

STEP 6:

# Care for Wounds

Authors: Linda F. Lehman, Mary Jo Geyer and Laura Bolton



## Step 6: Care for Wounds

### Introduction

A wound is an injury or break in the skin or nail, including cracks and blisters. It is important to heal a wound as quickly as possible because it is an entry point for dirt and germs. When the wound is at or near a joint, special actions may be needed to preserve movement. Good wound care helps wounds heal quickly and prevents complications such as infection, pain and movement limitations. Moisture-retentive dressings speed healing and reduce pain and incidence of infection in chronic and acute wounds. This helps to preserve limbs and mobility, leading to improved participation and quality of life.

The purpose of this step is to provide basic training for the management of simple, uncomplicated wounds at the community level. Large or complicated wounds require advanced wound management and should be referred.

### Goal

Practice wound care that aids in healing, prevents complications and improves quality of life.

### Key Messages

1. Wounds will heal more quickly and with fewer problems if the six basic principles of wound management are applied during daily wound care.
2. Moisture-retentive dressings speed healing, reduce pain and reduce incidence of infection in chronic and acute wounds.
3. Keep dressing as clean and as dry as possible during bathing and other daily activities; change if wet.
4. Exercises and movement can be done when there is a wound, but movement is restricted for approximately 7-10 days after skin grafting.
5. Contact your community health worker if you notice these situations: excessive fluid soaking through wound dressing; or increased bad odor, pain, swelling, wound size, warmth or fever.
6. Handle and dispose of contaminated material safely.



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## Step 6: Care for Wounds

### A Quick Supervisory Checklist for Step 6

Care for Wounds	Yes	No	Not Obs	Observations & Recommendations
1. Organizes materials before starting wound care				
2. Washes hands before wound care procedure				
3. Uses gloves appropriately				
4. Removes gauze and bandages without damaging new skin				
5. Cleans wound with clean water or saline solution to remove debris and dead tissue without damaging new skin				
6. Moves joints near or at the wound before new dressing and bandage is applied				
7. Applies clean Vaseline gauze or other moisture-retentive dressing				
8. Bandages with light compression distal to proximal				
9. Bandages without restricting movement				
10. Tapes end of bandage, does not tie a knot to secure bandage				
11. Follows special care procedures for skin grafts under 10 days old				
12. Disposes of contaminated material safely				
<b>Teaches affected person and caregiver how to:</b>				
13. Keep bandage clean and dry				
14. Change bandage if outer bandage becomes wet				



## Guidelines for Teaching the Module

Health Coach/Facilitator should use the local language and ensure that all terms are found in the local language.

**Estimated time: 4–6 hours**

## Learning Objectives

At the end of the module, participants will be able to:

1. Explain each of the six basic principles of good wound care:
  - Control underlying health conditions and/or diseases
  - Protect the wound and surrounding skin from physical or chemical injury
  - Keep the wound moist (not too wet and not too dry)
  - Keep the wound and surrounding skin clean, remove dead skin and tissues, and treat infection when needed
  - Control or reduce swelling to decrease pain, improve healing and preserve movement
  - Preserve skin and joint movement
2. Identify common problems contributing to delayed wound healing
3. Demonstrate how to change a wound dressing including removal of old dressing, cleaning the wound, applying a new dressing and securing dressing with a bandage
4. Identify actions to prevent loss of movement during wound healing
5. Explain ways to protect yourself and control infection; e.g., wash hands, safe handling and disposal of contaminated material.

## List of Teaching Activities and Learning Materials

### Activity 1

Wound Screening

### Activity 2

Principles and Actions for Wound Screening

### Activity 3

Steps for Wound Dressing Change and Wound Dressing Dramatization

### Activity 4

Correct Wound Dressing Simulation

### Activity 5

Practice Bandaging Hands & Fingers and Feet & Toes

### Activity 6

Identifying Ulcer Type, Wound Management and Prevention of its Reoccurrence

### Handouts

- 6.1 Instructions for Screening Wounds
- 6.2 Individual Impairment Record Form (IIRF)- Wound Section
- 6.3 Community Wound Care or Referral
- 6.4 Scenarios for Wound Care Screening and Recording
- 6.5 Principles and Actions to Improve Wound Healing
- 6.6 Wound Care Decision Tool
- 6.7 Artzberger Hand and Finger Bandaging
- 6.8 Artzberger Foot and Toe Bandaging
- 6.9 Types of Ulcers and Characteristics – Part 1 and Part 2
- 6.10 Photos of Ulcers

## Step 6: Care for Wounds

### Activity 1: Wound Screening

#### Handouts

- 6.1 Instructions for Screening Wounds
- 6.2 Individual Impairment Record Form (IIRF) – Wound Section
- 6.3 Community Wound Care or Referral
- 6.4 Scenarios for Wound Care Screening and Recording

#### Equipment & Materials

- Flip chart stand and paper
- 4 – 6 colored markers
- Copies of 6.2 IIRF – Wound Section, 1 form per pair
- 1 stool or chair to support a leg
- 1 red marker for drawing location of wound
- Pen/pencil

#### Instructions for Teaching the Activity

Room Arrangement: Participants sit in a semicircle with two chairs placed in the front. One chair is for the wound patient. The other chair is for the Health Coach.

