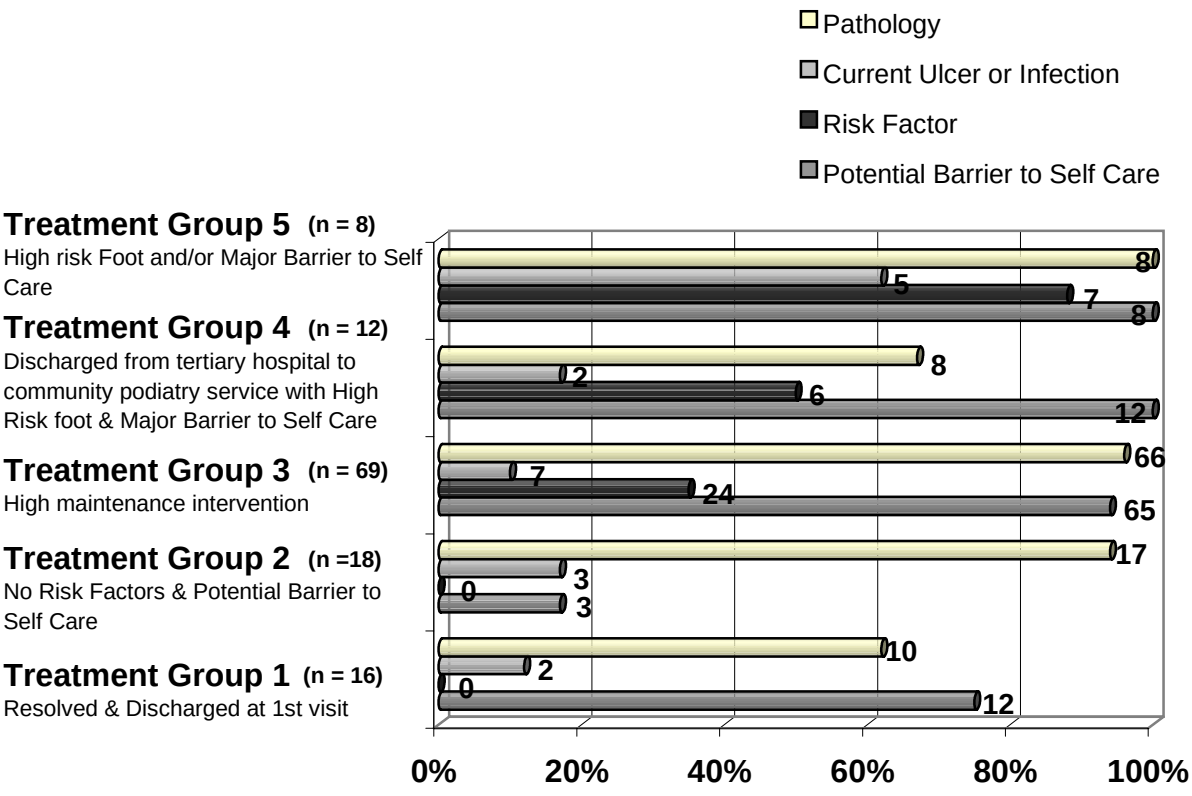
Treatment group 4 – Discharged from tertiary hospital to community podiatry service with high risk foot and major barrier to self care

All of the clients in treatment group 4 (n = 12) had one or more major barriers to self care, such as can't reach feet (7/12) or poor footwear (7/12). The average number of community podiatry visits for clients in this group was 2.1 visits.

Treatment group 5 – High risk foot and/or major self care deficit (could have been referred to tertiary hospital)

All of the clients in treatment group 5 (n = 8) had one or more major potential barriers to self-care, such as can't see feet (3/8), can't reach feet (6/8) or impaired comprehension. All but one of the treatment group 5 clients were seen at Site 2. Three of the cases, following deterioration, were referred to the tertiary hospital podiatry services. The average number of community podiatry visits for this group was 3.7 visits.

Graph 1: Community podiatry clients treatment profiles



10.1.5 Foot Pathology

Eighty nine percent (110/123) of all clients had one or more foot pathologies present at the first visit. Fifty five percent (n = 68) of clients presented with one foot pathology. Thirty two percent (n = 39) presented with two pathologies. The most common presentation for clients with two types of foot pathology were nail disorder and callus (n = 15). Twelve clients had three foot pathologies, the most common combination being nail disorder, callus and corn (n = 6). Three clients had four types of foot pathology, all involving foot deformity, callus, and corn and the fourth being either a nail disorder or a skin break.

Table 7 shows the frequency of foot pathology seen at the community podiatry clinics. The most common was nail disorders (63%), followed by calluses (41%), foot abnormalities or deformities (21%), and corns (19%). Proportionately there were more corns and calluses seen at Site 2 than at Site 1 and there were more foot abnormalities at Site 1 than Site 2.

Table 7 : Foot pathology seen at community podiatry services

Foot Pathology	Site 1 (n = 79)	Site 2 (n = 44)	Total (N = 123)
Corn	10 (13%)	14 (32%)	24 (19%)
Callus	28 (35%)	22 (50%)	50 (41%)
Fissures	2 (2%)	1 (2%)	3 (2%)
Skin breaks	2 (2%)	1 (2%)	3 (2%)
Nail disorders	47 (59%)	30 (68%)	77 (63%)
Foot abnormality	20 (25%)	6 (14%)	26 (21%)
No foot pathology	8 (10%)	5 (11%)	13 (11%)
Arthritic changes	1 (1%)	0 (0%)	1 (1%)

Table 7 percentages do not total 100% due to clients having multiple pathology.

10.1.6 Risk Factors

Seventy percent of clients had no risk factors present. Thirteen percent had had an ulcer previously. Twelve percent presented with an insensate foot and 5% had peripheral vascular disease. A greater proportion of Site 1 clients (19%, 15/79) had had a previous ulcer than Site 2 clients (2%, 1/44). More Site 2 clients (20%, 9/44) presented with an insensate foot than at Site 1 (8%, 6/79).

Ten clients (8%) presented with two risk factors. Two clients (2%) presented with three risk factors, that is, insensate foot, peripheral vascular disease and previous ulcer.

Table 8: High risk factors seen at community podiatry services

High risk factors	Site 1 (n = 79)	Site 2 (n = 44)	Total (N = 123)
Insensate foot	6 (8%)	9 (20%)	15 (12%)
Peripheral Vascular Disease	4 (5%)	2 (4%)	6 (5%)
Previous Ulcer	15 (19%)	1 (2%)	16 (13%)
No risk factors	54 (68%)	32 (73%)	86 (70%)

Table 8 percentages do not total 100% due to 12 clients having more than one risk factor.

10.1.7 Active Ulcer or Infection

Eighty six percent (106/123) of clients seen at the community podiatry clinics did not have any sign of current ulceration or infection. Eleven percent (14/123) had a current ulcer and only 2% (3/123) presented with a ulcer and an infection.

