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Rehabilitative Care Best Practice Framework for Patients with Primary Hip and Knee Replacements

Background and Introduction

Purpose and Intent

Purpose

Development of the Rehabilitative Care Best Practice Framework for Patients with Primary Hip and Knee Replacements was undertaken by the Rehabilitative Care Alliance (RCA) to support implementation of the Total Joint Replacement (TJR) Quality Based Procedure (QBP), and the TJR QBP Clinical Handbook, developed by Health Quality Ontario (HQO).

HQO has developed Clinical Handbooks for a number of conditions, including total joint replacements, “to serve as a compendium of the evidence-based rationale and clinical consensus driving the development of the policy framework and implementation approach for patients with specific conditions seen in hospitals.”1 The Total Hip and Knee Replacement handbook includes high level recommendations for post-operative rehabilitative care; however the extent to which these recommendations can be operationalized across locations of care is limited. The Rehabilitative Care Best Practice Framework for Patients with Primary Hip and Knee Replacements meets this need by identifying standardized rehabilitative care best practices, where not already defined in the TJR QBP Clinical Handbook.

Rehabilitative care improves total joint replacement outcomes. Following total hip or knee replacement, multidisciplinary rehabilitation improves outcomes at the level of activity and function.2 Rehabilitation improves strength and gait speed following total hip replacement3, and rehabilitative care to restore range of motion is essential to achieving satisfactory function following total knee replacement.4,5

Intent

The Rehabilitative Care Best Practice Framework for Patients with Primary Hip and Knee Replacements (the Framework) is intended to:

- Influence best practice across the province;
- Provide a basis for informing and improving quality care for this QBP population; and
- Provide a framework to support an approach to capacity planning that not only considers surgical allocations but also rehabilitative care allocations, and the optimal models/locations of rehabilitative care.

Development of the Framework

TJR QBP Task and Advisory Groups

The Framework was developed by the TJR QBP Task and Advisory Groups of the RCA; provincial groups consisting of stakeholders with clinical and system-level expertise related Primary Hip and Knee replacement rehabilitation, with more than 30 representatives from Health Service Providers across the province. The Task and Advisory groups included representatives from surgical and acute care services, bedded rehabilitative care programs, community physiotherapy clinics, private rehab clinics, regional home and community care services, and the OACCAC.

The Framework

The Framework was developed based on existing TJR care pathways, which identify best practice recommendations specific to different levels/locations of rehabilitative care. The Framework includes best practice recommendations for Pre-Operative care, in addition to Bedded, Ambulatory and In-Home rehabilitation. Pre-operative care is included in the framework, as pre-operative screening, assessment, education and planning are key components of best practice TJR rehabilitative care, given that post-operative trajectory and rehab are often dependent upon and informed by pre-operative practices.

Best Practice Recommendations

The TJR QBP Task and Advisory Groups established guiding principles to inform the identification and development of practice recommendations for inclusion in the framework. The groups agreed that the best practice recommendations would:

- Be patient centered
- Address the rehabilitative care needs for the majority of TJR patients and, where possible, identify considerations for TJR patients with more complex needs
- Be evidenced based whenever possible; in the absence of high quality evidence, make recommendations based on expert consensus
In addition to extensive iterative review and endorsement by the TJR QBP Task and Advisory groups, the best practice recommendations included in the framework were validated through consultation and review by external provincial stakeholders. Stakeholders included orthopedic surgeons, clinicians working in rehabilitative programs, and cross-sectoral representatives from regional rehab care committees from across the province.

**Considerations**

**Location of TJR Rehabilitative Care**

To support alignment with provincial directions for rehabilitative care, the TJR QBP Task Group adapted the RCA’s Referral Decision Tree to serve as a decision-making tool regarding the optimal location of rehabilitative care for patients following primary hip and knee replacement. Accompanying the Referral Decision Tree is a summary of current evidence related to the relative benefits of in-home and outpatient/ambulatory TJR rehabilitative care, as well as different models of TJR rehab, including group-based/congregate rehab; one to one rehab; and tele-rehabilitative care.

Recommendations related to the optimal location of TJR rehab should be implemented in consideration of the following recommendations from the TJR QBP Clinical Handbook:

- *The health system should support a move towards community-based rehabilitation following primary total knee or hip replacement and discharge from acute care.*

- *Inpatient rehabilitation should be restricted to patients who meet specific eligibility criteria, and eligibility criteria for inpatient rehabilitation should be standardized,* and

- *The location of rehabilitation within the community should allow for flexibility, depending on the local care context and patients’ needs.*

The provision of community-based TJR rehabilitation should also be considered within the context of current MOHLTC policy:

> “The Ministry funds hospital outpatient departments and CCACs to deliver community based rehab services but hip and knee physiotherapy care can be provided at the [community physiotherapy] clinics should any further physiotherapy services be required. The expectation is that only a small number of hip and knee patients would require any additional physiotherapy services over and above that provided by these other providers as part of Quality-based Procedure funding. In addition, the TPA [Transfer Payment Agreement] specifically stipulates that patients concurrently in receipt of services as part of another Ministry funded program are not eligible for care under the EOC [Episode of Care] model.”

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For clients/patients receiving in-home rehabilitative care, progress should be monitored, and patients regularly reassessed to determine whether their functional goals can be met in an outpatient/community setting outside of the home.

Model of TJR Rehabilitative Care

Wherever rehabilitative care is provided, the best practices identified in the framework should be provided by regulated health professionals, who work with patients to progress them towards self-management of their own health and ongoing rehabilitation.

Recommendations for both 1:1 and individualized group-based rehabilitation are included in the framework. Evidence indicates that both 1:1 and individualized group-based therapy can be beneficial, and that the model of rehabilitative care should be based on best practice, as well as availability, access, and patient need.

