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1.0 Policy Statement

1.1 It is the policy of Cappagh National Orthopaedic Hospital to provide a patient focused physiotherapy service delivered by chartered physiotherapists and support staff working in a well-equipped environment.

1.2 It is the policy of Cappagh National Orthopaedic Hospital to provide health professionals and the public with the necessary advice and guidance on physiotherapy rehabilitation.

2.0 Purpose

2.1 The purpose of this guideline is to advise health professionals and patients on the physiotherapy rehabilitation of a person undergoing a Total Knee Replacement.

3.0 Scope

3.1 This guideline applies to all staff involved in the care of a person undergoing a Total Knee Replacement, community staff involved in the pre and post-operative care of the patient, the patient and their family.

4.0 Health & Safety

4.1 There are health and safety risks involved in patient care, namely risk of physical injury to patient and staff, risk of infection.

4.2 Physiotherapists have the necessary qualifications and clinical experience to carry out this guideline and to supervise unqualified support staff.

4.3 They must be eligible for membership of their professional body, the Irish Society of Chartered Physiotherapists (ISCP).

4.4 They undertake mandatory manual handling, basic life support training, fire safety, infection prevention and control and risk management.

4.5 They complete a minimum of 100 hours continuing professional development every three years as required by the ISCP.

5.0 Responsibilities

5.1 It is the responsibility of physiotherapists to implement this guideline.
6.0 Definitions and Abbreviations
- TKR Total Knee Replacement
- Total Knee Replacement Surgery involving the excision of damaged bone and insertion of implants to both the femoral and tibial components of a knee joint
- CPM Continuous Passive Motion - A piece of equipment that passively moves the knee

7.0 Guideline
7.1 Pre-Operative
7.1.1 Patients should be evaluated prior to surgery, including:
   7.1.1.1 Assessment of joint range of motion, muscle strength, mobility and general function.
   7.1.1.2 Respiratory assessment and treatment if necessary.
   7.1.1.3 Explanation of post-operative physiotherapy management, including respiratory and circulatory exercises.
   7.1.1.4 Teaching independent bed mobility and transfers.
   7.1.1.5 Pre-operative exercise/activity programme to include quadriceps strengthening - there is evidence that this improves function post-operatively (McHugh et al, 2008).
   7.1.1.6 Neuromuscular stimulation if appropriate - there is evidence that this improves quadriceps function pre-operatively (Walls et al, 2008).
   7.1.1.7 Education - Pre-operative education can reduce anxiety and improve post-operative outcomes, especially with respect to pain, functioning and length of hospital stay (McDonald et al, 2007). In Cappagh this is achieved through attendance at a multi-disciplinary pre-assessment clinic.
7.2 Post-Operative
Review operation notes and post-operative physiotherapy and mobility instructions.

7.2.1 Day 1
7.2.1.1 Assess respiratory status and treat if necessary.
7.2.1.2 Encourage circulatory exercises.
7.2.1.3 Correct position in bed - knee extended in Robert Jones bandage to minimise swelling (no pillows under knee). +/- Heel raised to encourage knee extension.
7.2.1.4 Encourage bed transfers and mobility.
7.2.1.5 Isometric exercises for quadriceps, hamstrings, gluteals +/- straight leg raises.
7.2.1.6 CPM if appropriate (remove bandages to apply) – there is some evidence that CPM combined with physiotherapy can produce small short-term increases in knee flexion, but no evidence that it influences pain, knee extension, long-term knee flexion, complications or length of stay (Milne et al, 2003, Grella, 2008).
7.2.1.7 Stand and mobilise with frame (if an epidural is in situ for pain relief, ensure blood pressure well controlled and power and sensation adequate on non-operated side).

7.2.2 Day 2
7.2.2.1 Mobilise with frame, encouraging knee flexion in swing phase.
7.2.2.2 Continue exercise programme (as day 1), add knee flexion (sliding) in sitting.
7.2.2.3 CPM if appropriate.
7.2.2.4 Ice and elevation to control swelling.