Table 9 : Active ulcer or infection for community podiatry clients

	Site 1 (n = 79)	Site 2 (n = 44)	Total (n = 123)
Ulcer & Infection	2 (2%)	1 (2%)	3 (2%)
Current ulcer	8 (10%)	6 (14%)	14 (11%)
Neither	69 (87%)	37 (84%)	106 (86%)

10.1.8 Potential Barriers to Self Care – Intrinsic Factors

Social Support

Fifty four percent (64/118[1]) of clients were described by the podiatrists as living alone with no social support. A high proportion (95%, 42/44) of Site 2 clients were recorded as living alone or having no social support compared with Site 1 (30%, 22/74). Forty two percent (49/118) of clients lived with their families; 66% at Site 1 (49/74) and none at Site 2.

Smoking

There was no difference in smoking history at the two sites. Overall 45% reported they had never smoked; 42% (50/120) described themselves as previous smokers, and 13% (16/120) were current smokers.

Forty seven of the previous smokers had documented the year they had quit smoking. Thirteen reported giving up smoking in the 1980s; 19 in the 1990s, three in 1997, two in 1998 and one in the previous year.

[1] Total is 118 instead of 123 because no information was provided for four Site 1 clients.

Poor Diabetes Control

The HbA1C and the blood sugar levels when fasting and at random are measures of clients' diabetes control. Table 10 summarises the recorded diabetes control of clients. For the 81 clients with recorded diabetes control measurements, 57% were within recommended levels. A higher proportion of clients seen at Site 1 (62%, 35/56) were within the recommended levels than at Site 2 (44%, 11/25).

Table 10 : Diabetes control by community podiatry clients

Diabetes control	Site 1 (n = 56)	Site 2 (n = 25)	Total (n = 81)
Measures within recommended level	35 (62%)	11 (44%)	46 (57%)
Measure/s outside recommended level	21 (38%)	14 (56%)	35 (43%)

(Client included in "diabetes control measure outside recommended level" group if only one of the three measures was outside the recommended level ie. the Fasting BGL > 7, Random BGL > 10 or the HbA1c > 8).

10.1.9 Potential Barriers to Self Care – Extrinsic Factors

Indoor Footwear

Indoor footwear was recorded for 57 clients at their first appointment. Forty six percent (26/57) of these were reported as wearing adequate indoor footwear.

Table 11: Indoor footwear of community podiatry clients

Indoor footwear	Site 1 (n = 13)	Site 2 (n = 44)	Total (n = 57)
Satisfactory	7 (69%)	17 (39%)	26 (46%)
Unsatisfactory	4 (31%)	27 (61%)	31 (54%)

Outdoor Footwear

Seventy percent (78/111) of clients were reported as wearing satisfactory outdoor footwear. More Site 2 clients (80%, 35/44) were wearing satisfactory footwear than Site 1 clients (64%, 43/67).

Table 12: Outdoor footwear for community podiatry clients

Outdoor footwear	Site 1 (n = 67)	Site 2 (n = 44)	Total (n = 111)
Satisfactory	43 (64%)	35 (80%)	78 (70%)
Unsatisfactory	24 (36%)	9 (20%)	33 (30%)

10.2 Results for Service Cost

10.2.1 Establishment Costs

The establishment costs, including the consultant podiatrists, community podiatrists training and the one-off equipment purchase were calculated, and are not included as an ongoing podiatry service cost.

Table 13: Establishment costs for community podiatry services

Item		Cost
Consultant fees	Training podiatrists Auditing of premises Establishing imprest system for consumables Meetings Developing evaluation plan and documentation Mentoring	$4,700
Training	Foot Assessment Training Workshop	$860
	Catering	$323
	Remuneration of salary	$800
Equipment	Dopplers x 2	$1,950
	Monofilaments x 12	$550
	Foot Stools x 2	$200
	Filing Cabinet	$180
Total		$9,562

10.2.2 Cost of Consumables

The consumable costs were determined from the items ordered through the tertiary hospital's supply department.

Table 14: Consumable costs of community podiatry services

Consumable Items	Cost
Orthotic insoles	$100
Pharmacy	$176
Protective clothing	$137
Medical & surgical instruments	$35
Dressings, bandages etc	$378
Total	$825

10.2.3 Cost per podiatry service

A budget of $8,000 was provided to each site to meet the cost of administration, venue hire and sessional rates over a 12 month period. Each site had one, three hour session per week. The budget for each session was:

- community podiatrists' salaries = $90;
- venue hire = $40;
- administration = $40;
- consumables =$7.

Appointments for new clients were forty five minutes and the follow up appointments were thirty minutes. The client data collection forms were used to determine the actual number of clients seen as new appointments and the number seen as follow-up appointments.

Table 15: Frequency of services

	Site 1	Site 2	Total consults
Initial appointment	79	44	123
Review / Follow-up visit	117	106	223
Total	196	150	346

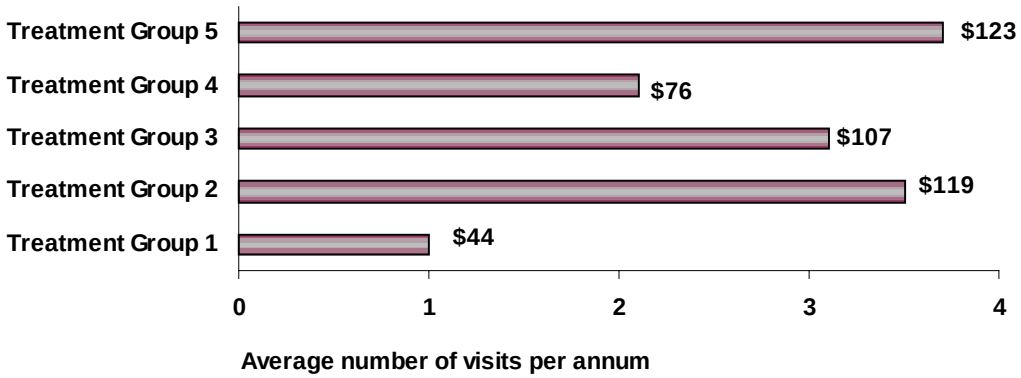
The estimated cost of each podiatry consultation was based on community podiatrist sessional fees, administration, venue hire and consumables. Each session has been costed as $177, comprising $90 for consultancy, $40 for venue hire, $40 for administration and $7 for consumable items. This means that the cost of a podiatry consultation for a new patient was $44 and a follow up visit was $30.

Table 16: Estimated cost per podiatry service

Visit	Cost	Costing based on:
First visit: comprehensive assessment, treatment, education and footwear assessment	$44	• community podiatrist sessional fees, • administration, • venue • consumables.
Review visit: Treatment/maintenance	$30	

Based on information of the cost of each visit, Graph 2 describes the cost to the service for clients categorised into the treatment groups. Clients from treatment group 1 attended the service once and therefore cost the service $44 each for the year. Treatment group 2 attended on average 3.5 times and therefore cost the service $119 a year for each client. Treatment group 3 attended on average 3.1 times and therefore cost the service $107 a year for each client. Treatment group 4 attended on average 2.1 times and therefore cost the service $76 each per year. Treatment group 5 attended on average 3.6 times and therefore cost the service $123 per client for the year.

