

MODULE 6: HEMIPLEGIC SHOULDER, POSITIONING, MOBILITY AND TRANSFERS



Learning Objectives



Upon completion of this module, nurses will be able to:

- Describe the importance of the nurse's role in the stroke survivor's recovery related to mobility
- Understand the hemiplegic shoulder and how to prevent injury
- Identify key factors for the assessment prior to mobilizing the stroke survivor
- State general principles to follow when assisting during positioning, mobilizing transferring and walking stroke survivors.

6.1 Introduction

Mobilization is the process of getting patient to move in the bed, sit up, stand, and eventually walk (Causabon et al., 2015). The goal of assisting the stroke survivor with mobility is to promote independence of movement in a safe manner, thereby maximizing recovery of function and preventing secondary complications. Recovery starts immediately. As the brain re-establishes connections, every movement influences how it rewires. Therefore, therapy is an ongoing activity and you are a key member of the team.

As per the Canadian Best Practice Recommendations Acute Stroke Unit Care 2022 update, recommendations **8.1** Patients admitted to hospital with an acute stroke or transient ischemic attack (TIA) should be treated on an inpatient stroke unit [Strong recommendation; High quality of evidence] as soon as possible; ideally within 24 hours of hospital arrival [Strong recommendation; Low quality of evidence].

All efforts should be made to admit patients to an acute stroke unit, which is a specialized, geographically defined hospital unit dedicated to the management of patients with stroke [Strong recommendation; High quality of evidence].

The core interdisciplinary stroke team should consist of healthcare professionals with stroke expertise including physicians, nurses, occupational therapists, physiotherapists, speech-language pathologists, social workers, dietitians, patients, and family members [Strong recommendation; High quality of evidence], who are ideally available seven days a week [Strong recommendation; Low quality of evidence].

The patient and family should be included as part of the core team [Strong recommendation; Low quality of evidence].

All professional members of the interdisciplinary stroke team should have specialized training in stroke care and recovery [Strong recommendation; Moderate quality of evidence].

The interdisciplinary stroke team should assess all patients as soon as possible after admission to hospital, and ideally within 48 hours, and formulate a management plan [Strong recommendation; High quality of evidence].

Assessments of impairment, functional activity limitations, role participation restrictions, and environmental factors should be conducted using standardized, valid assessment tools [Strong recommendation; Moderate quality of evidence].

Patients should be assessed for areas such as dysphagia, mood and cognition, mobility, functional assessment, temperature, nutrition, bowel and bladder function, skin breakdown, vision, apraxia, neglect, and perception [Strong recommendation; Moderate quality of evidence]. *Refer to [Section 9 Inpatient Prevention and Management of Complications Following Stroke](#) for additional information.*

Patients should have a formal and individualized assessment to determine the type of ongoing post-acute rehabilitation services they require as soon as their status has stabilized, and within the first 72 hours post-stroke, using a standardized protocol [Strong recommendation; Moderate quality of evidence]. *Refer to [CSBPR Rehabilitation and Recovery Following Stroke module Section 3](#) for additional information.*

Tools should be adapted for use with patients who have communication differences or limitations as required [Strong recommendation; Moderate quality of evidence].

Discharge planning discussions, prevention therapies, and venous thromboembolism prophylaxis should be initiated soon after arrival on the acute stroke unit [Strong recommendation; Moderate quality of evidence]. *Refer to [Section 9 Inpatient Prevention and Management of Complications Following Stroke](#) for additional information.*



It is important to work together as an interprofessional team regarding mobilizing the stroke survivor. Practicing the same techniques throughout the day provides consistency for the stroke survivor, and the necessary repetition for them to gain skill.

