



Standard of Care: Total Hip Replacement

Physical Therapy Management of the Patient following Total Hip Arthroplasty, hemiarthroplasty, hip resurfacing, or revision total hip arthroplasty.

Practice Pattern:

4H: Impaired Joint Mobility, Motor Function, Muscle Performance, and Range of Motion Associated with Joint Arthroplasty

ICD9 Codes:

Choose the primary diagnosis for the first ICD9 when entering charges; use secondary supporting ICD9 codess depending upon impairments per individual patient.

Primary ICD 9 Codes: May include but are not limited to: 733.42 avascular necrosis, 835 dislocation of hip, 820.8 femoral neck fracture , 821.3 femur fracture, 715.95, 714.0 rheumatoid arthritis, 714.3 juvenile rheumatoid arthritis, 719.95 hip osteoarthritis, 731.0 osteochondritis dissecans.

Secondary ICD9 Codes : May include but are not limited to: 719.7 difficulty walking, 719.55 stiffness of hip, 719.05 effusion of hip with or without pain

Indications for Treatment:

The disorders that are under consideration for this standard of care include, but are not limited to: osteoarthritis (OA), rheumatoid arthritis (RA), avascular necrosis (AVN), congenital hip dysplasia, tumors/osteosarcoma, traumatic joint injuries, protrusio acetabuli, arthritis associated with Paget's disease, ankylosing spondylitis, and juvenile rheumatoid arthritis.

This standard of care applies to patients following hip hemiarthroplasty, total hip arthroplasty (THA), and hip resurfacing. It serves as a guide for clinical decision making for physical therapy management of this patient population at Brigham and Women's Hospital (BWH) acute care and outpatient physical therapy services.

The incidence of total hip arthroplasty is a rate of 1 in 2,266¹ in the United States . In 2003 there were 200,000 total hip replacements performed, 100, 000 partial hip replacements, and 36,000 revision hip replacements². The purpose of a hip hemiarthroplasty, total hip arthroplasty, and hip resurfacing is to improve biomechanics of the hip joint by replacing the damaged joint with a prosthetic implant, realigning of the soft tissues, and eliminating structural and functional deficits.

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Surgical Techniques and Approach

A total hip arthroplasty consists of both a femoral and acetabular component. Stem portions of most hip implants are made of titanium- or cobalt/chromium-based alloys. They come in different shapes and some have porous surfaces to allow for bone in growth.

Cobalt/chromium-based alloys or ceramic materials (aluminum oxide or zirconium oxide) are used in making the ball portions, which are polished smooth to allow easy rotation within the prosthetic socket. The acetabular socket can be made of metal, ultra-high molecular-weight polyethylene, or a combination of polyethylene backed by metal.

Hip replacements may be cemented, cementless, or hybrid (a combination of cemented and cementless components), depending on the type of fixation used to hold the implant in place. Cemented total hip replacement is more commonly recommended for older patients, for patients with conditions such as rheumatoid arthritis, and for younger patients with compromised health or poor bone quality and density. These patients are less likely to put stresses on the cement that could lead to fatigue fractures.

Hip Hemiarthroplasty

If only one part of the joint is damaged or diseased, a partial hip replacement may be recommended. In most instances, the acetabulum is left intact and the head of the femur is replaced, using components similar to those used in a total hip replacement. The most common form of partial hip replacement is called a unipolar prosthesis³.

