Physiotherapy department

Post-stroke sensory deficits and re-education

Who is the leaflet for? What is its aim?

This leaflet is for patients who are experiencing reduced and/or altered sensation as a result of Stroke.

After a stroke your sensation can be affected. The pathways from the brain to areas of the body are complicated and sensory problems are different for everyone.

Sensory deficits can include: reduced ability to feel touch, pain, temperature, position or the ability to recognise objects you are holding. You may experience feelings such as tingling, prickling, numbness, aching, burning or “pins and needles”. Without sensation movements may lack precision and control.

Caution

Lack of normal sensation makes the hand vulnerable to damage. It is therefore important to:

- Change positions frequently to prevent too much pressure on affected areas.
- Always make sure that your hand and arm is in a safe position, not stuck underneath anything or hanging down.
- Be conscious of not applying more force than necessary when gripping a tool / object.
- Observe the skin for damage regularly (redness, swelling, warmth).
- Keep skin soft and hydrated by washing regularly and massaging with hand cream.
- Be aware of scalding and burning taking care with hot water, radiators, sitting too close to a fire etc.

Burns may be prevented by:

- checking the temperature of water using the non affected hand first
- wearing padded / silicon gloves whilst cooking
- using long-handled cooking utensils
- using insulated mugs for hot drinks

If blisters occur, cover and keep them clean to avoid infection.

Sensory re-education

Sensory re-education is used in an attempt to retrain or stimulate sensory pathways. Techniques can include: touching different textured objects, massage, vibration, pressure, determining joint position, identifying different temperatures.
Sensory re-education can start from day one post stroke. Recovery varies between everyone and it is not definite that your sensation will recover, however it is recommended to trial a period of sensory re-education. Although there is no set time you should do this, initial research studies suggest 60 minutes of stimulation per day for at least six weeks.

Exercises are best done in a quiet environment for short periods (approx. 20mins) three times daily. It can be helpful to get visitors/relatives or friends to help you with these exercises.

**The most important thing to do, if you have some movement in your upper limb, is to use it everyday in functional tasks as normally as possible. Try to touch, hold and move a variety of objects.**

**Repetition is important!**

Depending on how your arm presents (please see the list of the following sensory deficits), the following exercises may help your sensation to improve, or help you to compensate for the loss of your sensation.

**Sensory deficits - exercises and advice**

**Loss of light touch**

When doing your exercises, start with larger objects, such as pegs or keys then progress to smaller fiddly objects such as washers, screws, coins, buttons, paperclips, cotton buds, as your sensation improves.

1) Use a piece of tissue paper. Drag it slowly and lightly across the affected arm paying particular attention to the hand.
   - Can you feel it?
   - Get someone else to move the paper across your arm and hand.
   - With your eyes closed can you tell where it is?

You can do this with various different materials and objects. Try to keep focused on this for at least 10mins at a time.

2) Either do this yourself or have another person touch a spot on your arm with your eyes open, and then with your eyes closed. Try to associate where you saw object touch your skin to how it felt on your skin.

3) Have another person press firmly onto a point on your arm/hand. Then have them move their finger around maintaining firm pressure. Watch and pay attention how it feels. Close your eyes and try to identify whether their finger is still or moving. You can do this exercise using vibration such as an electric toothbrush or massager.

4) You could try using a TENS machine, the tingling sensation this provides could help stimulate sensation in your arm.

5) If the skin feels numb all the time try gently stroking your arm for a few minutes a day with a variety of textures for example a sponge, a towel, a soft brush, a wool scarf.
Loss of awareness of where your arm is/proprioception

Look at your arm in motion and at rest to help identify where it is in space.

1) Close your eyes and have someone else put your affected arm in a position. See if you can tell what position your arm is in (ie my elbow is bent) then open your eyes to see what position it is in.

2) Close your eyes. Have someone else move your hand while holding a pencil. Try to identify what letter, number or drawing is made.

3) Fill a flexible paper cup half full with water. Attempt to grasp cup without spilling the water or smashing the cup. Use your vision to determine how much pressure you are putting on the cup (ie if the cup is slipping out of your hand, apply more pressure; if the cup is squeezed too hard, lessen your grip)

Repeat the exercise with paper cup, try moving the cup from one spot to another maintaining a steady, even grasp (not too tight, not too loose)

4) Place several objects on table in front of you. With your eyes open move your hand to touch the objects. Then try to repeat with your eyes closed. Check your accuracy regularly by opening your eyes.

Loss of awareness of temperature

Use your unaffected arm/hand to check temperature before bathing or washing objects.

1) Have another person apply cold (eg wrap an ice cube in a cloth) and or warmth (eg hot water bottle) to your skin and see if you can detect temperature differences. You can also put your hand into bowls of different temperature water eg as hot/as cold as you can stand. (Be careful here!)

Loss of objects recognition

Use your unaffected side to handle sharp objects. When gripping an object, don't apply more force than is necessary.

1) Try to differentiate between textures (ie cotton, sandpaper, satin, velcro, rubber, velvet, wool, etc.)

2) Feel an object then try to find a matching object inside bowl of dry beans or rice.

3) Hide objects such as marbles, coins, etc. in a bowl of rice/dry beans/sand. Without using vision, try to find the objects with your hand.

4) Have someone place different objects in your hand while you are looking (ie cotton ball, marble, key, paper clip). Close your eyes and then try to identify objects as they are placed in your hand again one at a time.

5) Try to locate different objects from inside your pocket or a bag without looking.

6) Close your eyes. Have someone else place a lighter object on your hand then a heavier object. Try to determine which object was heavier or lighter. Do this with a variety of objects.
Hypersensitivity (increased awareness of a sensation)

Try keeping a note of anything which triggers this or makes it worse. This may help to avoid the trigger causing the problem.

Some people benefit from desensitisation where the sensation is deliberately stimulated and the person relearns how to control their response to it.

**Note:** Any cuts/wounds should be covered to prevent infection. You should ensure that the skin is not thin or breaking before trying these techniques. The skin should never be injured using this method.

1) Gently rub the area for a few minutes a day with a variety of textures for example a sponge, a towel, a soft brush, a wool scarf.

2) Apply some gentle pressure to your arm and hand when you are in a quiet place, gradually build up the pressure as you can tolerate.

**Further information**

For further information please speak to the rehab physiotherapy or occupational therapy team.

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We are now a smoke-free site: smoking will not be allowed anywhere on the hospital site. For advice and support in quitting, contact your GP or the free NHS stop smoking helpline on 0800 169 0 169.

**Help with this leaflet:**

If you would like this information in another language, large print or audio format, please ask the department to contact Patient Information: 01223 216032 or patient.information@addenbrookes.nhs.uk

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**Document history**

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Contact number 01223 596317
Publish/Review date May 2015/May 2018
File name Post_stroke_sensory_deficits_and_re-education.doc
Version number/Ref 1/PIN3733