

Information for patients  
**Brachial Plexus Injury**

# Contents

Where is the Brachial Plexus Injury Service Located? . . . . .	.3
Travelling to the New Victoria Hospital . . . . .	.3
Travelling to the Queen Elizabeth University Hospital, Glasgow. . . . .	.3
The Brachial Plexus Clinic . . . . .	.5
Clinical Nurse Specialist information . . . . .	.6
Physiotherapy information . . . . .	.7
Occupational Therapy information . . . . .	.8
Brachial Plexus injury in detail. . . . .	.9
What surgery is available for brachial plexus injuries? . . . . .	12
What other treatment may I have? . . . . .	13
Polysling advice . . . . .	13
Pain and other symptoms . . . . .	13
Counselling . . . . .	17
Physiotherapy exercise programme. . . . .	20
Personal Physiotherapy Programme . . . . .	24
Driving, employment and other issues . . . . .	25
Advice while you are in hospital. . . . .	26
After you are discharged from hospital . . . . .	27
Wound care and dressings . . . . .	28
Allowances and benefits (information confirmed Summer 2015) . . . . .	29
A guide to words and phrases used in your care . . . . .	31
Peripheral nerve distribution and functional limitations . . . . .	33
Areas of sensation supplied by brachial plexus nerves . . . . .	34
Useful contacts and websites . . . . .	35
Notes / questions / appointments etc . . . . .	36

## Where is the Brachial Plexus Injury Service located?

The Queen Elizabeth University Hospital, Glasgow / New Victoria Hospital are the locations for the Scottish National Brachial Plexus Injury Service.

The South Glasgow University Hospital is an in-patient teaching hospital situated in the South West of Glasgow (Postcode G51 4TF).

The New Victoria Hospital is an out-patient teaching hospital situated in the South East of Glasgow (Postcode G42 9LF)

## Travelling to the New Victoria Hospital

### Travelling by car

From East exit M8 at Junction 22 for M77 then exit at Junction 1. Turn left for Dumbreck Rd. Straight over for Titwood Rd. Right for Minard Rd. Straight over for Langside Ave. Up the slight hill then straight over at the monument roundabout, down the hill and first left on to Grange Road. The new hospital is just along on the right.

From West exit M8 at Junction 24. Turn left for Helen St. Right at -roundabout into Edminston Dr. Turn right at next roundabout. Straight over at first set of traffic lights for Dumbreck Rd and follow route as above.

From South exit M77 at Junction 1. Turn right for Dumbreck Rd and follow route as above.

### Disabled parking

Disabled parking spaces are allocated close to all entrances as well as in the New Victoria Hospital underground car park close to the lifts.

### By bus:

#### Concession Pass Holders

Holders of a concession pass who find it necessary to travel before 9.00am, must show their appointment card to obtain the concession.

Several bus services stop at Grange Road including, First bus, 66, 44 & 5. Check with Travel line 0870 6082608 or visit [traveline.org.uk](http://traveline.org.uk).

### By train from Glasgow Central

Mount Florida Train Station is only a few minutes walk away and has frequent services to and from -Glasgow Central Station on the Cathcart Circle and Neilston / Newton routes

## Travelling to the Queen Elizabeth University Hospital, Glasgow

### Travelling by Car

#### From the East or West of the City

- M8 motorway to Junction 25. Follow signs for Clyde Tunnel (A739) for  $\frac{3}{4}$  mile. Then follow signs for South Glasgow University Hospital. Turn left into Govan Road. The hospital is on the left.

#### From north of the River Clyde

- Go through the Clyde Tunnel (A739) and follow the signs for South Glasgow University Hospital.

## Car parking

There are on site multi-storey car parks and ground level spaces for patients and visitors. Car parking is free but there is a four-hour maximum stay between Monday to Friday 7.30am till 4.00pm. Disabled parking spaces are available on the ground floor of the multi-storey car parks. There are also drop off location points on the site. .

## By Bus

### Fastlink

The new Fastlink bus route provides speedy links from Glasgow City Centre via the Arc Bridge (known sometimes as the Squinty Bridge). At peak times there will be a bus every minute arriving at or inside the hospitals campus.

**Local Bus Services** (\*denotes exact fare only buses)

Through the hospital grounds: First Glasgow\* 747 90

Govan Road entrance: McGills 21 23 23A

Langlands Road entrance:(via pedestrian underpass) First Glasgow\* 3 34 and McGills 26 26E

### Please Note:

- All First Glasgow buses are low floor, easily accessible for wheelchair users and 'buggy friendly'.
- The hospital covers a large area. You may find it easier to take a bus that goes through the grounds.

### Concession Pass Holders

If you need to travel before 9.00am, show your appointment card to obtain your concession.

## By Rail or Underground

### To Govan Road Entrance

- Paisley Gilmour Street Station (nearest buses):  
McGills 21 26 26E
- Central Station (Union Street):  
McGills 23 23A 26
- Queen Street Station: Buchanan Street Underground to Govan.
- Govan Underground Station: A 25 minute walk to Govan Road entrance (just over 1 mile). Buses for hospital grounds are at street level bus stop, not the terminus.  
Local taxis also available.
- Cardonald Station: A 25 minute walk to Langlands Road entrance (just over 1 mile).

## Useful Links for public transport

**Traveline Scotland (Journey Planner) 0871 200 22 33**

- [www.travelinescotland.com/cms/content//News/PT\\_SGH.xhtml?lang=en](http://www.travelinescotland.com/cms/content//News/PT_SGH.xhtml?lang=en)

### SPT Park and Ride

[www.spt.co.uk/park-ride](http://www.spt.co.uk/park-ride)

## By Air

Glasgow Airport is 5 miles west of the hospital. Take M8 for Glasgow to Junction 25. Follow car directions above. The First Glasgow 747 airport bus goes through the hospital grounds.

# The Brachial Plexus Clinic

The brachial plexus clinic is held at the New Victoria Hospital, Glasgow, on Monday afternoons (approximately every 4-6 weeks).

- Lead Clinician is Consultant Mr Tim Hems.
- Other Clinician is Consultant Professor Andy Hart
- Clinical Nurse Specialist is Beverley Wellington.
- Physiotherapy is co-ordinated by Andrea Shaarani.
- Occupational Therapy is co-ordinated by Claire McGeehan
- Neurophysiology assessment is carried out at the South Glasgow University Hospital, Glasgow.
- Orthotic (splint/brace) service is provided at the University of Strathclyde, Glasgow.

## Contact numbers

New Victoria Hospital	0141 201 6000
Queen Elizabeth University Hospital, Glasgow	0141 201 1100
Out-patient Clinic appointments at New Victoria Hospital	0141 347 8741
Clinical Nurse Specialist (and advice line)	0141 347 8062
Physiotherapy Department	0141 347 8685
Occupational Therapy	(via Service Administrator)
Brachial Plexus Injury (BPI) Service Administrator	0141 201 1657

## Who's Who in your care team?

### The Multidisciplinary Team

This is the team of specialist professionals who will work together in providing your care.

### Consultant and other doctors

The Consultant is the Doctor in overall charge of your treatment. They have a Registrar as an assistant and other junior Doctor's working on their team.

### Clinical Nurse Specialist

The Clinical Nurse Specialist will provide advice and guidance to the other nurses caring for you. She will provide you and your relatives with additional information and support throughout the whole length of your treatment and follow up.

### Specialist Physiotherapist

The Specialist Physiotherapist will provide advice and guidance to any other physios caring for you. She will provide you and your relatives with additional information and support, as required, throughout the course of your treatment.

### Specialist Occupational Therapist (OT)

The OT will provide advice and guidance to any other OT's caring for you. She will provide you and your relatives with additional information and support as required throughout the course of your treatment.

### Orthotist

If your Consultant considers that you require a special brace to be made at any stage then you will be seen by this specialist who will measure and provide an appliance for you.

## Clinical Nurse Specialist information

The Clinical Nurse Specialist is able to offer specialist skills and knowledge whilst supporting patients and families affected by brachial plexus injuries. She offers sessions on relaxation therapy, mindfulness, visualisation, guided imagery, progressive muscle relaxation, anxiety management, anger management, self esteem and confidence building. Informal and formal counselling is also offered by her (see counselling section, page 17).

The Clinical Nurse Specialist can also provide advice, support and information on different topics including patient care plans, pain management & medication reviews, employment issues and benefits, driving assessments, family/home life, Intimacy and sexual relationships plus a variety of other subjects.