As LHINs and Health Service Providers (HSPs) continue to implement best practices and re-engineer clinical processes to improve patient outcomes, innovative TJR models of care will continue to evolve, as is the intention of evidence-informed funding for QBP populations. Currently, a number of LHINs and HSPs are targeting a decrease in acute care lengths of stay (with targets of 2-3 days), for patients following TJR; and day surgery models of care are beginning to emerge for some TJR populations. In addition, the Ministry of Health and Long Term Care has prioritized Primary Hip and Knee replacement to pilot bundled care in 2018/19.

This best practice framework was developed to inform rehabilitative care for TJR patients who follow the current “typical path” for total joint replacements, as identified in the QBP Clinical Handbook.

Currently, the “typical path” includes a short post-operative inpatient stay (the Orthopedic Expert Panel established a 4.4-day benchmark average acute length of stay), during which a patient should receive post-operative pain management and early mobilization, as per the recommended clinical practices in the Clinical Handbook. Emerging bundled care models, or models of care which include shorter acute care lengths of stay, may necessitate earlier access to rehabilitative care than that which is specified in this framework, and may have implications related to the optimal location of rehabilitative care.

As indicated in the Clinical Handbook, practice changes and innovative models of care should be implemented, “together with the adoption of evidence-informed practices”, in an effort to “improve the overall patient experience and clinical outcomes”, in addition to reducing costs in order to “create a sustainable model for health care delivery”.1
Summary of the Evidence: Relative Benefits of Community-Based Models of TJR Rehab

Group-Based Rehab Results in Similar Outcomes when Compared to 1:1 Rehab

There is increasing evidence that outpatient group-based therapy is an efficient and effective method of treatment following total joint replacement (TJR). Research indicates that group-based therapy can produce statistically and clinically significant improvements in function; and for most patients, group-based therapy yields similar outcomes as 1:1 therapy.\(^i,\)\(^ii\)

Benefits of Outpatient TJR Rehabilitative Care

In addition to facilitating access to specialized rehabilitative equipment, encouraging participants to leave their homes regularly during recovery, and allowing rehab to be scheduled around daily activities, outpatient rehab may also improve access to best practice care. There is silver-level (level II) evidence that multidisciplinary rehabilitation, following primary hip or knee replacement, can optimize outcomes at the level of activity and participation.\(^III\) Coordinated interprofessional rehabilitative care can be more easily provided in a team-based outpatient setting, than an in-home setting, and evidence suggests that integrated care teams, coordinated management of biopsychosocial patient factors, and the concurrent delivery of exercise and self-management interventions can reduce pain, optimize outcomes, and improve function.\(^III,IV,VI\)

Patient Satisfaction & Cost Effectiveness of Outpatient Group-Based Therapy

Group-based outpatient therapy is more cost effective than providing individuals with a course of home-based physiotherapy treatment; allowing for the provision of more therapy sessions at less cost.\(^LVII\) Patients in group-based therapy programs report high levels of satisfaction with their treatment, as group-based/congregate therapy allows patients with similar problems to exercise within a social and supportive environment.\(^LIII,VIII\) Expert consensus and patient satisfaction reports suggest that small groups (1 provider per 3-4 patients) are best.\(^IX,X\)

Individual Factors and the Optimal Setting and Model of Rehabilitative Care

There are numerous individual factors which can impact upon a patient’s rehab trajectory following total joint replacement. These personal and situational factors should be taken into consideration when making decisions regarding the optimal location/setting, and overall dose, of rehabilitative care.\(^IX,VI\)

For example, total knee replacement tends to be associated with poorer clinical outcomes than total hip replacement, with patients reporting less improvement in pain, function, and mobility one-year post surgery.\(^XI\) There is evidence to suggest that patients with total knee replacement, who present with significant mobility impairment at the outset of rehabilitative care, may require 1:1 supervised therapy, as opposed to a group based-model, to achieve optimal recovery.\(^XIII\)
The Role of Tele-Rehabilitative Care

The Health Quality Ontario (HQO) and Ministry of Health and Long Term Care (Ministry) Primary Hip and Knee Replacement Quality Based Procedures (QBP) Clinical Handbook includes the recommendation that “For patients who could attend an outpatient physiotherapy clinic, consideration may be given to a self-managed home exercise program with a physiotherapist monitoring through phone calls.” This recommendation is based on a Medical Advisory Secretariat analysis of a study by Kramer et. al, 2003. The findings of this study suggested that “when the major component of a rehabilitation program is a series of uncomplicated home exercises, most patients can be treated effectively via periodic telephone calls by a physical therapist.”

This 2003 article, however, does acknowledge the need for further research, in order to identify whether certain patients may derive more benefit from clinic-based rehabilitation programs, as well as to determine how effective a home exercise program would be for patients with a more complicated history, more limited range of motion, or limited motivation. Additionally, this research was completed with a relatively young cohort of patients (mean age 68), who were able to independently complete a home exercise program, and who did not present with concurrent rheumatoid arthritis or neurological conditions.

The number of patients with complicated histories and multiple comorbidities, who undergo total joint replacement, can be expected to increase, given the aging population. More recent research emphasizes the importance of multidisciplinary TJR rehab and suggests that TJR telerehab may provide a viable alternative, specifically for patients with non-complicated rehab needs, in situations where access to rehab may otherwise be limited.

