

STROKE REHABILITATION

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STROKE REHABILITATION

2)

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 - Concepts of stroke rehab
 - How the brain learns
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 - Shoulder care

Part 1

STROKE

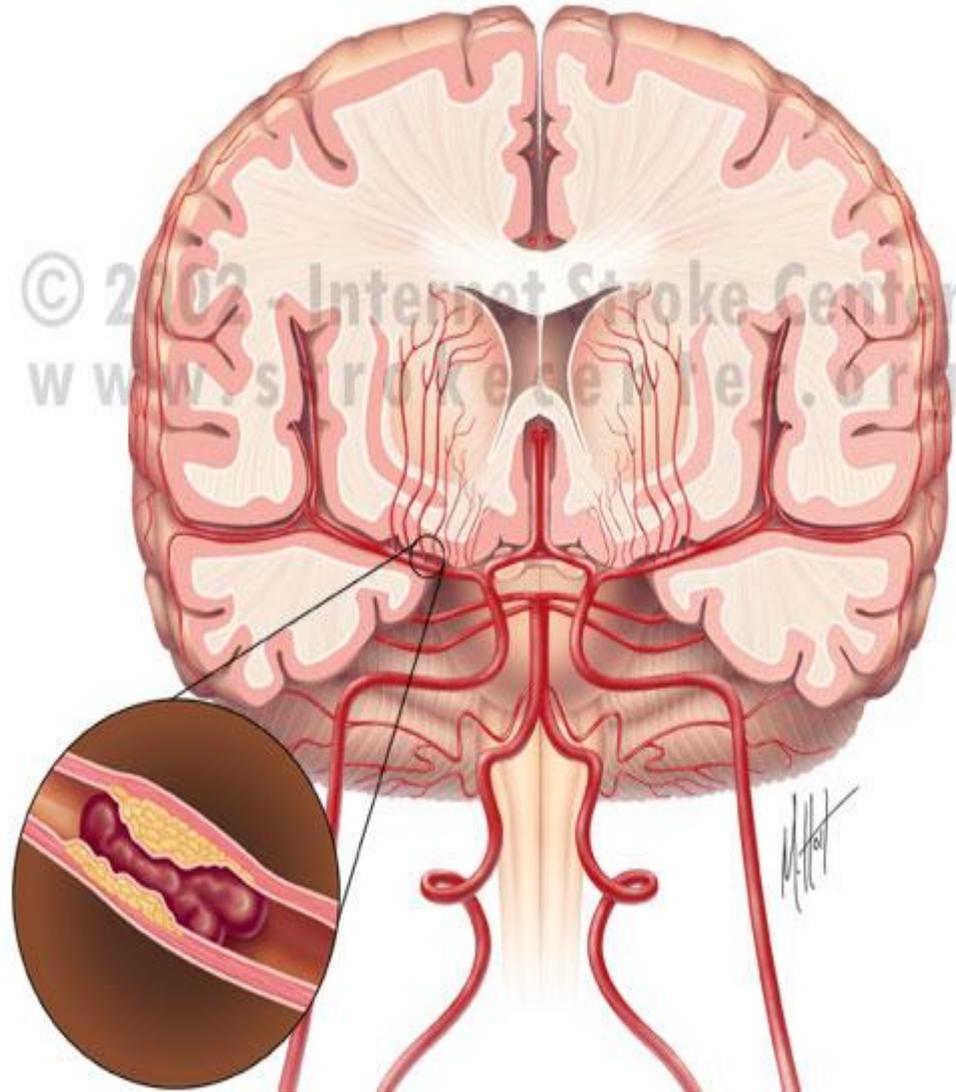
What is a stroke?

A stroke is when an area of the brain is deprived of its blood supply for 24 hours or more - usually because of a blockage or burst blood vessel - depriving the cells of oxygen and other nutrients. The cells are then damaged or die.

