Every healthcare organization has a **minimum manual lift policy** to reduce manual lifting. These policies differ between organizations. Minimum manual lift policies are designed to ensure a safe working environment. They reduce the risk of injury to you and your patient. You need to be familiar with your organization’s policy. You also need to know about available mechanical lifts and assistive devices, such as transfer discs and transfer poles.

The techniques for positioning, transfer, and mobility of stroke survivors described here follow stroke best practice. If you are unsure of the survivor’s ability to transfer, consult members of the interprofessional team such as the physiotherapist, occupational therapist, or the mobility expert.

## Moving after a stroke

We move all the time – in bed, rolling, sitting up, standing, and walking. Stroke can affect a survivor’s mobility, depending on several factors.

### Fatigue

Healing the brain and relearning the tasks of daily living takes a great deal of energy. Stroke survivors often feel very tired, especially during their initial recovery. Even simple tasks may be exhausting. Fatigue can produce frustration, sadness, and anger.

### Loss of sensation

Sensation means being able to:
- Feel
- Be aware of touch and temperature
- Know where the body is in space

A stroke survivor may have less or no sensation in the affected part of the body after the stroke. For example, a survivor may not realize a shoe is too tight, or an arm is too close to a candle.

### Loss of motor function

A stroke survivor can lose the ability to move body parts (*loss of motor function*). The loss usually occurs on the side of the body opposite the side of the stroke. For example, a left brain stroke can affect motor function on the right side of the body. Brain stem stroke, however, can affect motor function on both sides of the body.
Muscle tone
Muscle tone is the slight tension always present in normal muscle, even when the muscle is at rest. Normal muscle tone counteracts the downward pull of gravity. Stroke can alter muscle tone, causing high tone (spasticity) or low tone (flaccidity). Changes in muscle tone can cause mobility problems.

- **Flaccidity**: A limb with low tone appears heavy and limp. Handle the affected limb carefully. This can prevent injury and pain.
- **Spasticity**: A limb with high tone may appear stiff or tense. Careful and gentle handling and positioning can help prevent spasticity from worsening. Increased spasticity can cause muscle contractures (shortening). Constant high tone will reduce the range of motion in a joint.

Balance
To keep your balance, you need motor control and sensation. The body adjusts to make up for changes in position and movement. This helps us maintain balance. Problems with sensation or motor control after stroke can impair balance, increasing the risk of falls.

Posture
When you stand, your shoulders, hips, and feet are parallel, and your head is upright in the middle. Stroke may cause the survivor to put more weight on the unaffected side. The affected shoulder (shoulder girdle) and hip (pelvic girdle) may rotate backward.

Perception
Changes in perception caused by stroke may affect mobility. These changes include:

- Visual and auditory neglect (less awareness of the environment on the side of the body affected by stroke)
- Body neglect (less awareness of the body on the side affected by stroke)
- Apraxia (difficulty making purposeful movements, even though the survivor has the ability and understanding to perform the task)
- Impaired depth and distance perception (such as double vision, partial loss of vision in one or both eyes, and visual field loss)

By using the right techniques, you can prevent pain or injury to the survivor, yourself, or another health care provider helping you.
Assisting with mobility

Helping a stroke survivor means helping the survivor be safe, comfortable, and independent. It is also critical that you make the most of the quality of movement. This means assisting and encouraging the survivor’s body to work as normally as possible. Here are some things to keep in mind when you assist stroke survivors:

**Know the plan**, techniques, and strategies the team has developed for the survivors in your care.

**Balance rest and activity** to avoid frustration and prevent injury. Do not overtire the survivor or ask a tired survivor to do too much.

**Respect differences** between people and adjust to the individual.

**Think things through**. Ask yourself:
- Does a movement look normal?
- If not, why not?
- How can you help?

**Do not rush**. Staying calm lets the survivor participate better.
- Move slowly and gently
- Give the survivor time to think

**Explain what you are doing**. Make sure the survivor understands.
- Use simple and concise instructions
- Demonstrate what you mean, if needed

**Encourage the survivor** to participate as much as they can. Provide only the assistance the survivor needs.

**Match your efforts** with the survivor’s.
- Know the survivor’s abilities and limits
- Use verbal coaching or guidance when needed

**Use good body mechanics**:
- Ask for help if you need it
- Coordinate your efforts when working with another care provider
- *Never pull* on the affected arm or under the shoulders. Pulling can cause the survivor a lot of pain and harm the shoulder joint

**Managing the affected shoulder**

The shoulder joint is a ball-and-socket joint that can move in many directions. Other joints have strong ligaments to hold the joint in position. However, only muscles support the shoulder joint. Muscles affected by stroke may no longer hold the joint in alignment.