Graph 1: Average visits and costs per annum by treatment groups



10. 3 Client Feedback

10.3.1 Response Rate

Sixty five percent (66 / 101) of community podiatry service clients replied to the postal survey. Two surveys were returned to sender, of which one was unclaimed and the other was an incorrect street number. The 20 clients who had been approached to participate in the pilot test, were not involved in this survey.

Table 17: Response rates by site where community podiatry service received

	Site 1	Site 2	TOTAL
Responses	39	27	66
Returned to Sender	0	2	2
Total Sent	66	37	103
Response Rate	59%	73%	65%
	(39 / 66)	(27 / 35)	(66 / 101)

The following results are based on the number of respondents who actually answered each question and therefore the denominator varies. In some cases the question was not answered or the respondent was asked not to complete questions which were not relevant.

10.3.2 Referral Process

Time from Foot Check to Making Appointment

Respondents were asked how soon after their initial foot check did they telephone to make their podiatry appointment. This question was only applicable to those persons who were asked to telephone and arrange their appointment (n = 42). Forty five percent (19/42) arranged their appointment on the day of the initial foot check. Twenty one percent (9/42) reported ringing 1 to 3 days after their initial foot check, 19% (8/42) rang within 4 to 7 days and 14% (6/42) left arranging their community podiatry appointment for more than one week.

The appointment system differs at Site 1 and Site 2. Site 1 clients are referred from various sources and are required to make their own appointments. Equal proportions (28%, 8/29) of Site 1 respondents reported arranging their appointment on the same day, one to three days and four to seven days. The clients were contacted if an appointment had not been made within a week of referral. In Site 2, foot assessment and community

podiatry were in the same site, therefore the majority (11/13) of Site 2 respondents reported that their podiatry appointment was made on the same day as their initial foot check.

Table 18: Time for Clients to Telephone to Arrange a Community Podiatry Appointment after Initial Foot Check

Time between foot check & telephone call to arrange appointment	Site 1 (n = 29)	Site 2 (n = 13)	TOTAL (n = 42)
Same day	8 (28%)	11 (85%)	20 (48%)
1 – 3 days	8 (28%)	1 (7%)	9 (21%)
4 – 7 days	8 (28%)	0 (0%)	8 (19%)
> 1 week	5 (17%)	1 (7%)	6 (14%)

Clients' Comfort with Arranging their own Appointment

All respondents reported feeling comfortable about ringing the clinic to make their first podiatry appointment.

Time between date appointment was made and date of appointment

The wait time from when the clients appointment was made to the time that they were seen by the community podiatrist was reported by 45 respondents. Overall the majority of respondents (78%, 35/45) reported waiting 10 or more days. Nine (31%, 9/29) of Site 1 clients reported being seen within 10 days compared to only one (6%, 1/16) Site 2 client.

Table 19: Time between making appointment & being seen by podiatrist

Wait time	Site 1 (n = 29)	Site 2 (n = 16)	TOTAL (n = 45)
0 – 4days	3 (10%)	1 (6%)	4 (9%)
5 – 9 days	6 (21%)	0 (0%)	6 (13%)
10 - 14 days	11(38%)	7 (44%)	18 (40%)
15 + days	9 (31%)	8 (50%)	17 (38%)

Acceptability of Wait for Appointment

When asked in view of the severity of their diabetes how acceptable the wait for the appointment was, 96% (51/53) felt the wait was acceptable. Two clients (one from each site) felt that the wait was unacceptable. Both waited more than 14 days.

10.3.3 Access to community podiatry service

The majority (94%, 61/65) of community podiatry service clients reported the clinic was easy to get to. Of the four who had difficulty getting to the clinic, three attended Site 2 (n = 27). One of these stated that the distance to travel was a problem and other two reported that they needed to juggle at least two types of public transport to reach the clinic. The one person who attended Site 1 (n = 38) who had difficulty getting to the clinic stated it was due to the distance and public transport.

Table 20: Reasons for easy access to community podiatry service

Ease of access factors	Site 1 (n = 36)	Site 2 (n = 23)	Total (n = 59)
Convenient parking	15 (42%)	15 (65%)	30 (51%)
Close to home	8 (22%)	14 (61%)	22 (37%)
Close to public transport	16 (44%)	2 (9%)	18 (31%)
Close to work	4 (11%)	2 (9%)	6 (10%)
Used own car	0	1 (4%)	1 (2%)

Table 20 percentages do not total 100% as clients could give more than one response.

10.3.4 Clients' perception of importance of podiatry

Respondents were asked to rate the importance of podiatry in the management of their diabetes. None of the respondents rated podiatry as unimportant. The majority (94%, 62/66) of respondents considered the podiatrist's role as important. Four respondents rated podiatry's role in the management of their diabetes of some importance. Three of the four were from Site 1.

10.3.5 Information & skills to self-care

The majority (94%, 61/65) of respondents reported that the information they received from the podiatrist on foot-care was useful. Two respondents from Site 1 felt they had heard it all before. Another two respondents, one from each site, reported they did not receive any information.

Respondents were asked whether they felt that the podiatrist had given them enough information and skills to be confident to take over the care of their own feet. Seventeen respondents (17/64, 26%) reported that they had both enough skills and information.

More respondents were confident to report that they had been given enough information (61%, 39/64) rather than enough skills (28%, 18/65) to be confident to care for their own feet.

Barriers to Self Care

Table 21 shows that not having the right tools was the reason given most often by more than half of the respondents for inability to care for their own feet. Forty six percent (20/43) of respondents reported being unable to reach their own feet and 42% (18/43) reported the podiatrist had told them not to treat their own feet. Twenty six percent (11/43) stated their poor eyesight impeded their ability to care for their own feet. Respondents could give one or more reasons for being unable to care for their feet. When the combinations of reasons given are examined, 28% (12/43) of respondents reported both being unable to reach their feet and not having the right tools to care for their feet. Another twenty eight percent (12/43) of respondents reported that they did not have the right tools and that the podiatrist had told them not to treat their own feet.

Table 21: Reasons for feeling unable to look after own feet after seeing community podiatrist

Reasons	Site 1 (n = 24)	Site 2 (n = 19)	Total (n = 43)
Do not have the right tools	14 (58%)	11 (58%)	25 (58%)
Unable to reach feet	11 (46%)	9 (47%)	20 (46%)
Podiatrist has said not to treat own feet	10 (42%)	8 (42%)	18 (42%)
Poor eyesight	6 (25%)	5 (26%)	11 (26%)
Not enough information	1 (4%)	0	1 (2%)
Other	2 (8%)	4 (21%)	6 (14%)

There were six subjects who gave another reason for their inability to look after their own feet. Two expressed a preference for experts to do this for them, one was related to foot pathology, and three were due to potential barriers to self-care and health problems.

10.3.6 Self Management Practice & Self- care Knowledge

Shoes Worn Most of the Day

A total of 58 respondents completed the question on the type of shoe they wore most of the day. Twenty respondents gave more than one type of shoe worn most of the day.