References


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x. Kimona Issa, MD; Qais Naziri, MD; Aaron J. Johnson, MD; Talha Memon, BS; Jonathan Dattilo, BS; Steven F. Harwin, MD; Michael A. Mont, MD. Evaluation of Patient Satisfaction With Physical Therapy Following Primary THA. Orthopedics. 2013; 36(5):e538-e542


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Total Joint Replacement QBP Process Indicators

To inform identification of indicators to support performance monitoring of QBP-related outcomes and system performance, the Total Joint Replacement QBP Task Groups conducted a review of possible indicators. The following four process indicators were identified as key components of care, throughout the pathway, that will optimize rehabilitative care outcomes following TJR:

1) Processes are in place for pre-operative education, treatment (as applicable) and plan for post-operative rehabilitative care
   a. % of hospitals that perform TJR surgery that have standardized processes in place to provide pre-operative:
      i. Education
      ii. Treatment as applicable
      iii. Plan for post-operative rehabilitative care

2) Outcome measures are utilized
   a. % of hospitals that perform TJR surgery that utilize clinical outcome measures
   b. % of hospitals that perform TJR surgery that have a centralized method for reporting and analysis of clinical outcome measures

3) In partnership with clients a post-operative rehabilitative care plan is prepared and in place prior to discharge
   a. % of hospitals that perform TJR surgery that have standardized processes in place to:
      i. plan for post-operative rehabilitative care
      ii. engage clients as part of this discharge planning process

4) Patients receive timely access to rehabilitate care post-acute care discharge
   a. % of patients who receive Community Ambulatory-Based rehabilitative care following TKR within 7 days of discharge from Acute Care
   b. % of patients who receive Community Ambulatory-Based rehabilitative care following THR within 2-6 weeks post discharge from Acute Care
   c. % of patients who receive In-Home rehabilitative care following TKR within 7 days of discharge from Acute Care
   d. % of patients who receive In-Home rehabilitative care following THR within 7 days of discharge from Acute Care
## Rehabilitative Care Best Practices for Patients with Primary Hip and Knee Replacements

### Best Practice Framework

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## Processes of Care

### Screening
- Screening pre-operatively to predict patients’ post-operative discharge needs and inform proactive discharge planning. Key Components Include:
  - List of common elements:
    1. Age
    2. Gender
    3. Mobility/Functional Status
    4. Community Supports
    5. Assistance at Home/Home Environment
    6. Type & Number of Active Medical Issues/Comorbidities
    7. Patient Safety
- Screen to identify:
  1. Potential post-op and/or discharge issues
  2. If the patient would benefit from a preoperative in-home provider visit by Physiotherapist (PT) or Occupational Therapist (OT) to assess the home environment.

### Assessment
- A patient’s functional tolerance at the time of initial consult will assist in defining their level of disability and urgency rating.
- Functional ability may be measured through self-administered questionnaires and/or through functional testing using valid outcome measures. Examples of these measures are provided in the “Clinical Outcomes” section.
- Complete assessment to confirm the discharge destination of the patient post-surgery (i.e., home care, outpatient rehab, bedded rehab).
  - (e.g., Discharge Triage Considerations for Patients Following Elective Hip/Knee Replacement)
  - Alignment with eligibility criteria for in-home care.
- Complete Physiotherapy or Occupational Therapy Assessment for equipment needs post-surgery.
- Review and document goal setting and expectations.
- Evaluate cognitive status as indicated.
- Complete a home environment questionnaire.
- Complete the hospital specific pre-operative outcome measure to establish the benchmark for patient progress and achievement of functional outcomes.
- A variety of contextual factors including a patient’s coping skills, self-efficacy, anxiety, and social support are associated with perceived well-being and satisfaction after TJA surgery and therefore should be identified and addressed in the pre-operative period.

### Treatment/Interventions
- Individual (1:1) and Individualized Group-based Interventions
  - Demonstration of standardized exercises specific to THR and TKR with a home program of exercises to be continued either at a gym facility or home.
  - Consider referral to a pre-operative strengthening/ROM exercise program appropriate for joint replacement (E.g., NEMEX-TJR, GLA:D).
  - NEMEX-TJR stands for NEuroMuscular Exercise for total joint replacement. It is based on principle of neuromuscular training with the “aim of improving sensorimotor control and achieving compensatory functional stability”.
  - The NEMEX-TJR Program and GLA:D consists of three parts:
### Functional Training (e.g., ADLs & Mobility)

- Warming up
- Circuit Program
- Cooling Down

* Additional information can be found in the reference section.8, 20

- Following surgery, patients will require one or more walking aids to assist with ambulation. These may include a walker, crutches or a cane. Acquisition of these items should be arranged prior to surgery.4
- Fitting of the walking aid(s) by a health professional helps to ensure the correct dimensions for the patient, and to ensure the patient demonstrates safe use as appropriate.4 Document the details of information provided to client regarding assistive devices, needed equipment, and home modifications.

### Patient & Family Education

- Patients and families benefit from education on how to participate in a successful recovery. As patients have different learning styles, it is recommended that this education be provided through a number of media and that it includes the opportunity for patients and families to ask questions and to access materials according to their needs.4
- A patient information package is provided to standardize and consolidate information, to facilitate communication for the patient and health care providers, and to foster a sense of patient participation in outcomes achieved.2
- Providing quality health information (accurate, accessible, and actionable) enables patients to better manage their health and wellbeing, and make fully informed decisions about their treatment and care.4
- Patient education materials should be developed using plain language as a key strategy for improving health literacy and be compliant with the Accessibility for Ontarians with Disabilities Act (AODA)9 requirements for accessibility.
- All patients need to be made aware of their responsibility to participate in their recovery. This includes participation in rehabilitation and exercise in the hospital and after discharge.4
- Discuss with patients all aspects of their rehabilitative care, content may include:2,4,5
  - Expected length of stay.
  - Precautions and joint protection post-operatively, energy conservation and pain management techniques.2
  - Information on assistive devices to support independence with ADLs, and home set-up.6
    - These may include: Raised toilet seat, bath seat/chair/bench, grab bars, non-slip surfaces, raised cushion, reachers, elastic shoe-laces, long handled scrub brush, long handled shoe horn.4
  - Discussing the importance of procuring the equipment emphasized, preparing the home, and arranging for help with meal planning/preparation.2,5
  - Exercise, functional activities, ADLs (Toileting, dressing, bathing, car transfers, homemaking, bed transfers, stairs).4
  - Increased functional endurance and return to work/sports.4
- Contact information for patients in the event that they have any follow-up questions.4
- Encourage family/support patient to attend class with patient and become familiar with educational materials and role in recovery (transportation, ADL’s accessing additional resources).6
### Pain
- Review Pain management techniques, (i.e., Braces, medications, ice) and importance of joint protection.\(^1\)\(^2\)\(^3\)\(^4\)