6.2 General Principles for Assisting Stroke Survivors

Helping a stroke survivor means helping them to be safe, comfortable and independent. Here are some general principles to follow when assisting the stroke survivor:

- Use a *personalized approach* for each stroke survivor. Each survivor will be affected differently, so take time to observe what they are doing and how you may assist them.
- Use a *problem-solving approach*. There is not always a set routine of care to follow.
- *Prepare the environment* by making sure that the wheelchair is set up properly, that all adaptive equipment is secure and that the patient is wearing appropriate footwear, etc.
- Interact with the stroke survivor and *use simple, clear instructions*. Demonstrating the action may help to enhance the survivor's understanding. Check to see if they have understood. The *Speech Language Pathologist* may have further suggestions to enhance communication.
- *Make it active*. Let the stroke survivor initiate the movement and assist only as needed. The nurse should coordinate their efforts with the survivor's to maximize success. Knowing your survivor's abilities and limitations will help the nurse to know whether verbal cueing, physical cueing or assistance is needed.
- The survivor's brain needs time to think and plan what is about to happen. *Do not rush*. Move slowly and gently, giving time to prepare. This will allow the stroke survivor to participate more successfully. A calm and supportive approach will help to keep muscle tone down and the survivor from fatiguing due to anxiety
- Recognize that the stroke survivor's energy levels can change throughout the day. (Heart and Stroke Foundation, 2015)

6.3 The Hemiplegic Shoulder

Before we review the specifics of positioning, mobility and transfers for stroke survivors, it is important to learn about the hemiplegic shoulder.

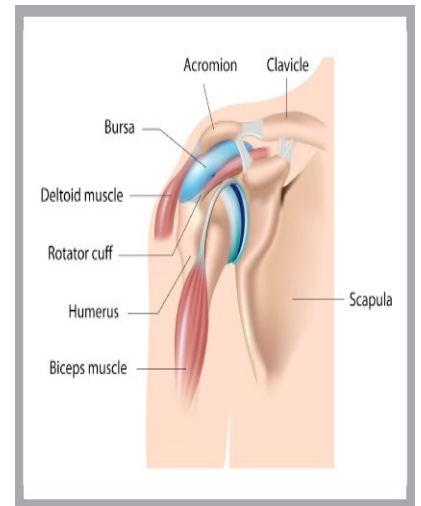
The Normal Shoulder:

- Contributes to functional movement, affecting transfers, balance, activities of daily living (ADLs) and hand function
- Has a large range of motion which contributes to speed, power, coordination and fine motor control
- Is vulnerable to injury, as the sacrifice for this increased range of motion is decreased stability

The shoulder girdle consists of the glenohumeral (GH) joint, scapula and clavicle. The GH joint is a ball and socket joint consisting of the humeral head as the ball and the shallow saucer like surface of the glenoid fossa on the scapula. While most think of the GH joint as providing movement at the shoulder, in fact, only 90 degrees of shoulder movement occurs at that joint. Any shoulder movement beyond 90 degrees requires movement of the scapula and clavicle.

The scapula is attached to the sternum by the clavicle but is otherwise free floating on the trunk. Therefore, the shoulder girdle is supported entirely by soft tissues, primarily muscle. This is why it is so versatile in function yet so vulnerable to injury. When the muscles are paralyzed, as in stroke, there is very little to support the shoulder girdle and the weight of the arm itself can cause injury; the GH joint is at risk of subluxation. Furthermore, important nerves and arteries travel through the axilla which are also very vulnerable to injury.

To avoid injury, ensure the arm is always supported and never raise the arm beyond 90 degrees. Movement beyond that range requires ensuring that the shoulder blade is also assisted to move appropriately. An *Occupational Therapist* or *Physiotherapist* can demonstrate this technique for you.



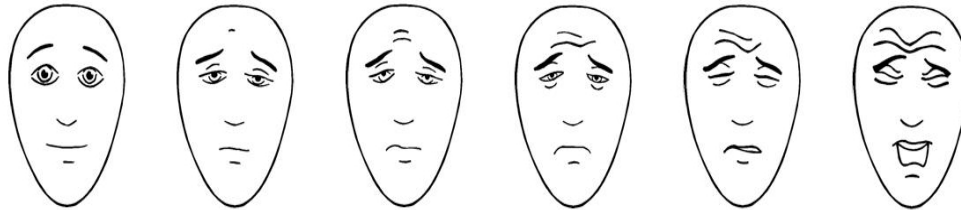
ACTIVITY: try to raise your arm in any direction beyond 90 degrees without moving your clavicle and scapula.

