

HARP Diabetic Foot Program

A new model for managing diabetes related
foot complications across the continuum of
care

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May

Partnerships in Health

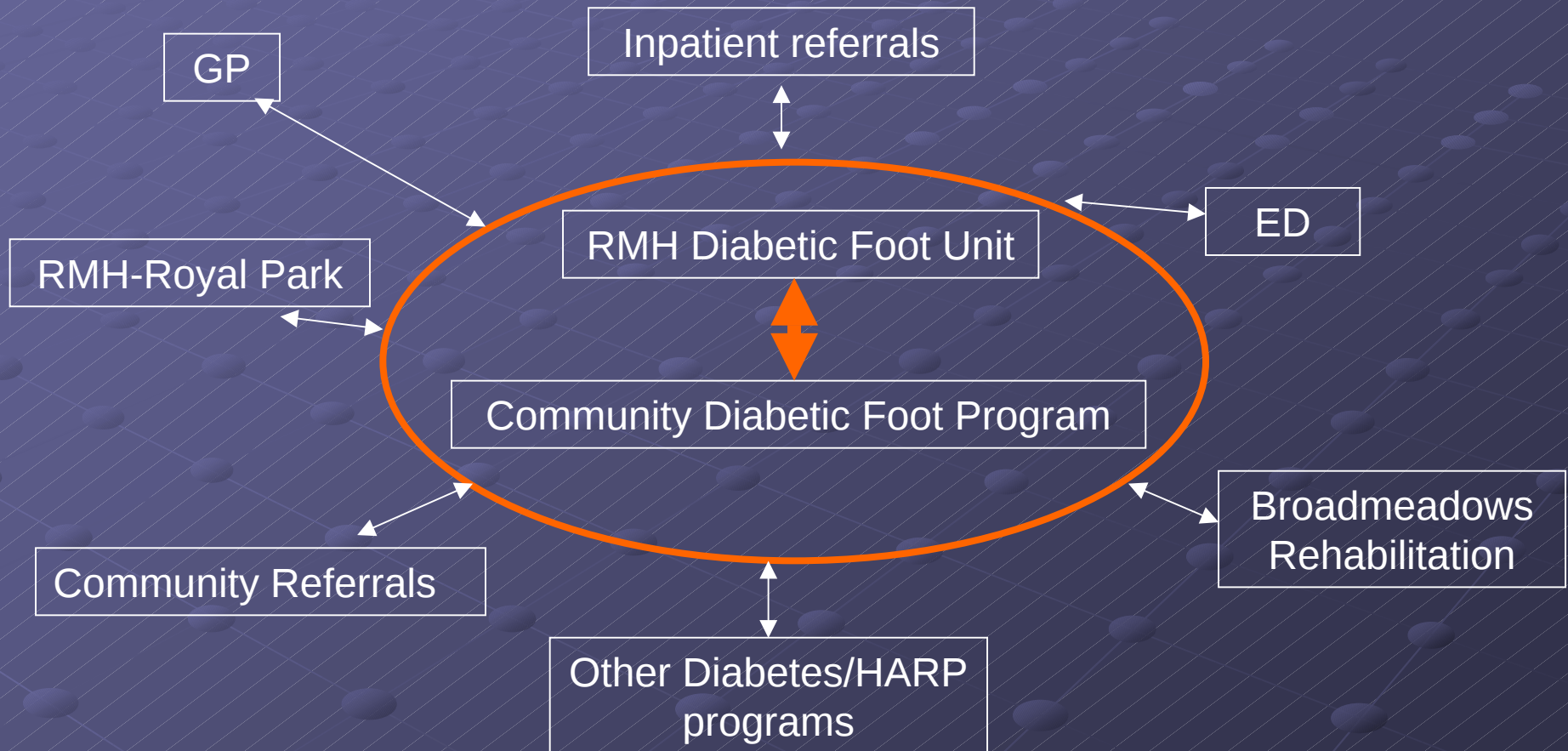


HARP Diabetic Foot Project

● Project Aims

- To provide timely, accessible and expert high risk foot care across the continuum of care (acute to community)
- Reduce Emergency Department Presentations
- Reduce Hospital admission rates
- Improve clinical outcomes through the implementation of an evidence based guideline
- Improve Quality of Life
- Promote collaboration across health care sectors

Diabetic Foot Program Model of Care



The Team

Community Diabetic Foot Program

- 1.5 EFT Podiatry
- 1.0 EFT Wound CNC
- Close links with Diabetes Nurse Educators, GP's & other allied health



RMH Diabetic Foot Unit

- 1.0 EFT Podiatry
- 0.4 EFT Endocrinologist
- 0.2 EFT Dietician & Clinical Psychologist
- Vascular Surgeon, Rehabilitation Consultant



Diabetes Related Foot Problems

- 25% will develop a diabetes related foot complication
 - ~25% will develop a foot infection
 - At least 60% of ulcers have underlying osteomyelitis
 - Ulcer recurrence: 34% / year, 70% over 5yrs
- Foot disease commonest reason for hospitalisation
 - Length Of Stay 59% longer for foot complications compared to non foot admissions
- RMH: 25% of inpatients have diabetes
 - 20% have a foot complication

Entry Criteria (Community)

DIABETES **plus** one, or more, of the following;

- Peripheral Neuropathy in the presence of gross foot deformity (Hx Amputation, Charcot's)
- Significant Peripheral Vascular Disease
- Active foot wound/ Recent past history
- Hospital admission with a foot related problem in past 12 months.

