



# Clinical guideline for the management of shoulder pain after stroke

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Type of document	Guidance
Target audience	Qualified physiotherapists and occupational therapists within the Community Rehabilitation Service and Ellesmere Port Hospital.
Document purpose	To establish a consistent approach in the assessment and treatment of shoulder pain after stroke.  To enable therapists to deliver the most appropriate evidence based management for shoulder pain in stroke.

Approving meeting	West Locality Governance and Risk Meeting	Date 8-Sep-14
Implementation date	Sep-14 followed by an annual compliance review	

CWP documents to be read in conjunction with	
<a href="#">CP3</a>	Health records policy
<a href="#">MH13</a>	Part IV & IVa MHA 1983 - Consent to treatment
<a href="#">IC1</a>	Trustwide infection prevention and control operational policy
<a href="#">GR3</a>	Risk management policy
<a href="#">GR26</a>	Policy for the safe manual handling of people and loads

To view the documents Equality Impact Assessment (EIA) and see who the document was consulted with during the review please [click here](#)

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## Quick reference flowchart therapeutic strategy to avoid shoulder pain following stroke

For quick reference the guide below is a summary of actions required.

(Reproduced with kind permission from Alice Colder, Clinical Specialist Physiotherapist)

### Patients identified at higher risk of post stroke shoulder pain

#### Clinical observation and assessment

- Past medical history of previous shoulder pain
- Patients who require assistance with transfers
- Clinical upper limb weakness
- Translation of humerus in glenohumeral joint
- Reduced range of movement, particularly lateral rotation
- Capsular tenderness
- Spinothalamic sensory deficit
- Marked tonal changes
- Distal bony tenderness particularly MCP joints
- Inattention/neglect

#### Management of patients at higher risk

- Establish MDT, patient and carer consensus approach to 24 hour manual handling, upper limb support and positioning
- Provide photographs and instruction for above and how to avoid injury
- Increase awareness of potential for injuries to structures of shoulder joint
- Facilitate sensory and motor recovery
- Maintain range of movement in affected arm and hand
- Reduce and monitor any development of oedema in upper limb
- Specific intervention as required e.g. strapping, electrical stimulation (FES), shoulder support

