

**AT****6**

Assistive technology for medical and surgical needs in emergencies

A handbook for rapid selection, fitting and teaching how to use
six essential assistive products



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Acknowledgements

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Source materials: WHO's Training in Assistive Products (TAP) online resource; Motivation Charitable Trust's Emergency Response Wheelchair Course.

Introduction

Why are assistive products important in an emergency?

Assistive products maintain or improve a person's functioning and independence and can prevent secondary health complications. Assistive products such as wheelchairs, artificial limbs, walking aids, and toilet chairs are essential health products and need to be available alongside medicines and other medical supplies to ensure comprehensive health care for people during humanitarian crisis. This includes:

- People who are injured and need assistive products temporarily or permanently
- People who have had to leave their homes quickly and have lost their assistive products and/or need assistive products to enable them to move and access essential services.

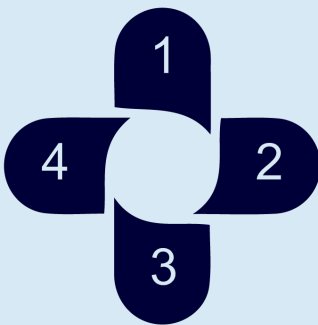
Who is this handbook for?

This handbook is for medical and surgical providers responding to emergencies. It provides guidance to meet the immediate needs of people who have been injured and need walking aids, wheelchairs and/or toilet chairs.

[Training in Assistive Products](#) (TAP) online modules provide more comprehensive training on the provision of a range of assistive products including walking aids, wheelchairs, toilet and shower chairs, and continence products.

What is covered?

For a person to be able to use an assistive product safely and effectively, four service provision steps are needed. The content is organized around these four steps:



- 1. Select:** The most appropriate product for the person
- 2. Fit:** Adjust and fit the product to suit the person
- 3. Use:** Teach the person how to use and take care of their product
- 4. Follow up:** Review the person's needs, maintain and repair

In an emergency, health personnel need to identify and communicate to assistive technology users a plan for follow up.



Important note

This handbook is to guide provision of assistive products in the context of an emergency. For provision of assistive products outside of the context of an emergency, a more comprehensive approach is required.

The following WHO training materials provide more information:

For walking aids, toilet chairs and other simple assistive products
– *Training in Assistive Products (TAP)*



For wheelchairs – Wheelchair Service Training Packages (basic and intermediate)



Assistive products included in this handbook

This handbook covers 6 priority assistive products for mobility and self-care, targeting people who have been injured and are being cared for in a health facility.

Mobility assistive products		
Walking stick	Walking frame	Axilla crutches
		
Elbow crutches	Transport wheelchair	Comfort cushion for wheelchair
		
Self care assistive products		
Toilet chair		

Providing walking aids in an emergency

Who needs a walking aid?



A person might need the support of a walking aid if they:

- Have weak leg muscles
- Have poor balance
- Can't put all their weight on one leg
- Have pain when they stand or walk.




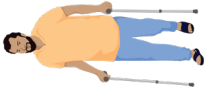

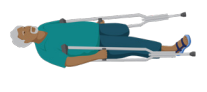

Do not provide a walking aid if the person's weight is greater than the weight rating of the walking aid.



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Step 1: Selecting a walking aid

Use this table to help you to select the best walking aid for a person's needs.

Step 1: Select		Walking stick	Two walking sticks	Elbow crutch	Axilla crutches	Walking frame	
Always select a walking aid with the person, taking into account their health, ability, environment and preference.							
Weight bearing	Can only walk with one leg	✗	✗	✓	✓	With caution	
	Can walk with two legs	✓	✓	Suitable for long term use	Only if no other aids available	✓	
	Can only use one hand	✓	✗	✗	✗	✗	
	Can grip and carry things easily with both hands	✓	✓	✓	✓	✓	
Balance and falls risk	Can use both hands but cannot grip and hold things easily	If a person has difficulties gripping and holding things, you may need to try the different walking aid options available to see which one the person finds easiest to manage.					
	Feels worried about falling over or falls often	✗	With caution	✗	✗	✓	
	Will use the walking aid on stairs	✓	✓	✓	✓	✗	
Environment	Will use the walking aid on sandy or uneven ground	✓	✓	✓	✓	✗	
	Crutches More balance is needed to use elbow crutches than axilla crutches. Elbow crutches are better than axilla crutches for long term use and also if the person is able to walk on both legs.						Walking frame - weight bearing on one leg If the person has a diabetes or risk of foot wounds, hopping with a walking frame should be avoided. Hopping on a foot at risk can cause damage.

