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Reducing foot problems through offloading

Module 1: Overview of wound management and offloading with minimal resources

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5

Module 1 – Training outline

	Estimated time to deliver
A: Overview of diabetic foot wound management	40 min
B: Overview of offloading	30 min
C: Activity modification and mobility devices	30 min
D: Offloading devices	30 min

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8

8

A: Overview of diabetic foot wound management

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21

21

Review: principles of diabetic foot wound management

- The International Working Group on the Diabetic Foot (IWGDF) recommend 7 principles for managing foot wounds (5):
 - **Relieve pressure** by offloading and protect the wound
 - **Increase blood supply** to the skin
 - **Treat any infection**
 - **Control diabetes** and other medical conditions
 - **Care for the wound** (debridement, dressing)
 - **Educate** the person and their family
 - **Find out the cause** and aim to prevent it happening again.
- A team approach is necessary to achieve all of these principles.

2.1

22

22

Principles of diabetic foot wound management

- The reducing foot problems through offloading training modules focus on one of the seven principles of foot wound management: **Relieve pressure by offloading and protect the wound.**
- The other principles described in the previous slide should also be followed.

2.1

23

23

B: Overview of offloading

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Offloading to heal wounds

- One of the 7 principles of wound management is: **Relieve pressure by offloading and protect the wound.**
- Offloading means:
 - Removing pressure from the wound and/or
 - Redistributing pressure to other parts of the foot/limb.
- The offloading will only work if the person follows the treatment.

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41

41


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Offloading to prevent wounds reoccurring

- After a wound has healed, there is a high risk that it will occur again.
- If a person goes back to using their old shoes, or walks bare foot – it is likely the wound will return.
- Offloading the area where the wound was, can help prevent it from coming back.
- Offloading methods to prevent wounds include:
 1. Foot orthotics and shoes.
 2. Footwear modification such as rocker soles.



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42

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Discuss:

- What are some ways to offload a foot wound?
- What are some challenges to offloading a foot wound?


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Offloading techniques and devices

- Offloading can be through:
 - Activity modification
 - Providing a mobility device to prevent weight bearing
 - Providing an offloading device.
- Remember – offloading is only one of seven principles of wound management. The other principles must also be applied.



44

44

Four rules for offloading (OAPL)

Regardless of the method of offloading, the following four rules for offloading should always be remembered:

- **O**ffload: A diabetic foot wound will not heal without relieving pressure from the wound site.
- **A**ll times: Offloading of the wound is required at ALL TIMES - not only when out of home (Indoors + Outdoors).
- **P**rotect: After the wound has healed it must be protected from reoccurring.
- **L**ong term: Consider long term pressure distribution through the use of foot orthoses and appropriate footwear.

45

45

Which offloading device/technique to use?

- The choice of offloading technique or device will depend on:
 - Materials and equipment available
 - Personnel trained in the different techniques and devices
 - Each individual person's situation and the type, location and condition of their foot wound.
- A prescription and treatment plan should be developed after a thorough client assessment and consideration of the available resources.

46

46

Comparison of offloading techniques and devices

Technique/device	Materials or equipment	Facilities	Family support	Training
Activity modification	No special equipment	No facilities required.	Daily family support very important	Personnel need to be able to discuss options.
Mobility device	Crutches and/or wheelchairs	Storage of devices and facility to set up and adjust wheelchairs.	Daily family support very important	Personnel need to know how to prescribe and set up equipment and train user how to use it.
Offloading device	Some materials and equipment depending on the device.	Some offloading devices require a basic 'orthotic' workshop.	Family support and encouragement to use the device, and check progress.	All personnel need to be trained to prescribe, fit and monitor each specific device. Orthotics skills and knowledge is required for some devices.

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- The physiotherapy service at Vaiola is expanding to become the rehabilitation service. In 2019 this service will be able to provide mobility and offloading devices.