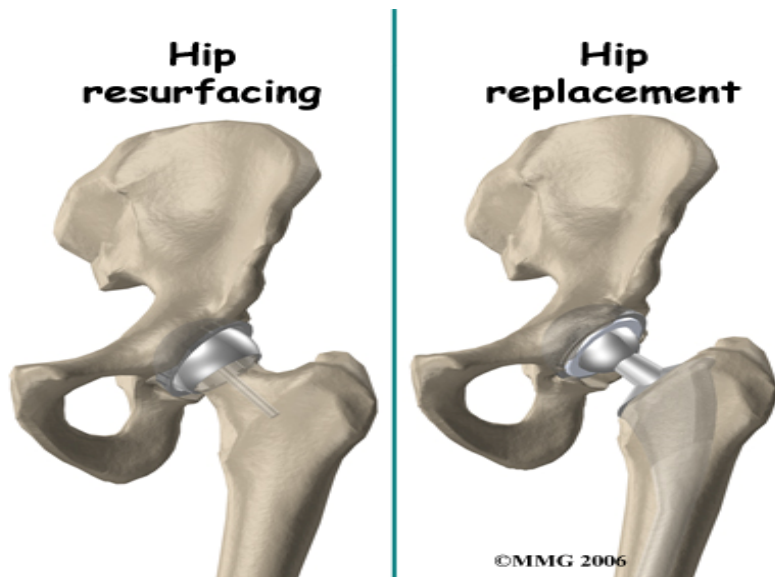
Total Hip Arthroplasty

If both the acetabulum and the femoral head are damaged then a total hip arthroplasty may be indicated. The hip is dislocated exposing the joint cavity and femoral head. The deteriorated femoral head is removed. The acetabulum is prepared by cleaning and enlarging it with circular reamers of gradually increasing size³. The new acetabular shell is implanted securely within the prepared hemispherical socket. The plastic inner portion of the implant is placed within the metal shell and fixed into place. Next, the femur is prepared to receive the stem. The hollow center portion of the bone is cleaned and enlarged, creating a cavity that matches the shape of the implant stem. The top end of the femur is planed and smoothed so the stem can be inserted flush with the bone surface. If the ball is a separate piece, the proper size is selected and attached. Finally, the ball is seated within the cup so the joint is properly aligned and the incision is closed.

Hip Resurfacing

Hip resurfacing is a technique for hip arthroplasty that has recently emerged. In this procedure the acetabular component is replaced similar to a total hip replacement. The femur, however, is covered or "resurfaced" with a hemispherical component. This fits over the head of the femur and spares the bone of the femoral head and the femoral neck. It is fixed to the femur with cement around the femoral head and has a short stem that passes into the femoral neck³.

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Revision THR:

Revision THA is an unfortunate necessity that occurs due to complications following total hip arthroplasty. The incidence of revision THA in a fourteen month span of October 2005 to December 2006 was 51,345 patients in the United States⁴. The most common indications for revision include:

- Instability/dislocation (22.5%)
- Mechanical loosening (19.7%)
- Infection (14.8%)
- Other causes include:
 - loosened/fractured femoral or acetabular components
 - hemarthrosis
 - recurrent dislocation⁵

Approach

There are several different incisions, defined by their relation to the gluteus medius: Knowing which approach was used in addition to the specifics of the patient's operating room report will help guide the therapist in postoperative rehabilitation management.

Posterior Approach: The posterior (Moore) approach accesses the joint through the back and the gluteus maximus is split posterior to gluteus medius. The posterior capsule and external rotators are divided. The exposure is completed with flexion and internal rotation of the femur⁵. This approach gives excellent access to the acetabulum and preserves the hip abductors. The external rotators and the posterior capsule are repaired at the end of the procedure.

Anterior lateral Approach: The anterolateral approach is through the interval between the tensor fasciae latae and the gluteus medius. The hip is dislocated anteriorly and a femoral neck osteotomy is performed or the neck osteotomy is made in situ. The anterior fibers of gluteus

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medius are often reflected from the greater trochanter and repaired at the conclusion of the surgery⁶.

Lateral Approach: The lateral approach requires elevation of the hip abductors (gluteus medius and gluteus minimus) in order to access the joint. The abductors may be lifted up by osteotomy of the greater trochanter and reappplied afterwards using wires. The hip abductors could also be divided at their tendinous portion, or through the functional tendon and repaired using sutures.

Trochanteric Osteotomy: This may be an additional aspect of the surgery for any of the above procedures. This allows for additional exposure of the hip joint by lifting the hip abductors off the greater trochanter with an osteotomy.

Peri-Operative Medical Management:

Anticoagulation Therapy

Patients undergoing THA are often started on anticoagulants such as warfarin, heparin, low molecular heparin (Lovenox), or aspirin the night before surgery. This dose is adjusted after surgery depending on the patient's international ratio (INR) hematology values. At the time of discharge, patients who are at a high risk for deep vein thrombosis (DVT) will remain on anticoagulation therapy for 4-6 weeks. High-risk patients include those who have undergone bilateral THA, have a history of prior DVT, are on estrogen therapy, have a recent history of cancer, or have undergone THA secondary to hip fracture⁷.