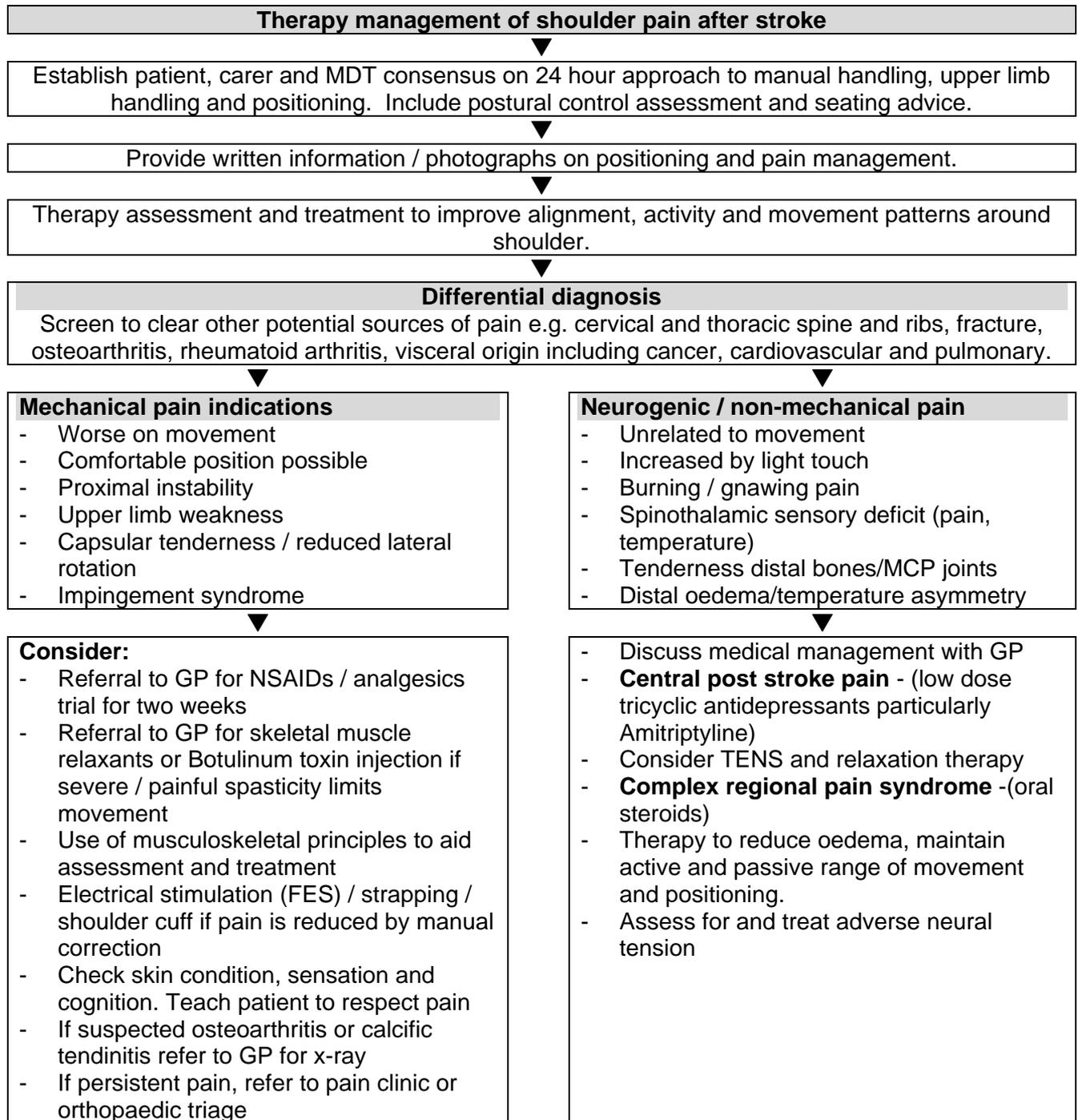
#### Patient self-management

- Ensure self-management strategies in place
- Awareness of how to access re-assessment and advice

References: Turner- Stokes & Jackson (2002), Price (2003), Nicks et al. (2007), Intercollegiate Stroke Working Party (2012).

## Quick reference flowchart to assist in therapy management of shoulder pain after stroke

(Reproduced with kind permission from Alice Colder, Clinical Specialist Physiotherapist)



References: Turner Stokes & Jackson (2002), Price (2003), Nicks et al. (2007), Intercollegiate Stroke Working Party (2012), NICE (2013).

## 1. Introduction

Shoulder pain is one of the most common complications following stroke which can hinder rehabilitation and restrict daily activities. The National Clinical Guideline for Stroke (Intercollegiate Stroke Working Party, 2012) provides specific recommendations based on the latest evidence for the management of shoulder pain. Within Cheshire and Wirral Partnership NHS Foundation Trust (CWP West), stroke patients are referred to the Community Rehabilitation Service or whilst on the stroke rehabilitation unit at Ellesmere Port Hospital. Patients may be referred in the early stages following stroke or months and even years later, therefore presenting with many and varied problems. Recent service configuration within the Community Rehabilitation team has led to therapists previously not involved in stroke care now taking responsibility for the assessment, treatment and longer term management of stroke patients. The purpose of this guideline is to support therapists in the quality care and management of stroke patients, based on current evidence.

The aims of the guideline are:

- To establish a consistent evidence-based approach in the assessment and treatment of shoulder pain after stroke;
- To enable therapists to deliver the most appropriate management for shoulder pain after stroke;
- To improve patient clinical outcomes, measured by individual patient goal achievement and through standardised, validated outcome measures;
- To support Care Quality Commission (Registration) Regulations - Regulation 9, Outcome 4, Care and welfare of people who use services (CQC, 2010);
- To meet standards for professional conduct (BAOT, 2010), (CSP, 2013).

## 2. Definitions

The focus of this guideline is to improve awareness of shoulder pain in patients with a diagnosis of stroke and the strategies to assist in pain avoidance and management. This guideline is based on current evidence-based practice recommendations.