Scuffs, thongs and slip ons were worn by 52% (30/58) of respondents. Thirty three percent (19/58) of respondents reported they wore lace up shoes most of the day, 24% (14/58) wore joggers and 22% (13/58) wore court shoes or men's business shoes. Slippers were reported as being worn most of the day by 22% (13/58) of respondents.

Table 22: Frequency of shoes worn most of the day

Type of shoes worn	Site 1 (n = 33)	Site 2 (n = 25)	Total (n = 58)
Scuffs, thongs, slip ons	18 (54%)	12 (48%)	30 (52%)
Lace ups	10 (30%)	9 (36%)	19 (33%)
Joggers	10 (30%)	4 (16%)	14 (24%)
Court shoes	6 (18%)	7 (28%)	13 (22%)
Slippers	6 (18%)	7 (28%)	13 (22%)
Sandals	3 (9%)	1 (4%)	4 (7%)

Regularity of going Barefoot

Seventy nine percent (46/58) of respondents reported never or rarely going barefoot. One fifth of respondents reported (12/58) going barefoot often.

Table 23: How often respondents reported going barefoot

Regularity of going barefoot	Site 1 (n = 33)	Site 2 (n = 25)	Total (n = 58)
Often	10 (30%)	2 (8%)	12 (21%)
Rarely	9 (27%)	16 (64%)	25 (43%)
Never	14 (42%)	7 (28%)	21 (36%)

Regularity of Self Foot Check

When asked how often respondents should check their own feet 63% (41/65) responded daily. Twenty percent (13/65) thought weekly and 15% (10/65) believed monthly was regular enough to do self foot checks. One respondent (2%, 1/65) believed now and again was regular enough.

Regularity of Rubbing Cream into Feet

Respondents were asked how often they rubbed cream such as 'Sorbolene' into their feet. There was a fairly even spread of responses across the time frame options provided. Twenty four percent (14/58) reported rubbing cream into their feet daily, 22% (13/58) on a weekly basis, 31% (18/58) reported sometimes and 22% (13/58) said never.

Understanding of What to do if a Corn Develops

When given a list of options and asked what would you do if a corn developed on your little toe, the majority of respondents, 79% (45/57) selected to see a podiatrist. The next most common choices were soften it with cream (21%, 12/57) and use a corn pad (18%, 10/57).

Respondents could select more than one option. Of the 10 respondents who selected corn pad, 7 of these selected both corn pad and see podiatrist, only one respondent selected only corn pad. Of the 12 respondents who selected soften it with cream, 9 selected to soften it with cream and see a podiatrist.

Understanding of "Pins & Needles"

Respondents were first asked if they knew what developing pins and needles or numbness in their feet meant. Seventy seven percent (44/57) stated they knew what it meant, 25 were from Site 1 and 19 from Site 2. The 44 respondents who stated they knew the reason for pins and needles or numbness were next asked to describe their understanding. Seventy three percent (32/44) answered this question as peripheral vascular disease. Eleven percent (5/44) wrote that pins and needles meant neuropathy or nerve damage, 4 from Site 1 and 1 from Site 2. Other responses included poor diabetes control (3/44), serious complication (3/44), and poor footwear (3/44).

10.3.7 Clients' perception of the community podiatry services

Differences between Community Podiatry Service & Other Podiatry Services

Sixty four percent (42/66) of all respondents reported that this was the first time they had been seen by a podiatrist. Of the 24 who had been seen previously at other podiatry services, 50% (12/24) had been seen by a private podiatry service, 21% (5/24) by a podiatrist at a hospital podiatry clinic and 21% (5/24) were seen at a senior citizens' centre. One respondent at each site reported seeing a podiatrist previously at an Autumn centre (4%, 1/24), school of podiatry (4%, 1/24) and community centre (4%, 1/24).

The 24 respondents who had been seen previously by another podiatrist were asked to describe any differences between the care they had received. The differences identified were in favour of the community podiatry service and included personalised service (n=2), better quality of care (n=7), education and information included (n=4), diabetes assessment and care (n=5), equipment (n = 1), no cost (n=1) and the service was the same (n=4).

Suggestions for Altering Community Podiatry Service to Better Suit Your Needs

Six respondents (9% 6/66) offered suggestions for altering the community podiatry service to better suit their needs, one from Site 2 and 5 respondents from Site 1. The improvement comments related to expanding the service (n = 2), more frequent visits (n = 1), more written education material (n = 2) and one comment on treatment regarding the removal of a callus. The expansion of service was related to offering sessions on more than one day, expanding to other suburbs and late afternoon and evening appointments. Respondents' suggestions on more educational material were on creams, footwear, socks, nail cutters for diabetics, the dangers of not looking after your feet if a diabetic and common questions with answers.

Something Important Done Poorly

Four of the total 66 (6%) respondents reported an important issue that they considered was addressed poorly at the community podiatry service. One respondent from Site 2 thought only basic information was provided and more thorough care was needed. Three respondents from Site 1 suggested issues that were addressed poorly. One said the wait time to see the podiatrist could be improved, another felt that not removing a callus was poor treatment and the third respondent reported that it was difficult to reschedule an appointment when the first appointment needed to be cancelled.

Something Important Done Well

Forty five of the respondents provided a comment on something important that was done well by the community podiatry service, 28 from Site 1 and 17 from Site 2. The theme appearing most often was expert personal care (20/45, 44%). Some of the comments included 'caring staff and treated like an individual' and 'very professional treatment'. The next most common theme was education and explanation provided by staff (14/45, 31%) such as 'explained exercises for my foot problems', 'clear explanation', 'education

into the necessity for proper care', 'explained why discolouration near/above ankles – small veins ruptured, not serious'. Six respondents made comment about the friendly staff. Service themes that emerged from the comments were comprehensiveness of the service (5/45, 11%), access to appropriate care (2/45, 4%), ongoing care (2/45, 4%), access (2/45, 4%) and excellent service (2/45, 4%). Treatment themes that emerged were nail care (6/45, 13%), orthotic device (3/45, 7%) treatment (4/45, 9%) and reassurance (2/45, 4%).

Attend if Small Fee

Seventy five percent (46/61) of respondents would continue to attend this service if there was small fee. A larger proportion of these was from Site 1 (86%, 32/37) than Site 2 (58%, 14/24).

11 Discussion

11.1 Limitations of the Study

It is recognised that only components of cost, efficiency and effectiveness have been reported.

Limitations of the Community Podiatry data collection form

There were inconsistencies in data collection between sites, as in the case of diabetes control, where Site 1 provided information on diet and medication and Site 2 did not. The audit of 35 client data collection forms by a podiatrist independent of the community podiatry service after 12 months of operation identified these inconsistencies. In order to increase the reliability of the client data collection form data, a briefing session was held with the consultant podiatrists. Feedback from the briefing session was used to revise and refine the client data collection form (Appendix 3).