- 1. Health Coach distributes handouts *6.1 Instructions for Screening Wounds*, *6.2 IIRF-Wound Section*, *6.3 Community Wound Care or Referral* and *6.4 Scenarios for Wound Care Screening and Recording*.**
- 2. Health Coach asks for a volunteer, if no patient is available with a wound.**
- 3. Health Coach selects one wound care scenario on handout *6.4 Scenarios for Wound Care Screening and Recording* and draws wound on volunteer to match the wound care scenario. The scenario details are written on the flip chart.**

- 4. Health Coach demonstrates how to do the screen and record the results.**
- 5. Health Coach discusses handout *6.3 Community Wound Care or Referral* with participants and together they decide what problems were identified in the scenario they observed and what care should be done.**
- 6. Health Coach asks participants to count off 1, 2, 3, 4, 5, 6, etc. and repeats to divide the group into pairs.**
- 7. Health Coach chooses one wound scenario from handout *6.3* for each pair.**
- 8. The pairs are given 10-15 minutes to complete the screening and recording, and decide what care is needed using handout *6.3*.**
- 9. The pairs start by drawing the wound from the scenario on one person in the pair. Then, the pair works together to complete the screening process, recording results and deciding care.**
- 10. Each pair shares their wound scenario, their documentation and care plan with the larger group.**
- 11. Health Coach and group provide feedback on the scenario presented by each pair.**

*Note: Examiner and participants must remember to wash hands with soap and water before and after screening demonstration.*



## Activity 2: Principles and Actions for Wound Healing

### Handouts

- 6.5 Principles and Actions to Improve Wound Healing

### Equipment & Materials

- Flip chart stand and paper
- 4 – 6 colored markers
- 6 sheets of flip chart paper, 1 piece for each group

### Instructions for Teaching the Activity

Room Arrangement: Initially the participants are divided into six groups and then present their work to the large group.

- 1. Health Coach divides the large group into six groups.**
- 2. Health Coach writes on the flip chart the following six principles for improving wound care and assigns one principle to each of the six groups:**
  - Control underlying health conditions and/or diseases
  - Protect the wound and surrounding skin from physical or chemical injury
  - Keep the wound moist (not too wet and not too dry)
  - Keep the wound and surrounding skin clean, remove dead skin and tissues, and treat infection when needed
  - Control or reduce swelling to decrease pain, improve healing and preserve movement
  - Preserve skin and joint movement
- 3. Health Coach distributes paper and markers to each group.**
- 4. Health Coach explains that each group will discuss their principle and make a list of the actions they would recommend to accomplish this principle. The responses are recorded on paper. The group selects one person to present for the group.**
- 5. Groups are given 10 minutes to complete the task and then all groups join together for each group to present.**
- 6. Health Coach asks which group wants to present first. The paper, with listed actions, is taped up on the wall or on the flip chart.**
- 7. After each group presents, the Health Coach asks other participants if they have additional actions to recommend.**
- 8. After all groups have presented, the Health Coach distributes handout *6.5 Principles and Actions to Improve Wound Healing*.**
- 9. The entire group reviews the handout and adds any missing actions on the corresponding flip chart paper.**

## Step 6: Care for Wounds

### Activity 3: Steps for Wound Dressing Change and Wound Dressing Dramatization

#### Handouts

- 6.6 Wound Care Decision Tool

#### Equipment & Materials

- 1 copy of 6.2 IIRF – Wound Section forms
- Pen/pencil
- Foot stool
- 1 handwashing kit (basin, cup, bucket of water, soap and paper towels)
- 1 wound care kit (waste disposable pad, kidney basin, scissors, forceps)
- Consumable materials for wound care (dressings and bandages)
- 10 gauze compress 10 X 10 cm, clean
- 1 roll of plaster tape (adhesive tape)
- 2 (10 cm) crepe bandages, clean
- 5g cotton wool, clean
- 1 bottle of alcohol
- 4 water sachets
- 4 pairs of disposable gloves, size 7½

#### Instructions for Teaching the Activity

Room Arrangement: Participants sit in a semicircle with two chairs and either a stool or another chair at the opening of the semicircle.

- 1. Health Coach reviews handout 6.6 Wound Care Decision Tool with participants.**
- 2. Health Coach asks participants to watch the dramatization of a wound dressing change. They are informed that the dramatization will be done with many errors. They are advised to observe and note on paper the errors performed during the wound dressing change. The errors identified will be discussed at the end of the dramatization.**
- 3. Health Coach asks for a volunteer to play the role of the “patient.”**
- 4. Health Coach asks participants to review and study handouts as dramatization is being set up.**

#### Set up for dramatization:

- 5. The Health Coach explains the purpose of the dramatization to the volunteer outside of the classroom and how to play the role of “patient.”**

#### 6. Health Coach prepares the “patient”:

- Draws a wound with a marker on the ankle
- Covers the wound with a gauze dressing and tape in place

#### 7. The “patient” and Health Coach return to the classroom.

#### Dramatization:

*Note: When dramatization starts, participants can stand closer to the procedure.*

#### 8. Health Coach changes the wound dressing making the following errors:

- Does not organize materials prior to starting
- Forgets to wash hands and change gloves
- Forgets to cover stool before placing “patient’s” leg on it
- Rips dressing off “patient” causing pain and drops dirty dressing on the floor
- Leaves the wound open for a long time and contaminates the wound (coughs over the wound, turns back or reaches over the wound when retrieving supplies, writing pen, cell phone)
- Vigorously scrubs the wound with cotton dipped in alcohol and then throws contaminated cotton on the floor
- Fans or blows over the clean wound to dry the alcohol
- Bandages the ankle too tightly with foot pointing down, making it difficult for patient to raise the foot up for walking
- Forgets to check and exercise ankle motion with and without bandage

#### 9. Health Coach asks the participants what errors they observed.

#### 10. Health Coach emphasizes the importance of allowing the patient to move when the dressing is removed and reminding the patient to frequently move throughout the day.