47

47

Key steps in providing an offloading device

- Referral and appointment:** The system of referral and appointment will depend on the situation.
- Assessment:** Each person requires an assessment. An assessment designed for providing an offloading device or technique is covered in Module 2.
- Prescription:** Using the information from assessment, a prescription is developed together with the person and their family. Depending on the device, prescription may include detailed measurements and /or casting.
- Device preparation:** Some offloading devices need to be fabricated in a workshop. Some devices can be bought already assembled.
- Fitting:** The person tries the device. Personnel and the person check that the device fits, is providing the offloading required and functions as it should. Final adjustments are often needed.
- User instruction:** Personnel teach the person (and their family) how the device should be used and cared for.
- Follow up:** Regular follow up/review is needed to check the fit and function of the device; to ensure the wound is healing; and to identify any problems quickly.

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48

48

Test your knowledge:

- What are the three main causes of foot wounds?
- List 7 risk factors – things that make it more likely a person will get a foot wound OR slow healing of a wound?
- Is offloading the ONLY treatment required for a diabetic foot wound?

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49

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C: Activity modification and mobility devices




50

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Offloading with minimal resources



- When there are no other offloading options, a combination of mobility devices and activity modification can be used to offload a foot wound.
- **Offloading by using activity modification and/or a mobility device - will only be effective if the person follows the activity plan and uses the mobility device correctly.**
- The healing time can be longer than it would if other offloading methods were used – as it can be difficult for the person to *always* stay off their feet.


51

51

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Prescribing activity modification and mobility devices




- The most appropriate choice of mobility device and activity limitation will depend on the person's:
 - Home/work environment
 - Daily activities and assistance available
 - General health and mobility
 - Whether the other leg is at risk of developing a wound. If yes – crutches and a walking frame should NOT be prescribed
 - What assistance the person has at home.
- These factors should be identified during assessment.

52

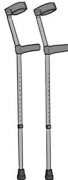
52

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Assistive mobility devices


- Assistive mobility devices that can be used to offload foot wound include:
 - Crutches
 - Wheelchairs.




2.1
53

53

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Guide to choosing mobility devices


- Crutches increase weight bearing on the opposite leg. The use of crutches also requires good balance, coordination and fitness.
- Wheelchairs are more expensive, more difficult to transport, and harder to maneuver over obstacles such as stairs and very rough terrain than crutches.
- However not every person will be able to use crutches – and a wheelchair is then the best option.

Mobility device	Recommended for a person who has:
Crutches	<ul style="list-style-type: none"> Good balance and coordination Sufficient fitness (energy and strength) Sound opposite leg (not at risk of developing a wound).
Wheelchair	<ul style="list-style-type: none"> Poor balance and/or coordination Opposite leg at risk of developing a wound OR Full/partial amputation of opposite leg.

2.1
54


54

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Assistive mobility devices

- All mobility devices must be set up correctly to fit the person; and the person should be taught how to use the device safely.
- If using a wheelchair, personnel should check how the person gets in and out of their wheelchair – to ensure they do not put pressure on the wound.
- Refer** to the physiotherapy/rehabilitation department for the person to be provided with an appropriate wheelchair or walking aid.



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Activity modification

- Activity modification means limiting and/or modifying the person's activity to take pressure off the wound.
- This requires discussion with the person and their family. Personnel should:
 - Explain why offloading is important
 - Discuss with the person and their family how they can reduce/modify their activity
 - Wherever possible provide a mobility device in conjunction with activity limitation
 - Be supportive and encouraging – activity limitation can be difficult for the person and their family.

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56

56

Activity modification

- Depending on the severity of the wound, activity limitation may mean:
 - Slowing down the rate of walking to reduce shear and pressure
 - Reducing the amount of walking to only indoors or only 'essential' walking
 - Bed rest – for severe wounds or wounds with deep infection.

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57

57

D: Offloading devices

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Offloading devices

- Some devices for offloading to heal foot wounds include:
 - Total contact casts (TCC)
 - Total contact cast shoe
 - Removable walkers
 - Offloading shoes
 - Shoe modifications
 - Felt padding
 - Foot orthoses to be used in conjunction with removable walkers.
- The treatment will only work well when the person follows instructions and uses the device. (7)

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59

59

Offloading devices

- It is very important to:
 - Choose the right device so the person will use it
 - Teach the person how to use the device
 - Regularly review the person's progress and use of the device.
- Offloading devices will start to be provided by the Rehabilitation service in 2019. Some may be provided at NDC and ECHC level as services develop.