### When will I see the Clinical Nurse Specialist?

As an out patient - she will see you at the Brachial Plexus Injury Clinic along with the rest of the team and is available for you and your family to see at a personal session on request. Ongoing care and support is provided for the time that you are cared for within the service.

As an in patient - if you are having an operation, she will co-ordinate the nursing care that you receive before and after the surgery and will co-ordinate follow up care after discharge.

Help and advice is available via telephone, text or e-mail.

Specialist nursing is co-ordinated by Beverley Wellington.

**Telephone: 0141 347 8062 direct advice line with answer phone.**

**Telephone: 07961 093324 (work mobile)**

**Email: Beverley.wellington@ggc.scot.nhs.uk**



Beverley Wellington

## Physiotherapy information

Physiotherapy uses exercise to maintain joint movement and to strengthen the muscles that are working. The physiotherapist will show you the exercises that you need to do (see the illustrations on pages 20-23). The exercises will be adapted to suit you.

### When will I see a physiotherapist?

- **As an in-patient in the ward**

If you are admitted to the Orthopaedic ward you will initially be seen by the in-patient physiotherapy staff. They will give you advice and start you off on some exercises for your hand and wrist. They will also arrange the follow-up physiotherapy for you when you are discharged.

- **As an out-patient**

Follow-up physiotherapy will be carried out either at the New Victoria Hospital or at a hospital or Health Centre in your own area. The physio will also see you at the Brachial Plexus Clinic. This gives you the opportunity to be assessed by the BPI team. The physiotherapist may want to review/progress your exercises at this time. If your exercises are changed or progressed, an updated report will be sent to your physiotherapist.

### What does Physiotherapy involve?

Physiotherapy involves exercises and focuses on your overall recovery.

This may include:

- Involving your family to help with your exercises.
- Showing you a programme of exercises to help you. keep the arm supple and the joints moving.
- Helping you back to work, sport or hobbies.
- Encouraging you to socialise with your friends and family.

Physiotherapy is co-ordinated by Andrea Shaarani

**Telephone: 0141 347 8685**

**Email: Andrea.shaarani@ggc.scot.nhs.uk**

See pages 20-23 for advice on exercise.

# Occupational Therapy information

Occupational therapy assists people to reach their maximum potential in independence in all aspects of daily life. Treatment can be provided by using specific activities, techniques and helpful aids that will help you adapt and cope with your daily routine following your injury. Occupational Therapists work in both hospitals and in the community.

## When will I see an Occupational Therapist?

- **As an in-patient in the ward**

If you are admitted to the Orthopaedic ward you will initially be seen by the in-patient occupational therapy staff. The team OT will assess your activities of daily living and arrange any follow-up Occupational Therapy visits or equipment deliveries for you when you are discharged.

- **As an out-patient**

Any Occupational Therapy equipment, advice or follow up will be carried out either at the New Victoria Hospital or at a hospital or Health Centre in your own area. The team OT will also see you at the Brachial Plexus Clinic. This gives you the opportunity to be assessed by the entire BPI team. The OT may want to review/progress your activities at this time.

## What does Occupational Therapy involve?

Patients who do not immediately require an operation will be encouraged to use their affected limb as much as possible in activities of daily living. You may benefit from aids & adaptations to assist with these activities of daily living. Following assessment the OT may refer you to Community services as appropriate.

Patients who have had an operation will have specific post operative instructions to follow which will be taken into consideration when an Occupational Therapy assessment is undertaken. The OT can show you some techniques to manage activities one handed if your injured arm is immobilized in a sling for a period of time. Options for showering & bathing will be discussed.

When your sling is removed & rehabilitation commences, the Occupational Therapist will look at extended activities of daily living roles including work, interests & hobbies and provide advice & support.

As your functional needs change, it is important to be reviewed and you will have the opportunity to see the OT at the Brachial Plexus Injury Clinic.

Occupational Therapy is co-ordinated by Claire McGeehan

**Telephone:** via Service Administrator 0141 201 1657

**Email:** Claire.McGeehan@ggc.scot.nhs.uk



Claire McGeehan



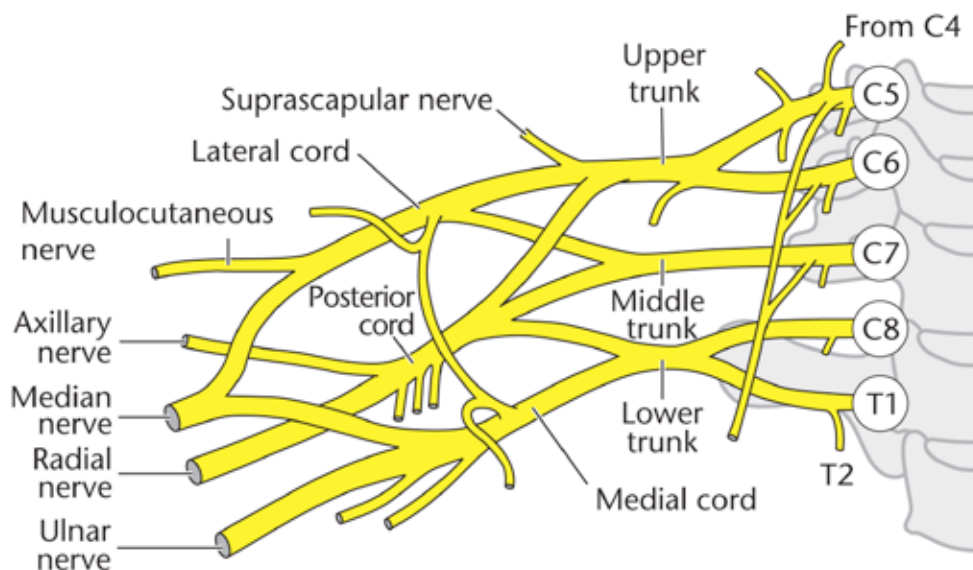
# Brachial Plexus injury in detail

## What is a brachial plexus injury?

To answer this, we first have to explain what the brachial plexus is!

## What is the brachial plexus?

The brachial plexus is a network of nerves in the neck and shoulder region (see the diagram below). It is made up from 5 large nerves which come out of the spinal cord between the vertebrae (bones in the neck), pass under the clavicle (collar bone) and into the upper arm. These nerves enable the signals that allow movement and feeling to reach the arm. These nerves are represented in speech and writing by these symbols:



C5, C6, C7, C8, T1 (C=cervical, T=thoracic)

## What are nerves?

Nerves are cordlike structures of tissue formed from a collection of nerve fibres. A single nerve may contain thousands of fibres (a bit like an electrical cable). In the arm, these fibres carry electrical messages both ways between the brain, muscles and tissues. For a muscle to work (contract), a message must travel from the brain, along a nerve that goes directly to the muscle. When nerve fibres are injured, the muscles that the nerve controls may be weakened, even though the injury is not in the muscle itself.

## What is the nervous system?

The nervous system integrates all body activities by sensing changes (sensory function), interpreting those (integrative function) and reacting to them (motor function). Sensory neurons carry sensory information into the brain and spinal cord. Motor neurons carry information from the brain and spinal cord into the peripheral nerves. A neuron (or nerve cell) processes and transmits information by electrical or chemical signalling.

## How do brachial plexus injuries happen?

Brachial plexus injuries are caused by damage to some or all of those nerves. The commonest cause of injury is a stretching or tearing injury to those nerves usually following a road traffic accident, a violent fall or from a penetrating wound e.g. glass, knife.

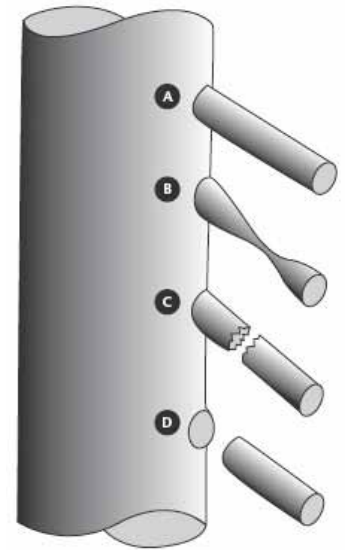
Injuries may be caused by:

- Deep wounds which cut the nerves.
- Severe stretching of the nerves by a violent force on the shoulder pulling it away from the neck (e.g. road traffic accident).