Assessment of Shoulder Pain

Pain can be assessed using

[RNAO Assessment and Management of Pain Clinical Best Practice Guidelines.](#)

The Faces Pain Rating Scale may be particularly useful, especially for persons with aphasia.



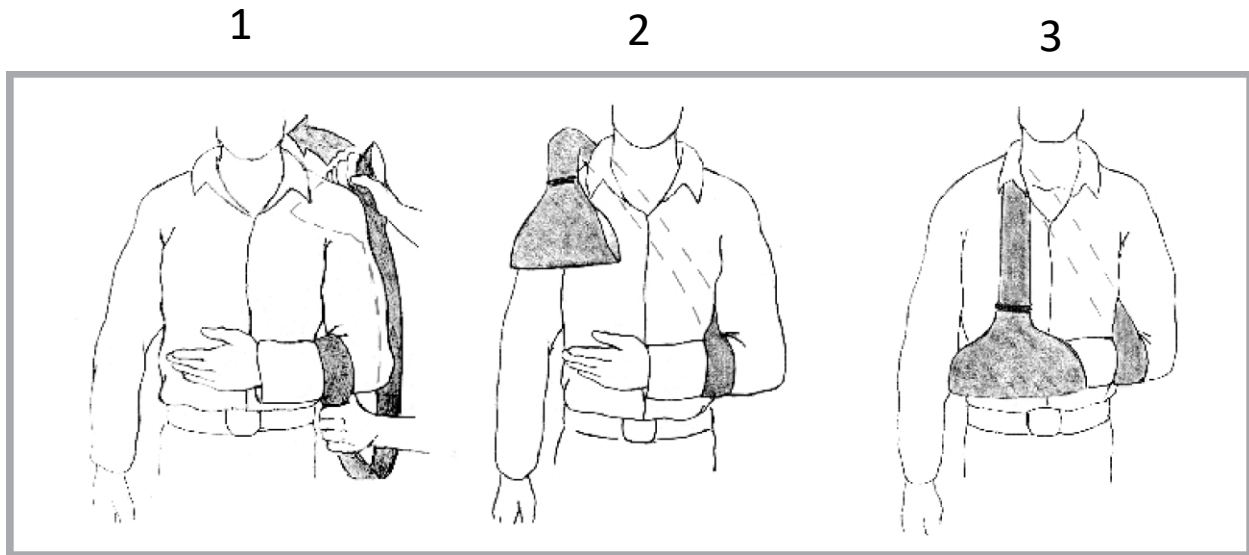
"These faces show how much something can hurt. This face [point to face on far left] shows no pain. The faces show more and more pain [point to each from left to right] up to this one [point to face on far right] - it shows very much pain. Point to the face that shows how much you hurt [right now]." Score the chosen face 0, 2, 4, 6, 8, or 10, counting left to right, so "0" = "no pain" and "10" = "very much pain". Do not use words like "happy" or "sad". This scale is intended to measure how a person feels inside, not how their face looks.