Step 2: Fitting a walking aid

General principles for fitting any walking aid



To fit a walking aid, ask the person to hold onto a rail or chair for support.

Check:

- Shoulders relaxed
- Arms at their side, slight bend in the elbow
- Shoes on.

When the person is standing with shoulders relaxed, arms at side, slight bend in the elbow and shoes on:

- The height of the hand grip (for all walking aids) should be level with the person's wrist.




To fit the different types of walking aids, follow these guidance notes.

Watch the videos for a quick overview for each.



WALKING STICK


The walking stick should be used on the person's strongest side.

-  Watch this video to fit a walking stick:



FOREARM CRUTCHES

The forearm cuff should be two finger widths below the elbow.

-  Watch this video to fit elbow crutches:



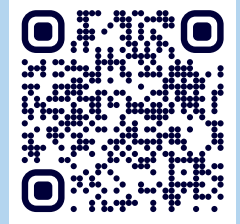


AXILLA CRUTCHES

The top of underarm pad of axilla crutches should be three finger widths below the person's armpit.



Watch this video to fit axilla crutches:



WALKING FRAME

The person's arms should be a comfortable distance apart when they are holding the walking frame grips.



Step 3: Using a walking aid

Use the information in the *Walking Aids User Information Leaflet* (Annex A) to teach the person how to use their walking aid. Give the person a printed copy of the leaflet.

Use the checklist below to make sure you have covered everything.

Walking aid user training checklist		
1	Standing up	<input type="checkbox"/>
2	Sitting down	<input type="checkbox"/>
3	Walking	<input type="checkbox"/>
4	Up stairs (crutches and sticks)	<input type="checkbox"/>
5	Down stairs (crutches and sticks)	<input type="checkbox"/>



Do not use walking frames on stairs (can use walking frame to go up and down one step).

If the person needs assistance



ASSISTING SOMEONE USING A WALKING STICK

- Stand at the person's side and slightly behind
- Hold the person's free arm.

ASSISTING A PERSON DOWN STAIRS

- Stand in front of the person
- Put your hands on their hips.



ASSISTING A PERSON UP STAIRS

- Stand slightly behind the person
- Put your hands on their hips.



ASSISTING A PERSON TO STAND UP

- Stand close to the person's side
- Bend your knees and help the person up by placing one hand behind their shoulders one below their armpit.



Step 4: Follow up

If the person is going to need a walking aid long-term, they will need to be followed up to check their walking aid is still meeting their needs, and to check the condition of the walking aid (and replace if needed).






Check rubber tips regularly and replace them when they are worn.

Providing wheelchairs in an emergency


Who needs a wheelchair?

A person may need a wheelchair if they are unable to walk, or only able to walk short distances. They may:

			Propel themselves
Be assisted to propel			

Supportive seating

A person may benefit from supportive seating because they need extra support to sit upright.

	The extra support may be added to their well fitting wheelchair or a dedicated supportive seat to sit comfortably and upright.
---	---

A wheelchair with supportive seating needs to be provided by staff who have had advanced training. Wheelchairs with supportive seating are not included in TAP.

Type of wheelchair use

People may need a wheelchair for temporary or long term use:

- **Temporary wheelchair users:** People who will be mobile again after recovering from injury or surgery.
- **Long term wheelchair users:** People who have an ongoing health problem and are unable to walk or have limited mobility. This could be as a result of injury or due to an existing health condition. They may use a wheelchair for the whole day, or combined with other mobility aids for short times each day.



A wheelchair should always be provided with a wheelchair cushion.

Step 1: Selecting a wheelchair

Use this table to help you to choose the best wheelchair options for the person's needs.

Step 1: Select Wheelchair options	Amputation	Older person	Neurological condition		Temporary injury
			Spinal cord injury / Spina bifida	Stroke / traumatic brain injury / cerebral palsy	
Comfort cushion	✓	✓	✗	✓ If able to stand to transfer	✓
Pressure relief cushion	✗	✓	✓	✓ If at risk of pressure wound	
Second pressure relief cushion	✗	✓ If difficulty with leaks			✗
Leg raiser / Stump board	✓ If below knee amputation	✗	✗	✗	✓ If needed to help healing
Extra support to sit upright	✗	✓ If difficulty sitting upright		✓	✗

Wheelchair safe and ready checklist

Use this checklist to make sure the wheelchair is safe and ready for the person to use.