- Compression of the nerves by pressure from broken bones around the shoulder or dislocation of the shoulder joint.

## Types of injuries

- A **Neurapraxia** - Minimal stretch or compression with no structural damage - the sensitive nerve fibres temporarily stop working but will usually recover without surgery.
- B **Axonotmesis** - Stretched but nerve remains intact- the nerve has been damaged but not torn apart. The nerves may recover to a variable degree on their own but this may take some months. This type of injury may not require surgical treatment.
- C **Neurotmesis** - With this injury, the nerve has been stretched to breaking point and has been snapped or torn (similar to an overstretched elastic band). Ruptures will not heal without surgery.
- D **Nerve root avulsion** - With this type of injury, the nerves are torn away from its root in the spinal cord. The nerve root cannot, at present, be rejoined to the cord. Some function of the arm will be permanently lost. Any possibility of surgery may mean that nerves may be transferred from other areas to improve function.



## What happens when there is an injury of the brachial plexus?

Many factors affect how severe the injury to the brachial plexus may be. These depend on:

- **The number of nerves affected** - This varies between patients. Sometimes only one or two nerves are damaged resulting in loss of movement in one area, e.g. shoulder or elbow. In some cases, all the nerves are damaged causing complete loss of movement and feeling in the arm.
- **How badly the nerves have been damaged** - There may be mild stretching or compression of nerves. However, in more severe injuries, nerves may be torn apart by severe stretching. Deep wounds may cut through the nerves.

## How do I know how severe the brachial plexus injury is?

The doctor may be able to determine the degree of damage to the nerves by examining you. However, it is quite common for other tests to be done to help to tell us where the nerve injury is and how bad it is. These tests may include:

- **Neurophysiology** – recording of the passage of electrical signals along nerves in the limbs using small electrical pulses on your skin. The test may include a recording of the electrical activity of muscles which involve using fine needles. These tests can be used to diagnose a variety of nerve or muscle problems.

### How to prepare for the test

- Do not apply creams or lotions to your arms – these make recordings difficult
- Do wear loose clothing that can be rolled up above elbows
- Do remove bracelets and watches on both arms. Rings can usually be worn.
- Do continue to take your usual prescribed medication unless instructed otherwise.

### Please tell us:

- If you have a pacemaker or defibrillator fitted
- If you take warfarin to thin the blood or suffer from excessive bleeding.
- If you have a problem or phobia with needles.

## What do the tests involve?

- You may have to change into a hospital gown.
- We use small electrical shocks to the skin. The pulses can feel uncomfortable to start with but most patients get used to them quite quickly.
- Sometimes we also use fine needles to study your muscles. However not everyone will need to have this done. If you are worried about needles let the doctor performing your tests know.
- Most people are fine with the tests but if there is anything that you find too uncomfortable the test will be discontinued

## How long do tests take?

This depends on the nature of your problem. Most tests take approximately 20 to 30 minutes. Complex tests can take longer.

## Are there any side effects?

The electrical tests may cause some slight tingling but only for a short time. Needle tests may cause mild muscle discomfort but usually settles quickly.

## How do I get results?

A report will be sent to the Consultant of the brachial plexus team who referred you and you will probably be asked to return to clinic to discuss your results.

- **MRI** – (Magnetic Resonance Imaging) uses strong magnetic fields and simple radiowaves in conjunction to produce computerised sectional images of various parts of the body. Unlike some other imaging methods MRI does not use x-rays and has no known side effects. You lie on a flat bed which is moved into the scanning tube of the MRI machine. The scanner is operated by a member of staff who is in an adjacent room but you will be able to talk to them through an intercom and they will be able to see you on a television monitor throughout the scan.

At times during the MRI scan, the scanner will make a loud clicking sound. This is the magnets being turned on and off. You will be given earplugs or headphones to wear and may listen to the radio or bring a CD with you. It is very important that you keep still during your MRI scan. The scan will usually last between 15 and 45 minutes, depending on the size of the area being scanned and how many images are taken.

- **Exploratory Operation**

Sometimes it is necessary to perform an exploratory operation to determine the extent of the injury that will help us decide on the best treatment for you. The timing of this will be determined by the Consultant.

## Will the damaged nerves recover?

If there has been mild stretching or compression of the nerves, they may repair themselves. However, recovery of the nerves may take 1 to 2 years.

If nerves have been torn apart or cut, then an operation will be needed to try and repair the nerves. Nerves can recover after repair, but this may take years and the nerves rarely return to normal. Occasionally nerves are so severely injured that they can't be repaired.

The area of nerves that are affected and the type of damage to those nerves will provide us with an idea of the future recovery of the nerves and the outcome that you may expect. However, each patient may have slight differences in the area and extent of nerve damage that can make it very difficult for us to predict the long term results of treatment.

## What surgery is available for brachial plexus injuries?

Surgery may be possible to repair damaged nerves.

In order to have a chance of success this surgery must be performed within a few months of the injury.

### Nerve Graft

Usually when the nerves are torn, the damaged segment of nerve, either side of the injury, must be removed and repaired using grafts from somewhere else (like the forearm or the lower leg area). The nerve graft acts as a guide through which new nerve fibres can grow and cross the gap caused by the injury. These nerves grow very slowly, recovery time is lengthy and complete recovery may be impossible due to the way that each individual microscopic nerve fibre grows in position.

### Nerve Transfer

Undamaged nerves in the area that are doing less valuable jobs can be transferred to other parts of the brachial plexus to try and regain some function within the limb. As the nerves used in this transfer start to recover you will need to work very hard at retraining these nerves to move your arm and initially you may have to do different movements to make your arm work.

### Other Surgery

If necessary other types of operation are sometimes possible at a later stage (some months or years after injury). These operations include tendon transfers and less commonly muscle transfers and joint fusion.

### Tendon transfers

Each muscle has a starting point (origin) and tapers into a tendon that attaches onto bone (insertion). During surgery the origin is left in place and the tendon attachment/insertion is detached and reattached into a different place.

Your Consultant will discuss the options for treatment that are appropriate for you.

## What other treatment may I have?

You will be seen by the Physiotherapist to start exercises aimed at preventing joint stiffness. These exercises do not make the nerves heal any faster but keep joints supple and help you look after the arm. You may also get some help and advice with pain management.

You will be given a 'polysling' to help support your arm and you will be advised on how and when to wear this. The length of time that your arm needs to be immobilised will depend on the severity of your injury and the healing of any other associated injuries e.g. dislocated shoulder or fractures of the arm.

A specially made brace may be recommended to support the arm. These are custom made and help to maintain the correct position of the upper arm and shoulder. The brace is usually recommended following surgery or if recovery is likely to be slower.

## Polysling advice

### What is a polysling?

The shoulder immobiliser (Polysling) is a sling that is made up of foam material with Velcro straps to attach it together. The sling is designed for immobilisation of the shoulder and arm, preventing the arm from turning outwards.

### Why do I need to wear it?

Following surgery it is advised that you avoid movement of the arm and shoulder. The sling is used to support your upper limb and provide elevation of the forearm, which also helps to reduce swelling.

### Do's and Don'ts when wearing a polysling

- **DO** observe the colour / circulation and sensation of your hand and fingers. If you experience any dusky blueness, tingling, pins and needles or swelling (that is out of the ordinary for you to experience) you **MUST** contact a Doctor immediately.  
(NOTE: bruising over the chest area and the injured arm is common with your injury and following surgery. However, bruising may not be present at first and then appear gradually.)
- **DO** exercise your hand, fingers and wrist if instructed, for approximately 5 minutes in every hour.
- **DO** take regular pain relief as advised by the Doctor/Nurse as this should allow you to exercise comfortably.
- **DO** sleep upright, using extra pillows for support to ease the pain.
- **DO NOT** attempt to remove the Polysling until advised to do so by the Doctor/Nurse. This is usually not until 4 - 6 weeks after your operation.
- **DO NOT** wear jewellery on your injured arm as fingers may swell.
- **DO NOT** wear nail polish on your injured arm / hand as this prevents observation of your circulation.

## Hygiene

As you are advised NOT to remove the sling, it will be difficult for you to perform hygiene under the armpit and arm areas. You are advised to use baby wipes to gently slide in and out to clean in these areas. If you are unable to do this or have a concern over your hygiene needs then we can arrange for a District Nurse to visit you at home.