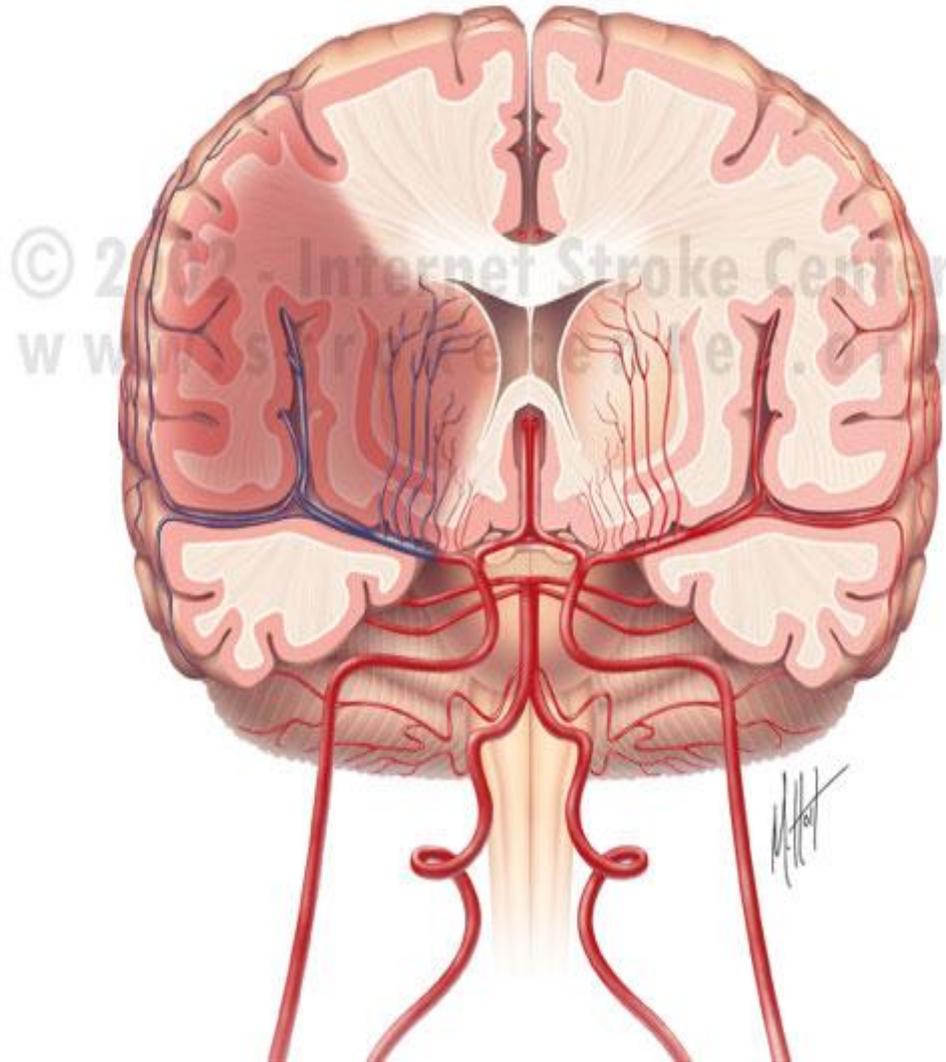
Ischaemic stroke

- Most common type of stroke (80% of all cases).
- The artery is blocked by a blood clot, which interrupts the brain's blood supply.
- Cerebral thrombosis - a blood clot forms in the main artery leading to the brain
- Cerebral embolism - a blood clot forms elsewhere in the body and is swept into the arteries serving the brain
- The clot eventually travels to a blood vessel small enough to block its passage -> blocking the blood vessel and causing a stroke.
- In atrial fibrillation, where the two upper chambers of the heart - the atria - quiver instead of beating properly, blood is not properly pumped out of the heart.