Whole wheelchair	
There are no sharp edges	<input type="checkbox"/>
No parts are damaged or scratched	<input type="checkbox"/>
The wheelchair travels in a straight line	<input type="checkbox"/>
Front castor wheels	
Spin freely	<input type="checkbox"/>
Spin without touching the fork	<input type="checkbox"/>
Bolts are tight	<input type="checkbox"/>
Front castor barrels	
Castor fork spins freely	<input type="checkbox"/>
Rear wheels	
Spin freely	<input type="checkbox"/>
Axle bolts are tight	<input type="checkbox"/>
Tyres inflated correctly (with thumb pressure, wheel can be depressed less than 5 mm)	<input type="checkbox"/>
Push rims are secure	<input type="checkbox"/>
Brakes	
Function properly	<input type="checkbox"/>
Footrests	
Footrests are securely attached	<input type="checkbox"/>
Frame	
For a folding wheelchair – the wheelchair folds and unfolds easily	<input type="checkbox"/>
For a wheelchair with fold down backrest – the backrest folds and unfolds easily	<input type="checkbox"/>
Cushions	
The cushion is in the cover correctly	<input type="checkbox"/>
The cushion is sitting on the wheelchair correctly	<input type="checkbox"/>
The cushion cover fabric is tight but not too tight	<input type="checkbox"/>
If the wheelchair has a solid seat: the cushion fully covers the solid seat	<input type="checkbox"/>





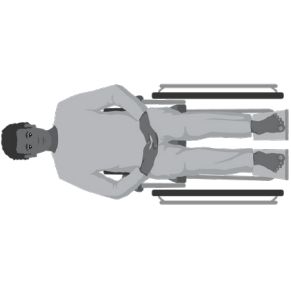


Wheelchair safe and ready checklist demonstration video



Step 2: Fitting a wheelchair

Follow the instructions in the table to fit the wheelchair for the person.

Step 2: Fit Ask person to lift their hips to back of seat Assist if necessary	 Seat width Hands slide smoothly between person and wheelchair	 Seat length Two fingers between chair and back of knees. Check no pressure on calf.	 Footrest height Foot rests flat on footplate. Thigh rests flat on cushion.	 Sitting upright Check from side.	 Sitting upright Check from front.
Backrest adjustment (if available)	Consider high backrest if person: <ul style="list-style-type: none"> → Is very tall → Is likely to get tired quickly → Prefers extra support. 	Consider low backrest if person: <ul style="list-style-type: none"> → Is very short → Is fit and active → Can sit well without extra support. 			
Rear wheel adjustment (if available)	Consider safe rear wheel position if person: <ul style="list-style-type: none"> → Has double amputation → Worries about tipping backwards → Is tall → Experiences uncontrolled movements which cause loss of balance. 	Consider active rear wheel position if person: <ul style="list-style-type: none"> → Is fit and active → Already able to balance on rear wheels (wheelie) → Is short. 			



Do not provide a wheelchair if the person's weight is greater than the weight rating of the wheelchair.



Video fitting demonstration



Step 3: Using a wheelchair

Use the information in the *Emergency Wheelchair User Information Leaflet* (Annex B) to teach the person how to use and take care of their wheelchair. Give the person a printed copy of the Leaflet.

Use the checklist below to make sure you have covered everything.

- If a person has used a wheelchair before, discuss their abilities and knowledge of the topics below and together select any training needs.
- Not all wheelchair users are at risk of pressure wounds. If a person needs a pressure relief cushion (see selection table), they should be taught how to avoid pressure wounds and relieve pressure.