*Note: Movement is **not** allowed for approximately 10 days following a skin graft. Talk with the surgeon and confirm when movement can be started again.*



## Activity 4: Correct Wound Dressing Simulation

### Handouts

- 6.6 Wound Care Decision Tool

### Equipment & Materials

- Flip chart stand & paper
- 4 – 6 colored markers
- 1 handwashing kit (basin, cup, bucket of water, soap and paper towels)
- 1 wound care kit (waste disposable pad, kidney basin, scissors, forceps)
- Consumable materials for wound care (dressings and bandages)
- 1 roll of plastic food wrap, clean
- 1 small container of honey for dry or necrotic wound (optional)
- Boiled banana leaf (optional)
- Boiled potato peel (optional)
- Cotton dress cloth, clean
- 10 gauze compress 10 X 10 cm, clean
- 1 roll of plaster tape (adhesive tape)
- 5g cotton wool, clean
- 1 bottle of alcohol
- 4 water sachets
- 4 pairs of disposable gloves, size 7½
- 4 large polyethylene (plastic) bags to cover the floor and stool or chair
- 4 small polyethylene (plastic) bags for contaminated material
- 2 (10cm) rolls of crepe elastic bandages
- 2 (12cm) rolls of crepe elastic bandages

### Instructions for Teaching the Activity

Room Arrangement: Participants sit in a semicircle with two chairs and either a stool or another chair at the opening of the semicircle.

**1. Health Coach asks the participants for a volunteer to demonstrate good technique when doing the step-by-step dressing change procedures described in handout 6.6.**

**2. Wound dressing change is done correctly on the same “patient” with help and feedback from the group.**

*Note: One participant should read out loud handout 6.6 Wound Care Decision Tool.*

**3. During the dressing procedure, the Health Coach reminds participants of the six basic principles of wound management:**

- Control underlying health conditions and/or diseases
- Protect the wound and surrounding skin from physical or chemical injury
- Keep the wound moist (not too wet and not too dry)
- Keep the wound and surrounding skin clean, remove dead skin and tissues and treat infection when needed
- Control or reduce swelling to decrease pain, improve healing and preserve movement
- Preserve skin and joint movement

**4. Health Coach checks to see if the bandage wrinkles or is tight at the ankle. If there is a problem, Health Coach corrects the bandaging.**

**5. Health Coach asks the patient if the bandaging feels more comfortable and allows for ankle movement needed for walking.**

## Step 6: Care for Wounds

### Activity 5: Practice Bandaging Hands & Fingers and Feet & Toes

#### Handouts

- 6.7 Artzberger Hand and Finger Bandaging
- 6.8 Artzberger Foot and Toe Bandaging

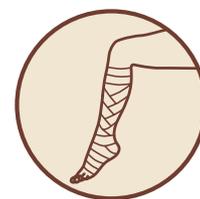
#### Equipment & Materials

- Flip chart stand and paper
- 4 – 6 colored markers
- 1.5–2cm rolls of crepe elastic bandages (2 rolls per pair)
- 10cm rolls of crepe elastic bandages (2 rolls per pair)
- 12cm rolls of crepe elastic bandages (2 rolls per pair)

#### Instructions for Teaching the Activity

Room Arrangement: Initially participants sit in a semicircle with three chairs at the opening of the semicircle, followed by working separately in pairs.

- 1. Health Coach asks for three volunteers. They are seated in front for bandaging demonstration.**
- 2. Health Coach distributes handout *6.8 Artzberger Hand and Finger Bandaging* and *6.9 Artzberger Foot and Toe Bandaging* to participants.**
- 3. Health Coach demonstrates correct bandaging techniques for fingers, upper limb (hand and arm) and lower limb (foot and leg).**
- 4. During demonstration, Health Coach emphasizes:**
  - Factors affecting bandage pressure
    - Bandage width (a narrower bandage has higher pressure)
    - Bandage overlap (more overlap has higher pressure)
    - Type of wrap (spiral and figure eight)
    - Bandage tension (not too tight)
    - Distance around the limb (narrow wrist/ankle areas vs. arm/leg)
  - Bandaging from bottom to top (finger up arm, toes up leg)
  - Checking if full joint movement can be done when bandaged
  - Fixing the end of the bandage with tape vs. tying a knot
- 5. Health Coach divides the group into pairs and distributes three different sizes of bandages (two of each size 0.5–2cm, 10cm, 12cm) to each pair.**
- 6. Participants practice bandaging fingers, upper limb (arm/hand) and lower limb (leg/ankle) of their partner.**
- 7. Health Coach will observe bandaging and correct as needed.**



## Activity 6: Identifying Ulcer Type, Wound Management and Prevention of its Reoccurrence

### Handouts

- 6.9 Types of Ulcers and Characteristics – Part 1 and Part 2
- 6.10 Photos of Ulcers

### Equipment & Materials

- Flip chart stand and paper
- 4 – 6 colored markers

### Instructions for Teaching the Activity

Room Arrangement: Participants sit in a semicircle.

1. Health Coach distributes handouts **6.9 Types of Ulcers and Characteristics – Part 1 and Part 2** and **6.10 Photos of Ulcers**.
2. Health Coach divides the large group into five small groups and assigns each group a specific type of ulcer. (See table below.)
3. The groups are asked to use the handouts to prepare a five-minute presentation that will be given to the larger group.
4. The groups are given 15-20 minutes to develop their presentation and are encouraged to find creative ways to do the presentation that will help the larger group learn to identify their specific types of ulcer, how to address key issues in wound management and how to prevent its reoccurrence.
5. Each group is given five minutes to present. Allow time at the end of each presentation for questions and clarifications.

Type Ulcer	Cause	How to recognize (Key characteristics)	Key issues to address in wound management	Actions to take to prevent reoccurrence
1. Neurotrophic				
2. Buruli				
3. Venous				
4. Arterial				
5. Malignancy				

## Step 6: Care for Wounds

### 6.1 Instructions for Screening Wounds

#### Preparation for wound screen:

Gather together equipment and supplies: IIRF-wound section, pen or pencil, soap, clean water, gloves, plastic trash bag for contaminated material, disposable paper towels. Wash hands with soap and water before and after each screen.