Good quality data collection is compromised in busy clinical practice, resulting in incomplete and inconsistent data. Another example of inconsistent data was that only two clients of the total 123 clients seen at Site 1 were prescribed orthoses. This does not correlate with the number of orthoses ordered by the community podiatry sites and therefore it is assumed that this treatment was under reported. It is recommended that data be audited regularly to maintain quality documentation.

Limitation of the Cost Data

Sterilising and reagents to ensure quality sterilisation is expensive and this cost has been absorbed by the health services and not costed for this service.

The recorded cost of consumables may be an underestimation as the tertiary hospital has highlighted that some consumables were provided from their supply department initially to prevent delays.

Limitations of the Questionnaire

Clients not involved in the pilot study (n = 103) were posted a survey on 14th April, regardless of the length of time since their last appointment. Therefore some questions were likely to be prone to recall bias, for example the first few questions asking respondents to report on waiting time for their first appointment.

The number of questionnaire respondents (n = 66) is a limitation of the study particularly when sub-dividing the data for further analysis, such as results by site.

11.2 General Discussion

Demographic and diabetes-related characteristics on access to, and use of the services.

Eighty seven (72%) of the clients were not in the workforce and 47 (54%) had no social support and lived alone. This was particularly the case for Site 2 clients where 95% (42/44) were recorded as living alone or having no social support. This indicates that the service is reaching the most at risk target group, which would be unlikely to attend a fee-paying service.

Anecdotal feedback from the community podiatrists indicates that clients who were treated at RPH and received voluntary transport experienced difficulty accessing the same level of transport assistance from local government. Most of these clients had barriers to self- care.

Sixty five percent (80/123) of clients seen at the Inner City Community Podiatry Service resided in suburbs external to the health service catchment area and came from as far away as Wanneroo, Serpentine-Jarrahdale, Fremantle. They may be doing so due to:

- ease of public transport into city versus across suburbs;
- referral from Diabetes Australia Western Australia (DAWA) (56%)
- the service being specifically for clients with diabetic foot problems with a comprehensive assessment by podiatrists with skills in managing diabetic foot problems.

The client satisfaction survey reflected a high level of satisfaction with access. The wide external referral source will continue to be monitored to ensure that service reach is documented and the referral sources are appropriate. However, underlying principles of an integrated service delivery model ensure equitable access and service suitable to clients' needs (Sheridan & Boyages, 1996). Therefore in the short term, the service will continue to support clients accessing the Inner City Community Podiatry Service from external areas. Priority will be given to people residing in the Inner City Health Service. Waiting lists and funding may impact on future service reach.

Appropriateness of the referral system

A clinical referral pathway was established to ensure that all levels of care required by clients, ie. tertiary, primary and general foot assessment, were available. To ensure that the community podiatrists' time was utilised effectively the foot assessments conducted on all clients ensured that only clients with high risk foot pathology were referred to the community podiatry service. Clients with no foot pathology or risk factors were discharged to self- care.

There were differences between sites regarding the system for making the first appointment. At Site 2 the appointment was made the same day, this ensured that appointments for the majority of clients were made within three days. At Site 1 the first appointment could be up to a week after initial contact. However there was a back up system to follow up those who hadn't rung within a week. Both systems were satisfactory.

It was pleasing that the majority (78%) of subjects were seen by a podiatrist within ten days. Longer than two weeks was not considered acceptable by respondents. It also increases the risk of clients missing their appointment.

Of the total number of clients seen, only three (2%) were referred to the community podiatry service with no pathology, no risk factors, & with minor self care deficits present. They were all discharged to self-care by the community podiatrists at their first visit. These clients were probably inappropriately referred by the referring agencies. Two of the three were seen at Site 1 and were referred by the community podiatry and Diabetes Australia Western Australia (DAWA) and the other was seen at Site 2, and referred by a general practitioner.

According to national standards (NSW Health, 1996) it is recommended that all people with diabetes have six monthly foot assessments. The protocol for the Inner City Community Podiatry Service is that all clients seen with foot pathology or deformity and not at high risk (ie. treatment group 2 clients) return to community podiatry for six monthly assessment. Those without foot pathology and at low risk are discharged to self-care. It was recommended that a systematic recall process for six monthly foot assessments be established however there was no evidence that this was occurring and requires monitoring and further refinement.

Treatment Patterns

The aim of the service is to decrease risk of ulceration requiring tertiary care and to reduce potential foot problems by treating deformity and pathology, and promoting self-care. These clients can then be discharged, to be seen at regular intervals for foot assessments. The duration of data collection was too short to draw any conclusions as to whether this has been achieved or not. It is also recognised that self care deficits may require long term maintenance podiatry in order to prevent deterioration to infection, ulceration and amputation.

The treatment groups of most clinical concern are treatment groups 3 to 5. According to the University of Texas Diabetic Foot Risk Classification System (Armstrong et al., 1998), (see Appendix 5), persons with foot pathology plus neuropathy are 36 times more likely to develop an ulcer and should be followed up every one or two months. Twenty five percent (31/123) of clients presented at this risk level. Treatment groups 3 and 5 clients were followed up according to the Texas Diabetic Foot Risk Classification System. Treatment group 4 clients were seen on average 2.1 visits per year and were under serviced (see graph 1). This should be investigated to assess why this treatment pattern is occurring. One explanation is that group 4 clients were referred to community podiatry services from the tertiary hospital later in the year and therefore were more likely to have less occasions of service. This will affect the costing comparisons. This would be confirmed by the further monitoring of the community podiatry service.

Another possible reason for the low level of attendance for treatment group 4 clients is anecdotal evidence that podiatry clients who have been attending tertiary podiatry services for extended periods of time perceive community podiatry service as substandard level of care. In addition, the transport service available for people accessing services at the tertiary hospital is not available to those attending community services.

The high service usage of treatment group 2, (see graph 1) by clients with no risk factors, suggests over servicing of this group and further monitoring is required.

The small number of inappropriate referrals (2%) suggests that the foot assessment clinic is identifying and referring high-risk clients appropriately. However as the foot assessment clinics are a new service, the predicted value, that is the ability of the assessors to accurately identify high-risk clients, needs to be calculated.

Fourteen of the sixty nine treatment group 3 clients did not have a high risk foot or major self care deficit therefore were considered cases who could soon be discharged, or treated as group 2 clients, that is, requiring regular screening rather than high maintenance care. Eleven of these were from Site 1 and the remaining three were from Site 2.

Although it was envisaged that those in treatment group 5, would need referral to the tertiary centre due to high risk factors and current ulcer, only three of the eight were referred. Of the remaining five who were cared for by the community podiatrist, four were static and could move into group 3 high maintenance in time.

Cost of Service Based on Best Practice

According to best practice all people with diabetes should have their feet assessed every six months. Guide lines for frequency of treatment varies. However, the consensus is that foot pathologies require maintenance at least six times a year and orthotic devices should be reviewed every six months. An objective of this study was to compare actual cost against best practice podiatry care costs by treatment groups, however due to individual client variation, it was not possible.

All treatment codes with the exception of treatment code 1 were seen less than what would be expected. Therefore, it is expected that the actual cost of this community podiatry service is less than what it would cost if clients attended as frequently as recommended. However, the period covered in this evaluation was for eight months for many of the clients.