Handling Techniques for the Hemiplegic Arm

- Prepare the patient for the movement. Tell the patient what you are going to do to promote awareness of the arm.
- Involve the patient in protecting the arm by bringing their attention to the arm and activity.
- During bathing and dressing, support the arm under the elbow and wrist and move the joints gently.
- Never lift the arm by the hand; it does not support the shoulder joint and will cause stretching of soft tissues.
- Never pull on the arm or lift through the axilla. You are asking an unprotected joint to support body weight, which will cause injury.
- Avoid quick movements, as it can increase muscle tone and can cause pain; keeping movements slow and gentle can reduce tone and stimulate activity.
- Do not lift the arm past 90 degrees. Passive range of motion exercises should not be done beyond 90° of flexion or abduction unless the scapula is upwardly rotated and the humerus is laterally rotated (an **Occupational Therapist or Physiotherapist** can instruct you in the proper technique). (Teasell et al., 2020, section 5.3iv) (Southwestern Ontario Stroke Network [SWOSN], 2012)

Use Appropriate Aids and Equipment

If the arm is weak or flaccid, a therapist can provide and instruct on the use of a sling for transferring or standing a person.



Slip arm through small loop to just below the elbow (1), slide the sling around the back, and up to the opposite shoulder coming over in front of the chest (2). Slide hand into large loop so hand and wrist are supported (3). Adjust velcro fastening so hand is level with elbow and strap is comfortable at side of neck.

Southwestern Ontario Stroke Network and London Health Sciences Centre, 2012

A HemiArm Educational Resource has been developed to assist healthcare providers with management of the hemiplegic shoulder. The resource contains PowerPoint and photographs of proper positioning techniques for patients with a hemiplegic arm. You can view it at [Popular Resources - SW Stroke Network - www.swostroke.ca](http://www.swostroke.ca)

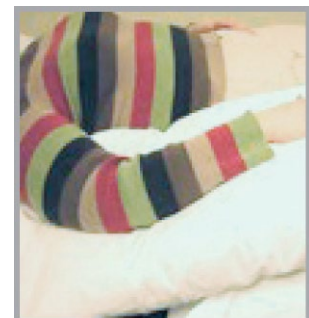
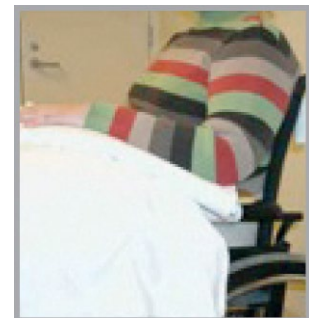
6.4 Positioning the Stroke Survivor

Positioning of the stroke survivor is important to prevent many secondary problems and maximize recovery. The goals of positioning are to:

- Support the affected limbs
- Prevent and manage pain
- Support muscles and prevent abnormal tone patterns
- Maintain skin integrity
- Increase awareness of the affected side
- Promote body symmetry and alignment
- Provide comfort
- Prevent soft tissue damage
- Reduce swelling and/or edema
- Prevent joint and muscle stiffness and maintain flexibility

Positioning the Hemiplegic Arm

- When the person is sitting, support the arm on a lap tray, arm trough, pillow, or table.
- Proper seating assists with achieving good trunk alignment and position of the shoulder and arm. This helps to maintain muscle length, limit changes in tone, and reduce contractures in the shoulder and arm.
- Elevate the hand to reduce edema. This can be achieved in supine or sitting.
- Ensure that there is padding under the elbow and that the hand is resting in a neutral position.
- Try to keep the antecubital fossa facing up.



Images from Northeastern Ontario
Stroke Network, 2010

The shoulder girdle is a complex system but being aware of potential complications and utilizing good positioning and careful handling techniques, can minimize problems too often seen with the hemiplegic shoulder.

Positioning the Stroke Survivor in Bed

Lying on their back:

Remember, when you position the stroke survivor, key principles are to support limbs, maintain good alignment, and provide comfort.

- The head should be aligned in neutral position, not tipped or turned but in line with the body. You can use a small towel under the pillow to support good alignment of the head.
- No less than 30 degrees elevation of the head of the bed.
- The affected arm should be positioned a comfortable distance away from the body, with the elbow straight and the elbow crease facing up.
- The affected hand should be elevated to reduce and/or prevent swelling.
- Separate the fingers.
- The affected leg should be level at the pelvis with the unaffected leg. You can level the hips with a towel or flat pillow under the affected hip.
- Ensure prolonged pressure on the heels is avoided.