For teaching purposes, assume screen begins after dressing has been removed and wound has been cleaned. However, in the community or health center, it is important to assess wound drainage: quantity, color, odor, etc. as you remove each wound dressing. See handout *6.6 Wound Care Decision Tool*.

<b>Number of wounds</b>	<b>Count number of wounds and record the total number of wounds on IIRF form. Mark wound(s) on body chart.</b>
<b>Type of wound</b>	<b><i>Note: If there are more than three wounds, choose the three most serious wounds and label W1, W2 and W3 on body chart.</i></b>
Crack(s) from dryness	Observe and record on IIRF form: Circle Yes, R and/or L. Mark on body chart.
Crack(s) between fingers, toes and/or base of skin folds	Observe and record on IIRF form: Circle fingers, toes and/or base of skin folds, Yes, R and/or L. Mark on body chart.
Blister(s)	Observe and record on IIRF form: Circle hands, feet, other, Yes, R and/or L. Mark on body chart.
Wound	Observe and record on IIRF form: Yes, R and/or L. Mark on body chart.

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## 6.1 Instructions for Screening Wounds (continued)

Signs of infection	Ask and observe:
Pain: new or increased	Do you have new pain or is the wound pain worse? Record on IIRF form: Circle Wound(s) with new pain or if pain is worse (Wound 1, Wound 2 and/or Wound 3).
Bad odor/smell: present or worse	Do you notice the smell/odor of the wound is bad or worse? Record on IIRF form: Circle Wound(s) if smell/odor is bad or worse (Wound 1, Wound 2 and/or Wound 3).
Localized warmth: present or increased	Does the skin surrounding the wound(s) feel warm or getting warmer? Record on IIRF form: Circle Wound(s) with warmth that is new or worse (Wound 1, Wound 2 and/or Wound 3).
Swelling of skin around wound: present or increased	Is there swelling or increase in swelling of skin surrounding the wound(s)? Record on IIRF form: Circle Wound(s) with swelling that is new or worse (Wound 1, Wound 2 and/or Wound 3).
Sudden increase in wound leakage/drainage	Is there increase of wound drainage/leakage on dressing(s)? Record on IIRF form: Circle Wound(s) with sudden increase in drainage/leakage (Wound 1, Wound 2 and/or Wound 3).

Condition of wound	Ask and observe:
Wound is too wet	Is the outer bandage wet after one day? Record on IIRF form: Circle Wound(s) with outer bandage that is wet after one day (Wound 1, Wound 2 and/or Wound 3).
Wound surface is too dry	Is there pain when dressing is removed or dressing sticks to the wound or wound bleeds when dressing is removed? Record on IIRF form: Circle Wound(s) with pain or sticking when dressing removed (Wound 1, Wound 2 and/or Wound 3).
Wound is worse	Is the wound larger and/or deeper? Record on IIRF form: Circle Wound(s) that are larger and/or deeper (Wound 1, Wound 2 and/or Wound 3).

## Handout 6.2: Individual Impairment Record Form (IIRF) – Wound Section

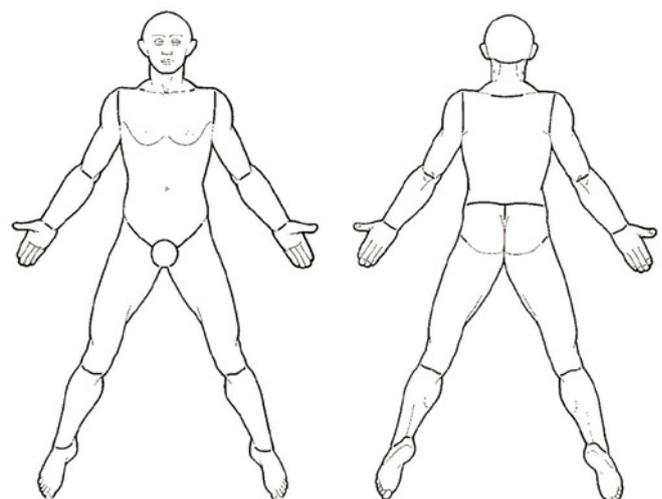
(See handout 6.1 for instructions on how to do screen)

Key: R = Right and L = Left, 1 = Wound 1, 2 = Wound 2, 3 = Wound 3

<b>Number of wounds</b>				
<b>Type of wound</b>				
One or more cracks from dryness	Yes	R	L	
Crack(s) between fingers, toes, and/or base of skin folds	Yes	R	L	
Blister(s) location: hands, feet, other	Yes	R	L	
Wound	Yes	R	L	
<b>Signs of infection</b>				
Pain: new or increased	Yes	1	2	3
Bad odor/smell: present or worse	Yes	1	2	3
Localized warmth: present or increased	Yes	1	2	3
Swelling of skin around wound: present or increased	Yes	1	2	3
Sudden increase in wound leakage/drainage	Yes	1	2	3
<b>Condition of wound</b>				
Wound is too wet (fluid on outer bandage after one day)	Yes	1	2	3
Wound is too dry (pain or dressing sticks or bleeding when dressing removed)	Yes	1	2	3
Wound is worse (larger and/or deeper)	Yes	1	2	3

<b>Key for Recording</b>	
Skin Lesion	
Crack	
Wound	
Scar Location	
Joint with Movement Limitations	
Swelling	
Location of Amputation	