The following terms are used in this document:

Term	Explanation
Adverse neural tension	Excessive nerve tightness.
Alignment	Position of body parts in relation to each other.
Analgesia	Drugs used in the management of pain.
Botulinum Toxin	Drug injected in small doses to treat essential tremor and other related disorders.
Capsular tenderness	Pain experienced in the capsule of the shoulder joint.
Central post stroke pain	Pain experienced due to central nervous system injury often described as burning, aching, prickling which is often constant and unrelenting.
Complex regional pain syndrome	Chronic progressive disease characterised by severe pain, swelling and changes in the skin.
Facilitate	To assist a movement to make it easier or less difficult.
FES (Functional electrical stimulation)	A means of producing contractions in muscles paralysed due to central nervous system lesions by electrical stimulation.
Glenohumeral instability	Refers to when excessive gliding movement at the shoulder joint produces pain, apprehension or dysfunction.
Glenohumeral joint	Refers to the shoulder joint which is the joint between the humerus (upper arm bone) and the glenoid (shallow socket of the shoulder blade).
Impingement syndrome	When tendons of rotator cuff muscles around the shoulder become irritated and inflamed as they pass through a narrow bony space.
Inattention	Reduced attention to one side of the body.
MCP (Metacarpal phalangeal joint)	First joint (big knuckle) of fingers and thumb.

Term	Explanation
Multi-Disciplinary Team	Multi-Disciplinary Team (MDT) consisting of a range of healthcare professionals involved in patient care working towards the same goals.
Muscle tone	Tension present in the muscle at rest.
Neglect	Reduced ability to look, listen or make movement toward one half of the environment.
NSAIDS	Non-steroidal anti-inflammatory drugs.
Oedema	Fluid retention in the body.
Orthotist	Professional, who measures, designs and fabricates devices to support or correct the function of a limb.
Outcome measure	Standardised measure used to assess changes in clinical outcomes as a result of intervention.
Postural control	System that allows posture against gravity and ensures balance.
Shoulder cuff	Supportive device to help maintain good shoulder position to ease pain and reduce instability.
Skeletal muscle relaxant	Drug used for the relief of chronic muscle spasm or spasticity associated with neurological damage.
Spinothalamic tract	A sensory pathway from spinal cord transmitting information regarding pain, temperature, itch and crude touch.
Strapping	Tape applied to limit unwanted movement at a joint and provide stability and alignment.
Subluxation of the shoulder joint	Separation of the humeral head from glenoid cavity. Develops as a result of weak muscles and stretch to soft tissues.
TENS (Transcutaneous electrical nerve stimulation)	Electrical stimulation used to treat pain by blocking the way pain signals are sent to the brain.

### 3. Procedure

No.	Action	Rationale
1.	All patient histories to include questions around shoulder pain and its impact on daily activities, documented in the health records (Intercollegiate Stroke Working Party, 2012).	<ul style="list-style-type: none"> <li>- To ensure all patients with stroke have a full assessment of their pain.</li> <li>- To ensure accurate patient health records.</li> </ul>
2.	All patients to have an assessment of the impact of shoulder pain on activities of daily living, function and participation (Intercollegiate Stroke Working Party, 2012).	<ul style="list-style-type: none"> <li>- To promote independence.</li> <li>- To identify further treatment / equipment required.</li> </ul>
3.	All patients to have an assessment of upper limb positioning. Provide appropriate positioning leaflets ( <a href="#">appendix 1</a> ) and document any advice, and education given to patients and their carers (Canadian Stroke Strategy, 2008, Intercollegiate Stroke Working Party, 2012, NICE, 2013).	<ul style="list-style-type: none"> <li>- To ensure a consistent 24 hour approach.</li> <li>- To ensure careful positioning of arm.</li> <li>- To aid compliance with therapy treatment.</li> </ul>
4.	All patients to have documentation of advice provided to patient and carers on specific moving and handling techniques to minimise risk of pain (Intercollegiate Stroke Working Party, 2012)	<ul style="list-style-type: none"> <li>- To ensure a consistent 24 hour approach.</li> <li>- To ensure everybody handles the weak arm correctly.</li> <li>- To minimise the risk of pain and trauma to shoulder joint through incorrect handling.</li> </ul>
5.	If appropriate, provide Factsheet 30: 'Pain after Stroke' (Stroke Association, 2009). Available at <a href="http://www.stroke.org.uk">www.stroke.org.uk</a>	<ul style="list-style-type: none"> <li>- To aid patient and carer understanding of the condition.</li> </ul>