## Pain and other symptoms

### What is pain?

Pain can be defined in basic terms:

- An unpleasant sensory event
- An unpleasant emotional or psychological experience

- Associated with or an actual damage to tissue, skin, muscles, bone

Pain is a sensory and emotional experience. It is a type of warning signal that tells us there is something wrong such as an Injury. It is important to realize that pain is more than a physiological event - it is an emotional and psychological one too.

Acute pain is short lived lasting from a few hours to a few weeks and is usually successfully treated with or without medication. Chronic pain is when pain persists for longer than expected and can last from 3 months to many years.

## Normal pain signals

Normally pain is caused by a stimulus that activates free nerve endings (the nerve endings are termed "nociceptors"). These signals are then transmitted from the nerve endings in the body to the spinal cord and then to the brain. The signals reach different parts of the brain where they are processed and the brain then sends signals downwards to the spinal cord to control the way the pain signals are either reduced or increased. Cells at the nerve endings, in the spinal cord and in the brain can become over sensitised as a result of constant pain input. This is called 'wind up' and is one of the reason why persistent pain does not go away easily.

## Assessment of pain

You may be asked to complete some forms to record the different nature of your pain experience including:

**Location of pain:** is it in a single place or multiple locations on the body? The location and pattern of distribution of the pain can lend clues as to the cause.

**Nature of pain:** is the pain intermittent, does it come and go depending on something you do like a movement or activity or is it constant and unrelieved

**Duration of pain:** is it related to an injury in the acute phase and associated with a normal painful response? Is it chronic - lasting for some months due to an ongoing condition?

**Intensity of the pain:** often measured on a scale of 1-10 (with 10 being the worst pain).

**Quality of pain:** is it sharp, does it burn, is it throbbing, does it feel like an electric shock etc.

**Other factors:** do you have any other symptoms e.g. depression, sleep disturbances, changes in appetite, etc?

## Causes / types of pain

**Nociceptive pain** - this follows an Injury to skin, muscles, bones or tendons. It usually settles with healing but can persist and can recur over time.

**Neuropathic / nerve pain** - this is due to damage to the nerves. You may feel some pain that can be different from anything you have felt before. It may vary from mild pins and needles to more severe nerve burning pain or electric shock like shooting pain. Neuropathic pain can be difficult to treat and may respond better to special medicines which have different actions from normal painkillers, although these are still used and can be effective in many cases. The drugs used for the neuropathic pain do not work immediately but should provide you with improved pain relief after a short time.

Here are some common medicines used to manage pain. Sometimes using 2 painkillers together that work in different ways can be more effective. Paracetamol is frequently combined with other drugs.

- **Non steroidal anti inflammatory (NSAID's)** - these drugs include Diclofenac, Ibuprofen and others. They work by reducing hormones that cause inflammation and pain in the body and are used to reduce pain, inflammation and stiffness caused by many conditions.
- **Tramadol** - this is effective in the management of moderately severe acute or chronic nociceptive pain. It is often useful when administered with other drugs.
- Anti epileptics e.g. gabapentin, pregabalin, carbamazepine, lamotrigine



- » **Gabapentin (Neurontin)** - this is used to help relieve certain types of nerve pain, but has another use as it can also be prescribed for patients who need help to control seizures (convulsions) or epilepsy. This is usually started at a low dose and gradually increased until a benefit is seen. This drug should not be stopped abruptly.
- » **Lyrica (Pregabalin)** - this is a newer medicine used to help relieve nerve pain and can also be used for patients with seizures. It is similar to Gabapentin and is usually started at a low dose and gradually increased until a benefit is seen. This drug should not be stopped abruptly.
- Anti depressants e.g. amitriptyline, duloxetine, venlafaxine
  - » **Amitriptyline** - this is in a class of drugs called tricyclic antidepressants. It may be used to treat nerve pain but has another use in patients with symptoms of depression such as feelings of sadness, worthlessness, or guilt; loss of interest in daily activities; changes in appetite; tiredness; sleeping too much or insomnia. It is often given at night and can improve sleeping patterns but may take up to 2 weeks to notice any pain relief.
- All drugs may produce side effects with signs and symptoms that will be discussed with you advising you what to be looking out for. E.g. dry mouth, sleepiness, weight gain, memory problems, tummy upsets.
- Topical medicines e.g. gels, creams, patches
- **TENS (Transcutaneous Electrical Nerve Stimulation)** - This is a small portable electrical device which is designed to help relieve pain. It works by sending a harmless electrical current through pads that are placed on your skin. This is felt as pins and needles and these feelings can help to block pain messages. It can be used on various parts of the body but only on skin that has normal feeling. If you would like to find out more about TENS and whether it would help you, please contact the team.

## Other techniques

The use of other techniques in addition to drug therapy can be useful to help you “live with” the pain. The purpose is to focus on the effects of pain on behaviour, mood, function and activity. It is important to set yourself goals, such as being more active, returning to activities and to use the pain relief produced to achieve these goals. The aim is to improve your ability to function and enhance your ability to cope with the pain. These services are provided by the Clinical Nurse Specialist.

## Coping with change / Psychological issues

A brachial plexus injury can be life changing and you may experience some differences in the following areas of your life:

**General health** - insomnia (sleeplessness), fatigue, loss of appetite, weight loss or gain (this may be related to your medications). These symptoms usually resolve over time.

**Daily living** - difficulty in carrying out everyday activities including your current work, future employment concerns, participation in sports and hobbies, doing housework and child care, shopping etc.

**Psychosocial** - poor concentration, memory and self esteem, lack of self confidence, losing a sense of control, problems with your libido (sex drive) anxiety, frustration, anger, guilt, focusing on the pain to the exclusion of everything else.

You may also experience emotions, thoughts and feelings that are similar to the grieving process. These may include:

**Anxiety** - you may feel anxious when faced with situations that challenge your physical abilities and this may then hinder you from participating in everyday activities especially out of the house amongst company.

**Anger** - you may feel angry with yourself and / or you may feel angry with others. This may relate to how your Injury was sustained. You may take this anger out on those especially close to you and experience mood swings and temper outbursts.

**Denial** - you may feel unable to accept the facts and information of what has really happened. This is a defence mechanism and perfectly natural. Some people can become locked in this stage when dealing with a traumatic change to their life that cannot be ignored.

**Depression** - this is a sort of acceptance with emotional attachment. It is natural to feel sadness and regret, fear, uncertainty etc. It shows that you have at least begun to accept the reality of how your injury is impacting on your life.

**Acceptance** - this occurs when you realise the full enormity of the circumstances and it begins the physical and emotional healing processes. Once you enter this stage you will notice a change in your attitude and the real work towards full recovery begins.

It is important for you to seek help with any of these issues that are concerning you or your family. The Clinical Nurse Specialist offers counselling that can help you with all of the above experiences.

We aim to provide you as much information as we can. However if we seem to be a little vague when we discuss this with you this is because there are so many different examples of injury and the severity can vary along with the levels of damage to the nerves and consequently the treatment choices available also very.

We often have to wait for time to pass before we are more able to predict what the end result might be.

### **What we do is:**

- Try to avoid false expectation
- Aim to be honest in our discussion concerning your injury
- Offer you and your family support and counselling from the outset and this will continue for as long as you need during your treatment and rehabilitation
- Always explain the ongoing care that is given to you and the reasons for this.

You may be concerned over the appearance of your arm. Some injuries cause the arm to be loose, floppy and hang at your side. Other injuries may cause the arm to be tight with a bent position to the hand and fingers. You will be assessed to determine if a supporting brace/splint (orthosis) would be suitable for you. There are different slings and splints that may be used to help you cope with your arm injury whilst you carry on with everyday living.

You will be assessed for any aids that will help you retain your independence. However, you may feel rather frustrated at the things that you are not able to do and it sometimes means that you have to rely on others to help you out. This may lead to relationships being placed under pressure. You may feel moody, angry, tearful or guilty that you are so dependent on your loved ones.

These feelings can affect all aspects of your life, including sexual relationships. You may feel that your 'disability' is affecting how others see you and how you see yourself. It is important that your feelings are recognised and discussed. You may also find that if you experience chronic pain this may reduce your sexual function. This can be due to a number of factors including:

- The medication that you take
- Fear of difficulty in moving and positioning
- Feelings of reduced masculinity/ femininity (often associated with a change in role)
- Physical appearance and self esteem
- Lack of energy and motivation

These issues can be discussed privately and confidentially with the Clinical Nurse Specialist who is qualified in cognitive behavioural therapy and counselling skills and can provide support to you and your family during this time. She can also offer advice on employment and financial issues, with referrals to appropriate agencies where necessary. There is a list of some useful websites at the back of the booklet.