### Transition Care Planning
- Patients can be linked to other health optimization programs within the community through formal groups and informal networks (e.g., the Canadian Orthopaedic Foundation’s Your Bone and Joint Health, The Arthritis Society, Weight Watchers®, smoking cessation programs, etc.).\(^4\)
- Post-operative rehabilitation needs have been identified and a referral to rehabilitation has been initiated.\(^2\)\(^5\)
- Mechanisms should be in place to communicate the date of the outpatient rehab appointment to the patient and inpatient acute care team; appointment to be confirmed by the inpatient team prior to the patient’s discharge from acute care.\(^5\)
- Transportation options for out-patient rehab are discussed and provided to the patient including LHIN subsidized programs if available.\(^5\)
- For patients who are expected to receive their rehabilitation services in home due to risk or complexity issues, the interdisciplinary assessment results and care plan (as below) should be shared with the in-home provider, according to patient need/urgency.
- Equipment, home management, home environment plans are discussed and patient’s individual plan for care is initiated and discussed as needed.\(^2\)
- Send a referral to an in-home provider for preoperative home assessment for patients identified as being at risk by the screening process.\(^3\)

### Clinical Outcome Measures
- Based on the needs of the patients in the pre-operative care setting, Range of Motion (ROM), Strength, and Gait Speed should be measured, along with at least one patient reported measure and performance outcome measure:
  - Patient Reported Outcome Measures Examples:\(^2\)\(^3\)\(^4\)\(^6\)\(^10\)
    - Western Ontario and McMaster Universities Osteoarthritis Index WOMAC
    - Lower Extremity Functional Scale (LEFS)
    - Pain Visual Analogue Scale (VAS)/Numeric Pain Rating Scale (NPRS)
    - Hip Disability and Osteoarthritis Outcome Score (HOOS)/ Knee Injury and Osteoarthritis Outcome Score (KOOS)
    - Patient Experience Measure
  - Performance Outcome Measure Examples:\(^2\)\(^3\)\(^4\)\(^6\)\(^10\)
    - Patient Specific Functional Scale (PSFS)
    - 30 Second Chair Stand Test (30CST)
    - Gait Speed (e.g., 2 Minute Walk Test, 40 Metre Walk Test)
    - Timed Up and Go (TUG)
    - Stair Climb Test
    - Functional Reach
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| **Considerations** | • Inpatient rehabilitation should not be the first choice for the typical patient with a primary, elective total hip or knee replacement.\(^\text{11}\)  
• The target of the Orthopaedic Quality Scorecard indicates that no more than 10% of hip/knee replacement patients will require inpatient rehabilitation.\(^\text{11}\) |
| **Assessment** | • Assessment and development of an individualized therapy plan (1:1 or group setting).\(^\text{2}\)  
• Outcome Measures should include performance measures, self-report measures, and clinical measures.\(^\text{6}\) |

### Treatment/Interventions

- **Individual (1:1) and Individualized Group-based Interventions**
- **Functional Training (e.g., ADLs & Mobility)**

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<tr>
<th><strong>Timing, frequency and intensity of rehabilitative care services provided in a bedded level of care to be defined in consideration of the following:</strong></th>
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| • Functional tolerance and goals of the patient  
• RCA Definitions Framework\(^\text{12}\)  
• QBP Targets\(^\text{13}\) |
| • Therapeutic interventions include: \(^\text{2}\)  
  - Exercise for Active ROM and Strength  
  - Functional training (e.g., gait, stairs, balance, transfers) including any applicable precautions  
  - ADL/IADL assessment and training. |
| • Both 1:1 and individualized group-based exercise programs can be beneficial.\(^\text{14}\)  
• In regards to function, ROM and health-related Quality of Life, group-based physiotherapy provides similar outcomes as 1:1 physiotherapy, following total joint replacement surgery.\(^\text{14, 15}\)  
• Progressive resistance training with sufficient intensity and dosage to enable a physiologic training effect should be a key component.\(^\text{6, 7}\)  
• Coordinate therapy with pain management.\(^\text{6}\)  
• Interventions to reduce knee swelling may help improve quadriceps strength and gait speed.\(^\text{16}\)  
• Treatments should be provided by a dedicated interprofessional MSK/orthopaedic team with general knowledge about the TJR rehab assessment and treatment process, and who have access to skills/training to develop and maintain the necessary skills and knowledge base.\(^\text{6}\) |