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60

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Total contact cast (TCC)

- Considered the most effective method of offloading for wounds on the bottom of the foot that are related to nerve damage. (8)
- Are made individually for each person by trained personnel.
- Materials needed include plaster of paris bandage, fiberglass casting tape, felt padding and casting cotton wool.
- Need to be removed and re-made regularly.



2.1

61

61

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Total Contact Cast Shoe (TCC shoe)

- TCC shoes are made individually for each person by trained personnel.
- TCC shoes can be removed easily and reapplied easily.
- Materials needed include plaster of paris bandage, fiberglass casting tape, and casting cotton wool.




2.1
62

62

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Removable walkers

- Considered an effective method of offloading pressure for wounds on the bottom of the foot [\(8\)](#).
- Come in a range of sizes.
- Should be used with a custom foot orthosis or felt padding to get the best pressure distribution.
- Can be removed easily, however can be made non removable by using a cable tie or wrapping them with fiberglass casting tape. This will make them more effective. [\(9, 10\)](#)




2.1
63

63

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Offloading shoes

- Are considered suitable for wounds on the bottom of the foot if TCCs and walkers are contraindicated/not available. [\(1\)](#)
- Come in a range of sizes and different shaped soles.
- Can be easily removed. People need to understand that they should wear the shoe at all times or the shoe will not be effective at healing their wound.




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64

64

Shoe modifications

- When offloading shoes are not available, modifications to a person's shoe may help to offload a wound.
- Modifications include:
 - Changing the shape of the sole to redistribute pressure on the bottom of the foot
 - Changing the upper part of the shoe – for example to make more room for the toes.





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Felt padding

- Can be used with shoes if other offloading methods are not appropriate (contraindicated) or not available for wounds on the bottom of the foot. (8)
- May also be used for toe wounds (11) or wounds on the sides of the foot.
- Must be replaced often (every 3 days) because it flattens out quickly and becomes less effective. Also for foot hygiene to reduce risk of damage. (12)
- May also be used along with a removable walker or offloading shoe.



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Foot orthoses


- Custom made foot orthoses can be used inside removable walkers to provide customised offloading.
- Are very important for long term prevention of wounds after a wound has healed.
- Need an orthotic workshop and equipment to make them. This will be available at Vaiola in 2019.



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67

67




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Overview of offloading devices for healing wounds

Device	FOR (indications)	NOT FOR (contraindications)	Positives	Negatives
TCC	<ul style="list-style-type: none"> Superficial or deep wound on bottom of foot. Related to nerve damage. Grade 1-2 wound (Wagner classification). 	<ul style="list-style-type: none"> Infected wound Deep and narrow ulcers Wound with poor blood supply (ischaemic) Grade 3-5 wound (Wagner Classification) Severe swelling Severe skin conditions Client who cannot reliably attend for follow up. Client who will walk in water. Clients who have very poor balance and cannot walk with a TCC. 	<ul style="list-style-type: none"> Considered most effective treatment. Made individually – so pressure distribution is as required for the client. Cannot be removed so the client has to wear it at all times (pressure is always offloaded). 	<ul style="list-style-type: none"> Requires personnel trained to prescribe and fabricate. Requires supply of materials. Is heavy and bulky May cause damage if it is not applied correctly. Requires weekly cast changes.
TCC shoe	<ul style="list-style-type: none"> Superficial or deep wound on bottom of foot Related to nerve damage Grade 1-2 wound (Wagner classification) When the wound needs to be checked often. 	<ul style="list-style-type: none"> Infected wound Deep and narrow wounds Grade 3-5 wound (Wagner Classification) Severe swelling Client who will walk in water. 	<ul style="list-style-type: none"> Made individually – so pressure distribution is as required for the client. Can be used for longer time than one TCC. Can be removed and reapplied for regular foot checks. 	<ul style="list-style-type: none"> Requires personnel trained to prescribe and fabricate. Requires supply of materials. May cause damage if it is not applied correctly.