# Counselling

## What is counselling?

One simple definition is that counselling is a working partnership in which you are helped to explore and manage what is happening in your life.

Counselling takes place in a private and confidential setting to help you deal with any issues you may be experiencing such as:

Coping with your reactions to your diagnosis – fear, changes to your body, anxiety about treatment, anger, loss of control & independence

Exploring personal issues –relationships, work and pleasure activities, your goals and ambitions

Family and relationship issues – how to talk about your thoughts and feelings to your family, intimacy with your partner, role changes within the family, sexual activity.

Dealing with practical issues – seeking benefits, transport problems, how to talk to your doctor

Acceptance and respect for the client are essentials for a counsellor and, as the relationship develops, so too does trust between the counsellor and client, enabling the client to look at many aspects of their life, their relationships and themselves which they may not have considered or been able to face before.

## Why do people have counselling?

There are many times in our lives when we all feel we need someone to listen to us. This is basically what counselling is - someone to listen to you. You may be finding it difficult to deal with your diagnosis and you may be feeling as if your life has turned 'upside down'. Things you can normally cope with such as going to work, household activities, looking after your family and socializing may become more difficult, and have less meaning for you. Your intimate relationships might alter because of changes in how you look and the way you feel about yourself. You may want to carry on with life as normal, but feel frustrated that you can't. Many people with a brachial plexus injury may have feelings that they're not in control of their life at this time and this can be very difficult to adapt to.

Bottled up feelings such as anger, anxiety, grief and embarrassment can become very intense and counselling offers an opportunity to explore your feelings with the possibility of making them easier to understand. A counselor can help you to find a way to make things less difficult to deal with.

## Why do i need it?

Many people are put off counselling because they feel it's a sign of weakness or that they've failed to cope with things on their own. This is far from the truth, as admitting to yourself that you need help is a strength, not a weakness. Your own feelings are what matter right now.

It takes courage to seek help with a counselor but it shows that you're taking control of things. You recognize that at this point in your life, you need someone to talk to, to help sort out your thoughts and feelings. There's nothing wrong with that. In the long run it may make you a much stronger person and help lessen the struggle you're going through.

Having counselling is a really positive experience for many people. True, it does sound a bit daunting and it can be upsetting at times, but it can be of real benefit to have some dedicated time devoted just to you - some time to spend thinking about how you feel, what you want and what's happening in your life right now.

As a general rule counselling may help you get back on track if your diagnosis causes you to experience any of these issues:

- Feel very anxious, depressed, sad, tired or angry
- Find it difficult to cope with everyday issues such as work or socialising
- Have problems with sleeping and concentrating
- Have financial, sexual or relationship problems

## What is involved?

The confidential counselling consultation will take place in private with just the counsellor and you together. However, if you are seeking couples counselling then you and your partner will be seen together. Usually, you can expect to see the counsellor for an hour or so at a regular time every couple of weeks. You may have a weekly session for a set period of time (often 6 or 8 weeks) or you might have sessions for as long as you and your counsellor agree that you need them.

### Your counselor will aim to:

- Listen properly to what you are saying
- Not interrupt you
- Help you sort out and untangle your feelings and worries
- Provide you with insight into how you really think and feel
- Help you express your emotions in your own way
- Help you work out your own solutions to problems
- Help you accept what cannot be changed
- Help and support you while you do all this

## Supportive one to one counselling

You may just need some 'one to one' supportive counselling sessions. This basically means that you need a caring and patient person to talk your worries over with in privacy, knowing that what you say is confidential. The counselor may not use a particular counselling method here but they are a trained person who will listen to you and help you work out some solutions which can be very helpful.

## Cognitive Behavioural Therapy

Cognitive describes the mental process that people use to remember, reason, understand, problem solve and judge things. Behaviour describes your actions or reactions to something. CBT aims to help you change how you respond to situations or emotions.

It helps you understand how your thought patterns may be contributing to feelings of depression or anxiety. This therapy also teaches you how to calm your body and mind using relaxation & breathing techniques. This helps you to control your feelings more, think clearly and generally feel better about things.

In a counselling situation, CBT is often used to help people overcome:

- Difficulty in keeping emotions under control e.g. anger, sadness, fear guilt
- Feeling very stressed
- Depression
- Panic attacks and anxiety
- Sleep problems
- Low self esteem / body image

## Mindfulness

Mindfulness based approaches are intended to teach practical skills that can help with physical and psychological health problems and ongoing life challenges. Mindfulness involves bringing your complete attention to the present experience on a moment to moment basis. This teaches you to be consciously aware of your thoughts, feelings and surroundings and helps you recognize habitual patterns of mind and allows you to respond in new ways. This can be particularly effective in coping with pain.

## ADDITIONAL ACTIVITIES

Here are some of the additional therapies that may be incorporated into your counselling sessions:

- Progressive muscle relaxation
- Breathing exercises / Relaxation therapy
- Anxiety management / Anger management
- Visualisation therapy / guided imagery – for pain management
- Medication reviews
- Couples intimacy issues / sensate focus
- Goal setting/action planning

For further advice or information, to have an informal chat or to make an initial appointment please contact:

Beverley Wellington (Clinical Nurse Specialist)

Tel: 0141 347 8062

# Physiotherapy exercise programme

The following programme of exercises is designed to help you be as independent as possible while doing the exercises.

You will be told when you are ready to start these exercises. A physiotherapist will show you exactly what you have to do.

The shoulder and elbow exercises are usually started at 4 to 6 weeks, once the Polysling has been removed. The wrist and hand exercises can be done while the Polysling is on. You should repeat each exercise 10 times, twice or three times each day.

## Shoulder exercises

1. Lying on your back, clasp your affected arm by the wrist or hand and lift your arm above your head. This movement should gradually improve until you are able to take your arm all the way above your head as shown.



2. You will need help with this exercise. The person helping you puts one hand across the top of your shoulder to stop it moving. With their other hand they grasp around your elbow and then fix your forearm between their body and side. Your arm is then moved out to the side as far as possible



3. You will need help with this exercise. The helper holds around your elbow to keep your arm close to your side. Their other hand holds around the wrist and in this position turns your arm out towards them.



4. Once your movement improves enough for you to reach above your head, you can stop exercises 2 and 3 and use this combined exercise instead.

Lift your affected arm up as far as you can and put your hands behind your head. In this position, stretch your elbow back towards the pillow.

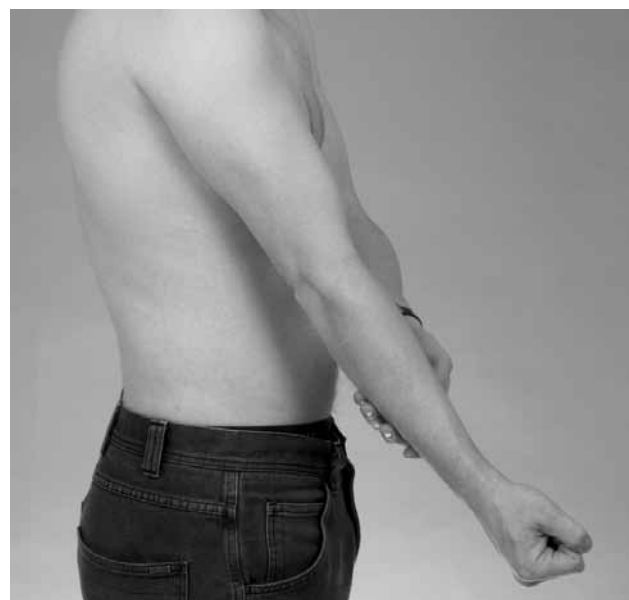


### Elbow exercises

5. While standing, hold your affected arm around the wrist and help bend your elbow up as far as you can.



6. Straighten your elbow out as far as you can. To help you get more straightening, place your other hand behind the point of elbow. If you find this exercise difficult, try adding a light weight as shown below.