No.	Action	Rationale
6.	For patients identified at risk of shoulder pain, follow the flowchart ( <a href="#">therapeutic strategy to avoid shoulder pain following stroke</a> ).	<ul style="list-style-type: none"> <li>- To ensure a consistent approach for all patients.</li> <li>- To ensure quality, evidence-based treatment.</li> </ul>
7.	For patients presenting with shoulder pain, follow the flowchart ( <a href="#">flowchart to assist in therapy management of shoulder pain after stroke</a> ).	<ul style="list-style-type: none"> <li>- To ensure a consistent approach for all patients.</li> <li>- To ensure quality, evidence-based treatment.</li> </ul>
8.	When considering FES, therapists must consult with Clinical Lead Physiotherapist for Stroke.	<ul style="list-style-type: none"> <li>- To ensure treatment is safe for patient.</li> <li>- To ensure treatment is provided by fully trained staff.</li> </ul>
9.	Patients presenting with shoulder pain and limitation in range of movement should be treated with gentle stretching and mobilisation techniques focusing on lateral rotation and abduction (Canadian Stroke Strategy, 2008).	<ul style="list-style-type: none"> <li>- To maintain passive range of movement.</li> <li>- To reduce shoulder impingement.</li> <li>- To ensure evidence-based treatment.</li> </ul>
10.	If following treatment there has been no improvement, discuss with neurology clinical specialist physiotherapists and occupational therapists with regard to further management.	<ul style="list-style-type: none"> <li>- To ensure all treatment options have been explored and managed appropriately.</li> </ul>
11.	If no improvement and there are underlying orthopaedic issues, discuss with musculoskeletal physiotherapy service regarding further investigation and advice.	<ul style="list-style-type: none"> <li>- To ensure that all differential diagnoses have been considered.</li> </ul>
12.	All patients with shoulder pain should be evaluated at the onset and monitored at regular intervals (Intercollegiate Stroke Working Party, 2012). Treatment outcomes should be monitored at a minimum on initial assessment and on discharge and documented in the health records. The <a href="#">Oxford Shoulder Score</a> for measuring the impact of shoulder pain on function (Dawson et al, 1996) and the <a href="#">Motor Assessment Scale</a> (Carr & Shepherd, 1985) for measuring upper limb impairment and function should be used, as appropriate.	<ul style="list-style-type: none"> <li>- To establish pre and post treatment outcomes.</li> <li>- To establish effects of treatment.</li> <li>- To minimise long-term problems.</li> <li>- To improve clinical outcomes.</li> </ul>

#### 4. Motor assessment scale

- This outcome measure is validated and reliable for use with stroke patients (Wade, 1992);
- The criteria for scoring appear as on the original document (Carr & Shepherd, 1985);
- Instructions that appear in italics are to assist the standardisation and thus the reliability of scoring within the therapy team, Cheshire and Wirral Partnership NHS Foundation Trust (CWP).

##### 4.1 Criteria for scoring

###### 1. Supine to side lying onto intact side

*State the number of pillows and type of bed used*

1. Pulls himself into side lying. (Starting position must be supine lying, not knees flexed. Patient pulls himself into side lying with intact arm, moves affected leg with intact leg).
2. Moves leg across actively and the lower half of the body follows. (Starting position as above. Arm is left behind).

3. Arm is lifted across body with other arm. Leg is moved actively and body follows in a block. (Starting position as above).
4. Moves arm across body actively and the rest of the body follows in a block. (Starting position as above). *Gross movement of arm allowed.*
5. Moves arm and leg and rolls to side but overbalances. (Starting position as above. Shoulder protracts and arm flexes forwards).
6. Rolls to side in 3 seconds. (Starting position as above. Must not use hands). *Start timing as soon as patient moves any body part.*

## **2. Supine to sitting over side of bed**

*Comment on any associated reactions and on technique.*

1. Side lying, lifts head sideways but cannot sit up. (Patient assisted into side lying).
2. Side lying to sitting over side of bed. (Therapist assists patient with movement. Patient controls head position throughout).
3. Side lying to sitting over side of bed. (Therapist gives assistance with legs over side of bed).
4. Side lying to sitting over side of bed. (With no stand-by help).
5. Supine to sitting over side of bed. (With no stand-by help).
6. Supine to sitting over side of bed within 10 seconds. (With no stand-by help).