Pain Management

The modes of analgesia used during and after THA surgery are general anesthesia and use of a patient controlled analgesia pump (PCA). Once the patient is brought to the post anesthesia care unit (PACU), a nurse starts the PCA pump with an intravenous (IV) narcotic. This most often contains Morphine or Dilaudid. Most often, these pain management methods are discontinued on post-operative day 1 (POD#1) and the patient is then transitioned to oral (PO) pain medication. Short-acting narcotics such as Oxycodone or oral Dilaudid are used as needed for breakthrough pain control. If necessary, IV infusions of Morphine or Dilaudid are also provided to the patient for additional breakthrough pain relief.

Rehabilitation Management

The typical length of stay at BWH for patients following THA is three days excluding the day of surgery. Due to the short length of stay following THA, the focus of physical therapy (PT) management begins on POD#1 with initial evaluation. The evaluation includes patient education, mobility, functional training, as well as increasing ROM and motor control of the articular and peri-articular structures of the hip joint. It is important to keep in mind that ROM, along with proper soft tissue balance is required to ensure proper biomechanics in the hip joint. Therefore, PT must address both impairments in order to ensure good outcomes. Knowledge of the basic concepts in THA and the acute care hospital course will guide clinical decision making in the outpatient physical therapy setting.

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Contraindications / Orders/Precautions for Treatment:

The following post-operative activity recommendations are often included in the physical therapy consults for patients following THA in the acute care setting:

- Weight bearing Status: May include; weight bearing as tolerated (WBAT) to full weight bearing (FWB), WBAT with bilateral upper extremity support, or partial weight bearing (PWB), with occasional exceptions.
- Hip Dislocation Precautions:
 - Posterior Precautions: No hip flexion greater than ninety degrees, no hip adduction or internal rotation beyond neutral, and none of the above motions combined.
 - Anterior Precautions: No lying flat, no prone lying, no bridging and no hip external rotation.
 - Lateral Precautions: The patient will likely have hip abduction restrictions.
 - Global Precautions: Global precautions are most often ordered for a patient following a hip resurfacing surgery. This set of precautions are a combination of both posterior and anterior dislocation precautions. This is due to the large incision into both the posterior and anterior hip capsule to expose the femoral head.
- If a trochanteric osteotomy is performed the orders may include restrictions for hip abduction. It may be stated as, “passive abduction only” or “functional abduction only.” This is to allow for bone healing and to prevent a non-union.
- Positioning of the operative extremity. Positioning recommendations may include: positioning the operative extremity in neutral rotation with a towel roll proximal to the knee to prevent external rotation, locking the foot of the bed in extension to prevent the operative knee from resting in a flexed position, use of a hip abduction pillow or folded pillow between the patients lower extremities to prevent the operative extremity from adducting.

It is important to recognize signs and symptoms of early post-operative complications and consult with other appropriate health care providers as appropriate. The common acute care complications following THA are:

- Blood loss requiring transfusion
- Deep vein thrombosis (DVT)
- Pulmonary embolism
- Excessive joint bleeding
- Hematoma
- Joint infection
- Joint dislocation⁸
- Sciatic nerve injury

If a patient presents during the first few days post-operatively with increased pain, excessive swelling, decreased muscle strength or sensation along a motor and/or sensory nerve distribution, sudden shortness of breath and decreased oxygen saturation along with increased resting heart rate, physical therapy interventions must be stopped, and the medical team consulted.

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Late-onset complications following THA may include:

- Skin necrosis requiring drainage and potentially surgery to correct the defect.
- Persistent joint drainage in the weeks following THA. This complication is often treated with joint aspiration, antibiotics, and at times, debridement and joint lavage. A wound vacuum may be placed.
- Large hematoma formation. Patients are often advised by the surgeon to rest the hip joint, use ice to help decrease the size of the hematoma, and stop taking anticoagulants. If the hematoma does not resolve, patients may need surgical evacuation.
- Wound healing complications in the first few weeks after surgery. This typically occurs in patients who are on chronic steroids or chemotherapy, have rheumatoid arthritis, obesity, diabetes, or are active smokers. The signs and symptoms include increased joint swelling, pain, and redness in the joint or at the site of the incision.
- Dislocation: the rates of hip dislocation vary depending on the surgical approach; anterior lateral, 0.70%, lateral 0.43%, and posterior lateral with soft tissue repair 1.01%, respectively⁹.
- Heterotrophic ossification: Extra bone growth that can cause stiffness.