Pathology



Changes

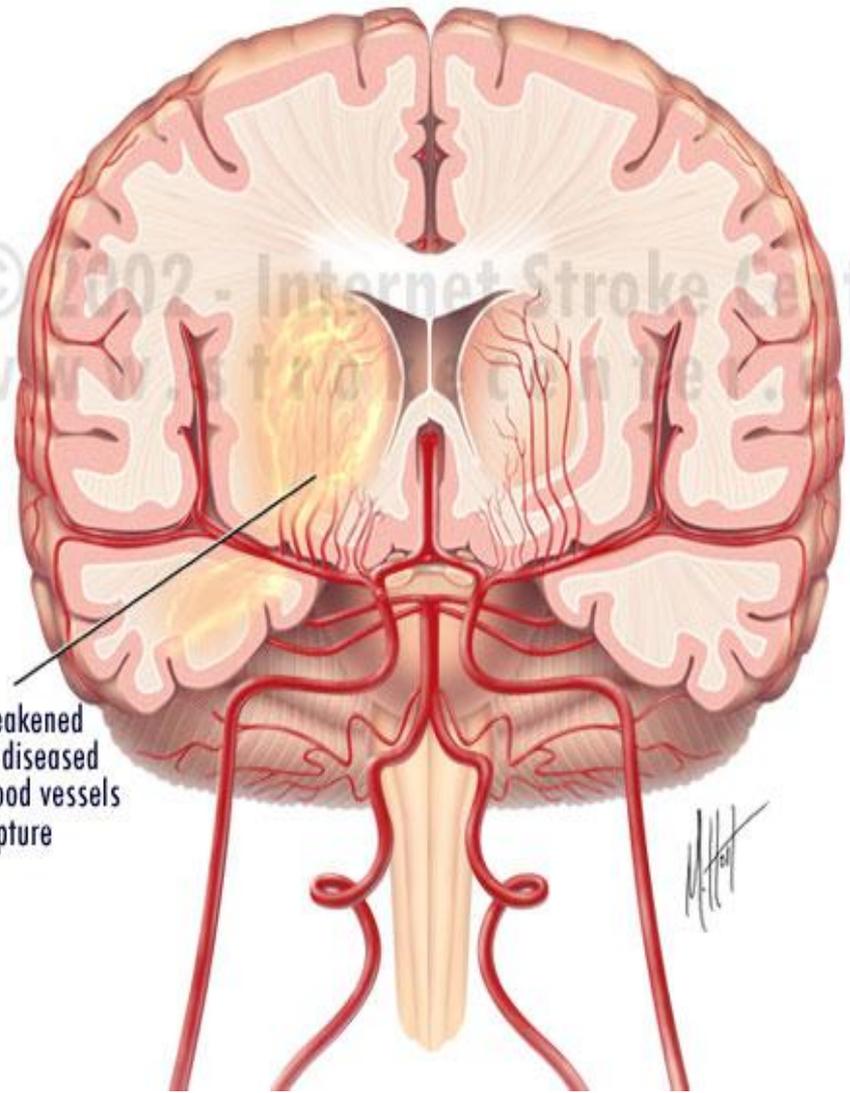


Haemorrhagic stroke

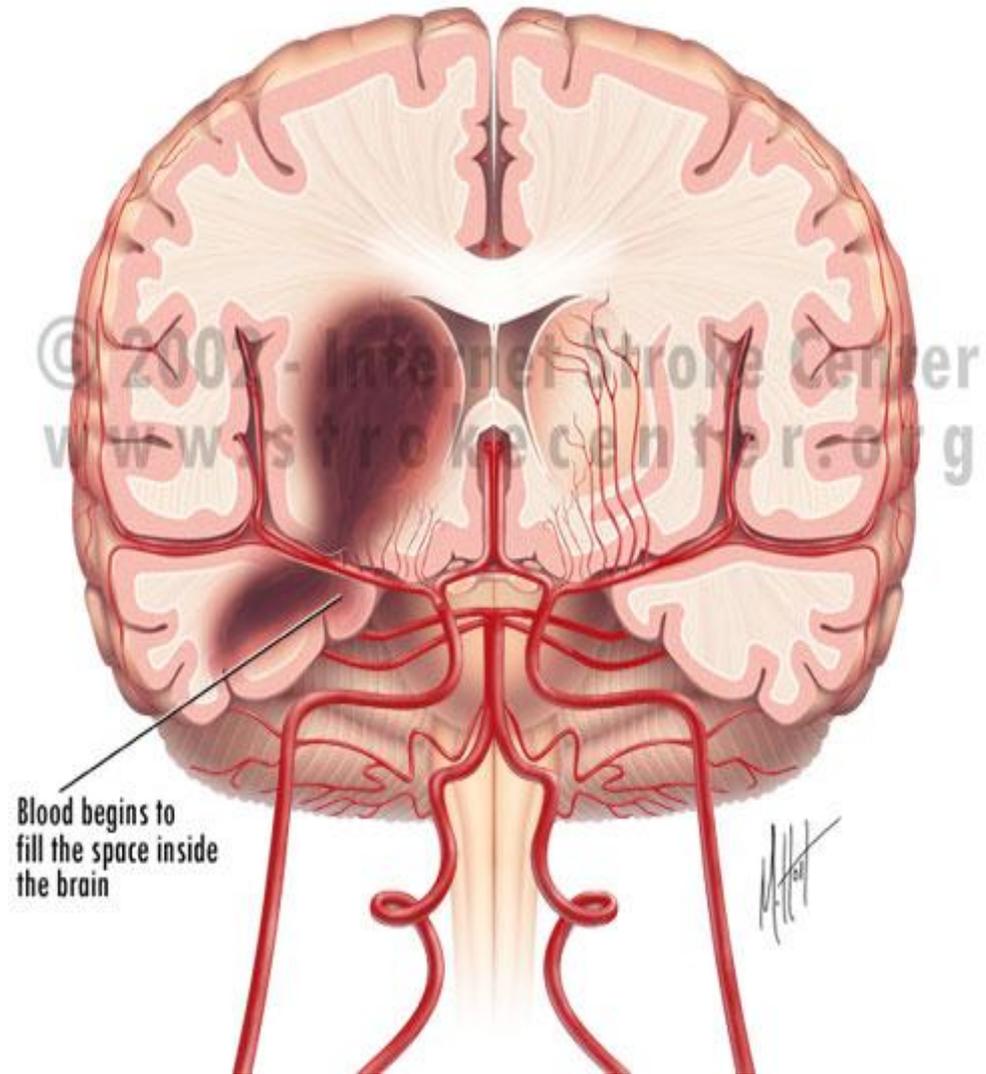
- A blood vessel in or around the brain ruptures causing bleeding, or a haemorrhage. When blood vessels within the brain become damaged, they are more likely to burst and cause a hemorrhage.
- A ruptured blood vessel will leak blood into the brain, eventually causing the brain to compress due to the added amount of fluid.
- The build up of blood presses on the brain damaging its delicate tissue, while other brain cells in the area are starved of blood and damaged.

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Weakened
or diseased
blood vessels
rupture



Pathology



Risk factors

- **Age**
- **Smoking**
- **Alcohol**
- **Cholesterol**
- **Blood pressure**
- **Physical inactivity**
- **Obesity**
- **Diabetes**
- **Previous medical history**
- **Stress**