Caution: Ensure that pillows or towels are not cutting off circulation or increasing pressure on the skin. Ensure that there are no wrinkles in the sheets, in order to prevent skin breakdown.

Image from Southwestern Ontario Stroke Network and London Health Sciences Centre, 2012

Lying on their affected side:

- The head should be aligned in neutral position.
- Do not have the stroke survivor lie directly on top of the affected shoulder. Draw the shoulder complex *slightly* forward by *gently* bringing the shoulder blade forward. Support the arm on a pillow with the elbow bent and resting away from the body or with the arm out straight (see adjacent photo).
- For the legs, bend both knees and position the bottom (affected) leg slightly forward, with a pillow between the knees to provide good alignment and prevent pressure points on bony areas.
- Support the trunk with a pillow lengthwise behind the back.



Image from Southwestern Ontario Stroke Network and London Health Sciences Centre, 2012

Lying on their unaffected side:

“Positioning the stroke survivor on the unaffected side is the same as positioning that person on the affected side. People with a lot of impairment on the affected side may feel trapped lying on their side and want to roll onto their back.” (Heart and Stroke Foundation, Tackling Action for Optimal Community and Long-Term Stroke Care, 2015, 6.2).

- The head should be aligned in neutral position.
- Do not lay the patient directly on the shoulder. Place the bottom (unaffected) shoulder in a slightly forward position by drawing the scapula towards you.
- Support the affected arm on 2 pillows to keep the arm from dropping down and pulling on the shoulder. Elevate the hand as needed with fingers spread.
- Position the top (affected leg) slightly forward and in a bent position while resting on a pillow for support. Support the trunk with a pillow tucked in lengthwise behind the back.



Image from Southwestern Ontario Stroke Network and London Health Sciences Centre, 2012

Once you have positioned the stroke survivor, it is important to check on them regularly. It is also important to reposition every 2 hours, or more frequently if needed, if they are not able to move themselves. This will reduce the risk of pressure sores.

Positioning the Stroke Survivor Sitting in a Wheelchair or Chair

When the survivor is sitting, the hips should be back and centred in the chair. Hips often slide forward in a chair creating a slumped position.

* Remember the 90 degree rule. The hips, knees, and ankles should be flexed to 90 degrees. This position will help the survivor sit comfortably and safely.

- Regularly remind or help the survivor to move his/her hips back in the chair.



- If you are having trouble seating the person in the wheelchair in the right position, let the team know. The chair could be part of the problem.
- Support the affected arm on a lap tray.
- Adjust the foot rests to make sure the affected foot is supported
- Sliding forward in a chair can:
 - Affect postural tone and control
 - Cause problems with transfers and control
 - Increase high tone (spasticity), pain, and the risk of skin breakdown



Image from Southwestern Ontario Stroke Network and London Health Sciences Centre, 2012

6.5 Mobilizing the Stroke Survivor



Mobilizing includes moving in bed, sitting up, transferring, participating in ADL, standing and walking. Proper mobilization is a key component of best practice stroke care. Stroke survivors should be assisted to move as early and as frequently as possible.

If bed rest is ordered, ensure this is reassessed after 24 hours. Once bed rest is discontinued, patients must be mobilized.

It is the nurse's responsibility to initiate mobilization of the acute stroke patient.

Don't wait for the *Physiotherapist* or *Occupational Therapist* to begin mobilizing the survivor into a dangle position or a transfer to the bedside chair.

It is important to remember, however, that two staff are required to initially mobilize the stroke patient. An RN or RPN should be present during this first transfer.

Within 48 hours, the *Physiotherapist* or *Occupational Therapist* should assess the stroke survivor's ability to mobilize, and will recommend the type of transfer to be used by all staff along with the amount of assistance required.