### Body Map



## Handout 6.3: Community Wound Care or Referral

Problems Identified with Wounds on Screen*	Community Care	Contact Supervisor and/or Refer for Clinical Exam, Diagnosis or Other
1. Scars with cracks	<ul style="list-style-type: none"> <li>• Soak and moisturize daily, cover with plastic wrap for 15 minutes.</li> <li>• Massage to free the scar.</li> <li>• Move and stretch the area affected by the scar.</li> <li>• Straighten the scarred area and immobilize until healed.</li> <li>• Protect from sun and injury.</li> </ul>	<p>If no improvements with good community care in <b>two weeks</b>, refer.</p> <p>If deep cracking or further loss of motion occurs, <b>refer as soon as possible</b>.</p>
2. Feet with dryness, callus and cracks	<ul style="list-style-type: none"> <li>• Soak and moisturize daily, cover with plastic wrap for 15 minutes, then gently scrape/rub.</li> <li>• Scrape/rub parallel with line of the crack.</li> <li>• Wear socks and footwear.</li> </ul>	<p>If dryness and cracks do not improve with good moisturizing practices after <b>two weeks</b>, refer.</p>
3. Clawed fingers with dryness, callus and cracks	<ul style="list-style-type: none"> <li>• Soak and moisturize daily, cover with plastic wrap for 15 minutes then gently scrape/rub.</li> <li>• Scrape/rub in parallel with line of the crack.</li> <li>• Straighten finger(s) and immobilize, until healed.</li> </ul>	<p>If dryness and cracks do not improve with good moisturizing and immobilization practices after <b>two weeks</b>, refer.</p>
4. Cracks from wet skin between the fingers, toes or in skin folds	<ul style="list-style-type: none"> <li>• Wash daily with soap and water.</li> <li>• Dry carefully between toes, fingers and in skin folds.</li> <li>• Talk to supervisor about use of antiseptic or antifungal cream.</li> <li>• Follow clinical treatment instructions.</li> </ul>	<p>If not improved within <b>one week</b>, refer.</p>
5. Ingrown toenails	<ul style="list-style-type: none"> <li>• Wash feet daily with soap and water.</li> <li>• If possible, after washing gently, lift nail edge to prevent more ingrowth.</li> <li>• Check that shoe length is not too short.</li> </ul>	<p><b>Refer as soon as possible</b> for clinical exam and excision if needed.</p>
6. Wound(s) to sole of foot 7. Wound to palm of hand(s) and/or finger(s) 8. Wound or injury to other part of body	<ul style="list-style-type: none"> <li>• Clean well with running clean water or saline solution.</li> <li>• Cover to keep clean.</li> <li>• Rest and protect from injury.</li> <li>• Use walking device, adapted footwear and/or tools.</li> <li>• Observe daily. If better, continue. If worse, get help.</li> </ul>	<p>If not improved within <b>one week</b>, refer.</p>

\* Note: Check vision and mobility to see if it is adequate to do self-care.

The Health Coach will explain and demonstrate how to check person's ability to see the skin on the bottom of each foot.

- Health Coach draws a number with a black pen on the sole of the foot over bone at the base of the great toe.
- Health Coach asks the person to view the sole of the foot and tell the number they see.
- If unable to see, daily skin checks, foot and toenail care must be done by a helper and/or with the aid of a mirror.

## Step 6: Care for Wounds

### Handout 6.4: Scenarios for Wound Care Screening and Recording

#### Scenario No. 1: Fisherman

**Complaints:** Itching and pain

**Location of problem:** Right and left leg and foot

**Problem(s):** Dry skin, heel cracks (3), cracks between toes (4)

**Duration:** One month

#### Scenario No. 2: Middle-aged mother

**Complaints:** Too much wound leakage and smell

**Location of problem:** Left, inside ankle above the bone

**Problem(s):** Wet wound with no pain or infection; dressing soaked within a couple of hours of dressing change.

**Duration:** One year

#### Scenario No. 3: Soccer (futbol) player

**Complaints:** Pain with movement and at rest (day and night)

**Location of problem:** Behind right knee

**Problem(s):** Infected puncture wound with increased local warmth, swelling, pain and bad smell

**Duration:** One week

#### Scenario No. 4: Vendor at the market

**Complaints:** Family and others complain of a bad odor

**Location of problem:** Bottom of left foot on the bone under the first toe

**Problem(s):** Infected ulcer on foot with loss of feeling; leakage into footwear and bad odor

**Duration:** Heals and breaks down repeatedly for the last three years

#### Scenario No. 5: Young child of 3

**Complaints:** Crying and screaming with dressing change

**Location of problem:** Chest and left armpit (hollow under the arm)

**Problem(s):** Uninfected burn from scalding water

**Duration:** One week

#### Scenario No. 6: 10-year-old student

**Complaints:** Recent bump which opened up into a wound with undermining edges (lifts away from skin and a cotton swab can be placed under the edge)