### Patient and Family Education

| **Patient education is best accomplished using a combination of methods.** When education materials are provided in addition to verbal communication, patient education is more effective.\(^\text{17}\)  
• Providing quality health information (accurate, accessible, and actionable) enables patients to better manage their health and wellbeing, and make fully informed decisions about their treatment and care.\(^\text{17}\)  
• Patient education materials should be developed using plain language as a key strategy for improving health literacy and be compliant with the Accessibility for Ontarians with Disabilities Act (AODA) requirements for accessibility.\(^\text{9}\)  
• A mechanism should be in place to assess the patient’s learning needs.\(^\text{2}\)  
• Multi-modal education should be provided to patients that can be tailored to their individual preferences and experiences.\(^\text{17}\)  
• Education on all of the following topics should be available and reviewed with patient/family as appropriate:\(^\text{2}\)  
  - Caregiving training  
  - Safe activity resumption |
### Transition Care Planning

#### Transition Planning – During Hospital Stay
- Anticipate the expected date of discharge, and discuss it with the patient, his/her caregiver(s) and the next care provider(s).
- Implement individualized care and discharge plan(s); revise as required based on therapeutic progress, consultations, and new information.
- Based on discharge plan, schedule follow-up rehabilitative care and assessments. Confirm and document appointments in discharge plan.
- Rehabilitative care team to support follow-up with most appropriate medical care practitioner.

#### Transition Planning – At time of discharge
- Schedule face-to-face and real time discharge conversations (“warm handoffs”) with the patient and their family or informal caregivers.
- Provide the written individualized discharge plan to the patient and their caregiver(s) at the time of discharge from hospital. Provide written individualized care and discharge plans to patient’s primary care team, specialists and other providers within 24 hours of discharge.
- Provide list of scheduled follow-up rehabilitation appointments and review with the patient and his/her family/caregiver(s) at time of discharge.
- Confirm patient’s (and/or family and caregivers’) understanding of the information discussed, and document in the patient’s chart.

#### Transition Planning
- Review therapy goals, treatment expectations and discharge criteria with patient.
- If the patient is discharged to any provider other than the hospital where the surgery was performed, a Discharge Report must be completed, and provided to the receiving care provider. A discharge report should include information such as relevant post-op information (PT and/or MD note) and discharge date; treatment or weight-bearing restrictions; a discharge medication list; and date of follow-up appointment.
- Criteria for discharge home:
  - Ambulates and transfers safely with mobility devices
  - Able to do stairs if needed
  - Able to perform safe/supported ADLs with or without assistive devices
  - Home exercise/education program has been provided to patient and/or caregiver
  - Rehabilitation plan is in place (Outpatient, Community)
- If criteria for discharge are not met, consider alternate levels of care.

### Mobility
- Include principles of healthy lifestyles and active living in the rehabilitation program.
- Include the provision of resources or referrals to external programs and sources of help (e.g., Arthritis Society)
- Review TJR precautions with patient and family/caregiver.
- Future tools that are offered using technology such as Apps for smart phones might be helpful for some patients.
Clinical Outcome Measures

- Referral to outpatient or community service as needed.\(^2\)
- Make and confirm appointments and referrals prior to discharge.\(^6\)

Based on the needs of the patients in the pre-operative care setting, Range of Motion (ROM), Strength, and Gait Speed should be measured, along with at least one patient reported measure and performance outcome measure:

- Patient Reported Outcome Measures Examples:\(^{2,3,4,6,10}\)
  - Western Ontario and McMaster Universities Osteoarthritis Index (WOMAC)
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<tr>
<td><strong>Assessment</strong></td>
<td>• Assessments are focused on patient safety at home as well as physical and functional abilities necessary for daily activities. 2,21&lt;br&gt;• Initial assessment with a PT to determine breadth of deficits and intensity of rehabilitation required. 2&lt;br&gt;• Assessment of function and ADL management with validated measurement tools. 2&lt;br&gt;• Assessment for and development of individualized therapy plans (e.g., 1:1 or group settings). 2&lt;br&gt;• Goals need to be established in partnership with the individual, their family / carers and treating health professionals. 22</td>
</tr>
<tr>
<td><strong>Treatment/Interventions</strong></td>
<td>• Exercises for ROM and strength, including home exercises. 2&lt;br&gt;• Functional training (e.g., gait, stairs, balance, transfers) including home exercises. 2&lt;br&gt;• Progressive resistance training with sufficient intensity and dosage to enable physiologic training effect should be a key component of rehab programs. 7&lt;br&gt;• Both individual and group exercise programs can be beneficial, and the level of health professional supervision should be matched to the patient’s needs. 7&lt;br&gt;• Progression of functional abilities towards patient’s goals. 21&lt;br&gt;• Hands-on therapy as required. 2&lt;br&gt;• Rehabilitation to be provided or supervised by a regulated health care professional with knowledge and clinical experience in arthritis and TJR surgery. 22&lt;br&gt;• Standardized, evidence-based training be available to health professionals to ensure they have the most up to date knowledge and skills to provide safe and effective rehabilitation care to individuals undergoing TJR. 22&lt;br&gt;• Timing of rehabilitation is important for optimal patient outcome after TJR. 22</td>
</tr>
</tbody>
</table>

**Total Knee Replacement**

- **Initiation**
  - Outpatient rehab should begin within 7 days of discharge from acute care. 22

- **Duration**
  - The greatest improvement in knee flexion occurs within the first 6-7 weeks postoperatively. 23
  - Rehabilitation for patients following knee replacement includes intensive exercise to achieve range of motion and function through the first 12 weeks post-surgery. 4
  - Duration is based on the achievement of functional goals of independence or plateau in progression. 2, 4

- **Frequency**
  - Overall frequency of rehabilitation is important for optimal patient outcomes. 22
  - Personal and external factors be identified and considered for their influence on overall frequency of rehabilitation. 22
  - Treatments should be offered 2-3 times per week 2,21

- **Format**
  - Hands-on treatment & manual therapy techniques are required to assist the patient achieve range of motion in the knee.
Interventions to reduce knee swelling may help improve quadriceps strength and gait speed. Both 1:1 and individualized group-based exercise programs can be beneficial. In regards to function, ROM and health-related Quality of Life, individualized group-based physiotherapy provides similar outcomes as 1:1 physiotherapy following total joint replacement surgery. Note: patients who need close monitoring for surgical or medical concerns are not appropriate for group-based rehabilitative care.