7.2.3 Day 3 onwards
7.2.3.1 Exercise programme to increase range and strength of affected knee and maintain range and strength of both lower limbs (open and closed chain).
7.2.3.2 Ice and elevation to control swelling.
7.2.3.3 Gait: assess and progress - crutches, 1 or 2 sticks as appropriate.

7.2.3.4 Balance work.

7.2.3.5 Assess transfers and progress to restore independence.

7.2.3.6 Step or stair practice.

7.2.3.7 Home exercise programme.

7.2.3.8 Attend Occupational Therapy education group when independently mobile.

7.2.3.9 Liaise with other disciplines and family as necessary.

7.2.3.10 Refer for convalescence or community services as necessary.

7.2.3.11 CPM +/- neuromuscular stimulation can be helpful with individual patients.

7.2.4 Discharge Criteria
7.2.4.1 Independent with appropriate walking aid.

7.2.4.2 Independent with transfers.

7.2.4.3 Independent on steps/stairs negotiation if appropriate.

7.2.4.4 Effective with home exercise programme.

7.2.4.5 Able to control swelling with ice.

7.2.4.6 0-90° active range of movement or expected to achieve this independently

7.2.5 Criteria for further out-patient follow up with TKR patients
7.2.5.1 Poor bend (less than 80°) and not improving and/or

7.2.5.2 Poor quads strength (more than 15° lag) and not improving and/or

7.2.5.3 Poor gait and/or

7.2.5.4 Unusual circumstances e.g. drop foot, poor pain control, severe swelling, poor comprehension, and poor compliance with exercises. If possible, review in Cappagh. If not possible, refer to local outpatient physiotherapy service.

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7.2.6 **Expected outcomes at 6 weeks**

7.2.6.1 Mobilising unaided around house and for increasing distances outdoors.

7.2.6.2 Decreasing pain and swelling, though not fully resolved.

7.2.6.3 0° to 110° degrees range of motion.

7.2.6.4 Reasonable quadriceps and hamstring strength (4-5/5).

7.2.6.5 Beginning to climb stairs normally.

7.2.6.6 Able to perform light household activities, such as cooking, light polishing, sweeping floor.

7.2.6.7 Able to swim if desired.

7.2.6.8 Able to use ergometer and/or normal bike, if desired.

7.2.7 **6-8 week onwards**

7.2.7.1 Review by their surgeon.

7.2.7.2 Wean off walking aids.

7.2.7.3 Advised to gradually return to normal activities such as driving, recreational walking, swimming, sexual activity. All activities should be within comfortable limits.

7.2.7.4 Patients are invited to contact their physiotherapist if they have concerns or for advice regarding progress.

7.2.8 **Expected outcomes at 6 months**

7.2.8.1 Mobilising unaided for unlimited distances.

7.2.8.2 No pain or swelling.

7.2.8.3 0° to 120° degrees range of motion.

7.2.8.4 Good lower limb strength (5/5).

7.2.8.5 Able to manage stairs and slopes easily.

7.2.8.6 Able to kneel and do all normal household activities such as hoovering, washing.
TKR surgery can give dramatic relief from pain and significant improvement in function BUT it is not a normal knee.

7.3 Return to Activities

7.4.1 Red Alert:
Running, jogging, contact sports (soccer, rugby, GAA); jumping sports and high impact aerobics are considered dangerous activities that are not allowed after THR.

7.4.2 Orange Alert:
Vigorous walking or hiking, skiing, tennis, repetitive aerobic step climbing and repetitive lifts of greater than 50lbs are considered dangerous activities that should be avoided.

7.4.3 Green Alert:
VDriving, recreational walking and light hiking, swimming, recreational cycling, golf and ballroom dancing are all activities that should be encouraged and introduced gradually after 6-8 weeks.
(Klein et al (2007)).
8.0 Related Documents
Individual Physio tools exercise sheets
IM-CNOH-20 Total Knee Replacement – Patient Information Booklet

9.0 Appendices
N/A

10.0 References