THE ROBERT JONES AND AGNES HUNT ORTHPAEDIC HOSPITAL NHS FOUNDATION TRUST

REHABILITATION GUIDE FOLLOWING TOTAL ELBOW REPLACEMENT
(This is not an exhaustive list of all rehabilitative techniques or therapies and this should not over rule any clinical judgement)

Indications
Post-trauma or severe osteoarthritis and rheumatoid arthritis where predominant feature is pain
Malignancy in or around the elbow
Poor results from previous elbow surgery
Instability resulting from severe damage to the soft tissues in the elbow, maybe a relative indication
Major cysts in the distal humerus or proximal ulna

Procedure
To replace the articular surfaces of the distal humerus and proximal ulna with prosthetic implants
Associated Procedures- ulnar nerve transposition
Some patients will receive an interscalene block whilst under anaesthetic for pain relief which will last 12 - 36hrs but this will also result in temporary muscle paralysis.
Rehabilitation varies based on the type of implant used and the surgical approach.
These guidelines are based on the use of a semi-constrained - linked prostheses which have a ‘‘loose or sloppy-hinge’’ mechanical linkage. These prostheses do not require significant ligamentous support.

Post Operative Protocol Summary
In patients with RA, wound healing is the initial priority.
In patients with OA, wound healing is rarely a problem and ROM is primary focus.
Therapist should be aware of the type of prosthesis used, the status of the triceps tendon/ surgical approach and the overall stability of the joint assessed in theatre.
Consider status of the ulna nerve
Sling is used for comfort only for approximately 4/52
Lifting is limited to the weight of a cup of tea for the first 6 weeks and no more than 5 – 10lbs for life.

TIMESCALE	REHABILITATION EXERCISES	GOALS
Day 1 – 3	• Wait for anaesthetic block to wear off before exercising limb • Wrist, hand and finger exercises • Make regular fist pumps • Elevate arm by supporting it on pillows when sitting and lying • Arm in sling when mobilising • Shoulder girdle/ neck exercises • Scapula setting and postural correction • Active assisted shoulder flexion using table or other arm in supine lying • Start gentle elbow and forearm movements – active assisted elbow flexion/ extension, supination/ pronation at 90 elbow flexion	• **Check if specific post-operative instructions have been given and amend the guide accordingly** • Good understanding of post- operative rehabilitation • No complications following surgery • Control of pain with adequate pain relief • Sling to be worn (except when washing or exercising) • Teach sling application and axillary hygiene • Normal sensation returned to limb • Minimal swelling in limb • Ice therapy/ cryocuff 3-4 times a day if dressing allows • No shoulder stiffness • Discharge with advice sheets and ensure follow up appointment is made
Day 3 - 3 weeks	• Continue wearing the sling for support whilst mobilising • When resting, elevate arm • No aggressive elbow ROM stretching in the first 2 weeks, until wound healing is well established. • Start structured daily elbow exercises after two weeks – active assisted elbow flexion/ extension, supination/ pronation	• Sling to be worn (except when washing or exercising) • Continue ice therapy • Commence scar tissue management after 2 weeks • Encourage light functional ADL after 2 weeks (eating and drinking) • Aim for 50% pre-op AROM by 3/52 • Normal shoulder range of movement • Encourage daily walk or light lower limb/ CV work
3- 6 weeks	• Continue shoulder, finger and wrist ROM • Gradually progress biceps control • Gradually progress active elbow extension - After 4 weeks Introducing against gravity work with bilateral activity	• Low levels of elbow discomfort • Gradually wean out of sling around 4 weeks • Use the hand for light functional ADL • No lifting of weight beyond half kg • Maintain CV fitness • Progress LL, Trunk and core exercises as appropriate