Evaluation

Past Medical/Surgical History: A patient's past medical history should be reviewed detailing both pre-existing medical conditions, and past surgical interventions. It should be noted if additional consults we requested prior to surgery for medical clearance. Some co-morbid conditions that can affect outcomes are:

- diabetes
- asthma
- medication-controlled hypertension
- coronary artery disease or prior myocardial infarction
- stroke with residual neurological deficits
- cancer
- renal disease requiring dialysis
- peripheral vascular disease with claudication
- Parkinson's disease
- systemic disorders
- active psychiatric disorders
- obesity¹⁰

History of Present Illness: Attention to pre-operative ROM, hip muscle strength, and functional mobility are among the most important data for the physical therapist during the medical history review. It is also imperative to review relevant diagnostic imaging and other tests that lead to the current diagnosis and decision to pursue surgical management. Inquire about presenting signs and symptoms, including: duration/severity, impact on function, and any prior management of symptoms via PT, medication, or other conservative means.

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Read the operative report and note positioning, technique used, if the surgeon needed to perform a trochanteric osteotomy, or additional fixation was required. Record the surgeon, date of surgery and note any complications or additional procedures intra-operatively in the initial evaluation.

Hospital Course: When reviewing the chart and orders, note any consults that were placed, post-operative complications, and the trend of lab values. Post-operative laboratory workup, especially hematocrit and INR level, need to be monitored when evaluating the THA patient in the acute care setting. INR levels should not exceed 3.0 as this places patients at risk for post-operative hemarthrosis. Generally, if the patient's INR is 3.0 or higher, appropriateness of treatment must be discussed with the medical team. Please refer to the General Surgery Standard of Care for further details on hematocrit and INR parameters¹¹.

Social History: Inquire regarding vocation, avocation, prior functional level, home environment, family/caregiver support, patient goals, and use of assistive devices, and possession of durable medical equipment (DME).

Medications: Review current pharmacological management of current medical conditions. Common pain medications used in the acute management of patients following total hip arthroplasty are: intravenous Dilaudid, intravenous Hydromorphone, Oxycodone, Oxycontin, and oral Dilaudid. Patients are also often on the anticoagulant medication Warfarin to prevent deep vein thrombosis. Take note of the route of administration for medications (i.e. via IV, PO, etc), as this will help guide the examination. Record the type of pain medication the pt is receiving and when it was last administered in the initial evaluation.

Examination

Systems Review

Upon observation, the typical patient on POD#1 from a THA will commonly have the following lines, tubes, and positioning devices:

- PCA pump for pain medication administration
- Foley Catheter
- Nasal Cannula for oxygen therapy
- Venodyne (compression) boots for DVT prophylaxis
- Telemetry/cardiac and/or continuous oxygen saturation monitors depending on if there is specific co-morbid conditions
- Towel roll next to the distal thigh to prevent lower extremity external rotation
- Hemovac or Jackson Pratt drain to extract excess fluid from the operated hip joint
- Hip abduction pillow placed between the patient's lower extremities or hip traction placing the hip in slight flexion and abduction
 - Either of these items may be removed post-operative day one. If the patient has posterior precautions place a folded pillow between the patient's lower extremities.

Musculoskeletal:

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Anthropometrics

Body Mass Index (BMI) and/or height and weight of the patient should be included in the systems review to assist with guiding your examination.

Range of Motion

Observation or goniometric measurement of ROM of all lower extremity (LE) joints and gross assessment of ROM of the upper extremity (UE) joints are to be documented in the systems review. Active and passive flexion, extension, and abduction ROM of the operative hip is measured in supine, flexion while seated, and extension standing. Limitations in ROM are also documented to further describe the end-feel of the joint (i.e. firm, bony, empty/painful).

Strength

Manual muscle test (MMT) or gross measurement of the LE and UE muscles is assessed and documented. Special attention is given to assess quadriceps, hip abductor and hip flexor strength, and the quality of an isometric quad contraction of the quadriceps, and gluteals (i.e. trace, poor, fair, and good) via palpation and observation. Even though joint surgery is successful at eliminating many joint related factors, reduced muscle mass, muscle length, and strength reduction are not addressed by surgical interventions. Therefore, attention to these impairments is important in developing an appropriate treatment plan and achieving good outcomes.