The affected shoulder can be injured more easily than the unaffected shoulder. If you have any concerns, talk to members of the team about the right techniques and strategies. A physiotherapist or occupational therapist can teach you safe exercises and ways to position and move the affected shoulder.

*Never perform exercises on an affected shoulder, unless specifically prescribed by the physiotherapist. Improper movement may lead to further tissue damage and loss of function.*
The low-tone shoulder

The effects of a stroke can reduce the strength and tone of the muscles supporting the shoulder joint. As a result, gravity can drag the head of the humerus down, overstretches the weakened muscles. This may cause the shoulder to move out of alignment. It may even cause a partial dislocation (subluxation), of the shoulder. A subluxed shoulder has a noticeable gap between the ball and socket of the joint.

Subluxation allows the muscles and ligaments of the shoulder to stretch further. Excessive muscle stretching may cause a constant dull pain. Survivors often describe this as toothache-type pain.

What you can do to help

Learn the techniques and strategies in the care plan of each stroke survivor. These techniques can help prevent injury and further loss of function in the low-tone shoulder. Members of the team can show you the correct way to move or position a survivor’s arm.

Watch the shoulder closely. Always handle it carefully. This can prevent painful stretching of muscles and ligaments.

Support the affected arm and treat it gently:
- Use a lap tray or arm trough when the survivor is sitting
- Support the affected limb before moving the survivor
- Do not pull on the arm when you are moving a survivor or helping them walk or move in bed. Pulling the arm may cause pain and shoulder damage

The high-tone shoulder

Spasticity, or high muscle tone, can pull the upper arm toward the chest wall. This makes movement painful and difficult.

What you can do to help

- Support and position the limb in good alignment. This will reduce muscle imbalance and survivor pain
- Use pillows or towels to improve arm positioning in bed. Support the arm on a lap tray when the survivor is sitting
- Get advice from the survivor’s physiotherapist or occupational therapist
- Report joint or tissue pain to the right person for follow-up
- Never perform exercises unless approved by the mobility expert on your team
Managing the affected hand

**Flaccidity:** Lack of sensation and mobility after stroke can make a low-tone hand prone to positioning problems and swelling. Swelling and disuse may cause pain and skin problems.

**Spasticity:** Gentleness is important with a spastic hand. It should never be forced open. Ask the survivor not to squeeze a ball to exercise the hand. This kind of activity will only worsen spasticity.

**Relaxing a spastic hand**

To relax and open a spastic hand, position the survivor with the shoulder girdle forward.

Support the hand at the wrist, and gently stroke the back (extensor surface) of the hand and wrist. Gently position the hand properly when the fingers are open. The hand can now be cleaned.

**What you can do to help**

**Always** be aware of the affected hand. Follow the therapist’s instructions to mobilize the hand and treat pain and swelling. Report any changes in pain, swelling, or function to the right person.

To reduce swelling, support the arm on a lap tray or trough when the survivor is sitting. Use a foam wedge or arm support to raise the hand and support the wrist. Place the arm with the hand in front and fingers opened.

Encourage the survivor to use their unaffected hand to gently open the fingers of the affected hand and place the hand on the supporting surface.

Managing the affected foot

The survivor may have less movement and sensation in the foot on the affected side. They may have pain, stiffness, swelling, and possible skin damage because of impaired sensation.

Reduce swelling by having the survivor lie down from time to time. Elevate the legs to chest level with a pillow.

If possible, get the person to stand. This will increase weight-bearing and prevent foot stiffness and deformity. You may need to help the survivor, if their ankle is weak or unstable.

- **Note:** Raising the leg rests on wheelchairs is not helpful. That is because circulation in the legs and feet is impaired by exaggerated hip flexion. Use bed positioning instead.
What you can do to help

Check the survivor for any problems in the affected limb. Report any concerns to the right person.

Regularly check any skin that has impaired sensation for redness, blisters, or breakdown.

Encourage the survivor to follow the doctor’s orders to reduce swelling. This might include helping the survivor to wear prescribed pressure stockings.

When possible, make standing part of the survivor’s daily routine. For example, have the survivor stand at the kitchen counter or bathroom sink with their weight spread evenly over both legs, with leg joints aligned and heels on the ground.