2.1
68

68




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Overview of offloading devices for healing wounds

Device	For (indications)	NOT FOR (contraindications)	Positives	Negatives
Removable walker	<ul style="list-style-type: none"> Superficial or deep wound on bottom of foot. When the wound needs to be checked often (eg. if there is poor blood supply or infection). If there is poor ankle muscle strength (the walker will support the weak ankle). Non-removable – as with TCC. 	<ul style="list-style-type: none"> Severe foot deformity that cannot be accommodated in the walker. Clients who will not wear it. Clients who are at risk of falls after training and practice walking with the device. Non-removable – as with TCC. 	<ul style="list-style-type: none"> Considered an effective treatment (with custom foot orthosis or felt padding). Can be re-used. Can be made non-removable to increase compliance. 	<ul style="list-style-type: none"> Requires personnel trained to prescribe and set up correctly. Requires walkers to be purchased and in stock.
Offloading shoe	<ul style="list-style-type: none"> Wound on bottom of foot When the wound needs to be checked often (eg. if there is a lot of discharge from the wound and daily dressing changes required). When TCC or walker is not available or appropriate (eg. poor blood supply or infection). When the client can put it on correctly or has help to put it on correctly. 	<ul style="list-style-type: none"> When TCC or walker are available and appropriate. Client who will not wear it. 	<ul style="list-style-type: none"> Can be re-used. 	<ul style="list-style-type: none"> Client can remove the shoe. Requires shoes to be purchased and in stock.

2.1
69

69



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Overview of offloading devices for healing ulcers

Device	For (indications)	NOT FOR (contraindications)	Positives	Negatives
Shoe modifications	<ul style="list-style-type: none"> Wounds on top or sides of feet where shoes can be stretched. Wounds on bottom of feet where soles can be modified to make offloading shoes. Use if there is severe infection that would prevent other devices being used. 	<ul style="list-style-type: none"> When TCC or walker are available and appropriate 	<ul style="list-style-type: none"> May be able to use locally available shoes. 	<ul style="list-style-type: none"> Requires personnel trained in shoe modifications. Requires supply of materials and tools and equipment for modifying. Client can remove the shoe.
Felt padding	<ul style="list-style-type: none"> For superficial small neuropathic (related to nerve damage) wounds on the bottom of the forefoot, or toe wounds. Where other offloading devices are not available. When other offloading methods are contraindicated (not recommended) – eg. if poor blood supply or infection or if wound needs to be checked daily. No additional offloading in a removable walker or offloading shoe. 	<ul style="list-style-type: none"> Wound on bottom of foot if other methods are available and appropriate Clients who are unable or unlikely to return regularly for follow up. Clients who are unlikely to be able to also modify their activity (eg. walk less) and/or use a mobility device. Clients who are likely to remove the padding themselves. Clients who may have an allergy to the adhesive tape (if it is applied directly to the skin). Clients who will walk in water. 	<ul style="list-style-type: none"> No special facilities are required. 	<ul style="list-style-type: none"> Requires trained personnel. Requires supply of padding. Client can remove it.

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70

70

Overview of offloading devices for healing wounds

Device	For (indications)	NOT FOR (contraindications)	Positives	Negatives
Foot orthoses	<ul style="list-style-type: none"> To be used inside removable walkers or offloading shoes. 	<ul style="list-style-type: none"> Primary method of healing foot wounds. 	<ul style="list-style-type: none"> Provides customized additional offloading inside removable walkers or offloading shoes. 	<ul style="list-style-type: none"> Requires personnel trained in provision of foot orthoses. Requires supply of materials, tools and equipment for making foot orthoses.

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71

71

Test your knowledge

- Which offloading devices are considered the two most effective methods of offloading to heal a wound?
- When would you NOT use a total contact cast?
- When would you use crutches as an offloading method?

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72

72

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74

74




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75

75



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76

76