**Location of problem:** Inside of right elbow

**Problem(s):** Nodule that has developed into an uninfected ulcer and has gradually increased in size

**Duration:** One month

#### Scenario No. 7: Young mother

**Complaints:** Too painful to use hand in daily activities and is getting worse

**Location of problem:** Palm and web space (between thumb and first finger) of left hand

**Problem(s):** Infected knife cut with increased pain, warmth, swelling and bad odor

**Duration:** Two weeks



## Handout 6.5: Principles and Actions to Improve Wound Healing

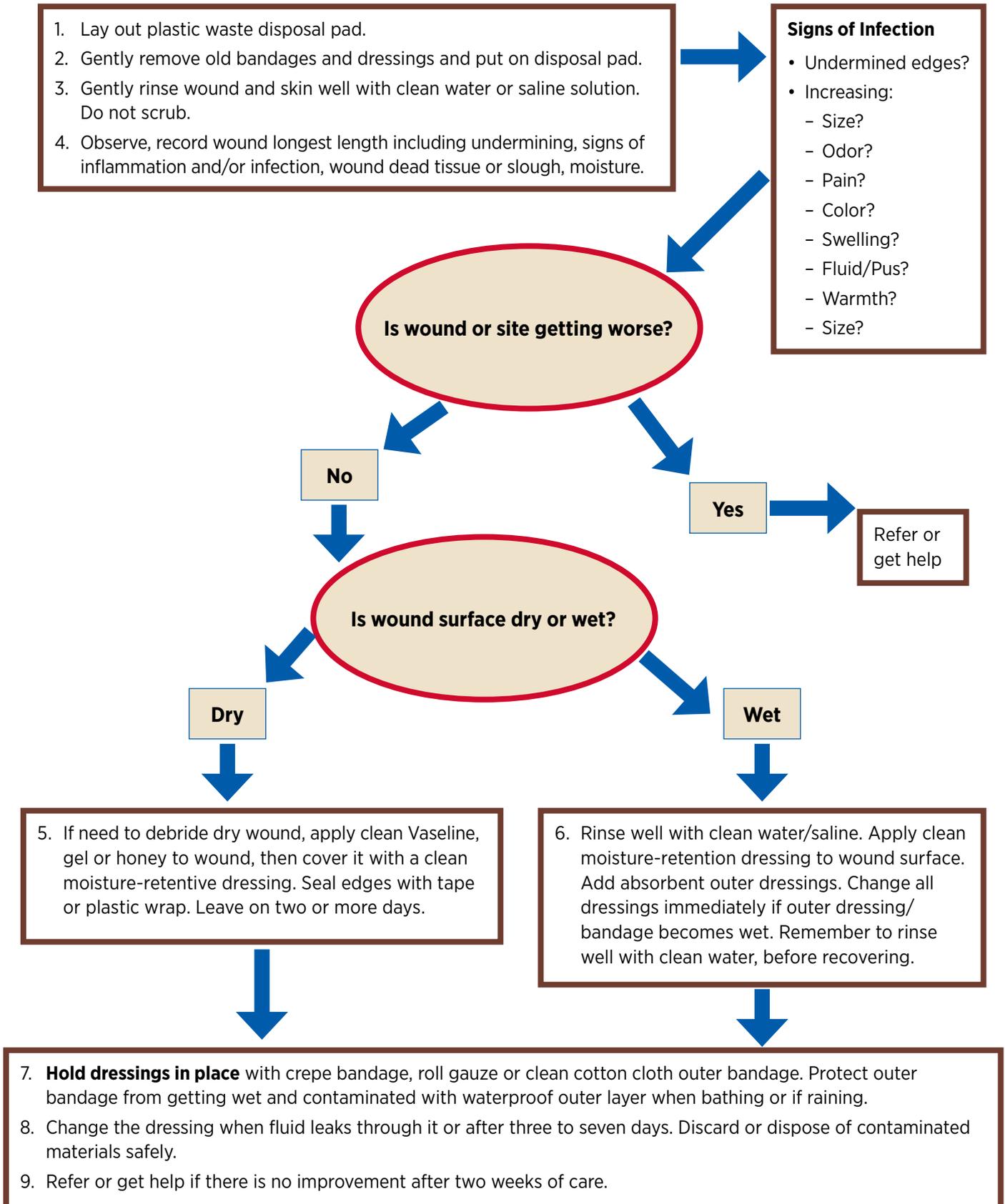
Principles	Actions
1. Control underlying health conditions and/or diseases	<ul style="list-style-type: none"> <li>• Healthy eating, good personal and environmental hygiene. See handouts 3.2 <i>Good Individual and Household Behaviors</i> and 3.3 <i>Preventive Actions for Healthy Skin and Nails</i></li> <li>• Correct use of disease-specific medications; e.g. antibiotics (leprosy, Buruli ulcer, other), insulin (diabetes), antivirals (HIV)</li> <li>• Regular follow-up for chronic (on-going) health conditions (problems)</li> </ul>
2. Protect wound and surrounding skin	<ul style="list-style-type: none"> <li>• Protect from physical (mechanical) injuries:               <ul style="list-style-type: none"> <li>– Removal of wound dressings stuck to the wound</li> <li>– Excessive pressure on the wound during standing, walking, sitting and/or lying</li> <li>– Excessive pressure on the wound from tight bandages</li> <li>– Repeated rubbing from hand tools, footwear, etc.</li> </ul> </li> <li>• Protect from chemical injuries:               <ul style="list-style-type: none"> <li>– Do not put anything on the wound that you would not put in your eye</li> </ul> </li> <li>• Protect from dirt and germs (cover the wound)</li> <li>• Protect wound and surrounding skin from drying and excessive moisture by sealing with waterproof tape or film top dressing*</li> </ul>
3. Keep the wound moist	<ul style="list-style-type: none"> <li>• Keep the wound moist but not too wet and not too dry               <ul style="list-style-type: none"> <li>– Use appropriate type of moisture-retentive dressing**</li> <li>– Adjust frequency of dressing change as needed</li> </ul> </li> </ul>
4. Keep the wound and surrounding skin clean, remove dead skin and tissues and treat infection when needed	<ul style="list-style-type: none"> <li>• Change dressing regularly or as needed:               <ul style="list-style-type: none"> <li>– Gently wash the wound and surrounding skin thoroughly with clean water or saline to remove excess secretions and wound debris (dead skin and tissues)</li> <li>– Gently pat dry the surrounding skin</li> <li>– If wound is infected, seek health worker for antibiotic</li> </ul> </li> </ul>
5. Control swelling	<ul style="list-style-type: none"> <li>• Elevate affected part as needed</li> <li>• Frequent, gentle active movement of the affected part by the patient</li> <li>• Apply light pressure with bandaging starting distally and working upward</li> </ul>
6. Preserve skin and joint movement	<ul style="list-style-type: none"> <li>• Position affected part to prevent contractures</li> <li>• Mobilize skin/scars that are sticking to underlying structures</li> <li>• Move affected part frequently through full range of motion</li> </ul>

\* Examples of waterproof films: tape, adhesive film, unused plastic wrap

\*\* Examples of moisture-retentive dressing: Vaseline or zinc paste around intact skin which seals a moisture-retentive film top dressing

## Step 6: Care for Wounds

### Handout 6.6: Wound Care Decision Tool





## Handout 6.7: Artzberger Hand and Finger Bandaging

1. Use tape and hold bandage end at ulnar (lateral) side of wrist, wrap two times around wrist, spreading the bandage.



2. Come up on radial side (outer side) of thumb starting at base and angling up.



3. Do 360° wrap around thumb at base of nail.



4. Continue overlapping 360° wraps to thumb web, end at lateral (ulnar) side of wrist.



5. Wrap around volar side of wrist and angle bandage up to nail bed, between the second and third fingers and do 360° wraps to finger web space, returning to lateral side of wrist.