Posture

Assessment and documentation of leg length discrepancy and/or posture in supine, sitting, or standing are included in a systems review. Patients will often have a shortened extremity pre-operatively secondary to degenerative changes and during surgery the surgeon will attempt to minimize a leg length discrepancy¹². Post-operatively, if the operative extremity was lengthened, the patient may experience hip flexor tightness and pain. The degree of rotation of the lower extremities should also be assessed.

Gait

Qualitative gait assessment is detailed with comments on the type, pattern, and biomechanics of gait, as well as the type of assistive device used. Changes in stride and step length, as well as cadence should be documented in patients with hip osteoarthritis both before and after total hip arthroplasty.

Pain:

Intensity of pain at rest and with treatment is documented at every inpatient encounter using the visual analogue scale (VAS) or verbal report scale (VRS) if possible. Plan of action such as pre-medication or cryotherapy is also included in the systems review. Other qualitative details of pain that are important to obtain include the frequency, alleviating/aggravating factors, and descriptors of pain. Pain assessment should be made pre, during, and post physical therapy.

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Neuromuscular:*Sensation*

Light touch sensation is assessed in bilateral LE especially on POD#1-2 to ensure that there is no nerve damage.

Proprioception

Hip joint proprioceptive testing may be indicated depending on where the patient is in their post-operative course, as this may impact balance.

Balance

Following THA, it is important to assess and document both static and dynamic balance in the sitting and standing positions, including the use of UE support. Particularly in the acute post-operative phase, sitting and standing balance may be impaired, thereby impacting the overall plan of care. In the sub-acute period, patients after THA should be examined in their ability to perform static and dynamic standing without assistive devices, as well as unilateral standing as appropriate.

Cardiovascular/Pulmonary:*Vital Signs*

Blood pressure, heart rate, respiratory rate, and peripheral oxygen saturation should be assessed and documented as appropriate during patient encounters based on the patient's symptomatology, particularly in the early post-operative days. As previously referenced, anemia and concomitant orthostatic hypotension are common complications immediately after THA. They can cause clinical symptoms such as shortness of breath, lightheadedness or dizziness, blurred vision, and nausea. The clinical signs include drop in blood pressure with positional changes, tachycardia, diaphoresis, and vomiting. Attention to these signs and symptoms including appropriate documentation is important during the patient examination following THA, in addition to communication with the clinical team.

Endurance

Examination of activity tolerance by utilizing the rate of perceived exertion (RPE) scale or a gross subjective and objective assessment of fatigue level should be documented in THA patients. This should detail the amount of functional activities the patient was able to tolerate during the exam.

Integumentary:*Skin*

Skin assessment is noted, including observation of surgical incision and presence/absence of dressing, discoloration/erythema, drainage, or ecchymosis. Any pressure points due to immobility or bracing should also be assessed.

Edema

Soft tissue edema commonly occurs immediately after THA, as well as in the sub-acute phase. Therefore, the amount of LE edema is documented by gross qualitative assessment, or via circumferential measurements as appropriate.

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Communication, Affect, Mental Status/Cognition, Language, and Learning Style:

The patient's level of arousal/alertness, orientation, ability to follow commands, communicate/make needs known, and learning preferences is taken into account and documented in the examination.

Functional Tests and Outcome Measures:

The following functional tests and measures may be used in the acute care setting and during the home or outpatient phase of rehabilitation to assess locomotor and functional capacity of THA patients:

- Timed Get Up and Go (TUG)
- Six Minute Walk Test (6MWT)
- Hip and Knee Satisfaction Scale
- Harris Hip Score
- Western Ontario and the McMaster Universities Osteoarthritis Index (WOMAC)¹³
- Lower Extremity Functional Scale (LEFS)
- Short-Form-36 (SF-36)¹³

Assessment:

Based on the Guide to Physical Therapist Practice¹⁴, patients following THA are classified into the following practice pattern:

4H: Impaired Joint Mobility, Motor Function, Muscle Performance, and Range of Motion Associated With Joint Arthroplasty¹⁴.

Patients in this pattern may demonstrate the following impairments:

- decreased range of motion
- decreased muscle performance (including strength, power, and endurance)
- decreased motor control
- impaired balance
- impaired gait
- decreased tissue integrity
- pain

Particularly in the first few post-operative days, these impairments will result in decreased independence with bed mobility, transfers, ambulation, functional activities, basic/instrumental activities of daily living (B/IADL), and quality of life.