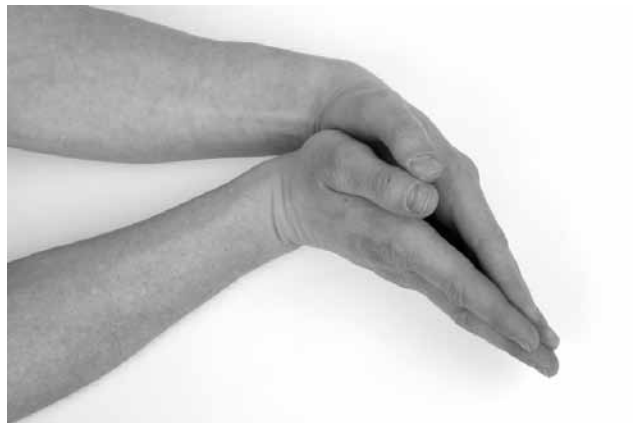


## Wrist exercises

7. While seated, help your affected hand by putting palm to palm and push the wrist back.



8. While seated, place your unaffected hand over the back of your affected hand and bend the wrist forward.



9. Hold your affected hand in the mid part of the palm and turn your hand up.



10. Hold your affected hand in the mid part of the palm and turn your palm down.



## Hand exercises

11. Use your unaffected hand to help bend your fingers into your palm. Make sure you bend your fingers from the knuckles so you are curling your fingers as much as possible.



12. Spread your fingers by placing the fingers of your unaffected hand in between the fingers of your affected hand and stretch them apart.



## Thumb exercises

13. Stretch your thumbs across your palm as far as you can.



14. While seated, fix your hand between your knees and stretch your thumb away from the fingers.





# Personal Physiotherapy Programme

In addition to this exercise programme your physiotherapist may suggest exercises specific to you and your injury. Notes to guide you with these can be found below:-

## Muscle Stimulation

When the muscles that have not been working start to show signs of working, it will often be a very small flicker. In the early recovery phase this is often not enough to move the joints involved so may be hard for you to exercise. Muscle stimulation is a device that can be helpful at this stage. It works by electrically stimulating the muscles with pads placed on the skin over the muscle you want to work. It stimulates the muscles to contract and can help to give you the feeling of moving them again. However it does not replace your exercise programme. Please ask your physiotherapist if you want to know more about muscle stimulation.

## General Exercise

Physical activity of any type is good for you for a number of reasons. It is known to release chemicals called endorphins into the bloodstream which can act as natural painkillers and therefore make you feel better in mood also. It is good for your body to stay in good physical condition to help with the healing process. If you enjoyed certain sports or physical activities before your injury it is very helpful to return to them as soon as possible to fulfill your enjoyment and possibly take your mind off your pain or injury. The team will provide advice and support on how and when it is suitable to return to activities specific to you. There are many ways of adapting activities to allow you to return to them if your arm does not fully recover. Please ask for advice.

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# Driving, employment and other issues

## Driving

If recovery from your injury is likely to take some time and you are unable to drive your car, your Consultant is able to refer you for a special driving assessment (usually held at Astley Ainslie Hospital in Edinburgh but there are other travelling assessment units). There is quite a lengthy waiting period for these assessments. [www.smart.scot.nhs.uk](http://www.smart.scot.nhs.uk)

They will recommend any modifications needed to your vehicle so that you may safely drive it. These may include steering wheel 'rotators' change to automatic transmission, positioning of indicator switches etc. Further information is available on the website with regards to driving following Brachial Plexus Injury with pictures of adaptations included. [www.brachialplexus.scot.nhs.uk](http://www.brachialplexus.scot.nhs.uk)

Brachial plexus is a condition that you need to tell the Driver and Vehicle Licensing Agency (DVLA) about ([www.dvla.gov.uk](http://www.dvla.gov.uk)) and need to complete form G1 [www.direct.gov.uk](http://www.direct.gov.uk)

## Employment

If you are unable to return to your present employment or require assistance to function in your current job then the Occupational Therapist is able to offer you relevant information. She may refer you to a Disability Employment Advisor at your local Job Centre.

There are various benefits and services offered by the Department for Work and Pensions which you may be entitled to claim for see section on Allowances and Benefits on page 29. We can offer advice and guidance on seeking help with these matters.

## Sports & hobbies

The benefits of participation in sport are well known to promote health, well being and self-esteem. The majority of activities can be adapted to allow participation. Patients known to the Brachial Plexus service have been able to return to a variety of sport & hobby activities using adaptations e.g. Fishing, playing guitar, running, bicycling, playing snooker and gardening.

Please refer to the website for more detailed information regarding sport and hobbies.

# Advice while you are in hospital

## Examinations and assessments

Whilst you are in hospital and when you attend the clinic as an outpatient, you will have your injured arm examined. This means that you have to uncover the top half of your body so please be advised to wear suitable clothing. We may note specific information on charts during this examination. You may also be asked to fill in other assessment forms which ask about your everyday activities, any pain you may have and other social / emotional issues.

## Clothing in hospital

The staff will discuss with you the most appropriate clothing for you to wear when you are going home and whether you have to wear your sling underneath your clothes.

## Medication

The ward Doctor will order any medicines that you need from the hospital pharmacy. A letter will be sent to your GP with details of the treatment and medicines you have received. You should obtain any future medicine prescriptions from your GP as usual.

If you gave the staff your own medicines when you were admitted to hospital we will return them to you, if they are still prescribed for you when you are discharged home.

## Discharge information

The staff in the ward will discuss your plans for leaving hospital with you and your carers/family as soon as possible in order that all the necessary details can be gathered and the plans for your discharge organised. The Clinical Nurse Specialist will also be involved in your discharge plans.

## Transport home

We advise you to arrange for a friend or family member to collect you from hospital to take you home. If for clinical reasons you are assessed to require assistance from a hospital car or patient transport service (ambulance) we will need to order this transport at least 24 hours in advance (if you live out with the Glasgow area this may need to be booked 48 hours ahead). If you do go home in an ambulance you are only allowed to take one small bag of luggage. This is due to limited space in the vehicles. It is not always possible for a family member to escort you in the ambulance. We are also unable to specify exact times for this type of transport pick up.

# After you are discharged from hospital

## Physiotherapy and Occupational Therapy

If your Consultant wishes you to have therapy once you have been discharged, then the Physiotherapist and Occupational Therapist will discuss the need for further treatment with you. If you are not local to the New Victoria Hospital then the Physiotherapist will arrange this for you in your local health centre or hospital. The team physiotherapist will contact you shortly after discharge home to confirm the arrangements that need to be made. The Occupational Therapist may arrange for a local Community Occupational Therapist to visit you at home.

## Outpatient appointments

We will make an outpatient appointment for you to come to a clinic. We may give you the appointment card before you leave the ward or it will be sent to you in the post (this can be up to 2 weeks before the clinic appointment date). The Brachial Plexus Injury Clinic is held once a month on a Monday afternoon but we may ask you to return to another of Mr Hems' clinics.

We advise you arrange for a friend or family member to bring you to your clinic appointment at hospital. If you have medical or mobility needs and require support from the Scottish Ambulance Service to reach your healthcare appointment then you should contact their Booking Line on 0300 123 1236.

If there are any issues that you or your family/carer would like to discuss concerning your discharge from hospital then please speak to the ward staff or the Clinical Nurse Specialist. We are happy to discuss your plans for going home at any time and hope to make this part of your care as satisfactory as possible.

## Wound care and dressings

If you are advised that your wounds need the dressings changed, or require inspection, we will discuss with you whether you should return to the Clinical Nurse Specialist at the New Victoria Hospital, or if it is appropriate for you to attend your GP's practice nurse or if you require a District Nurse to visit you at home. Any details of your wound care and dressing's advice will be noted below.

### Wound closure

Subcuticular          Sutures                  Paper                  Clips

### Dressings used

Tegaderm                  Mepore                  Aquacel

Other (specify):

Further advice:

Observe your wounds for any of these warning signs:

- Feels very hot and fiery.
- Red or swollen.
- Foul smell / bad odour.
- Excess leakage from the wound / through the dressing e.g. blood.
- Thick yellowy brown liquid, pus.
- Sudden increase in pain around the wound.

If you experience any of these symptoms you **MUST** contact a doctor immediately.

# Allowances and benefits (information confirmed Summer 2015)

We would advise you to visit the websites for the Department of Works and Pensions (DWP) and Job Centre Plus ([www.dwp.gov.uk](http://www.dwp.gov.uk)). The Disability and Carers Service is part of DWP and can provide advice on benefits.