6. Continue for each finger and end by wrapping the wrist and as far up as needed.



## Step 6: Care for Wounds

### Handout 6.8: Artzberger Foot and Toe Bandaging

1. Use tape and hold bandage end to outside (lateral) side of foot near little toe, wrap two times around foot, spreading the bandage.



2. Come up on radial side (outer side) of big toe starting at base and angling up and around toe at base of nail.



3. Then wrapping at 360° around big toe returning to medial side of foot.



4. Wrap around bottom of foot coming up at an angle from lateral side of foot to the nail bed of the second toe and wrap 360° around toe, returning to medial side of foot.



5. Wrap around bottom of foot coming up at an angle from lateral side of foot to the nail bed of the third toe and wrap 360° around toe, returning to medial side of foot.



6. Continue until all toes have been wrapped and then continue to wrap up the foot.





## Handout 6.9: Types of Ulcers and Characteristics – Part 1

	<b>Venous</b>	<b>Arterial (Ischemic Ulcer)</b>	<b>Pressure</b>	<b>Neurotrophic Diabetes / Leprosy</b>
<b>Cause</b>	Venous stasis Minor trauma is often the immediate cause	Arteriosclerosis and/or hypertension and/or diabetes  Very rare in people who have never smoked	Constant pressure, due to chronic immobility in elderly, spinal cord injured, disabled or obese	Diminished or absent sensation due to nerve damage  Repetitive mechanical stress causing trauma, which goes unnoticed
<b>Location</b>	Usually inner part of lower leg but can be circumferential from mid-calf to just below the malleoli (ankle bone)  Often involves both legs	Distal legs  Heels  Dorsum of feet and toes	Bony prominences, especially sacrum, buttocks, hips, heels and malleoli (ankle bones)	Under calluses or over pressure points  Leprosy: sole of feet and hands  Diabetes: only the feet
<b>Appearance</b>	Irregular border/edge Shallow ulcer  Moist red granulating base or dark necrotic tissue  Dark pigmentation of skin surrounding the wound  Edema of lower legs  Eczema in the surrounding skin  Serous discharge  Varicose veins	Irregular borders/edges or round “punched out” border  Deep ulcer  Multifocal; greyish granulation tissue  Tendency to become necrotic (dry and black gangrene)  Foot is pale, blue and cold	Stages: • starts superficial with redness and increased local warmth • forms a blister or erosion • progresses deeper and often associated with thick necrotic tissue	Circular border/edge, punched-out appearance  Chronic inflammation of tissues surrounding the ulcer (warm to touch and pink)  Superficial or deep  Frequently associated with callus at the edge  Frequently associated with trauma (nail, rock, nylon thread, burn, etc.)
<b>Pain</b>	Moderate to severe pain  Pain relieved with elevation of leg, which helps venous drainage	Severe pain, worse at night when lying down  Pain increases when legs are up and decreases when legs are down	Pain is variable	Often completely painless, because of the nerve damage
<b>Other Features</b>	Pulse present (can be hidden if important edema)	Chronic ischemia: • Pulse is reduced or absent • Foot is pale, blue and cold, hairless, nail dystrophy • Wasting of calf muscles	Varied with lesions of epidermis and other deeper tissues	Can be infected or not  In diabetes the foot is often hairless, with no perspiration

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## Step 6: Care for Wounds

### Handout 6.9: Types of Ulcers and Characteristics – Part 1 (continued)

	<b>Venous</b>	<b>Arterial (Ischemic Ulcer)</b>	<b>Pressure</b>	<b>Neurotrophic Diabetes / Leprosy</b>
<b>Natural History</b> What happens if not treated	Over 80% of leg ulcers in the USA are venous ulcers Even if it heals, there is a strong tendency to recurrent ulceration	Rarely heals without improved arterial supply	Rarely heals on its own	No rest and continued daily activities prevents healing Remain painless, so often ignored by patient
<b>History</b> Helps with diagnosis	Feet and legs swell during the day but in the morning after sleeping the swelling is less	Pain when legs and feet are up and is less when feet are down Foot/feet feel cold	Person has difficulty changing positions, staying for long periods of time in one place without moving May report difficulty feeling and therefore does not feel the need to change positions	Person states they didn't feel the injury, they don't know how it happened Sometimes associated with foreign body trauma (nail, rock, nylon tread, burn, etc.)
<b>Treatment</b>	Wound care Elevation Compression Deep "belly breathing" with self Manual Edema Mobilization (MEM)	Wound care Arterial surgery Maintain the head higher than legs and feet	Wound care Strict routine to relieve continuous pressure (pillows, towels, foam rolls, positional change etc.)	Wound care Enforced rest and protection of limb
<b>Prevention</b>	Elevate legs Use compression (stockings, bandages) during the day but remove at night Deep "belly breathing" plus MEM Walking Calf and ankle exercises Prevent trauma Raise feet of bed	Treat hypertension, obesity & diabetes Stop smoking Raise head of bed Prevent trauma	Periodic relief of pressure in wheelchair (cushion, push up) and bedridden (position change) patients Protect bony prominences Provide good nutrition	Community health education to identify and treat the disease early Monitor sensation Daily inspection and skin care (hydrate and lubricate) Protect during daily activities Use footwear



