Rehabilitation guidelines following Ray, Trans Radius, Trans Humerus, Shoulder Disarticulation and Transpectoral Amputations of the upper limb

These guidelines outline the goals that patients should be aiming to achieve during their rehabilitation. These are guidelines and every patient should be assessed and treated as an individual, therefore, there may be variation in timing and outcome.

Patients who have been diagnosed with a tumour are, if appropriate, referred for pre/post op chemotherapy or radiotherapy. (Not all tumours are malignant and not all tumours are chemotherapy/radiotherapy sensitive). These treatments will impact on their rehabilitation. Please see appendix for further information.

Therapy Rehabilitation

Definition

- **Ray**: amputation of digit/digits and metacarpal bone/bones
- **Wrist disarticulation**: disarticulation of the ulnar and radius from the carpal bones
- **Transradial**: amputation from approximately two thirds of radius and ulna
- **Elbow disarticulation**: disarticulation of the humerus from the radius and ulna
- **Transhumeral**: amputation from approximately lower half of humerus
- **Shoulder disarticulation**: disarticulation from gleno-humeral joint sometimes humeral head and deltoid remains, scapula intact
- **Transpectoral**: amputation of humerus, scapula and majority of clavicle, head of clavicle remains

Indications for surgery

- Malignant or invasive tumour of the upper limb
- Congenital limb absence
- Congenital deformity requiring an amputation
- Infection to the limb
- Complex trauma to the upper limb
- Vascular insufficiency e.g. PVD, DM
Possible complications

Early Stages
- Post operative pain
- Bleeding
- Phantom limb sensation and pain
- Potential soft tissue loss due to size/site of tumour
- Stiffness in remaining joints

Intermediate stage
- Delayed wound healing
- Infection
- Haematoma
- Blood clot

Later stages
- Recurrence of tumour
- Revision surgery
- Persistent phantom limb sensation
- Flexion contractures at remaining joints

Expected surgical outcomes
- Relief of pain
- Prevention of infection spreading further
- Improved quality of life
- Excision of the tumour, thus preventing or slowing the spread of the disease
- Cure from disease

Therapy goals
- To ensure there is a multi-disciplinary team approach to patient care and discharge planning
- To inform patients of the post-operative rehabilitation process suitable to their individual circumstances
- To facilitate safe return to the patient’s own home environment or appropriate discharge location by optimising his/her functional level of independence e.g. with personal care, transfers, domestic ADL’s, driving, work and leisure.
- To encourage self management and independence with treatment programmes, for example exercise programmes, care of the remaining limb, wound and scar management.
- To inform the patient about the prosthetic rehabilitation process as appropriate to their needs
- To ensure on discharge that onward referrals are made as appropriate to the individual and their goals in relation to care and rehabilitation services
• To encourage the patient to reach their maximum potential within their physical and psychological capabilities with or without a prosthesis

Patient education
• “A Patient’s guide for completing Activities of Daily Living with One Hand”
• Education and advice on returning to functional activities appropriate to level of amputation and the individual
• Advice regarding pacing in activities
• Advice on care of the remaining limb e.g. joint protection
• Advice on care of the residual limb
• Advice on scar management

Therapy rehabilitation
Pre-admission
• Where possible the patient should have a pre-amputation discussion with an occupational therapist and any other relevant members of the amputee rehabilitation team
• Therapist introduces self to the patient and explains the role with this patient group and obtains consent
• Gather relevant information using the initial assessment forms as is appropriate at the time of the interview
• Provide advice, information and reassurance about the initial post-operative process, rehabilitation and functional outcomes expected
• Explain the possibility of phantom limb pain / sensation
• If indicated provide pre-operative exercise regime to maximise post-operative outcome
• Refer to social services OT for pre-admission assessment if appropriate
• Discuss centre for prosthetic limb fitting and time frame for starting prosthetic rehabilitation if appropriate for patients’ individual circumstances. (Patients have the option to attend Stanmore Prosthetic Rehabilitation Unit however, it may be more appropriate to attend locally -this is dependant on level of amputation and rehabilitation needs)
• If patient has not seen the therapy team pre-admission then complete the above prior to surgery as an inpatient