Entry Criteria (Acute)

A diabetes related foot problem, including but not limited to;

- Foot ulceration
- Charcot foot
- Cellulitis
- Osteomyelitis
- Acute lower limb ischaemia

All referrals are made through the Endocrinology registrar and triaged by the DFU coordinator.

Strategies for Improving Care

- Innovative, evidenced based clinical guideline
- Involvement of key stakeholders
- Creation of the acute DFU
- Workshops/case conferences between acute & community
- Accessible, specialist community services to maintain clients in the community
- Holistic care – not just caring for the foot

Strategies for Improving Care

- Adequate funding to provide high cost treatments
- Use of interpreters for CALD
- Clients encouraged to become actively – part of the multidisciplinary team
- Education to referring groups, e.g. GP's
- Consumer & stakeholder involvement to improve service
- Monitoring & evaluation of practice & outcomes (admission & amputations)
- Discharge Action Packs

CLINICAL ASSESSMENT, INVESTIGATIONS & MANAGEMENT OF ACUTE DIABETIC FOOT COMPLICATIONS



Initial assessment

History:

Co-morbidities:

Ulcer History:

Investigations:

Diabetes type, duration, level of control, treatment, complications.

Hypertension, cardiovascular disease, dyslipidaemia, smoking history, obesity.

Past ulcer or amputation, cause, duration, treatment (incl. revascularisation).

UEC, random blood glucose, HbA1c, lipid profile, 24 hr urine collection, ECG.



Individuals with a diabetic foot complication must be assessed in all three of the decision pathways and referred to the ACUTE DIABETIC FOOT SERVICE. It is essential that glycaemic control is maximised in all patients.

Is neurological status compromised?

Assess with a 10g (5.07) monofilament.

No

Yes

N₀

Is Charcot Joint a possibility?

Assess for: joint deformity, pain/tenderness, swelling, bounding pulses, erythema and warmth.

No

Yes

N₁

N₂

N₀

No acute investigations or management.

N₁

Pressure off-loading. Educate about neuropathy.

N₂

Expert opinion should be sought to aid diagnostic process. If Charcot joint, pressure off-loading essential. If osteomyelitis, U₃I₁.

Is vascular supply compromised?

Assess: claudication, rest pain, acutely painful and cold limb, peripheral pulses, femoral bruits, dry gangrene.

No

Yes

V₀

V₁
Vascular compromise

- (1) Superficial ulcer (U₁).
- (2) Ulceration to tendon/joint capsule (U₂) or bone (U₃) with palpable pulses.

Conservative therapy. If no improvement after 2 weeks, investigate.

V₀

No acute investigations or management.

V₁
Vascular compromise

- (1) Dry gangrene.
- (2) Rest pain.
- (3) Ulceration to tendon/joint capsule (U₂) or bone (U₃) in the absence of palpable pulses.

V₁
Lower limb angiography (type/extent as guided by vascular opinion) ± Toe pressures (TP).

V₁

Maximise vascular supply. If unable to improve, conservative therapy should be considered if TP >30 mmHg or consider early amputation if TP <30 mmHg.

V₂
Acute limb ischaemia

An acutely cold limb with no palpable pulses, should be managed as a vascular emergency.

V₂
Urgent angiography (type/extent as guided by vascular opinion).

V₂

Urgent vascular review with individualised management plan.

Is there evidence of an ulcer?

Assess: initiating event, duration, treatment to date, site, size, depth (including ability to probe to bone). Consider documenting ulcer with digital photo.

No

Yes

U₀

No ulcer.

U₁

Superficial ulcer, not down to tendon/joint capsule, or bone.

U₂

Ulcer down to tendon/joint capsule, but not bone.

U₃

Ulcer down to bone. Osteomyelitis.

Is infection present?

Assess: pain/discomfort, erythema/cellulitis, heat, swelling, treatment to date, volume and composition of discharge, odour, condition of surrounding tissue, fevers, sweats, signs of wet/gas gangrene, elevated glucose, FBE, ESR, CRP, Alkaline Phosphatase.

No

Yes

No

Yes

U₀I₀

No ulcer. No infection.

U₀I₁

Possible infection without an ulcer. Differentials: osteomyelitis, Charcot joint, gout, cellulitis, arthritis.

U₁I₀

Superficial ulcer. No infection.