Triage into class model vs. 1:1 treatment is based on the assessment of the PT with the following considerations where class volumes permit:

- Pre-Surgical Status
  - Longstanding contractures or muscle imbalances
  - Co-morbidities
- Surgical Complexity
  - Fractures, osteotomy, bone graft reconstruction, non-routine follow-up.
- Social/cultural factors
  - Language barriers, difficulty following instructions

For the patients who require community based rehabilitative care the best practice guideline is:

- Group based format provided to approximately 90% of TKR patients based on initial assessment by PT.
- 1:1 individual treatments provided to approximately 10% of TKR patients based on initial assessment by PT.

### Total Hip Replacement

<table>
<thead>
<tr>
<th>Interventions</th>
<th>Functional Training (e.g., ADLs &amp; Mobility)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Individual (1:1) and Individualized Group-based Interventions</td>
<td></td>
</tr>
<tr>
<td>Functional Training Interventions</td>
<td></td>
</tr>
</tbody>
</table>

- Initiation
  - Class or 1:1 session scheduled at approximately 2-6 weeks post discharge.
  - Variation in initiation timeline is to account for differences in surgical practices, patient profiles and other environmental factors (e.g. degree of familiarity with the patient in the Outpatient Rehab setting; patient’s geographical proximity for surgical follow-up, service availability in different geographical locations, patient’s ability to receive home-care prior to ambulatory care, availability of home support and safety concerns, etc.)

### Intensity

<table>
<thead>
<tr>
<th>Frequency</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Personal and external factors need to be identified and considered for their influence on overall dose of rehabilitation.</td>
<td></td>
</tr>
<tr>
<td>Frequency of treatment depends on achievement of goals, typically no more than once per week.</td>
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</tr>
<tr>
<td>1-2 group sessions and/or 1:1 sessions will be suitable for 75-80% of THR patients, 20-25% of patients may require up to 8 individual sessions.</td>
<td></td>
</tr>
</tbody>
</table>

- Format
  - Triage into group model vs. 1:1 treatment is based on the assessment of the PT with the following considerations where class volumes permit:
    - Pre-Surgical Status
      - Longstanding contractures or muscle imbalances
    - Co-morbidities
    - Surgical Complexity
Rehabilitative Care Best Practices for Patients with Primary Hip & Knee Replacements

<table>
<thead>
<tr>
<th>Patient and Family Education</th>
</tr>
</thead>
</table>
| • Principles of healthy lifestyles and active living are incorporated in the rehabilitation program. This may include providing resources or referrals to external programs. ²  
• There is a mechanism in place to assess the patient’s learning needs. Education on all of the following topics should be available: ²,⁴  
  o Caregiver/Coaching training  
  o Safe activity resumption  
  o Mobility and precautions if applicable  
  o Expected progress  
  o Pain Management  
  o Sources of help  
• The majority of the patient’s recovery will take place in the community; therefore, throughout the program, the patient needs to be provided with instruction and ongoing education regarding exercise and functional activities to be completed at home. ⁴  
• Patients may require education up to and beyond a year, education should be consistent and available through many media including written materials, websites, primary care practitioners, telephone calls and teleconferences. ⁴  
• Educate and encourage patients to manage their own care and become more physically active following TJA surgery in order to achieve health-enhancing benefits associated with regular moderate-intensity exercise. ⁶ |

- Fractures, osteotomy, bone graft reconstruction, non-routine follow-up.
- Social/cultural factors
  - Language barriers, difficulty following instructions
  - Both 1:1 and individualized group-based exercise programs can be beneficial. ¹⁴
  - In regards to function, ROM and health-related Quality of Life, individualized group-based physiotherapy provides similar outcomes as 1:1 physiotherapy, following total joint replacement surgery. ¹⁴,¹⁵
  - A model of care which encourages and empowers patients to self-manage their care. ³
  - Regardless of whether patients are attending individual or group sessions, 1-2 sessions should be used to assess the patient, review educational materials, help patient progress his/her home exercise program, review objectives of rehab with patient and address any concerns. ²¹
  - In addition to the 1-2 sessions above, some patients may require additional sessions to support progression of the patient’s exercise program, provide re-checks, and to assess the need for gait aids and other functional needs. ²¹
  - Timely communication of the patient’s progress should be share with patient, caregiver and patient’s care team
- Duration
  - Duration is based on the achievement of functional goals of independence or plateau in progression. ²,⁴
  - Duration of the program and the need for subsequent sessions will vary and is dependent on patient needs. ²¹
  - Rehabilitation for hip replacement patients is limited by surgical restrictions. Surgical restrictions tend to be required following the first surgeon visit and up to 3 months following surgery. ⁴

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### Pain

- Assess pain using a validated pain measurement tool (e.g., VAS, NPRS).
- Integrate pain management into care of patient to allow active participation in rehabilitation.
- A patient’s pain management goals should be related to returning to ADLs/IADLs.
- Provide individualized multi-modal pain management education and resources to patients, including patient and/or family on pain management, and where needed, redirection to the most appropriate health care provider for pain management.