Presentation of stroke patient

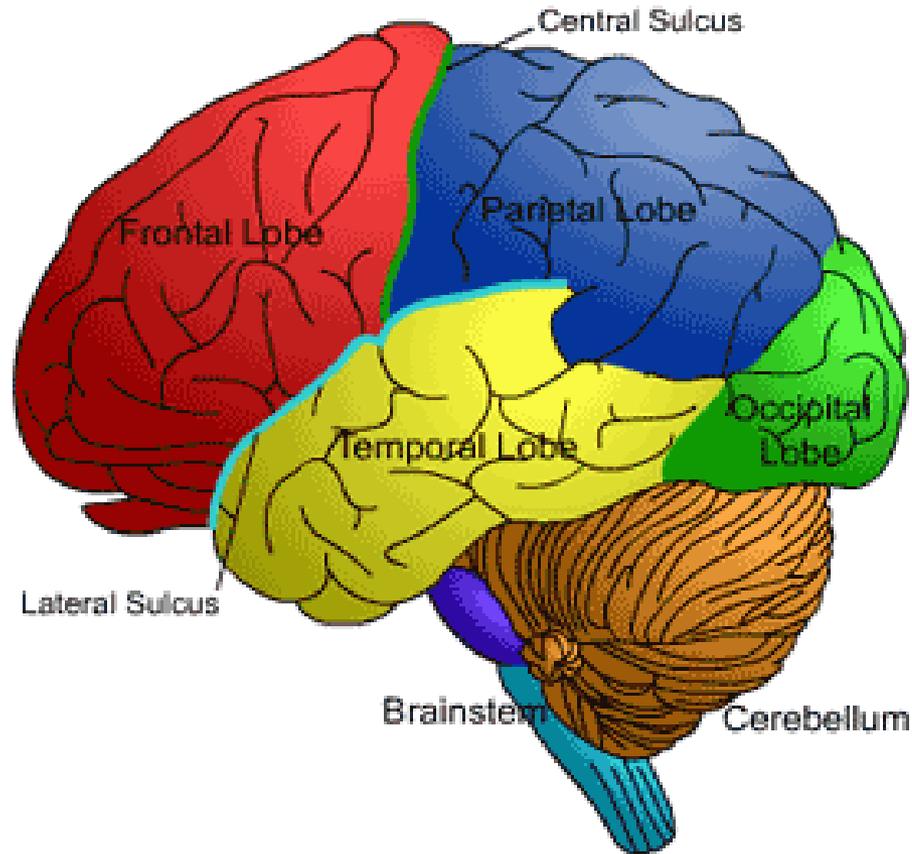
Patients can develop complex problems after a stroke that relates to where in the brain the stroke has occurred.

Potential functions that can be affected after a stroke:

- Movement
- Feeling (sensation / proprioception)
- Speech
- Co-ordination
- Balance
- Memory / cognition
- Looking to stroke side – vision / perception

Anatomy

Figure AB-11: Lobes of the Brain

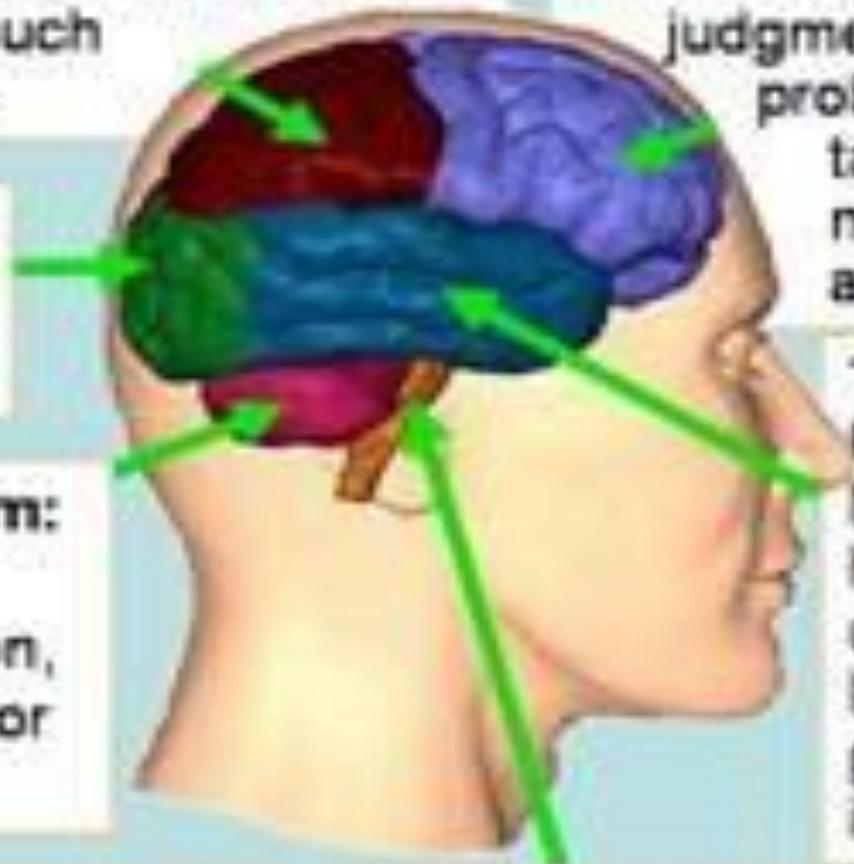


Parietal Lobe: Sense of touch, awareness of spatial relationships and academic functions such as reading