Emergency wheelchair user training checklist		
1	How to handle your wheelchair	<input type="checkbox"/>
2	How to check your cushion	<input type="checkbox"/>
3	How to avoid pressure wounds	<input type="checkbox"/>
4	How to relieve pressure	<input type="checkbox"/>
5	How to propel your wheelchair	<input type="checkbox"/>
6	How to turn your wheelchair	<input type="checkbox"/>
7	How to go up and down slopes	<input type="checkbox"/>
8	How to move on rough ground and stairs with assistance	<input type="checkbox"/>
9	How to transfer to and from your wheelchair	<input type="checkbox"/>
10	How to care for your wheelchair and cushion	<input type="checkbox"/>

Step 4: Emergency wheelchair follow up

If the person is going to use a wheelchair long term, they should be followed up to check their wheelchair is still meeting their needs, and to check the condition of the wheelchair (and replace or repair if needed).

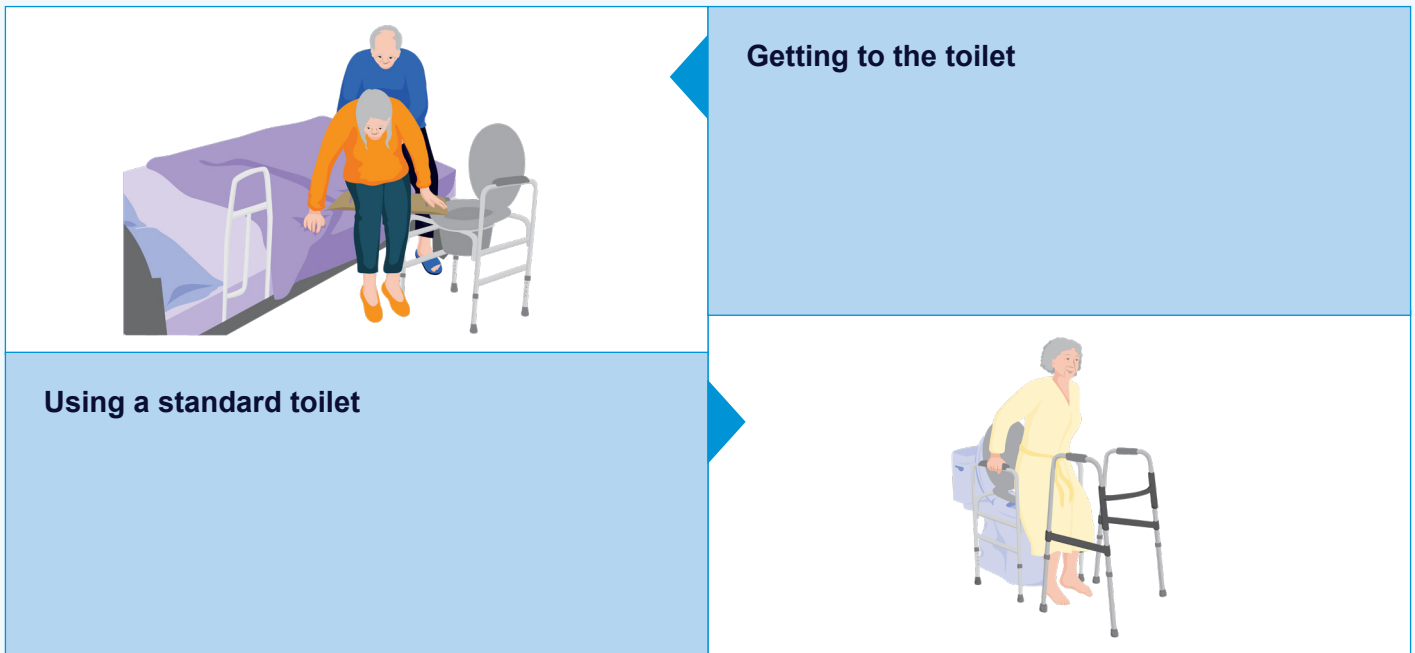
People who are priority for urgent follow up are those who:

- Are at risk of pressure wounds or
- Have difficulty sitting in comfort and upright and require extra support.