Throughout the patient's inpatient stay, consult with other members of the team as available if you have questions or concerns about the stroke survivor's mobility. Nurses should actively communicate with the *Physiotherapist* and/or *Occupational Therapist* about transfers to share concerns and be provided with updated techniques as the patient recovers. Therapists can also demonstrate the transfer to you, if you wish.

When mobilizing the stroke survivor, always keep in mind:

- Preparation of the environment
- Communication in clear and simple sentences
- Safety and comfort
- Encouragement or assistance is aimed at enhancing normal movement
- Promotion of independence

Mobility is important for:

- Preventing secondary complications of DVT
- Skin integrity
- Maintaining or improving function
- Improving lung function
- Maintaining bowel and bladder function
- Preventing bone loss
- Preventing contractures
- Decreasing pain
- Improving mood
- Reducing edema
- Promoting neuroplasticity and stimulation (which promote recovery)

Survivors may not be able to learn to use the affected side normally due to spasticity or difficulty with motor control. The assistance you provide is specific to each survivor, based on their needs and abilities.

Bed Mobility

Moving and repositioning the stroke survivor in their bed or chair is essential for:

- Good skin care
- Assisting with awareness of the body
- Maintaining good alignment of the body
- Early mobilization
- Reducing of swelling and edema

Rolling to the Affected Side

When rolling to the affected side, ensure that the affected arm is slightly forward to prevent rolling onto the shoulder.

- Stand on the weak side and remove side rail.
- Tell stroke survivor to bend their stronger leg and use it to help roll.
- To roll, assist the stroke survivor by supporting the back of the shoulder and hip as needed. Encourage them to roll themselves as much as possible by turning their head, reaching over with the *unaffected arm* and pushing through the foot of the bent leg.

Rolling to the Unaffected Side

- Ask the stroke survivor to support their arm and bring it across their body. Ensure that the affected arm is supported at all times.
- Remove side rail and stand on unaffected side. The unaffected leg remains straight.
- Help the patient bend the affected leg.
- Assist the stroke survivor to roll by helping at the back of the shoulder and hip as needed. Encourage them to roll themselves as much as possible by turning their head, pushing with the leg, and drawing their affected arm across their body.



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Repositioning the Stroke Survivor in Bed

- Remove pillows, lower bed rails, adjust the height of bed, and lower the head of the bed.
- Ensure the bed brakes are applied.
- Ask the patient to bend the unaffected leg and assist them to bend the affected leg.
- Place both patient arms on their chest, supporting the affected arm with the unaffected arm.
- The stroke survivor can tuck their chin and may be able to help by pushing through their heels. Encourage the stroke survivor to help, if able.
- Remember that a draw sheet or slider sheet can help.
- You should not be lifting. Shift your weight toward the direction you are moving with your feet apart, your back straight, and your knees bent. Count 1-2-3 GO with your partner.
- Use a mechanical lift if the stroke survivor cannot assist with the repositioning.

Sitting up from Side Lying

- Depending on the patient's ability, a second nurse or PSW may be needed to assist with either the legs or the trunk.
- Lower the bed to ensure the stroke survivor's feet will touch the floor to provide them with stability and assist with sitting balance once up.
- From side lying, bend the hips and knees, and then let the legs come over the edge of the bed, drawing the knees as far up to the chest as possible. Assist by placing one hand on the trunk just under the shoulder and ask the stroke survivor to lift their head and push up with their arms. You can assist by applying a bit of pressure to the top of the pelvis to help lever them up.
- The head of bed can be raised to get a head start.
- Don't forget to use good body mechanics, lift with your legs and keep your core muscles engaged.
- Assess their ability to sit unsupported without leaning or falling, as this will dictate whether you can proceed with a 1 or 2 person transfer or will need a mechanical lift.