## **3. Balanced sitting**

*State if sitting on chair or bed*

1. Sits only with support. (Therapist should assist the patient into sitting).
2. Sits unsupported for 10 seconds. (Without holding on, hips and knees at 90 degrees. Feet supported on the floor).
3. Sits unsupported with weight well forward and evenly distributed. (Weight should be well forward at the hips, head and thoracic spine extended, weight evenly distributed on both sides).
4. Sits unsupported turns head and trunk to look behind. (Hips and knees at 90 degrees and feet supported on the floor. Do not allow legs to abduct or feet to move. Have hands resting on thighs, do not allow hands to move onto plinth).
5. Sits unsupported, reaches forward to touch floor to right and left and returns to starting position. (Feet supported on floor. Do not allow legs and feet to move, support affected arm if necessary. Hand must touch floor at least 4 inches in front of feet).
6. Sits on stool unsupported, reaches sideways to touch floor (*on a level with back of heel*) and returns to starting position. (Feet supported on floor. Do not allow patient to hold on. Do not allow legs and feet to move, support affected arm if necessary. Patient must reach sideways, not forward).

## **4. Sitting to standing**

*State whether standing from chair, bed or plinth*

*Give instruction that if patient feels he can stand without using hands, he should do so*

*Stand-by implies supervision, not actively assisting*

*Allow minor deviation in weight distribution as long as weight evens out once stood*

1. Gets to standing with help from therapist. (Any method).
2. Gets to standing with stand-by help. (Weight evenly distributed, uses hands for support) Gets to standing. (Do not allow uneven weight distribution or help from hands).
3. Gets to standing. (Do not allow uneven weight distribution or help from hands).
4. Gets to standing and stands for 5 seconds with hips and knees extended. (Do not allow uneven weight distribution).
5. Sitting to standing with no stand-by help. (Do not allow uneven weight distribution. Full extension of hips and knees).

6. Sitting to standing with no stand-by help three times in 10 seconds. (Do not allow uneven weight distribution).

## 5. Walking

*Make comment on any orthotic appliance used*

*Make comment if a walking aid was used prior to this episode*

*If a walking aid has been supplied since this episode, do not score more than 3*

*Stand-by implies supervision only*

1. Stands on affected leg and steps forward with other leg. (Weight bearing hip must be extended. Therapist may give stand-by help).
2. Walks with stand-by help from 1 person.
3. Walks 3 metres (10ft) alone or uses any aid but no stand-by help.
4. Walks 5 metres (16ft) with no aid in 15 seconds.
5. Walks 10 metres (33ft) with no aid, turns around, picks up a small sandbag from the floor and walks back in 25 seconds. (May use either hand).
6. Walks up and down 4 steps with or without an aid but without holding on to the rail 3 times in 35 seconds. *If 4 steps are not available, state the number of steps, the time taken, whether a walking aid was used and whether the rail was used at any time.*

## 6. Upper-arm function

1. Lying, protract shoulder girdle with arm in elevation. (Therapist places arm in position and supports it with elbow in extension).
2. Lying, hold extended arm in elevation for 2 seconds. (Therapist should place arm in position and patient must maintain position with some external rotation. Elbow must be held within 20 degrees of full extension).
3. Flexion and extension of elbow to take palm to forehead with arm as in no. 2. (Therapist may assist supination of forearm).
4. Sitting, hold extended arm in forward flexion at 90 degrees to the body for 2 seconds. (Therapist should place arm in position and patient must maintain position with some external rotation and elbow extension. Do not allow excess shoulder elevation).
5. Sitting, patient lifts arm to above position, holds it there for 10 seconds and then lowers it. (Patient must maintain position with some external rotation. Do not allow pronation).
6. Standing, hand against wall. Maintain arm position toward wall. (Have arm abducted to 90 degrees with palm flat against the wall).  
*Assume that patient is able to place hand against wall.*