Self Management Practice and Self care knowledge

More educational material and reinforcement is needed to encourage choosing recommended footwear, as 52% of the respondents wore scuffs, thongs or slip ons the majority of the time. As the majority of the clients have foot pathology or high risk foot conditions, trauma from inappropriate footwear is an issue. This is also relevant for the 21% who indicated that they often went bare foot. Daily self- care needs to be reinforced because 37% of clients reported they did not check their feet daily. Twenty one percent did not choose appropriate treatment for corns, callus and other pathology. Clients asked for more information on creams, footwear, socks and nail cutters.

Although the majority of the study group stated that they knew what pins and needles meant, their descriptions did not reflect this. Most had answered this question incorrectly as peripheral vascular disease (32/44). Only a small proportion (5/44) gave the correct answer of neuropathy or nerve damage.

Cost

The service was established cost efficiently by using sites with existing podiatry equipment and access to a podiatrist, rather than creating a new service. Any site deficits in equipment eg. sterilisers, instruments and dopplars, were provided. Consumable items were purchased through Royal Perth Hospital for economy of scale. The available podiatrists were trained and briefed on standards of care and provided with standardised forms and referral pathways. The sessions required to be delivered by each site were defined and dates and times were promoted to other general practitioners and other service providers. Increasing the capacity of existing resources to provide a quality service is more cost efficient than creating a new service.

The establishment costs included workforce development, provision of resources, specialist podiatry consultancy for service establishment, systems for co-ordination and data collection, and a system for monitoring outcomes, which are components essential for a sustainable service and provide the infrastructure for podiatry services by virtual co-ordination. This entails increasing the capacity of existing resources and services to provide a quality service as opposed to employing new service providers and creating a new service. These establishment costs were not included in the service cost, (ie. $44 & $30) as they are not ongoing.

This program purchased essential resources, ie. sessional podiatrists, venue rent, capital equipment and all components required for a quality community podiatry service for $170 per session. As there was no existing infrastructure for community podiatry this was the best choice for this health service. Each health service needs to determine the most efficient model based on the existing infrastructure.

Five percent (17/347) of clients failed to attend a follow-up visit. The total estimated cost to the service was $493. The majority of the clients who failed to attend (n = 15) were high maintenance, group 3 clients.

As demonstrated in graph 2, clients in treatment group 2 are costed at the same amount as the treatment groups 3 to 5 clients. This may be preventing clients most at need from accessing timely care. Systems to ensure that low risk clients are eventually discharged to self- care need to be developed.

12. References

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13. Appendices

Appendix One:– **Inner City Local Advisory Committee Members.**

Appendix Two: – **Original Client Data Collection Form**

Appendix Three :– **Redesigned Client Data Collection Form**

Appendix Four: – **Client Feedback Survey**

Appendix Five:- **University of Texas Diabetes Foot Risk Classification system**

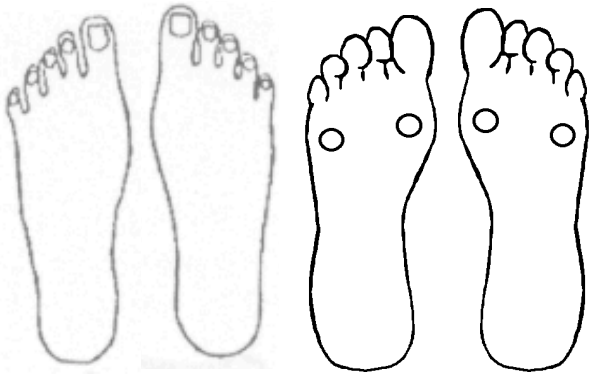
Appendix One: Members of The Local Advisory Committee

Ms Maureen Unsworth	Eastern Perth Public and Community Health Unit
Dr Ian Churchwood	Perth Division of General Practice
Ms Mary Hervey	Perth Division of General Practice
Ms Emma Ellis	Diabetes Australia Western Australia
Ms Beryl Marsh	Royal Perth Hospital
Ms Patricia Marshall	Eastern Perth Public and Community Health Unit
Ms Moyra Cattermoul	Swan Health Service
Ms Genevieve Labbe- Evans	Derbarl Yerrigan Health Service
Ms Sally Cowan	Mercy Hospital
Ms Theresa Armstrong	Silver Chain Nursing Association.
Ms Josie Cohen	Multi-Cultural Access unit. (Ex-officio)
Ms Sarina Sirna	Italo- Australia Welfare and Culture centre Inc.
Ms Patricia Jagiello	Royal Perth Hospital
Ms Fiona Van Den Berg	Eastern Perth Public & Community Health Unit (Ex-officio)
Mr Graham Fist	WA Optometrists' Association
Ms Nga tran	Swan Health Service
Ms Kathryn Swain	Diabetes Australia Western Australia

Appendix Two: **Original Client Data Collection Form**

DIABETES - FOOT SCREENING FORM

Name:	**Comorbidity:**
Address:	
	Occupation:
Tel.No: **DOB:** **Sex: M/F**	**Social Support:** carers ❒; hostel ❒; nursing home ❒; silver chain ❒; Other ❒
Date of Screening: **Date of Diagnosis::**	**Visual Acuity:** can see ❒; can't see ❒
Referral Source:	**Foot wear:** indoor (satisfactory/not satisfactory) : Outdoor (satisfactory/ not satisfactory)
Type / Diabetes: 17A (IDDM) ❒; 17B (NIDDM) ❒; 17C (IR) ❒	**Current smoker:** yes ❒ no ❒ **Previous smoker:** yes ❒ no ❒. **Date: quit:**
Diabetes Control HbA1c =	**Regular Exercise Program:**
	(describe)

FOOT COMPLICATIONS	**VASCULAR ASSESSMENT**	**L**	**R**	**NEUROLOGICAL ASSESSMENT**	**L**	**R**
Hyperkeritosis ❒; Ulcers ❒; Amputations ❒; **Nail conditions ❒** **Please describe an indicate on diagrams below:** **Dorsal** **Plantar** 	**Palpation DP:** not detected (ND); diminished (D); normal (N) strong./regular (S/R); irregular/ bounding (I/B) **Palpation PT:** ND; D; N. S/R; I/B **Ultrasound DP:** not detected (ND); monophasic (M); biphasic (B); triphasic (T). **Ultrasound PT:** ND; M; B; T **ABI** **Filling Time :** NAD; >3secs **Skin Texture:** NAD (N); anidrotic (A); moist (M); fungal (F); hair present on toes (H) **Temperature:** NAD (N); hot (H); cold) **Claudication:** NAD; Onset **Oedema:** NAD (N); pitting (P); non- pitting (NP)			**Monofilament 5.07, >5.07** **Proprioception** NAD (N); diminished (D) **Muscle test** NAD strength: appearance: group affected:		

RISK FACTORS
(Please tick and /or comment column if present)