Day 1-3 post surgery
• Review theatre notes for surgical procedure undertaken and post-operative instructions
• Review post-op analgesia management and liaise with MDT as appropriate
• Liaison with ward staff with respect to their progress
• Provide advice regarding management of swelling and maintaining range of movement in remaining joints
• Provide advice regarding scar management procedures with patient
• Teach and encourage bed mobility
• Assess transfers and ability to mobilise
• If a walking aid is used or required, consider adaptation where possible to allow safe use
• Assessment and intervention in following occupational performance areas: self-care; domestic tasks; functional transfers
• Discuss potential future prosthetic options if appropriate
• If indicated, fabricate temporary shoulder cap for trans-pectoral amputation
• Provision of equipment i.e. loan or sale from RNOH stock or follow-up to confirm social services equipment is in situ
• If indicated, refer to outside agencies for follow up and continuing rehabilitation in the home
• If indicated, refer patient to local hospital or specialist unit for further treatment and liaise with the therapy staff prior to transfer

Discharge Home when
• Wound healing satisfactorily
• Safe transfers and mobility achieved
• Safe mobilising with walking aids if appropriate
• Independent with personal and domestic activities of daily living and / or appropriate support and follow up organised
• Education has been given to patient about care of residual limb, wound and scar
• Pain well controlled

Organise
• Distribution of therapy discharge summary to the patient and appropriate agencies
• Appropriate onward referral may include:
  o Community Occupational Therapy
  o Physiotherapy services
  o Hand therapy services
  o Prosthetic limb fitting services
  o If the patient is having chemo or radiotherapy transfer information to be sent to the therapy team at that centre

Estimated length of Stay – 1 -3 days for amputations below the level of the humerus. 3-5 days for amputations above the level of the humerus
Appendix

Some chemotherapy and radiotherapy side effects - implications for treatment

- Bone marrow toxicity, ↓white cell count, ↓platelets, ↓Hb and ↓rate of healing. White cell count will be at its lowest approximately 10 days post chemotherapy and signs of wound infection should be watched for.
- Tissue viability / skin integrity – Therapists among other treatment, would aim to maintain independence, improve quality of life and prevent pressure ulcers.
- Nausea, vomiting, diarrhoea, ↓appetite, lethargy and ↓exercise tolerance. Physiotherapy will be particularly important during and immediately after chemo and radiotherapy, as patients often lose ROM and strength after a cycle. Community physiotherapy may need to be arranged after discharge if the patient is too unwell to attend for outpatient treatment. The occupational therapist may need to advise on the practical implications of the symptoms such as meal and drink preparation, laundry and hygiene. Relaxation techniques may also be used to reduce nausea and vomiting in addition to reducing anxiety levels associated with food and meal times.
- Fatigue – needs to be addressed / acknowledged as it can affect a person’s physical and cognitive ability to carry out normal activities. The therapists will need to take this into consideration and tailor the rehabilitation accordingly.
- Anaemia which can lead to tiredness, lethargy and breathlessness
- Anxiety and depression – these can diminish people’s concentration, ability to assimilate information and motivation to carry out activities. The therapists, among other treatment, will identify goals which increase a person’s sense of control.

Radiotherapy only

- Fibrosis of soft tissues – can continue for up to two years and may lead to contractures. Passive exercise is very important during and immediately post radiotherapy to prevent loss of ROM
- Demineralisation of bone – increases risk of fracture
- Redness, soreness and sensitivity of the skin to heat – care of the skin is important. Heat modalities are contraindicated post DXT. Application of lotions and manual treatments are contraindicated during DXT, but can be used with caution post DXT. Electrical modalities e.g. TNS and FES can be used with caution