	- Encourage exercises with the patient in supine lying, auto assisted reaches overhead with elbows to the ceiling. - Hands to top of head – then reach to ceiling - Hands to the nose - Hands to the mouth - Hand to earlobe - Hand to the shoulder. • Progress exercise to patient holding tissue box between hands, to a ball, to a small weight • Progress pronation and supination through ROM flexion/ extension • Progress functional exercises • Maximise sensory input using visual imagery, touch and bilateral movement	
<u>6 - 8 weeks</u>	• Encourage active movements into all ranges	• PROM = pre-op level by 6/52 • Return to driving 6-8/52 safe from surgical perspective but competency to drive is the responsibility of the individual patient. • Return to sedentary work 6/52 • Good levels of comfort with functional movements 6-12/52
<u>8 – 12 weeks</u>	• Progress control through range • Soft tissue mobilisations if required • Emphasise correct movement patterns in activities of daily living • Dynamic strengthening • Use kinetic chain	• AROM = Pre-op level by 12/52 • Swimming 12/52 • Golf 12/52 • Full AROM at 6/12 • Protect joint from heavy loading (beyond 5 lbs) • Jamar grip strength test measures correlates with global UL strength • Oxford Elbow score

Complications to consider

- Ulnar neuropathy
- Impingement into flexion
- Obesity with a body mass of 30+ increases infection rate, increases medical complications and increases risk of removal of prosthesis.
- Deep infections - Complications higher in patients with RA.
- Triceps insufficiency, patients struggle to reach over head, push doors open.
- An overall failure rate of 3% following TEA has been reported.
- Periprosthetic fracture rate has been reported at 1.3% (Williams et al 2016)
- Main modes of mechanical failure seen on the Coonrad Morrey are stem loosening, polyethylene wear and osteolysis, predisposing to potential periprosthetic fractures. Higher rate of failure reported in patients with acute distal humerus fracture, distal humerus non union and post traumatic arthritis. (Sanchez-sotelo, 2017)
- Heterotopic Ossification (HO) after total elbow arthroplasty is seen more commonly than previously reported. In a recent study (Robinson, 2018); the overall incidence of HO after TEA was 84% (46/55). This was higher in the trauma group (96%, 25/26) compared with the elective arthroplasty group (72%, 21/29) ($p = 0.027$, Fisher's exact test). Patients in the trauma group had HO of higher Brooker class. The presence of HO did not significantly affect elbow range of movement within the trauma or elective groups.

Catrin Maddocks/ Julie Lloyd Evans
Advanced Physiotherapy Practitioners Upper Limb : February 2024

Review Date : February 2026
Tel: 01691 404464
E Mail: catrin.maddocks@nhs.net/ julie.lloyd-evans@nhs.net

PATIENT GUIDELINE

- Initially you will wear your sling continuously other than to wash or exercise.
- In hospital, you will be visited by the physiotherapist, who will teach you the appropriate exercises to work on at home until you are seen by your local physiotherapist.
- You will be working on neck, hand, wrist and shoulder movements regularly.
- You will also be encouraged to shrug your shoulders regularly.
- You will be taught to rest the hand of your operative arm on a table or sink, to support the weight of the arm, as you wash your armpit. This is important because the armpit can become sweaty when the arm is not as mobile as usual. It is important that the axilla does not become sore, so please wash and dry it regularly.
- Once your dressings have been reduced you can apply ice to the elbow for up to 15/20 minutes 3 or 4 times a day. It is important to perform the exercises you have been taught regularly and research shows that taking adequate pain relief assists with this.
- Initially, rehabilitation is aimed at protecting the elbow, allowing healing but avoiding stiffening.
- Please keep generally active and maintain general fitness in legs, trunk and for your general well being.
- It will take approximately 3 months to get useful active movement of the elbow. The elbow will continue to improve for 12-18 months.

MILESTONES		
50% of pre op active R.O.M		3 weeks
Passive R.O.M equal to pre op level		6 weeks
Active R.O.M to pre op level		12 weeks
Full ROM		6 months
Driving		6-8 weeks
Swimming	Freestyle	3 months
Golf		3 months
Lifting	Light	6 weeks
	Heavy	Never
Return to work	Sedentary	6 weeks
	Surgery not to be considered for manual occupations	