GENERAL		**FOOT RELATED**		**EXTRINSIC**	
Poor Vision		**Active Foot problem/s** callus		**Funds**	
Cannot reach feet		corn		**Access**	
Lives alone		skin breaks			
		nail disorder			
Poor Blood Glucose Control		infection		**Time**	
		Current ulceration			
Poor Comprehension / Understanding of risk		**History of Previous Foot problems**		**Other**	
		Insensate Foot			
Other self care deficits		**PVD**			
		Foot Deformity			
		Current Ulceration			

ACTION PLAN (Referral Choice: Inner city/RPH- Please circle choice		**REVIEW** ® = resolved; (I) = improving; (S) = static; (D) = deteriorated.	**RATING**	**FOLLOW UP CONSENT** (Would you be willing to let us contact you at a later date to ask you how satisfied you were with the service? Yes ❒; No ❒
1. **Lives alone + any general risk factor** 2. **Active Foot Problem** 3. **Active Foot Problem + Foot Related Risk Factors**	**ICD** **ICD** **RPH**	**Active foot problem/s** • • • • •		**Contact details:** **Contact Person:_____** **Address:_____** **_____** **Phone No:_____**
		New Active Problem/s **Define:** • • • • •		

Appendix Three: Redesigned Client Data Collection Form

ICDP DIABETES INITIAL FOOT SCREENING FORM

Name:	**Med Alert:**
Address:	**Date of Screening:**
Pcode:	**Service Site:** APL / MERCY/ WL
Tel. No:	**Referral Source:**
Genetic Origin:	**GP Name:**
Occupation:	**Address:**
Social Support: Lives alone ☐ With family ☐	
Carer ☐ Silver Chain ☐ N/Home ☐	**Tel. No:**
Exercise: Type	**Diabetes:** Type 1 Type 2 I/R
Nos: x week / month ☐ Rarely/Never	**Tx:** Diet ☐ Oral agents ☐ Insulin ☐
Footwear: Indoor – Adequate ☐ Inadequate☐	HbA1C : BGL :
Outdoor - Adequate ☐ Inadequate☐	**Year of Diagnosis:**
Comorbidity:	
Medication:	

RISK FACTORS	
FOOT RELATED	**INTRINSIC / SELF CARE DEFICITS**
Foot Pathology (Latent Risk Factors)	Poor Blood Glucose Control ☐
Corn ☐ Callus ☐ Wart ☐	Current Smoker ☐ Nos /day
Skin Break (minor) ☐	Previous Smoker ☐ Year quit …….
Nail Disorder ☐	Poor Vision ☐
Foot Abnormality ☐	Cannot Reach Feet ☐
"At Risk Factors"	NESB ☐
Insensate Foot ☐	Reduced compliance ☐
PVD ☐	Impaired comprehension ☐
Previous ulcer ☐	Other Self Care Deficit ☐
Amputation ☐	(Describe)
Active Foot Problem	
Current Infection / Ulcer ☐	

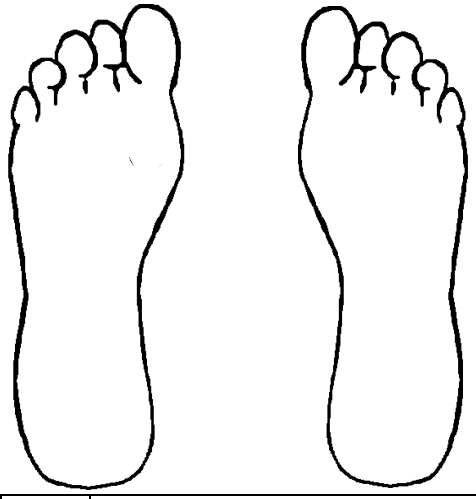
REVIEW DATES	**RATING**	**Brief Tx Plan Overview**	**ACTION PLAN**
R=RESOLVED; I=IMPROVING; S= STATIC; D= DETERIORATED			Please circle number of choice:
DATE	CODE	Tx (please circle)	1. General risk factor/s ICD
			2. "At Risk" Foot Factors ICD
		General	3. Active Foot Problem + "At Risk" Foot Factors
			Transfer to RPH ☐ Transfer from RPH ☐
		Education	
			4. Self Care / Screening only
		Footwear	5. Discharge to other Podiatrist / Screening only
			6. Discharge back to GP
		Orthoses	7. Other

FOOT COMPLICATIONS

Nail Problem ❒ Hyperkeratosis ❒ Ulcer/s ❒ Amputation ❒ Other: ❒
Please list and indicate on diagrams below:

DORSAL:

PLANTAR:



Vascular Assessment	L	R	Neurological Assessment	L	R
PALPATION: DP Strong (S) Not Detected (ND) Diminished (D) Regular (R) Bounding (B) Weak (W)			**Monofilament** 5.07, >5.07		
PALPATION PT:			**Proprioception** NAD (N) Diminished (D)		
DOPPLER DP:			**Muscle Testing:** NAD (N) Diminished (D)		
DOPPLER PT:			**Group affected:**		
ABI			**Strength:**		
Filling Time: NAD (N) >3secs			**Appearance:**		
Skin Texture: NAD (N) Anidrotic (A) Moist (M) Fungal (F) Hair present on toes (H)					
Temperature NAD (N) Hot (H) Cold (C)					
Claudication: NAD (N) Site:……..Distance……					
Oedema: NAD (N) Pitting (P) Non-pitting (NP)			**Varicosities:** NAD (N) Marked (M) Venous Ulceration - History (HVU) Current (VU)		

Appendix Four: **Client Feedback Survey**

THE INNER CITY INTEGRATED DIABETIES CARE PROJECT COMMUNITY PODIATRY SERVICE EVALUATION

You recently attended the Community Diabetes Podiatrist, we are now doing a survey to make sure that it suited your needs.

Your answers will help us to improve our services to you and for other people who develop diabetes in the future.

DIRECTIONS

Below are a number of questions that we would like you to complete, it should only take some 5 minutes of your time.

Please indicate your response by ticking the appropriate box ☑ which best indicates your opinion. If you are unable to complete the survey, a family member or friend may help you.

Your reply will be completely confidential. If you have any questions or difficulties completing this survey please contact Mrs Maureen Unsworth on (08) 9224 1661

1a. How soon did you ring to make your podiatry appointment after your initial foot check?

☐ Same day ☐ 4-7 days later ☐ Not sure

☐ 1-3 days later ☐ more than 1 week after ☐ Not applicable

If you had the appointment made through Royal Perth Hospital please go onto question 2.

1b. How long did you have to wait from the time you made this phone call to the actual podiatry appointment?

☐ 0-4days ☐ 10 -14 days ☐ Not sure

☐ 5-9days ☐ 15+days

1c. How did you feel about ringing the clinic yourself to make your first podiatry appointment?

☐ Very Comfortable ☐ Comfortable ☐ Not very comfortable

☐ Other (please state)_____

1d. In view of how serious you felt your diabetes was, how did you feel about the time that you had to wait for this appointment?