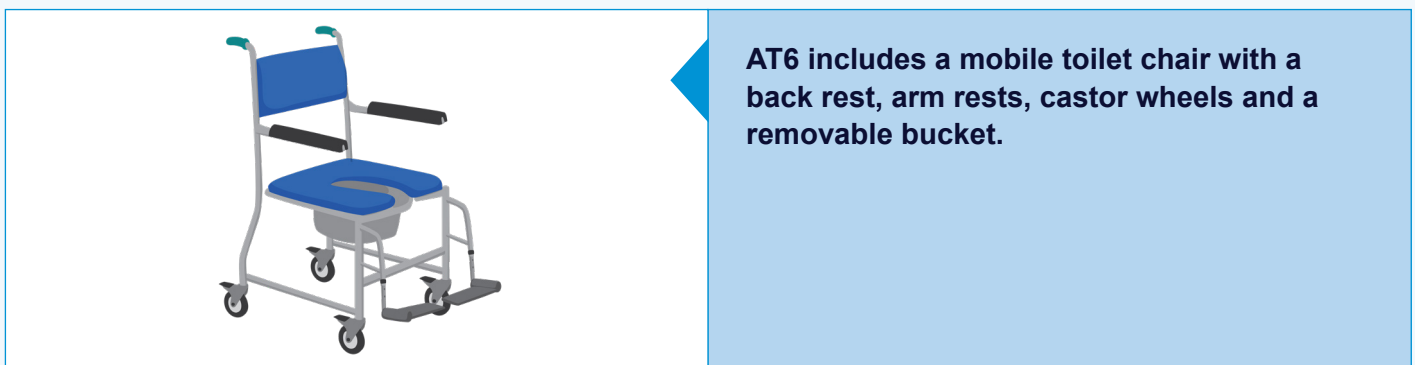
Providing a toilet chair during an emergency

Who needs a toilet chair?

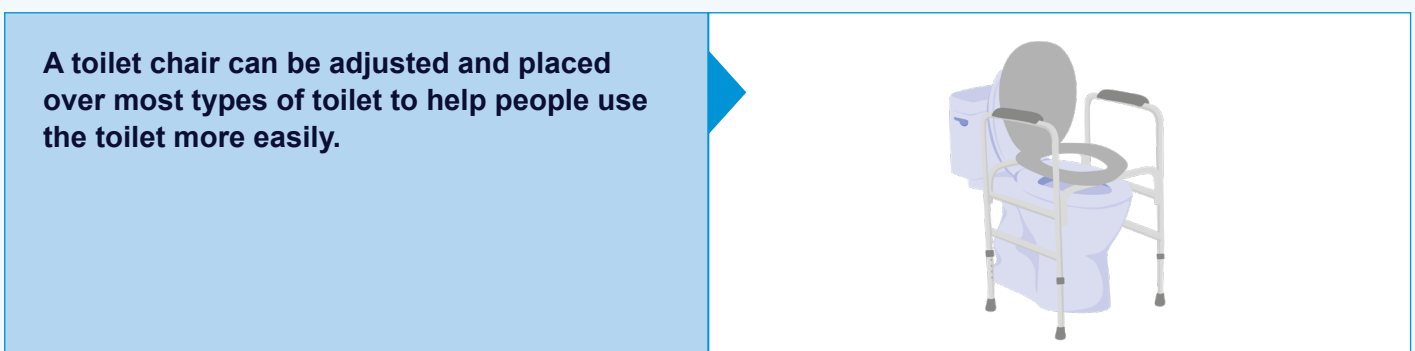
Children and adults may benefit from a toilet chair if they have difficulty:



Step 1: Select toilet chair



Step 2: Fit toilet chair





On a ward, a toilet chair may be used in a private location other than over the toilet, for example a screened area next to the person's bed.

Step 3: Use

<input type="checkbox"/>	All four legs of the chair are in even contact with the floor and brakes are on (if there are brakes).
<input type="checkbox"/>	There is a place to wash hands.
<input type="checkbox"/>	There is good lighting, particularly for use at night to reduce the risk of falls.
<input type="checkbox"/>	There is space to move the toilet chair out of the way when others use the toilet.
<input type="checkbox"/>	If more than one person is using the chair, it is wiped down after each use.



The removable bucket of a toilet chair should be emptied into the toilet and cleaned with soap after each use.

Step 4: Follow up

If the person is going to use a toilet chair long term, they should be followed up where they live to see if it is meeting their needs, and to check the condition of the toilet chair (and replace spare parts if needed).

WALKING AIDS USER INFORMATION LEAFLET



STANDING UP

Place feet under knees.

Move to the edge of the chair/bed and lean forward.

If using two crutches/sticks, hold them on the weaker side.

Push up on the chair/bed with the free hand to stand up.

SITTING DOWN

Stand in front of the chair/bed, with back of legs touching it.