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Moving from Sitting to Standing

- Ask or assist the stroke survivor to scoot their bottom forward so they are on the edge of the seat.
- Her or his feet should be flat on floor with toes under knees.
- Ensure the survivor's feet are positioned shoulder width apart.
- Apply the transfer belt snugly.
- Support a flaccid arm with a hemi-sling.
- Always count together or communicate in some way so that you will both start moving at the same time.
- Cue the stroke survivor to bring their shoulders forward over knees and sit up tall: "Nose over your knees and stand up".
- As much as possible, the weight should be distributed evenly over both feet.
- You provide supervision/cueing and minimal guidance or assistance using the transfer belt as required to complete the stand.



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6.6 Transferring the Stroke Survivor

Transfers are important to start early mobilization of the stroke survivor out of bed and into a chair, onto a commode or onto the toilet. How you transfer the stroke survivor depends on a few key points.

What to Consider Before Mobilizing

- Is the stroke survivor able to move him or herself in the bed, i.e. roll to side or shift hips?
- Is the stroke survivor able to maintain sitting independently or is the person constantly falling to the side or backwards?
- Is she or he able to stand?
- Is the survivor able to understand and follow directions?
- Is he or she aware of the affected side of the body and the environment on the affected side? For example does the stroke survivor;
 - turn their head to both sides
 - look towards a speaker standing on the affected side
 - have awareness of the affected arm (e.g.: is the patient supporting their arm or is it caught behind or underneath them?)
- What is the survivor's fatigue level?

Mechanical Lift Transfer

Consider using a mechanical lift transfer if the stroke survivor:

- Is unable to maintain sitting without moderate to maximal support
- Has significant dizziness or poor sitting balance
- Cannot follow directions to assist with a safe transfer
- Does not move well in bed
- Is unable to take weight on the legs

Two-Person Transfer

Consider using a two-person transfer if the stroke survivor:

- Is able to sit with minimal support
- Has been up to a chair already
- Is ambulatory with the therapists
- Is able to follow instructions to participate in the transfer but needs physical help
- Is able to move themselves in bed i.e. roll, bridge which show sufficient recovery to assist in a transfer

The stroke survivor will require two people to assist if one person is needed to assist the survivor to a stand position using a transfer belt while a second person is required to assist with turning the hips to the chair, preventing the trunk from falling back and guiding the survivor into the chair safely.



Right Hemiplegia Two-Person Transfer

Transfer to the Unaffected Side

- Put the stroke survivor's shoulder sling on if the survivor is unable to safely use the arm to assist in the transfer.
- Ensure wheelchair is positioned at a slight angle to the bed so that the corner of the chair touches the bed on the survivor's unaffected side.
- Ensure the wheelchair's brakes are on and the arm rest and foot rests are removed (if applicable).
- Ensure the stroke survivor has proper footwear.
- Ensure the stroke survivor is sitting with both feet flat on the floor and the balls of his/her feet are under his/her knees; turn the stroke survivor's heels in the direction you want to go.

- Put transfer belt on snugly; ensure it is on snug so that it does not slide up.
- Ask the stroke survivor to sit up tall and bring their nose forward over their knees.
- Ask the stroke survivor to push up from the bed and you assist as needed to stand and guide the turn to transfer.
- A second person behind can guide the hips to the chair and make sure they don't lean or fall backward.
- The stroke survivor can then wiggle hips back into the chair. He or she may need assistance to make sure the affected hip is positioned correctly.

Transfer to the Weak (Affected) Side (more difficult)

A stroke survivor who transfers with the assistance of two people will find moving to the weak side very difficult, so transferring to the unaffected side is preferred to make the transfer easier and safer. However, in cases like transferring on or off the toilet in a small washroom, it cannot be avoided and it is important for their recovery to learn to transfer in both directions.

- Ensure that the stroke survivor is strong enough and stable enough to perform a transfer to the weak side (i.e., sufficient trunk and leg strength, sufficient balance, sufficient awareness of the environment and body on the affected side).
- Be prepared to offer more assistance to initiate the turn and the descent to a sitting position.
- The 'sit-to-stand' component is the same as other transfer.