Positioning

Survivors who cannot turn themselves in bed need to be moved often. This will reduce the risk of pressure sores. The goals of positioning are to:

- Preserve normal body alignment
- Change abnormal muscle tone patterns associated with hemiplegia (one-sided paralysis)
- Increase awareness of the affected side

Lying on the back

To place the survivor in a comfortable position on their back, follow these steps:

1. Tell the survivor what you are going to do.
2. Make sure the survivor’s head is in a neutral position. It should not be bent forward or backward.
3. Support the survivor’s head, affected arm, and affected hip with pillows.
**Lying on the affected side**

Many survivors are more comfortable lying on their sides. Following these steps:

1. Tell the survivor what you are going to do.
2. Make sure the survivor is ready. Do not startle the survivor.
3. Turn the survivor onto the affected side. Use a turning sheet or have another person help you.
4. Place a pillow under the survivor’s head. Make sure the neck is slightly bent and in a comfortable position.
5. Move the affected leg straight and slightly behind the trunk.
6. Move the affected shoulder slightly forward of the body and straight at the elbow.
7. Place a pillow under the upper arm in front of the survivor’s stomach. This stops the person from falling forward.
8. Bend the unaffected leg at the hip and knee. This reduces the feeling of floating.
9. Place a pillow between the survivor’s legs to reduce friction and increase comfort.

**Positioning a survivor on their unaffected side**

Positioning a survivor on the unaffected side is the same as positioning that person on the affected side. Survivors with a lot of impairment on the affected side may feel trapped in this position. They often roll onto their backs. Try to get the survivor to:

- Bend the knees before rolling to make the roll easier
- Be aware of the affected arm. Survivors often leave the affected side behind when rolling onto the unaffected side
- Look in the direction they are rolling. This is easier to do if the survivor lifts and turns the head to look in the direction they want to roll
Moving on the bed: bilateral bridging

*Bilateral bridging* can help the survivor raise the hips. This helps with personal care or moving towards the edge of the bed.

Here are some ways to help the survivor raise their hips:

- Help the survivor bend at the hips and knees, placing the soles of the feet flat on the bed.
- Get the survivor to raise their hips off the bed. Make sure that weight is taken through the feet.
- Try to stop the survivor from pushing too firmly. Pushing too much can make the survivor move towards the head of the bed.

**Sitting up**

You can teach the survivor techniques for moving safely. You may need to help the survivor rise to a sitting position.

Ask the survivor to follow these steps:

1. Bend both knees.
2. Lift and turn the head to look in the direction of the roll.
3. Roll completely over onto one side. Remember to move the affected arm.
4. Draw both knees toward the person’s chest.
5. Slide both feet over the edge of the bed.
6. Push up with one or both arms. Look up while pushing up.
7. Sit up straight.
Moving from sitting to standing

You may need to help the survivor rise to a standing position. Not all survivors can perform all the actions independently.

Ask the survivor to follow these steps:

1. Slide their hips forward to the edge of the bed or chair.
2. Sit up straight. Position the survivor's feet shoulder width apart with their heels directly below the knees. Make sure both heels are touching the floor.
3. Bend forward at the hips and look up.
4. Keep a straight back. Bring their shoulders forward in line with the knees. Their trunk and neck should remain extended as the hips bend.
5. Push up with both legs. Keep their weight spread equally over both legs.
6. Stand up straight.

Sitting in a chair or wheelchair

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 posture.

The 90º rule: The survivor should sit with hips, knees and ankles flexed at 90º

Remember the 90º rule. This will help the survivor to sit comfortably and safely.

- Regularly remind or help the survivor to move their 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
Transfers

Moving from bed to chair or chair to toilet

Safely helping a survivor to move depends on the abilities of both the health care provider and the survivor. No single technique works in all situations. Consider the following factors when planning a transfer:

- The survivor’s level of control and movement: Poor control of the affected side may cause overuse of the unaffected side during transfers
- Size and weight of the survivor compared with the health care provider
- Time of day and how tired the survivor is (a fatigued survivor needs more help). Is the survivor better able to perform in the morning but fatigued at night?
- Your level of comfort in safely moving the survivor. If you are not sure you can do this safely, ask for help

Rules for safe transfers

Follow these steps when helping a stroke survivor to move:

1. Make sure the survivor is wearing safe shoes.
2. Apply wheelchair brakes.
3. Move any arm rests and swing foot rests out of the way. Support the affected arm with a sling if needed.
4. Help the survivor get into the right starting position. The persons unaffected side should be closest to the chair. Shift the person’s buttocks closer to the edge of the wheelchair, one side at a time.
5. Position yourself as close to the survivor as possible. Do not block the direction of movement or the survivor’s view of the path of movement.
6. Guide and support the survivor’s upper body. Place your hands around the upper back and shoulder blades.
7. Bend your knees and keep your back straight. Note: Do not lift the survivor by placing your hands under the arms or armpits. This can cause pain. Do not pull the affected arm.
8. Shift your weight from the front to the back foot. Doing this makes the transfer easier.
One-person pivot (stepping) transfer

A one-person pivot (stepping) transfer is often used for assisting a survivor to stand. It is also used for toilet, car, and bed-to-wheelchair transfers.

Follow these steps:

1. Stand in front of the survivor, supporting the shoulder blades.
2. Tell the survivor which way they are being moved.
3. Rock the survivor gently forward and guide the person to a standing position.
4. Position your feet on either side of the affected foot to support the leg and prevent it from collapsing.
5. Assist survivor to step and transfer weight to the leg closest to the destination.
6. Pivot.
7. Help the survivor bend forward and place the buttocks down and back on the new surface.
Two-person pivot (stepping) transfer

The two-person pivot (stepping) transfer is used on the survivor who can bear weight on the legs but is heavy, likely to make sudden movements, or unable to follow direction. You need 2 health care providers for this transfer. The taller care provider stands behind the survivor. The care provider at the front leads the transfer. The rear care provider guides the hips.

Step 1: Getting ready for the transfer

Both caregivers:

- Lower the bed so the survivor’s feet rest on the floor
- Lock the bed brakes, if the bed has casters
- Adjust or remove the wheelchair foot rests and the arm rest on the side closest to the bed
- Place the wheelchair beside the bed at a slight angle
- Lock the wheelchair brakes to allow the rear care provider to be closer to the survivor

If you are standing in front:

- Assist the survivor to sit on the edge of the bed with feet flat on the floor
- Have the survivor place the unaffected arm around your waist
- Place your hands on the survivor’s upper back
- Position your feet on either side of the affected foot to support the leg and prevent it from collapsing

If you are standing behind:

- Stand behind the survivor with one knee on the bed

Step 2: The transfer

If you are standing in front:

- Use a no-verbal signal (like a head nod to the second caregiver) to start the transfer if the survivor overuses their unaffected side
- Assist the survivor to transfer weight to the leg closest to the destination
- Turn, and place the buttocks down and back on the new surface

Note: A transfer belt placed low on the survivor’s pelvis can simplify this step. It can also make it more comfortable for the survivor, and allow the care provider at the back to help more.

If you are standing behind:

- Support the survivor at hip level and guide (do not lift) the hips
Both caregivers:

- Do not lift using the survivor’s clothing
- Replace the wheelchair foot rests and arm rest
- Position the survivor comfortably

A low-pivot transfer may be more effective if the stroke survivor can help by coming into a half-standing position, but not a full standing position. Follow the steps above.

Wheelchair use

Even after treatment, most survivors have some problems moving. These problems range from someone who is easily fatigued to being unable to move. A survivor may require a wheelchair for part or all of the day. The physiotherapist or occupational therapist can decide what wheelchair is needed. They will know whether or not the survivor will also need a pressure-relieving cushion and back support. Many survivors learn to move their wheelchair during rehabilitation. You may need to remind them how best to use their wheelchair.

Survivors may slide forward in a wheelchair so that their feet can reach the floor. Sliding forward in a wheelchair can:

- Affect postural tone and control
- Cause problems with transfers and control
- Increase high tone (spasticity), pain, and the risk of skin breakdown

The physiotherapist or occupational therapist may prescribe a hemi-height wheelchair. This chair has a lower seat than a standard chair. It allows the survivor to reach the floor with their feet without sliding forward.

What you can do to help

Watch the survivor moving the wheelchair so you can spot any problems. Ask yourself these questions:

- Does the movement look normal? If not, why not?
- What can I do to change it?
- Do I need to have a member of the team assess the survivor?

Watch for increasing muscle tone (stiffness). This tells you that the survivor is using too much effort. Check with the healthcare team if you are concerned. Excessive effort reinforces abnormal movements. Make sure the survivor is not doing too much too soon.

The too much, too soon rule

Doing too much, too soon has a long-term, negative effect on the survivor’s ability. Overuse can cause wear and tear on the unaffected side and increase the need for help. Always balance the benefits of faster independence with the risk of overuse and deterioration.
Walking

The survivor may need to learn to walk again – safely. They may have to cope with balance problems, using the affected leg, and using a walking aid. The following principles can help the survivor walk safely.