☐ Acceptable ☐ Unacceptable ☐ Don't care

2. Who referred you to this particular community diabetic podiatry service?

☐ GP Specialist ☐ Self ☐ Other _____

☐ Diabetes Educator ☐ Hospital

3a. Is this the first time you have ever been seen by a podiatrist?

☐ Yes ☐ No

If yes please go to question 4.

3b. If you answered "No" in question 3a where else have you seen a podiatrist in the past?
(You may mark more than one box)

☐ Autumn Centre ☐ Private ☐ School of Podiatry

☐ Hospital Podiatry Clinic ☐ Senior Citizen Centre ☐ Community Centre

☐ Other (please state)_____

3c. Tell us if there were any differences between the care you received at this community diabetic podiatry clinic as compared to any other podiatry services you have had?

_____

_____

_____

4a. Was it easy for you to get to the community podiatry clinic ?

☐ Yes ☐ No

If No go to question 4c

4b. If Yes, why was it easy for you to get to? (you may tick more than one box)

☐ close to public transport ☐ convenient parking
☐ close to work ☐ close to home

4c. If you answered "No" in question 4a, tell us why it was not easy to get to the community podiatry clinic:

_____

_____

_____

_____

5. Please indicate how useful the foot-care information that you received from the podiatrist was : (you may tick more than one box)

☐ Useful ☐ Heard it all before ☐ Did not get any information

6a. Do you feel that you have <u>enough information</u> now to look after your own feet?

☐ Yes ☐ No ☐Not sure

6b. Do you feel that you have the <u>skills</u> now to look after your own feet ?

☐ Yes ☐ No ☐ Not sure

If you answered "No" to question 6a or 6b, please indicate why not: (You may mark more than one box):

☐ Poor eyesight ☐ Unable to reach feet ☐ Not enough information

☐ Do not have the right tools ☐ Podiatrist has said not to treat your own feet

☐ Other _____

7. How do you rate the importance of podiatry in the management of your diabetes:

☐ Important ☐ Of some importance ☐ Not important

8. How often should you check your feet?

☐ Daily ☐ Weekly ☐ Monthly ☐ Now and again ☐ Never

9. If you develop pins and needles or numbness in your feet do you understand what this could mean ?

☐ Yes ☐ No

If you answered "yes" to question 9, please explain why:

_____

_____

_____

10. Do you rub cream such as "sorbolene" into your feet?

☐ Daily ☐ Weekly ☐ Sometimes ☐ Never

11. If you develop a corn on your little toe, what would you do?
(you may mark more than one box):

☐ Soften it with cream ☐ Use a bandaid ☐ Use a razor /scissors

☐ See the podiatrist ☐ Ignore it if it does not hurt ☐ Use a corn pad

☐ Unsure

12. Do you go barefoot at all?

☐ Often ☐ Rarely ☐ Never

13.What type of shoe do you wear most of the day?

☐ Joggers ☐ Scuffs ☐ Slip ons ☐ Slippers ☐ Lace ups
☐ Court shoes ☐ Thongs ☐ Other _____

14. Do you think the podiatry service can be altered in any way to better suit your needs?

☐ Yes ☐ No ☐ Not sure

If yes how?

_____

_____

_____

15. With regard to the community podiatry service was there something important to you which we did poorly for you? Please describe:

_____

_____

_____

16. With regard to the community podiatry service was there something important to you which we did well for you ? Please explain:

_____

_____

_____

17. Would you continue to attend this community podiatry service if there was a small fee?

☐ Yes ☐ No ☐ Not sure

Thank you for taking the time to complete this survey. Please return it in the large stamped addressed envelope provided and return by the .2000.

If you wish to take part in the prize draw, don't forget to also include the flier with your name, address and contact telephone number in the small envelope marked "confidential".

Good Luck ! ☺

Appendix Five: **University of Texas Diabetes Foot Risk Classification system**

The University of Texas Diabetic Foot Risk Classification System

Category 0: **NO Neuropathy**	**Category 1:** **Neuropathy NO Deformity**	**Category 2:** **Neuropathy with Deformity**	**Category 3:** **History of Pathology**
- Patient diagnosed with Diabetes Mellitus - Protective sensation intact (Semmes-Weinstein 10gm Monofilament detectable) - Ankle-brachial index (ABI) >0.8 and toe systolic pressure >45 mmHg - Foot deformity may be present - No history of ulceration **POSSIBLE TREATMENT** - Possible shoe accommodation - Patient education - Follow-up 6-12 months	- Protective sensation absent (Semmes-Weinstein 10-gm monofilament NOT detectable) - ABI>0.80 and toe systolic Pressure >45mmHg - No history of ulceration - No history of diabetic Charcot Joint - No foot deformity **POSSIBLE TREATMENT** - Possible shoe gear accommodation (Orthotist) - Quarterly visits to assess shoe gear and monitor for signs of irritation - Follow-up 3-4 months ***Patients are 1.7 times more likely to develop ulcer***	- Protective sensation absent - ABI>0.80 and toe systolic pressure >45 mmHg - No history of neuropathic ulceration - No history of Charcot's arthropathy - Foot deformity present **POSSIBLE TREATMENT** **Same as Category 1 plus:** - Pedorthist /Orthotist consultation for possible custom-made/extra depth shoe accommodation - Possible prophylactic surgery to alleviate focus of stress [eg: correction of hammertoe or bunion deformity] - Follow-up 2-3 months ***Patients are 12.1 times more likely to develop ulcer***	- Protective sensation absent - ABI >0.80 and toe systolic pressure >45 mmHg - History of neuropathic ulceration, amputation or Charcot's arthropathy - Foot deformity present **POSSIBLE TREATMENT** **Same as Category 2 plus:** - More frequent visits May be indicated for Monitoring - Follow-up 1 – 2 months ***Patients are 36 times more likely to develop ulcer***
Category 4A **Neuropathic Wound**	**Category 4B:** **Acute Charcot's Joint**	**Category 5:** **Infected Diabetic Foot**	**Category 6:** **Ischaemic Limb**
Protective sensation absent **ABI>0.80 and toe systolic pressure >45 mmHg** **Foot deformity normally present** **No acute diabetic Charcot's arthropathy** **POSSIBLE TREATMENT** **Same as Category 3 plus:** **Pressure reduction program instituted** **Wound care regime instituted**	- Protective sensation absent - ABI>0.80 and toe systolic pressure >45 mmHg - Non-infected neuropathic ulceration may be present - Diabetic neuropathic Charcot present **POSSIBLE TREATMENT** **Same as Category 3 plus:** - Pressure reduction program instituted - Thermometric and radiographic monitoring - If ulcer present, same as Cat 4A	- Protective sensation may be present - Infected wound - Charcot joint may be present **POSSIBLE TREATMENT** - Debridement of infected, necrotic tissue and/or bone as indicated - Possible hospitalisation, AB regime - Medical management	- Protective sensation may be present - AB<0.80 or toe systolic pressure <45 mmHg or pedal transcutaneous oxygen tension <40 mmHg - Ulcer may be present **POSSIBLE TREATMENT** - Vascular consult, possible revascularisation - If infection present, treatment same as for Cat 5