Frontal Lobe: Emotional control, self awareness, motivation, judgment, problem solving, talking, movement and initiation

Occipital Lobe: Vision

Cerebellum: Balance, coordination, skilled motor activity



Temporal Lobe: Memory, hearing, understanding language, and processing information

Brainstem: Breathing, heart rate, arousal and consciousness, sleep and wake cycles

Part 2

STROKE REHABILITATION

The concept of stroke rehab

- Essential that we adopt a 24 hour approach to rehab
- The brain has the potential to adapt after stroke and learn from any stimulation 24 hours a day (*Neuroplasticity*)
- To maximise the patient's recovery all staff need to work towards the same goals
- Rehab approach is based on encouraging patient to move as normally as possible (*Normal Movement*)

How the brain learns

- Research shows that the brain has the capacity to modify after a lesion / stroke (neuroplasticity)
 - Using unused pathways
 - Development of new pathways
- The brain is learning 24 hours a day
- The brain is like a sponge and absorbs information constantly

Brain's ability to adapt (*Neuroplasticity*)

- Whatever we do to the patient influences the patient's recovery (positively and negatively)
- The way a patient is positioned or handled, and how they move themselves contributes to what the patient learns
- E.g. If patient is sat leaning to left in chair will learn that that is normal sitting posture or if allowed to pull with unaffected arm will discourage recovery of affected limb

Normal Movement Approach

- Encourage the patient to move in normal manner
- Maximise ability to use affected side (facilitation)
- Reinforce symmetry and good alignment
- Discourage the over use of the patient's unaffected side, i.e. pulling / pushing
- Work on getting sitting balance and control and then progress into standing

Positioning on back



Considerations when lying on affected side

- Affected leg positioned as straight as possible
- Remove all body weight off affected arm by placing your hand near to shoulder blade and gently sliding affected shoulder through
- Support back with pillows to maintain good position on side
- Support unaffected leg bent up on pillow

Lying on affected side



Considerations when lying on unaffected side

- Support affected arm in comfortable position on pillows in front of face / body
- Support affected leg bent up on pillows

Lying on unaffected side



Positioning in the chair / out of bed

- It is very important for patients to get out of bed.
- Complications of staying in bed:
 - Respiratory complications (poor air entry to bases)
 - Knees / hips can become stiff and difficult to bend
 - Ankles / feet at risk of developing muscle shortening in achilles tendon if allowed to point down continually
 - Pressure sores
- Positioning in chair
 - Body straight
 - Arm supported

Shoulder care

- Effects of a stroke on upper limb
 - Low tone / floppy arm
 - High tone arm (tight muscles)
 - Loss of movement
 - Reduced sensation / proprioception
 - Neglect

Risk to upper limb

- Subluxation of shoulder
- Pain -> problems sleeping / difficulty concentrating / depression
- Injury due to reduced awareness of arm position
- Swelling of hand

The subluxed shoulder

- Reduced muscle tone
- Muscles become lax
- Humerus is displaced – forwards and downwards
- Joint is unstable and very vulnerable





Preventing shoulder subluxation

- Low tone arm must be supported at all times to keep shoulder joint in place
- Never pull or lift under arm
- When moving the arm:
 - Support under the wrist
 - Move it slowly keeping an eye on the patients face to detect pain
 - Avoid moving arm 90 degrees above the body if unsure of shoulder position

Positioning of shoulder

- Sitting:
 - Arm should be well supported on pillow / tray slightly away from side and within patients sight
 - Ensure that arm does not slip off the side of chair / pillow

Comfort



Supports

- Standing:
 - Support low tone arm at elbow and wrist to prevent the effects of gravity
 - Supportive slings e.g. collar and cuff or triangular slings can be used when standing, walking and transferring to stop the arm pulling on shoulder joint
 - These slings should not be left on patient when sitting

Triangular sling



Conclusion

The brain learns 24 hours a day, 7 days a week and it is essential that all rehab is centred around the same goals

→ To encourage normal movement

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