Therefore, the short-term goals (STG) for this patient population during their acute hospital course (2 to 3 days) are as follows:

- The patient will be able to verbalize and demonstrate good knowledge of hip dislocation precautions with all mobility.
- Patients will perform all bed mobility and transfers with the least amount of assistance and devices.

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- Patients will ambulate household distances (50-100 ft) and negotiate stairs (step-to pattern) with the least amount of assistance and devices.
- Patients will demonstrate a fair to good isometric quad contraction, and MMT of $\geq 3/5$ to increase independence with bed mobility, transfers, and ambulation.
- Patients will be independent with all home exercise programs and activity precautions

These STG will vary depending on the patient's prior functional level, as well as the patient's own personal goals.

Long-Term Goals:

Most patients are expected to ambulate without assistive devices within three to six weeks after their surgery.

Prognosis:

Most patients are expected to ambulate without assistive devices within three to six weeks after their surgery. Patients should exhibit operative hip strength $\geq 4+/5$ MMT within 3 months following THA. The overall long-term goal for the patient is to at least return to their pre-operative level of function with less pain; however most tend to see an overall improvement when compared to their pre-operative function.

The degree to which patients reach these projected goals depends on the reason for the THA, prior functional level, co-morbidities and post-op complications. Patients with lower pre-operative function may require more intensive physical therapy intervention. This may extend recovery times because the patient is less likely to achieve functional outcomes similar to those of patients who have less pre-operative dysfunction^{13,15}. A recent literature review showed significant increases in WOMAC and SF-36 functional scores when comparing baseline to post-operative THA scores at a 6month follow up and minimal gains up to two years^{13,15}.

Re-evaluation

The average inpatient length of stay following THA is 3 days. Patients are re-evaluated on a daily basis with respect to their range of motion, quality of movement, muscle contraction, pain intensity, gait quality, and functional independence. If the patient's hospital course is prolonged due to complications, a formal re-evaluation will be performed every 7-10 days to re-assess progression towards the previously outlined goals and outcomes. In the outpatient setting, the patient is to be formally re-evaluated every 30 days; however impairments such as ROM should be monitored each visit.

Discharge Planning:

It is expected that most patients following THA will be discharged home after the inpatient acute care phase. Approximately 40% following THA discharge to rehab¹⁶. Several factors including age, co-morbidities, living situation and support at home all may contribute to a patients discharge to short term rehabilitation versus home. Commonly expected outcomes for discharge home are the ability to comply with hip dislocation precautions with all mobility, the ability to perform bed mobility and functional transfers independently, safely ambulate household

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distances of 50-100ft on even and uneven surfaces with an assistive device, and improve hip range of motion and strength as identified in the goals outlined above.

TREATMENT PLANNING/INTERVENTIONS:

Treatment Planning / Interventions

Established Pathway	<input type="checkbox"/> Yes, see attached.	<input checked="" type="checkbox"/> No
Established Protocol	<input type="checkbox"/> Yes, see attached.	<input checked="" type="checkbox"/> No

Frequency and Duration

Patients are generally in the hospital for 3-5 days post-operatively. Patient's are followed five to seven times per week and are reassessed every 7-10 days. Most patients do not remain in the acute care greater than 5 days unless there are post-operative complications. The expected number of visits per episode of care ranges from 12 to 60. The various episodes of care following THA consist of inpatient acute care PT, short-term rehabilitation or home PT, and outpatient PT (when indicated). Based on the *Guide to Physical Therapist Practice*, it is anticipated that 80% of patients will achieve their anticipated goals and expected outcomes during this time frame of visits¹⁴. During the acute care stay, THA patients are typically seen once daily. The focus of treatment during this time is on increasing hip joint ROM, muscle control and balance, and functional independence. If outpatient care is required, ROM, strength, proprioception, gait, balance, and swelling impairments should be assessed and treatment should be progressed as appropriate in order to maximize functional outcomes.

Coordination, Communication, and Documentation

Collaboration with care coordination for discharge planning is initiated at the time of initial evaluation. This collaboration is documented in the initial physical therapy evaluation note and in any other encounter note as appropriate. This will assist in facilitation of appropriate discharge destination of home with services or transfer to an extended care facility. Additional communication with the clinical team including the surgeon, surgical associates, and nursing staff is also documented.