### Transition Care Planning

- Review therapy goals, treatment expectations, benefits of a healthy, active lifestyle and discharge criteria with patient.
- Communicate to the full care team, including but not limited to the Orthopaedic Surgeon and primary care practitioner.
- Refer to community resources/programs as appropriate (e.g., Arthritis Society, falls prevention clinics (Stand Up, e.g.), fitness and wellness centres).
- Provide patient with name, date, and time of next care provider.
- If the patient is discharged to any provider other than the hospital where the surgery was performed, a Discharge Report must be completed, and provided to the receiving care provider. A discharge report should include information such as relevant post-op information (PT and/or MD note) and discharge date; treatment or weight-bearing restrictions; a discharge medication list; and date of follow-up appointment.
- **Discharge Criteria:**
  - Functional active ROM (consider pre-op status and lifestyle)
  - Functional Strength (consider pre-op status and lifestyle)
  - Independent ambulation (indoors and outdoors, with/without ambulation aid as required – consider pre-up status)
  - Safe transfers as required (home, vehicle)
  - Safe use of stairs if required
  - Swelling resolved or self-managed; wound healed or self-managed; pain self-managed with/without medications
  - Long-term equipment needs identified; vendors, funding and safe use understood
  - Knowledge of prescribed home exercise program and how to progress his/her prescribed home exercise program.
  - Knowledge of resumption of safe activities and a return to an active lifestyle.
  - Patients are discharged when they have achieved their discharge goals or they have reached a plateau, rather than based on a maximum number of visits.
  - If patient’s personal goals exceed the program goals above a home exercise program, a patient may be referred to a private clinic or other community exercise facilities.
Clinical Outcome Measures

- Based on the needs of the patients in the pre-operative care setting, Range of Motion (ROM), Strength, and Gait Speed should be measured, along with at least one patient reported measure and performance outcome measure:
  
  - **Patient Reported Outcome Measures Examples**: 2,3,4,6,10
    - Western Ontario and McMaster Universities Osteoarthritis Index WOMAC
    - Lower Extremity Functional Scale (LEFS)
    - Pain Visual Analogue Scale (VAS)/Numeric Pain Rating Scale (NPRS)
    - Hip Disability and Osteoarthritis Outcome Score (HOOS)/ Knee Injury and Osteoarthritis Outcome Score (KOOS)
    - Patient Experience Measure
  
  - **Performance Outcome Measure Examples**: 2,3,4,6,10
    - Patient Specific Functional Scale (PSFS)
    - 30 Second Chair Stand Test (30CST)
    - Gait Speed (e.g., 2 Minute Walk Test, 40 Metre Walk Test)
    - Timed Up and Go (TUG)
    - Stair Climb Test
    - Functional Reach
<table>
<thead>
<tr>
<th>Processes of Care</th>
<th>In-Home Rehabilitative Care</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Considerations</strong></td>
<td></td>
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</tbody>
</table>
| • According to the Provision of Community Services under the Home Care and Community Services Act (2014):  
  o In the case of physiotherapy services and medical supplies, dressings and treatment equipment necessary to the provision of physiotherapy services,  
  ▪ if the services are provided in the patient’s home in accordance with clause 3.5 (3) (a), the patient must be unable to access the services in a setting outside the home because of his or her condition  
• The rehab setting should be based on the care needs of the patient (e.g. pain level, limitations, mobility, frailty, etc.). |
| **Assessment** |
| • Assessments are focused on physical and functional abilities as well as safety at home necessary for daily activities.  
• Goals need to be established in partnership with the individual, their family / carers and treating health professionals.  
• Assessment of function and ADL management with appropriate intervention as required is recommended.  
• Assessment of fall risk with appropriate intervention as required is recommended.  
• Ensure that a measurement of cognitive status is completed when needed/indicated and the results are considered for potential impact. |
| **Treatment/Interventions**  
  • Individual (1:1) and Individualized Group-based Interventions  
  • Functional Training (e.g., ADLs & Mobility) |

<table>
<thead>
<tr>
<th>Total Knee Replacement</th>
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</thead>
<tbody>
<tr>
<td><strong>Initiation</strong></td>
</tr>
</tbody>
</table>
| • Patient care as defined by delivery of direct services by PT and/or OT should be started within 7 days of discharge or earlier if patient has been identified as high risk. This does not include in-home Care Coordinator assessment or equipment delivery.  
• First post discharge patient care visit should be based on patient’s need and circumstances (wound care, safety issues or other concerns). The first visit could be needed as early as 24-48 hours but should be no later than 7 days from discharge.  |
| **Intensity** |
| • **Frequency** |
| o Frequency is more intense in the first few weeks (2-3 times per week) as there is a risk of contracture or loss of range of motion and is based on the progress of the patient.  
o Personal and external factors be identified and considered for their influence on overall dose of rehabilitation.  
o Overall dose of rehabilitation is important for optimal patient outcomes.  
  o Treatments should be offered 2-3 times per week.  |
| • **Duration** |
| o The greatest improvement in knee flexion occurs within the first 6-7 weeks postoperatively.  
  o Rehabilitation for knee replacement patients includes intensive treatment to achieve range of motion and function up to the first 12 weeks post-surgery if patient is unable to access outpatient clinics.  
  o Duration is based on the achievement of functional goals of independence or plateau in progression.  
  o Duration of the program and the need for subsequent sessions will vary and is dependent on patient needs.  |
| **Format** |
| o Timely communication of the patient’s progress should be shared with patient, caregiver and patient’s care team. |
Rehabilitative Care Best Practices for Patients with Primary Hip & Knee Replacements