U₂I₀

Ulcer down to tendon/joint capsule. No infection.

U₁I₁

Superficial ulcer. Infection present.

U₂I₁

Ulcer down to tendon/joint capsule. Infection present.

U₃I₁

Ulcer down to bone. Infection present.

U₀I₁

No investigations if cellulitis. If no improvement after 2 weeks, x-ray ± MRI. If other diagnosis likely at presentation, x-ray ± MRI.

U₁I₀

No investigations. If no improvement after 2 weeks of treatment, arrange x-ray ± MRI.

U₂I₀

X-ray. If no improvement after 2 weeks of treatment, arrange MRI.

U₁I₁

Culture. If no improvement after 2 weeks of treatment, arrange x-ray ± MRI.

U₂I₁

X-ray and MRI. Culture.

U₃I₁

X-ray and MRI. Culture.

If investigations suggest osteomyelitis, go to U₃I₁.

U₀I₀

No acute investigations or management.

U₀I₁

Treat cellulitis with antibiotics. Manage Charcot joint according to N₂ and osteomyelitis as U₃I₁.

U₁I₀

1. Debride.
2. Dressings.
3. Pressure off loading.

U₂I₀

1. Debride.
2. Dressings.
3. Pressure off loading.

U₁I₁

1. Debride.
2. Dressings.
3. Pressure off loading.
4. Antibiotics.

U₂I₁

1. Debride.
2. Dressings.
3. Pressure off loading.
4. Antibiotics.

U₃I₁

1. Debride.
2. Dressings.
3. Pressure off loading.
4. Antibiotics.

Outcomes – Community

January – December 2005

● Amputations

- 21.8% of all patients had a history of amputation prior to joining the project
- 1.05% of patients have required a minor amputation

● Ulcerations

- 82.6% of all patients had a history of ulceration prior to joining the project
- 68.63% maintained ulcer free
- 50.48% with an ulcer healed

● ED presentations

- 3.92%

● Inpatient admissions

- 12.42%

Outcomes – Acute

January to December 2005

● Amputations

- Pre DFU 20% of all 'DFU' patients had a minor amputation; post 8.8%
- Pre DFU 10% of all 'DFU' patients had a major amputation; post 2.2%

● Length of stay

- Average at 13.3 days

● Admits/referrals

- 189 admissions
- 273 referrals

Collaboration

- DFU created in January 2005
- Joint data collection
- Mutual support
- Reduced ED presentations
 - Direct admits
 - Immediate outpatient review
- Victorian Health Care Award – Excellence in Continuity of Care

Case Study

The Complex Person with Diabetes

- 67 year old Fiji-Indian gentleman
- Type 2 diabetes (insulin requiring)
- IHD, nephropathy, hypertension
- Obesity, retinopathy, PVD & peripheral neuropathy
- Long standing foot ulcers secondary to burns
- Managed at RMH 01-04
- Referred to HARP 8/04



Case Study

The Complex Person with Diabetes

- Diabetes well managed
- Reviewed every 1-2/52
 - Debridement
 - Dressings
 - Pressure off loading
- Wound CNC involved in outreach management every 2/52
- 08/04 new ulcer post holiday; healed 10/04
- 11/04 re-ulcerated
- X-rays 12/04 – no o/myelitis



Case Study

The Complex Person with Diabetes

- Referred to DFU 02/05
- Footwear/orthotics review
- 09/05 presents with 2 new ulcers
 - Styloid process both feet
- Podiatry every 2/52;
Wound CNC every 2/52
- 02/06 Right foot healed;
left foot deteriorates due
to traumatic removal of
felt padding by patient



Case Study

The Complex Person with Diabetes

- 06/05 referred to DFU for review – continue with current management plan.
- CAM walker with pressure offloading insoles
- Referred back to HARP to continue 2/52 Podiatry & Wound CNC reviews
- Commenced Arginine supplement
- Wound healed – 08/06



Case Study

The Complex Person with Diabetes

● Outcomes

- New ulcerations dealt with in an expertly and timely manner
- No Emergency Department presentations or inpatient admissions since initial involvement in 2001
- Despite complex medical history
 - Diabetes control evident (HbA1c stable)
 - Amputation avoided
 - Quality of life maintained
- Seamless transitioning evidenced between Acute and Community services

Challenges & Future Direction

- Ongoing improvement and maintenance of links between Community Diabetic Foot Program and the Royal Melbourne Hospital based Diabetic Foot Unit
- Succession planning
- Restructuring has introduced Diabetes Co-Management Melbourne Division of General Practice Inc. into the HARP program.
 - Coordinated approach with Diabetic Nurse Educators in Community GP clinics

Challenges & Future Direction

- Improving the continuum of patient flow
 - Capacity
 - Transitioning
 - Support and development of Community Podiatry Services
- Mainstreaming Program for other Health Care services
- Development of policy and procedure
- Sourcing Custom Shoe and Custom Orthoses manufacturers (community)

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