Patient/Family/Caregiver Education

Beginning on POD#1, patients and their families/caregivers are educated on correct positioning of the operative LE, hip dislocation precautions, the importance of initiating early mobility, safety, weight bearing precautions (if indicated), details of the PT intervention plan including independent exercises, and the expected discharge goals and outcomes. Pre-operative joint education class is also conducted at BWH for patients who plan to undergo THA. Most orthopedic surgeons at BWH refer and highly recommend that their patients attend this interdisciplinary pre-operative course. Based on the findings of a recent meta-analysis, pre-

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operative education for orthopedic patients appears to decrease anxiety levels and increase patient's knowledge.¹⁷

Procedural Interventions

The following treatments may be initiated in a patient following THA as deemed appropriate by the evaluating PT:

- Flexion, extension, abduction (if indicated), and adduction Active/Active Assisted/Passive ROM of operative hip.
- Therapeutic exercise/strength training with focus on isometric and functional hip flexor and quadriceps control, hamstrings, as well as hip abductors, adductors, and gluteal muscles.
- In addition, respiratory and circulatory exercises starting POD#1, to include deep breathing, coughing, and ankle pumps.
- Closed chain exercises when the patient demonstrates good pain control, muscle strength, and balance.
- Resistive Exercises for the quadriceps and hamstrings are generally not used in the acute phase of rehabilitation, but are commonly initiated within 2 months post-operatively.¹²
- Gait training on even surfaces, stair training and, uneven terrain as indicated
- Balance and coordination activities
- Body mechanics and postural exercises

Functional Training in Self-Care and Home Management

Basic and instrumental activities of daily living (B/IADL) training including bed mobility and transfers are initiated on POD#1 following THA to promote the patient's independence. Assistive device or equipment training are initiated, if indicated, during B/IADL such as the use of a bedrail, overhead trapeze, or transfer devices. In most cases, the goal is to gradually wean the patient off such assistive equipment by POD#2-3 and instruct them on mobility techniques to allow them to function safely and independently in their home environment. Proper technique for vehicle transfers is also introduced and reviewed to the patient prior to discharge home.

Prescription and Application of Appropriate Assistive Devices/DME

Patients are measured, fitted, and trained with the most appropriate assistive device to increase safety and independence during ambulation and transfers. The most common ambulatory devices used in patients immediately following THA are walkers (standard or rolling), axillary crutches, and in some cases, only a straight cane or a single crutch. Patients should be progressed to the less restrictive assistive devices as safety allows. Other durable medical equipment (DME) generally used or recommended to facilitate safe and independent transfers include commodes, raised toilet seats, ADL equipment, and tub/shower seats.

Interdisciplinary Interventions

Occupational Therapy (OT): Patients who are in need of assistance for B/IADL are referred to occupational therapy for training with adaptive equipment as needed. OT is generally consulted immediately post-operatively in conjunction with physical therapy. Occupational therapy will assess a patient if the patient plan is to discharge home, or if a patient may potentially have specific OT needs secondary to pre-existing co-morbidities. Occupational therapy is consulted

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to assess a patient's ability to comply with dislocation precautions during activities such as toileting, dressing, and ADL's. OT generally evaluates a patient on post-operative day two or three to maximize participation and independence with B/IADL's. OT can provide a patient with special equipment to optimize a patient's independence with ADL's. Equipment could include: sock donner, long handled sponge, shoe horn, grabber, elastic shoe laces, leg lifter etc. If the patient plan is to discharge to a rehab facility generally OT is deferred while in the inpatient setting to the rehab setting to optimize ability to participate.

Ortho Tech: Ortho techs will place a bed frame and trapeze on the beds of patients following a THR to allow the patient to perform bed mobility and weight shifting as appropriate. The MD may also order a traction suspension to place a patient's operative extremity in slight flexion and abduction. This is placed on a case to case basis and is rare. Ortho techs will also be consulted if a hip abductions brace is indicated. A hip abduction brace is used if a patient has had pervious hip surgery with multiple dislocations, or during the surgery the MD assessed that the patient was going to require external support to prevent dislocation. Fitting a hip abduction brace can be performed the day that the order is placed and the physical therapist should accompany the ortho tech for the initial fitting. It is the physical therapists role to clarify ROM orders for the brace and a wearing schedule, as well as progress the patient's bed and transfer mobility. Please see the hip abduction procedure guide on the T drive for additional information.

Social Work: Social workers may be consulted in complicated situations where patients may have difficulty coping with recovery and have limited social supports.

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