| Treatment/Interventions | Model of care which encourages and empowers patients to self-manage their care. ³  
|                        | Hands-on treatment & manual therapy techniques are required to assist the patient achieve range of motion in the knee.  
|                        | Interventions to reduce knee swelling may help improve quadriceps strength and gait speed. ¹⁶ |
| Total Hip Replacement   | **Initiation**  
|                        | Patient care as defined by delivery of direct services by PT and/or OT should be started within 7 days of discharge. This does not include in-home Care Coordinator assessment or equipment delivery. High risk patients should be identified as per normal hospital process for earlier initiation of service. ¹,²,⁹  
|                        | First post discharge visit should be based on patient’s need and circumstances (wound care, safety issues or other concerns). The first visit could be needed as early as 24-48 hours but should be no later than 7 days from discharge. ⁶,²⁹ |
| Intensity               | **Frequency**  
|                        | Typical number of visits is once per week in the first few weeks and then based on the progress of the patient thereafter. ²  
|                        | Personal and external factors should be identified and considered for their influence on overall dose of rehabilitation. ²² |
|                        | **Format**  
|                        | Timely communication of the patient’s progress should be shared.⁶  
|                        | Model of care which encourages and empowers patients to self-manage their care should be considered. ³ |
|                        | **Duration**  
|                        | Duration is based on the achievement of functional goals of independence or plateau in progression.²  
|                        | Duration of the program and the need for subsequent sessions will vary and is dependent on patient needs. ²¹  
|                        | The typical maximum duration of therapy is up to 12 weeks if patient is unable to access outpatient clinic.² |
| Patient and Family Education | There is a mechanism in place to assess the patient’s learning needs. Education on all of the following topics is available: ²  
|                        | Caregiver/coaching training  
|                        | Safe activity resumption  
|                        | Mobility and precautions if applicable  
|                        | Expected progress  
|                        | Pain Management  
|                        | Community Resources  
|                        | Education on the principles of a healthy lifestyle and active living should be incorporated into the rehabilitation program. This may include providing resources or referrals to external programs. ²  
|                        | Patient education should reinforce the benefits of ongoing independent participation in exercise. ² |
### Patient Education
- Patient education is best accomplished using a combination of methods. When education materials are provided in addition to verbal communication, patient education is more effective.10
- Providing quality health information (accurate, accessible, and actionable) enables patients to better manage their health and wellbeing, and make fully informed decisions about their treatment and care.10
- Patient education materials should be developed using plain language as a key strategy for improving health literacy and be compliant with the Accessibility for Ontarians with Disabilities Act (AODA) requirements for accessibility. 9
- Educate and encourage patients to manage their own care and become more physically active following TJR surgery in order to achieve health-enhancing benefits associated with regular moderate-intensity exercise.6
- A self-management component should be included in the treatment plan to empower patients to continue post-discharge of rehabilitative care.

### Pain Management
- Assess pain using a validated pain measurement tool (e.g., VAS, NPRS) 6
- Integrate pain management into care of patient to allow active participation in rehabilitation.4
- Provide individually tailored multi-modal pain management education19 and resources to patients, including patient and/or family on pain management, and where needed redirection to the most appropriate health care provider for pain management.

### Transition Care Planning
- There may be a need for equipment and/or assistive devices to be in place within the home to assist with function. These may include but are not limited to: 6
  - Raised toilet seat/Versa frame
  - Bath seat/chair/bench
  - Grab bars
  - Non-slip surfaces
  - Raised cushion
  - Reachers
  - Elastic shoe laces
  - Long handled scrub brush
  - Long handled shoe horn
  - Gait aid
  - Furniture risers
- If patient’s personal goals exceed the rehab goals above a home exercise program, a patient may explore other community resources that best meet – his/her needs (e.g., YMCA Program or private services).2
- Refer to community resources/programs as appropriate.
- Patients are discharged when they have achieved their discharge goals or they have reached a plateau, rather than based on a maximum number of visits
- If the patient is discharged to any provider other than the hospital where the surgery was performed, a Discharge Report must be completed, and provided to the receiving care provider.7 A discharge report should include information such as relevant post-op information (PT and/or MD note) and discharge date; treatment or weight-bearing restrictions; a discharge medication list; and date of follow-up appointment5
- Discharge Criteria: 2
### Clinical Outcome Measures

- Based on the needs of the patients in the pre-operative care setting, Range of Motion (ROM), Strength, and Gait Speed should be measured, along with at least one patient reported measure and performance outcome measure:

  - **Patient Reported Outcome Measures Examples:** 2, 3, 4, 6, 10
    - Western Ontario and McMaster Universities Osteoarthritis Index WOMAC
    - Lower Extremity Functional Scale (LEFS)
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    - Patient Experience Measure

  - **Performance Outcome Measure Examples:** 2, 3, 4, 6, 10
    - Patient Specific Functional Scale (PSFS)
    - 30 Second Chair Stand Test (30CST); Stair Climb Test
    - Gait Speed (e.g., 2 Minute Walk Test, 40 Metre Walk Test); Timed Up and Go (TUG); Functional Reach

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- If the patient’s in-home community rehabilitation is temporary, the discharge criterion is:
  - Patient is able to get in and out of home and vehicle safely to attend outpatient clinic.
- If the patient’s entire rehabilitation is provided in a home environment, the discharge criteria are:
  - Functional active ROM (consider pre-op status and lifestyle)
  - Functional Strength (consider pre-op status and lifestyle)
  - Independent ambulation (indoors and outdoors, with/without ambulation aid as required – consider pre-op status)
  - Safe transfer as required (home, vehicle)
  - Safe use of stairs as required
  - Swelling resolved or self-managed; wound healed or self-managed
  - Pain is self-managed with/without medications
  - Long-term equipment needs identified; vendors, funding sources and safe use are understood
Best Practice References


6. Waterloo Wellington Rehabilitative Care System (2014). Total Joint Arthroplasty Care Pathway