One-Person Transfer

Consider using a one-person transfer if the stroke survivor:

- Is able to move themselves in bed and sit themselves up on the side of the bed
- Is able to stand with minimal assist
- Is able to follow instructions to transfer safely

Follow these guidelines:

- Once the patient is seated at the side of the bed, apply the transfer belt.
- Ask the stroke survivor to sit up tall and bring their nose over their knees.
- As in the other transfers, the balls of the feet must be under the knees, feet flat on floor and ready to accept weight.
- Their hand(s) start out placed on the bed to assist by pushing off the bed THEN reaching toward the arm rest of the chair.
- If the survivor has sufficient energy: support the patient to stand and step around until s/he is standing in front of the chair and can feel the chair with the back of his/her strong leg. Support the patient as s/he leans forward, places the unaffected hand on the arm rest of the chair and then sits down. The survivor can wiggle and shift hips back into the chair.
- You may need to help *moderately* or *minimally* depending on their ability; be in front of them and be ready to offer moderate help as needed.
- If the patient performs poorly and *moderate* help will not be sufficient to safely complete the transfer, sit the stroke survivor back down and get help from a colleague to perform a two-person transfer.

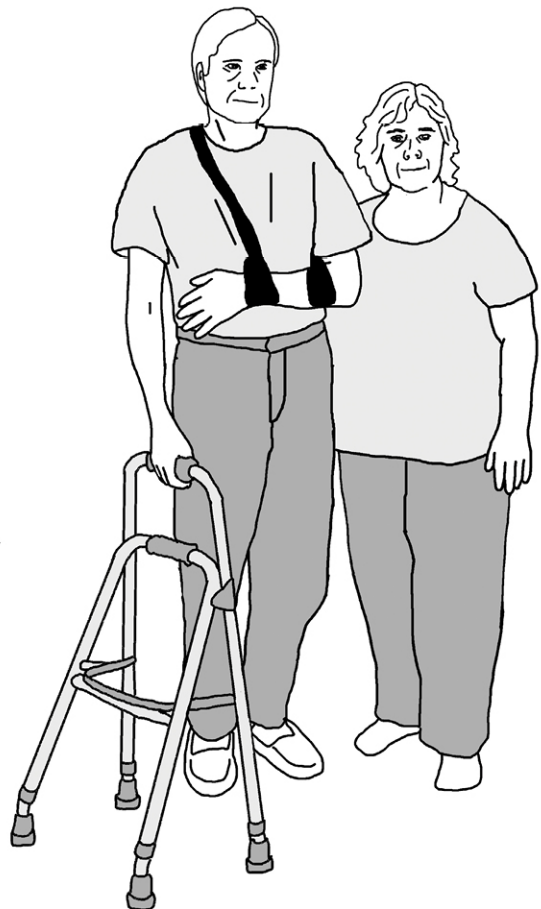
Walking with Assistance

Before walking the stroke survivor, check if the stroke survivor is:

- Able to follow instructions
- Moving well in bed
- Able to sit up and transfer with minimal assist
- Able to take weight on the affected leg
- Clearing the floor with their affected foot
- Already walking with therapists

Follow these guidelines:

- Stand on the affected side.
- Use a transfer belt for support as needed (do not hold onto the affected arm).
- Have the appropriate walking aid ready (consult with therapists if not known).
- Ensure the survivor is wearing good, supportive footwear with a good tread (sloppy slippers provide no stability and can cause falls).
- Use a sling if necessary to support the hemiplegic arm.
- If a foot drop splint is used, ensure it is worn.
- Before walking, ensure balance is stable while standing with weight distributed over both feet, not leaning to one side.
- Ensure the stroke survivor is standing with the hip, knee, and ankle inline in order to bear weight and balance effectively.
- Check if the foot clears the floor during each step and is flat on the floor when standing and not rolling over.
- Encourage attention to safety when walking in room or hallway. Provide any needed verbal cueing for safety (to slow down, be careful of foot placement, keep head up, not to place the walking aid too far ahead etc.).



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