## Personal Independence Payment

Personal Independence Payment (PIP) helps with some of the extra costs caused by long-term ill-health or a disability if you're aged 16 to 64. The rate depends on how your condition affects you, not the condition itself. You'll need an assessment to work out the level of help you get. Your rate will be regularly reassessed to make sure you're getting the right support.

Personal Independence Payment (PIP) is usually paid every 4 weeks. It's tax free and you can get it whether you're in or out of work. It's made up of 2 components (daily living and mobility parts). Whether you get one or both of these depends on how your condition affects you.

You must have a long-term health condition or disability and have difficulties with activities related to 'daily living' and or mobility. You must have had these difficulties for 3 months and expect them to last for at least 9 months.

### Contacts:

#### DWP - Personal Independence Payment claims

Telephone: 0800 917 2222

Textphone: 0800 917 7777

Monday to Friday, 8am to 6pm

#### Personal Independence Payment New Claims

Post Handling Site B

Wolverhampton

WV99 1AH

You'll be asked for information like:

- contact details and date of birth
- National Insurance number
- bank or building society details
- doctor's or health worker's name
- details of any time you've spent abroad, or in a care home or hospital

You'll be sent a 'How your condition affects you' form. It comes with notes to help you fill it in. Return the form to DWP - the address is on the form. You must use the PIP application form DWP send you. [www.gov.uk/browse/benefits/disability](http://www.gov.uk/browse/benefits/disability)

## Carer's Allowance

Carer's Allowance is a benefit to help people who are spending at least 35 hours per week looking after someone receiving PIP or Attendance Allowance (if over 65). It may affect any other benefits, allowances or entitlements that you or the people who care for you are receiving.

## Employment & Support Allowance

Employment and Support Allowance provides financial help to people who are unable to work because of illness or disability. It also provides personalized support to those who are able to work. You can apply for ESA if you're employed, self-employed or unemployed.

Employment and Support Allowance involves a medical assessment called the Work Capability Assessment. This is to see to what extent your illness or disability affects your ability to work. You'll then be placed in one of 2 groups if you're entitled to ESA:

- work-related activity group, where you'll have regular interviews with an adviser
- support group, where you don't have interviews

The amount you get paid depends on your circumstances. For income-related Employment and Support Allowance, your household income, pension and any savings of £6,000 or more are taken into account.

The quickest way to apply for Employment and Support Allowance is by phone.

### Contact centre numbers

Telephone: 0800 055 6688

Textphone: 0800 023 4888

Welsh language telephone: 0800 012 1888

Monday to Friday, 8am to 6pm

You can also fill in and print out the ESA1 form and send or take it to your local Jobcentre Plus office.

## Attendance Allowance

Attendance Allowance is a tax-free benefit for people aged 65 or over who need help with personal care because they are physically or mentally disabled. Attendance Allowance isn't usually affected by any savings or income you may have. It's paid at 2 different rates and how much you get depends on the level of care that you need because of your disability.

You can get Attendance Allowance if you're 65 or over and the following apply:

- you have a physical disability (including sensory disability, e.g. blindness), a mental disability (including learning difficulties), or both
- your disability is severe enough for you to need help caring for yourself or someone to supervise you, for your own or someone else's safety

### Attendance Allowance helpline

Telephone: 0345 605 6055

Textphone: 0345 604 5312

Monday to Friday, 8am to 6pm

## Support with travel costs

If you travel to hospital by transport, you may be entitled to get help with your costs. You must check in advance if you are eligible, this can be done by contacting the NHS Travel Health Costs Advice Line on 0845 850 1166 (Calls are charged at local rate; 8am-6pm Monday- Friday) or [www.scotland.gov.uk/healthcosts](http://www.scotland.gov.uk/healthcosts)

The amount reimbursed will be for the cost of the cheapest form of transport available, which is usually public transport

You may be entitled to claim Healthcare Travel Costs if you or your partner are receiving:

- Income Support
- Income-based Jobseeker's Allowance
- Guarantee Pension Credit
- Income-related Employment and Support Allowance

# A guide to words and phrases used in your care

**Abduction** - moving a limb away from the body e.g. lifting the arm out to the side.

**Adduction** – moving a limb towards the body e.g. bringing the arm close to the body from the side.

**ADL's** – activities of daily living e.g. washing, walking, cooking, toileting, shopping etc.

**Arthrodesis** – the fusion of bones across a joint space to eliminate unstable movement (e.g. shoulder or wrist joint).

**Atrophy** – wasting away (e.g. muscles waste when they are not stimulated by nerves to work).

**Avulsion** – tearing away (e.g. the nerve root has been torn out of the spinal cord).

**Axilla** – the under armpit area.

**Axillary Nerve** - from C5, 6. Provides deltoid muscle to allow abduction (lifting and turning out of humerus).

**Axonotmesis** - nerve that is stretched and damaged but not torn apart.

**Biceps** – muscle at front of the upper arm that helps to bend the elbow.

**BPI** – brachial plexus injury.

**Clavicle** – collar bone.

**Contracture** – resulting from thickening and scarring of the tissues supporting the muscles or the joints making them difficult to stretch.

**Contusion** – a bruise or injury to a part without a break in the skin.

**CAT scan** (computerised axial tomography) – a form of x-ray examination where the scanner moves around the body part and produces cross section images by computer.

**Deltoid** – thick, triangular muscle that covers the shoulder joint and raises the arm away from the side of the body.

**Diaphragm** – thin muscle below the lungs and heart that separates the chest from the abdomen and helps with deep breathing.

**Extension** – straightening of a limb of joint.

**Flaccid** – weak, flabby, lacking in firmness or tone (especially muscles).

**Flexion** – bending of a limb or joint.

**Fusion** – the joining together of two bones at a joint, to stabilise and limit movement (e.g. shoulder or wrist).

**Horner's Syndrome** – a nerve condition which involves a drooping eyelid, small (constricted) pupil and lack of sweating on one side of the face. The pupil usually remains small. This syndrome may be seen following a high impact injury to the brachial plexus.

**Humerus** – upper arm bone.

**Median nerve** - from C5 - T1. Provides muscles that turn palm down and also thumb and finger movement (bending).

**Motor nerve** – a nerve that carries messages outwards to bring about movement in a muscle.

**MRI** (magnetic resonance imaging) – a special technique using radio-waves and a large magnet within the scanner to provide an image of particular structures within the body.

**Muscle stimulator** - this is a device that works by electrically stimulating the muscles with pads placed on the skin over the muscle you want to work.

**Musculocutaneous nerve** - from C5-C7. Provides biceps to allow elbow flexion (bend).

**Nerve grafting** – when direct stitching together of the nerve is not possible, a length of another nerve is taken and a number of strands are built up to repair the damaged nerve.

**Nerve transfers** – this allows for a nerve to be transferred to the end of the damaged nerve that has lost its connection to the spinal cord.

**Neurapraxia** - nerve that is minimally stretched or compressed with no structural damage.

**Neurophysiology** (often described as nerve conduction studies and includes EMG electromyography) - These tests measure how well muscles respond to electrical impulses and give us information about the amount of nerve damage and how much the nerve is recovering.

**Neuropathy** – any disease of the peripheral nerves, causing weakness and numbness (e.g. injury to the nerves that supply sensation/feeling to the arms and legs).

**Neurotmesis** - nerve that is cut or stretched till torn apart.

**Orthosis** – an appliance, brace or splint used to provide support to a limb.

**Paraesthesia** – abnormal tingling sensations e.g. pins and needles.

**Peripheral nerves** – all parts of the nervous system outside of the brain and spinal cord.

**Phrenic nerve** – the nerve that makes the diaphragm work (starts at the side of the neck).

**Plexus** – a network or tangle of nerves.

**Radial nerve** - from C5-T1. Provides triceps to allow elbow extension (straightening) and muscles that 'cock up' wrist and thumb and finger movement (straightening)

**Radius** – forearm bone.

**Scapula** – shoulder blade.

**Sensory nerve** – a nerve that carries messages inwards to relay information about temperature, pain, touch and feeling.

**Shoulder arthrodesis** (fusion) – this is reserved for unstable or painful shoulders or to help improve function and the operation is tailored for each individual patient.