If using two crutches/sticks, hold them on the weaker side.

Reach back with the free hand to hold onto the chair/bed and slowly sit down.



VIDEO DEMONSTRATION



VIDEO DEMONSTRATION



WALKING

Place the walking aid in front of the body.

Step forward with the weaker (or only) leg.

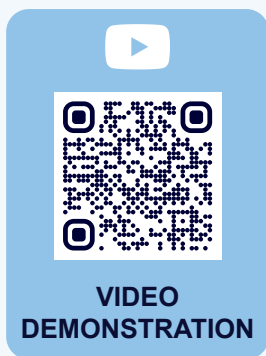
Step forward with the stronger leg.

If using a walking stick, hold it on the stronger side.

UP STAIRS - CRUTCHES AND WALKING STICKS

Step up first with the strong (or only) leg.

Next, step up with the walking aid and the weaker leg together.



VIDEO DEMONSTRATION



DOWN STAIRS - CRUTCHES AND WALKING STICKS

Place the walking aid on to the step and step down with the weak (or only) leg.

Next, step down with the strong leg.



Only use walking frames to go up one step. Do not use walking frames on stairs. Check rubber tips regularly and replace them when they are worn.

EMERGENCY WHEELCHAIR USER INFORMATION LEAFLET

Wheelchair user name:

Emergency wheelchair provider name and contact details:

Important information

This booklet contains important information for your health and mobility. You have been assessed for a wheelchair through an emergency wheelchair service. We recommend you are reassessed in 6-9 months, or sooner if your needs change.

Ask for follow up if you:

- Develop any sign of a pressure wound
- Are uncomfortable
- Do not feel safe when using the wheelchair.

If you move to a different place after receiving your wheelchair, ask if you can be referred to a wheelchair service in your new location.

How to handle your wheelchair



FOLDING THE WHEELCHAIR

- Tip the wheelchair towards you to raise two wheels off the ground
- Lift the seat.

UNFOLDING THE WHEELCHAIR

- Press your hands down on the seat rails.



Do not wrap your fingers around the seat. Your fingers may get trapped!

PREPARING FOR TRANSPORT

- Remove armrests (if removable)
- Remove footrests (if removable)
- Fold (some backrests fold forwards)
- Unlock brakes and remove rear wheels (if removable).



Always check rear wheels have clicked or locked back in position. A loose rear wheel is very dangerous!



Watch this video to learn how to fold and unfold a wheelchair.

How to check your cushion



PUTTING THE CUSHION ON THE SEAT

Make sure the cushion is placed correctly on the seat.

- Check front of cushion is positioned at front of wheelchair seat
- Cushion is the right way up
- Cover is positioned correctly on cushion.

How to avoid pressure wounds

Remember

Any part of your body that comes into contact with the wheelchair can be an area where a pressure wound could develop.

You are at most risk of developing a pressure wound if you:

- Have reduced feeling (sensation) in any area in contact with the wheelchair
- Have had a pressure wound in the past
- Are very thin or frail
- Cannot easily shift your weight.

It is easier to prevent pressure wounds than to treat them.

Pressure wounds can usually be prevented by:

- Using a pressure relief cushion
- Pressure relief techniques
- Checking for pressure wounds
- Regularly changing position.

RELIEVE PRESSURE

There are different ways to relieve pressure when in your wheelchair. Choose a method that works for you.



BENDING FORWARD

- Lean forward until weight comes off your sitting bones
- Hold for 30 seconds.

SIDE TO SIDE LEANING

- Lean to each side until weight comes off each sitting bone.
- Hold for 30 seconds.



CHANGING POSITION

Sitting for too long can cause pressure wounds. Start sitting for one hour and build up slowly. Lying down and changing position to remove pressure from your hips and buttocks can help.



Watch this video to learn more about wheelchair pressure relief techniques.



CHECK FOR PRESSURE WOUNDS

Check daily:

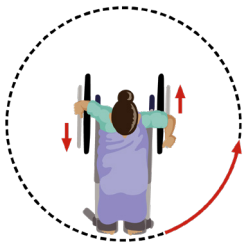
- Before getting up and going to sleep
- If you have difficulty, ask a family member or caregiver to hold the mirror or take a photo so you can check.