Balance and posture

- Good balance prevents falls. The survivor should be balanced before starting
- Body weight should be spread evenly over both legs
- If the survivor starts losing balance while walking, have them stop and regain balance before continuing
- The survivor should stay erect and look ahead, not at the floor

Weight bearing

- The hip, knee, and ankle of the affected leg should be lined up. This position helps the leg take the survivor’s weight smoothly and safely with each step
- After the survivor swings the affected leg forward, body weight should be spread over the whole foot to stop it from rolling onto the outside edge
- If needed, help the survivor walk by standing on their affected side. Place one hand on the survivor’s back and one hand in front if they need support

Walking aids

- Putting weight on the affected leg can help the survivor to move more normally. Walking aids include canes, walkers, and rollators
- However, leaning on a walking aid puts less weight on the affected leg. Leaning too heavily on a walking aid causes abnormal gait. The physiotherapist can choose the right walking aid and can make sure the aid is the right height

Safety

The survivor must pay attention to safety and slow down when necessary. Some survivors may not always be aware of where their body is in space. Some have limited sight on the affected side. This means they may be less aware of objects on that side. Remind these survivors to turn their head to that side so they do not bump into objects.

Stairs

Stairs can be challenging. Survivors who can climb stairs using the opposite foot on the next step, should use the hand rail. Survivors who cannot manage stairs this way need to place first one foot and then the other on the same step, before moving to the next step (see drawing on next page.)

Survivors usually learn to lead with the stronger leg when going up stairs. They lead with the weaker leg when going down stairs. The survivor may have been taught to lead with the stronger leg going up and down stairs. If you are not sure which strategy to use, ask the physiotherapist.

Before you help someone use stairs, make sure they need only a small amount of help. If the person needs help, assist from behind going up stairs and from in front going down stairs.
Assistive devices

Assistive devices can help a stroke survivor with mobility problems to function. If you think one of the following devices might help a stroke survivor in your care, talk to a member of your interprofessional team.

Ankle supports

A brace can support an unstable ankle that turns when the person stands. A brace may also be useful if ankle weakness prevents the survivor from raising a foot enough to clear the floor when walking (foot drop). Ankle braces can prevent injury and increase walking safety.

Ankle-foot brace (orthosis)

An ankle-foot brace fits in the shoe under the sole of the foot. It runs up the back of the calf, and fastens with a Velcro strap below the knee. This type of support holds the ankle straight and reduces foot drop. Ankle-foot braces may need to be custom-made if the survivor has high-tone leg muscles (ankle spasticity).

Ankle last

An ankle last is a strong elastic strap that attaches to the outside of the shoe. It wraps around the ankle. This type of brace supports a low-tone ankle that turns in during walking and standing.

Air cast ankle stirrup

An air cast ankle stirrup has 2 plastic supports filled with air. They fit on either side of the ankle, stabilize it, and prevent it from turning in.
Arm supports
These support the arm and protect it from harm.

Sling
A sling can support a low-tone arm during transfers or while standing. Slings should not be used all of the time. They prevent arm swing during walking. They may contribute to the elbow stiffening in the bent position.

Arm trough
Arm troughs are modified arm rests on wheelchairs that may support the low-tone arm. These supports may swivel. This lets the arm rest in a more natural position.

Lap tray
Lap trays can support the affected arm when the survivor is seated in a wheelchair. By placing the affected arm where they can see it, the survivor can handle and move that hand with the unaffected hand.

Arm wedge
Placing an arm wedge on a lap tray positions the wrist higher than the elbow in neutral position. An arm wedge can support the affected arm and reduce swelling.

Compression glove and wrist splint
A compression glove can reduce swelling of the affected hand and needs to be professionally measured. A wrist splint can be used to position the wrist in a neutral position and prevent excessive wrist flexion.

Upon reflection
Think of a transfer that was very challenging for you.
• How was it challenging?
• What did you do to make it safe?
• Can you improve that person’s positioning or transfers?
• How would you do this?

Who can tell you about proper exercises for the stroke survivors you care for?

What transfer aids might help the stroke survivors you care for?

What affects a stroke survivor’s ability to transfer? Do those things apply to survivors in your care? How could you address them?

What resources does your facility have to help you decide which transfer technique is best for the stroke survivors in your care? (such as books or training)