## Hand movements

1. Sitting, extension of wrist. (Therapist should have patient sitting at a table with forearm resting on the table. Therapist places cylindrical object in palm of patient's hand. Patient is asked to lift object off the table by extending the wrist. Do not allow elbow flexion).
2. Sitting, radial deviation of wrist. (Therapist should place forearm in midpronation-supination, i.e. resting on ulnar side, thumb in line with forearm and wrist in extension, fingers around cylindrical object. Patient is asked to lift hand off table. Do not allow elbow flexion or pronation).
3. Sitting, elbow into side, pronation and supination. (Elbow unsupported and at a right-angle. Three quarter range is acceptable). *No object in hand.*
4. Reach forward, pick up large ball of 14 cm (5 in) diameter with both hands and put it down. (Ball should be on table so far in front of patient that he has to extend arms fully to reach it. Shoulders must be protracted, elbows extended wrist neutral or extended. Palms should be kept in contact with the ball).
5. Pick up polystyrene cup from table and put it on table across other side of body. (Do not allow alteration in shape of cup).

6. Continuous opposition of thumb and each finger more than 14 times in 10 seconds. (Each finger in turn taps the thumb, starting with the index finger. Do not allow thumb to slide from one finger to the other or to go backwards). *14 touches*

## **7. Advanced hand activities**

*Comment on whether patient is right or left handed*

1. Picking up the top of a pen and putting it back down again. (Patient stretches arm forward, picks up pen top and releases it on table close to body).
2. Picking up one small marble from a cup and placing it in another cup (Teacup contains eight marbles. Both cups must be at arms' length. Left hand takes marble from cup on right and releases it into cup on left).
3. Drawing horizontal lines to stop at a vertical line 10 times in 20 seconds. (At least 5 line must touch and stop at the vertical line).
4. Holding a pencil, making rapid consecutive dots on a sheet of paper. (Patient must do at least 2 dots a second for 5 seconds. Patient picks pencil up and positions it without assistance. Patient must hold pencil as for writing. Patient must make dot not a stroke). *10 dots in 5 seconds*.
5. Taking a dessert spoon of liquid to the mouth. (Do not allow head to lower towards spoon. Do not allow liquid to spill). *Therapist places liquid onto spoon*.
6. Holding comb and combing hair at back of head.

## **General rules for administering the Motor Assessment Scale**

1. The test should be done before treatment and preferably carried out in a quiet room or curtained off area.
2. The test should be carried out when the patient is maximally alert. For example, not when he is under the influence of hypnotic or sedative drugs. Record should be made if patient is under the influence of these drugs.
3. Patient should be dressed in suitable street clothes with sleeves rolled up and without shoes and socks. Items 1 to 3 inclusive may be scored in nightclothes.
4. Each item is recorded on a scale of 0 to 6.
5. All items are to be performed independently by the patient unless otherwise stated. 'Stand-by help means that the physiotherapist stands by and may steady the patient but not actively assist.
6. Items 1 to 8 are recorded according to the patient's responses to specific instructions.
7. Patient should be scored on his best performance. Repeat 3 times unless other specific instructions are stated.
8. Because the scale is designed to score patient's best performance, the therapist should give general encouragement but should not give specific feedback on whether response is correct or incorrect. Sensitivity to the patient is necessary to enable him to produce his best performance.
9. Instruction should be repeated and demonstrations given to the patient if necessary.
10. The order of administration of items 1 to 8 can be varied according to convenience.
11. If patient becomes emotionally labile at any stage during the scoring, the therapist should wait 15 seconds and if the patient is unable to control his behaviour, the examiner should cease testing and re-score this item and any other items un-scored at a more suitable time.
12. If performance is scored differently on the left and right side, the therapist may indicate this with an L in one box and an R in another.
13. The patient should be informed when he is being timed.
14. You will need the following equipment: a low wide plinth, a polystyrene cup, 8 small marbles, 2 teacups, a rubber ball approximately 14 cm in diameter, a stool, a comb, a pen top, a table, a dessert spoon and water, a pencil, a prepared sheet for drawing lines and a cylindrical object.

## **Appendix 1 - Upper limb positioning leaflets for patients and carers**

Positioning charts for the upper limb in sitting and lying.

# **POSITIONING**

## **Aim**



## **Instructions**

## **Frequency**

**If you have any problems / need advice please contact**

**Therapist:**

**Patient:**

**Number:**

**DOB:**

**Date:**

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