How to propel and turn your wheelchair

PUSHING POSITION

There are three ways to make pushing your wheelchair easier:

- Lean your head forward before pushing
- Aim for long smooth pushes
- Let your arms relax and swing back after each push.



TURNING THE WHEELCHAIR

- To turn, push one hand forward and the other hand backward.



Watch this video to learn how to propel and turn a wheelchair.

How to go up and down slopes



PROPELLING UP A SLOPE

- Lean forward to go up slopes.



If you have a double amputation, the castor wheels may lift when going up slopes. An extra weight can be added to the footrests to assist with balance.

PROPELLING DOWN A SLOPE

- Lean backwards to go down slopes
- Let the push rim slide slowly through your hands.



When practicing, ask an assistant to follow closely behind until you feel confident.



Watch this video to learn how to go up and down slopes.

How to move on rough ground with assistance

ASSISTANCE OVER ROUGH GROUND

- Ask your assistant to tilt your wheelchair on its back wheels until it feels balanced
- Your assistant should keep good control of the tilt by holding the push handles firmly
- Keep your head forward while you push the wheels



How to go up and down stairs

It is possible to go up and down stairs with one or two people. If in doubt, ask two people to help. One person stands behind holding push handles and one person stands in front holding the wheelchair frame.

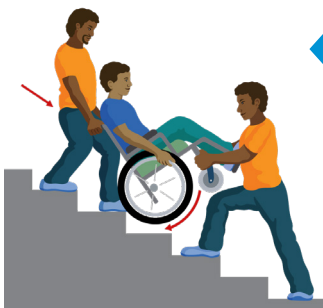
- Your assistant should keep their back straight and bend their knees
- Co-ordinate the lift, such as by counting “1,2,3”.

UP STAIRS

- Go up **backwards**
- Balance on the rear wheels
- Pull the rear wheel back when going up.



Watch this video to learn how to go up and down stairs.



DOWN STAIRS

- Go down **forwards**
- First balance on the rear wheels
- Squeeze the push rim to gently roll the rear wheel down each step.

How to transfer to and from your wheelchair

There are different ways to transfer. Choose a method that works for you.

PREPARING THE WHEELCHAIR

Some armrests and footrests are swing away or removable. Move these out of the way before transferring.





TRANSFERRING WITHOUT ASSISTANCE

- Position your wheelchair close and put on brakes
- Lift to front of cushion
- Position your hands and feet
- Push shoulders down to lift
- Keep head down to help balance.

USING A TRANSFER BOARD

If you have difficulty doing a transfer in one lift, a transfer board can help.

Lean to the side while positioning and removing the transfer board.



STANDING TRANSFER WITH ASSISTANCE

- Check you are able to take weight through your legs
- If you need extra assistance, ask two people for help.



Watch this video to learn more about assisted transfers.

TRANSFERRING TO AND FROM A VEHICLE

There is more than one way to transfer in and out of a vehicle.



PREPARE

- Open the vehicle door fully
- Position the vehicle seat as far back as possible
- Position the wheelchair as close as possible.

SITTING

- Lift bottom onto vehicle seat first
- Then lift legs in to vehicle
- When transferring out of vehicle, lift legs out first.

STANDING WITH ASSISTANCE

- Lower bottom on to vehicle seat
- Lift legs in to vehicle.



Watch the video of Ryan transferring into a vehicle.

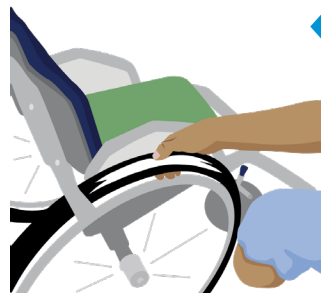
How to care for your wheelchair and cushion

CUSHION

Cushions should be clean and dry to protect skin.

To clean a cushion:

- Wipe clean with soapy water and rinse
- Always dry completely before using
- Remove cover and wash and dry separately.



TYRES

It is easier to propel a wheelchair with firm tyres. Keep tyres firmly pumped up.

- Press the tyres. They should only press a few millimetres.
- When tyre pressure changes, always check the brake position. Adjust if necessary.

NUTS AND BOLTS

Loose bolts allow unwanted movement in parts of the wheelchair. This can be unsafe.

- Check nuts and bolts
- Tighten if loose.



AT6: Assistive technology for trauma needs during an emergency

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