## Handout 6.9: Types of Ulcers and Characteristics – Part 2

	<b>Buruli Ulcer</b>	<b>Tropical Ulcer</b>	<b>Malignancy</b>
<b>Cause</b>	<i>M. ulcerans</i> infection, which produces a necrotizing toxin, called mycolactone Person must have visited or lived in an endemic area	Bacterial infection (non-specific) Small skin wounds allow entry of organisms	Squamous cell carcinoma can develop in chronic wounds Other malignant tumors are not associated with ulcers
<b>Location</b>	Lower limbs (60%) Upper limbs (30%) Other sites (10%) such as trunk, face	Most often on lower limb (mostly around ankles) Sometimes on thighs and arms	In a chronic wound, anywhere on the body
<b>Appearance</b>	Ulcer with undermined edge Edema around the ulcer Location of wound is other than lower limb	Regular round/oval shape with clearly defined borders/edge Not significantly undermined edge Edema around the ulcer with dark pigmentation	Often a recently appearing cauliflower-like mass, growing out of the wound surface; may bleed easily
<b>Pain</b>	Little or no pain unless there is secondary infection	Painful in acute phase Less pain in chronic phase	Initially, there is no pain
<b>Other Features</b>	More common in children Osteomyelitis	More common in children, teenagers and women	The underlying ulcer will usually have been present, off and on, for more than 10 years
<b>Natural history</b> What happens if not treated	Can become very large Heals eventually with severe scarring and skin contracture, which may limit movement	Size is limited by immune response May heal if general health is good	Slowly progressive malignancy, spreading to local lymph nodes and then to other parts of the body
<b>History</b> Helps with diagnosis	Lives in or has visited an endemic area Starts as a small lesion (nodule or plaque) but can lead to an extensive ulcer May also start as an edema (swelling of the limbs)	Lives in or has visited tropical rural areas Small traumatic wounds to lower limbs exposed to mud or contaminated water Starts as a pustule; when this ruptures there is foul-smelling, blood-stained pus	History of long-standing chronic ulcer (greater than 10 years)

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## Step 6: Care for Wounds

### Handout 6.9: Types of Ulcers and Characteristics – Part 2 (continued)

	<b>Buruli Ulcer</b>	<b>Tropical Ulcer</b>	<b>Malignancy</b>
<b>Treatment</b>	Antibiotics for BU Wound care Prevent contractures with early movement and good positioning Possible skin grafts after BU-specific treatment	Antibiotics Wound care Prevent contractures with early movement and good positioning Possible skin graft after specific treatment	Wide excision or amputation may be curative in the early stages, but once it has spread, only palliative care is possible
<b>Prevention</b>	Community health education to identify and treat the disease early, when the ulcer is still small	Wear shoes Prevent insect bites and other wounds Clean and dress small wounds Clean mud off the legs	Chronic wounds must be helped to heal and stay healed Surgery and skin grafting may be necessary

#### References:

- *Buruli ulcer: Recognize and act now!* (2011). World Health Organization. (<http://www.who.int/buruli/information/iec/en/index.html>)
- <http://www.ifd.org/protocols/tropical-ulcer>
- *Manual de Condutas para Úlceras Neurotróficas e Traumáticas.* (2002). Ministério da Saúde, Secretaria de Políticas de Saúde. Brasília: Departamento de Atenção Básica, Área Técnica de Dermatologia Sanitária.



Handout 6.10: Photos of Ulcers

<p><b>Venous Ulcer</b></p>				
<p><b>Arterial (Ischemic ulcer)</b></p>				
<p><b>Pressure Ulcer</b></p>				
<p><b>Diabetes or Leprosy (Neurotrophic Ulcer)</b></p>				
<p><b>Buruli Ulcer</b></p>				
<p><b>Tropical Ulcer</b></p>				

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## Step 6: Care for Wounds

### Handout 6.10: Photos of Ulcers (continued)

#### Suspected malignancy in Leprosy and Buruli Ulcer patients



#### Characteristics of malignancies

- Invasive
- Rapid growing
- Bleeding
- Bad smell

#### Squamous cell carcinoma can develop in chronic wounds

- Often a recently appearing cauliflower-like mass, growing out of the wound surface; may bleed easily.
- The underlying ulcer will usually have been present, off and on, for more than 10 years.
- Slow progressive malignancy, spreading to local lymph nodes and then to other parts of the body.
- Wide excision or amputation may be curative in early stages, but once it has spread, only palliative care is possible.
- Chronic wounds must be helped to heal and stay healed. Surgery and skin grafting may be necessary.

Photos: Linda F. Lehman (Venous Insufficiency, Leprosy, BU-Osteomyelitis and Malignant BU), WHO BU <http://www.who.int/buruli/en> (BU nodule and ulcer), CDC/ K. Mae Lennon, [http://www.lhsc.on.ca/Health\\_Professionals/Wound\\_Care/venous.htm](http://www.lhsc.on.ca/Health_Professionals/Wound_Care/venous.htm) (last venous ulcer photo), Tulane Medical School; Clement Benjamin (Tropical Ulcer), <http://www.nadermo.org/index.php/gallery/diseases/diseases-2-10-20,2-1-11> (Tropical Ulcers), Creating the Ideal Microcosm for Rapid Incorporation of Bioengineered Alternative Tissues Using An Advanced Hydrogel Impregnated Gauze Dressing: A Case Series. *The Foot and Ankle Online Journal* 1 (9): 2 (Arterial ulcer), Hubert Vuagnat and the University of Geneva Wound Care Group (arterial and pressure ulcer), Paul Sauderson (Malignant Ulcer in Leprosy), Rie Yotsu Dept of Dermatology National Center for Global Health and Medicine Tokyo