**Spastic** – a tight, spasm like tone (especially in muscles).

**Tendon** – attaches a muscle to bone, helping with movement.

**Tendon or muscle transfers** – an operation to move the attachment of a tendon in order to perform a different movement. Various different tendons can be used.

**TENS** (transcutaneous electrical neuromuscular stimulation) - used for managing pain relief, this is a small machine with electrodes, runs on batteries and stimulates the nerve endings in the skin, dulling the pain messages in the brain.

**Tinel's Sign** – a method of checking the recovery of a nerve by tapping lightly over the nerve to see if you experience any tingling sensations.

**Triceps** – muscle at the back of the upper arm that helps straighten the elbow.

**Ulna** – forearm bone.

**Ulnar nerve** - from C8-T1. Provides many muscles of hands and fingers to allow movement.

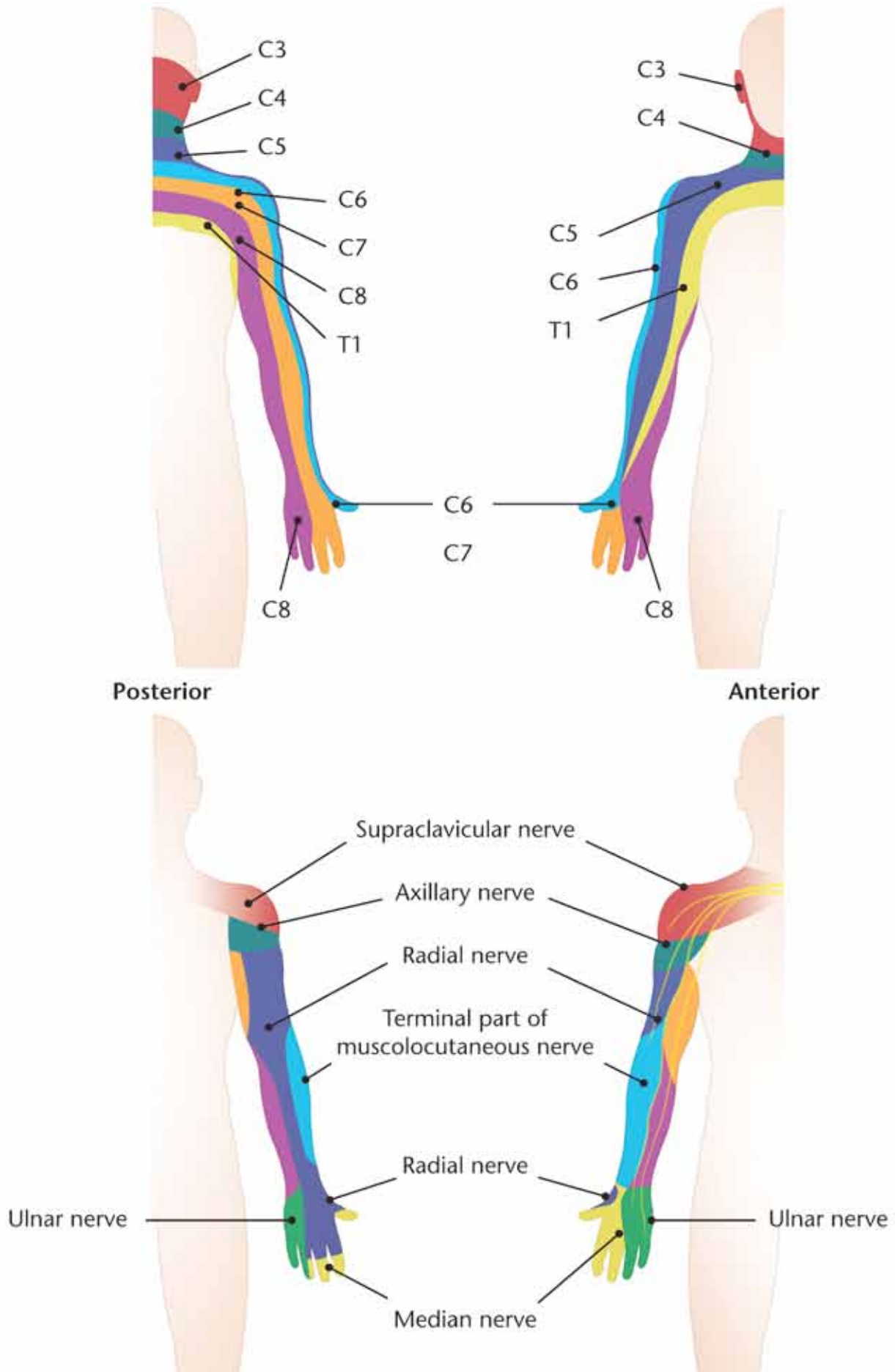


## Peripheral nerve distribution and functional limitations

Nerves	Muscles	Functional limitations
Suprascapular nerve C5, C6 (shoulder girdle)	Supraspinatus, Infraspinatus	Inability / difficulty with turning arm out from shoulder
Axillary nerve C5, C6	Deltoid	Unable to lift arm fully away from side of body
Musculocutaneous nerve C5-C7	Biceps	Loss of elbow bending (flexion)
Median nerve C5 – T1	Some of the muscles which move the fingers	Weakened grip, loss of pinch grip, loss of finger bending
Radial nerve C5-T1 (arm)	Triceps	Unable to straighten the elbow when arm above shoulder height (extension)
Radial nerve C5-T1 (forearm)	Extensor muscles of the wrist, fingers and thumb	Wrist drops down, unable to straighten the fingers
Ulnar nerve C8-T1	Some small muscles of the hands	Hand looks flat, sometimes fingers look curled in, loss of fine hand movements

Adapted and modified from Pendleton, H.M & Khron, W.S. (2006) Pedretti's Occupational Therapy

# Areas of sensation supplied by brachial plexus nerves



## Useful contacts and websites

### [www.brachialplexus.scot.nhs.uk](http://www.brachialplexus.scot.nhs.uk)

The official website for our service - access to information booklets, newsletters and links.

### [www.citizensadvice.org.uk](http://www.citizensadvice.org.uk) / [www.cas.org.uk](http://www.cas.org.uk) (Citizens Advice Scotland)

Citizens Advice Bureaux provides free information and advice to help clients with a range of problems including debt, issues with benefits, housing, legal matters, employment etc.

### [www.direct.gov.uk](http://www.direct.gov.uk)

This site gives you information on benefits, driving, housing, employment, tax, pensions, travel etc

### [www.dvla.gov.uk](http://www.dvla.gov.uk)

The DVLA provide information to drivers on a range of subjects including fitness to drive and medical conditions, disabilities and adaptations to vehicles.

### [www.dwp.gov.uk](http://www.dwp.gov.uk)

The Department for Work and Pensions can offer advice on benefits and services including attendance allowance, carer's allowance, disability living allowance, incapacity benefit, statutory sick pay and Job Centre Plus.

Disability Employment Advisers (DEA) are usually based at the Job Centre Plus office. They can provide specialist support if you are looking for work or are already in work. They can carry out employment assessments to identify your potential, abilities, and strengths and give appropriate support and advice.

### [www.skill.org.uk](http://www.skill.org.uk) / [www.disabilityrightsuk.org](http://www.disabilityrightsuk.org)

SKILL (the National Bureau for Students with Disabilities) is a national charity promoting opportunities for young people and adults with any kind of disability in post-16 years of age education, training and employment across the UK. This organisation has now been absorbed into Disability Rights UK.

### [www.smart.scot.nhs.uk](http://www.smart.scot.nhs.uk)

This service offers driving assessment and/or advice for people who wish to commence, resume or continue driving after illness or injury, and also advises on vehicle modifications to enable safe driving or passenger travel for those with a disability.

### [www.tbpi-group.org](http://www.tbpi-group.org)

This is a website created for and by adults who have a Trauma Brachial Plexus Injury. (TBPI) The primary purpose of this website is to supply information and support to adults coping with a TBPI through discussion forums.

### [www.victimsupport.org.uk](http://www.victimsupport.org.uk)

Victim support provides emotional support, practical help and essential information to victims, witnesses and other affected by crime. The service is free, confidential and is provided by volunteers.

# Notes / questions / appointments etc

Please use the following pages of your information booklet to note any questions you may like to ask us or to keep a record of your appointments etc.

Date	Note / Question / Appointment

<b>Date</b>	<b>Note / Question / Appointment</b>







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