ORTHOPEDICS & SPORTS MEDICINE
BAYCARE CLINIC

DR. CARL DIRAIMONDO
TOTAL KNEE ARTHROPLASTY POST-OP THERAPY PROTOCOL

Patient is highly encouraged to attend joint school 1-2 weeks prior to their surgery.

PREHAB: Education on adaptive equipment/assistive device, mobility, home environment, DEP, caregiver assist, don/doff T.E.D. stockings.

Phase 1 – Acute (POD 0-1, hospital discharge x2 days)
(continued on next page)

Goals for Phase 1	Precautions for Phase 1:
• ROM 0-90 • Safe car transfer	• No twisting/pivoting upon leg

OT Goals

- Shower/Bathing:
  - Complete full shower at modified independent, sitting/standing depending on plan to sit/stand at home
  - If patient has tub/shower, complete transfer at modified independent to home plan (transfer bench or stepping into tub)
- Dressing:
  - Don lower body street clothing including pants, standard socks, shoes at modified independent or independent. Use AD ONLY if needed, promote as close to baseline function as possible
  - Doff/don of TEDs and Tetragrips at modified independent or have caregiver demonstrate doff/don
  - Education in DVT prevention and s/s of blood clots
- Grooming:
  - Tolerate standing activity sink side to complete grooming/oral cares at supervision
- Toileting:
  - Transfer, hygiene, and clothing management at modified independent

PT Goals

- Perform bed mobility modified independently
- Perform transfers modified independently from all surfaces
- Ambulate 150 feet modified independently
- Perform stair mobility with supervision
- Independent with HEP of phase 1

POD 0-3

- Evaluation:
  - Pain
  - ROM
  - Quad contraction, LE strength
  - Ambulation/transfers
  - ADLs
  - Edema
  - Patient-reported OM – KOOS, JR

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Rev. 3/6/2026

Phase 1 – Acute (POD 0-1, hospital discharge x2 days)

- Treatment:
  - ROM:
    - Manual
      - Consider joint mobilization: patellar, PA/AP tibial mobilization (grade I/II) soft tissue mobilization
    - Therapeutic exercise: heel slides, knee flexion seated, knee extension, hangs ankle pumps
  - Strengthening:
    - Aurora Rehab Book Exercises for phase 1:
      - Breathing exercises
      - Glut sets
      - Quad sets
      - Supine hip abduction
      - Terminal knee extension/short arc quad
      - Straight leg raise (active/active assisted)
      - Adductor sets
      - Long arc quad/knee extension
      - Sitting push ups
  - Gait Training:
    - Use of AD, normalize gait, WB
      - Emphasis on heel strike, push off at toe-off, normal knee excursions
      - Proper fit of equipment, with FWW patient is closer to household ambulation speed than standard walker
  - Edema Management:
    - Compression – Tetragrip, ACE wrap, TED stockings
    - Massage
    - Cryotherapy
    - Electrical stimulation
  - Positioning
    - Avoid pillow under knee
      - Turning every two hours from supine to side lying
      - A towel should be placed at the ankle to promote knee extension when supine in bed
  - Nutrition:
    - Aurora Handout – *Wound Healing Nutrition Guidelines*

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Phase 2 – Sub-Acute (1-4 weeks)
(continued on next page)

Goals for Phase 2
- ROM 0-105 degrees
- 75% independent with HEP

Office Visits
- See physician's nurse at 2-2.5 weeks 2x/week unless otherwise stated by physician

Evaluation
- Pain
- Incision/swelling
- ROM – focus on full active extension
- Patellar mobility
- Quad contraction, LE strength
- Ambulation/transfers
- Patient-reported OM – LEFS/KOOS

Treatment
- Wound:
  - Scar tissue mobilization until incision moves freely over subcutaneous tissue with education on home completion
- ROM:
  - Manual: (joint mobilizations, PROM, contract relax soft tissue mobilization – IASTM as indicated and myofascial release)
  - Grade I-II joint mobilizations for pain
  - Grade III-IV for increasing motion
    - Tibiofemoral joint position into restricted motion:
      - Posterior glide to increase flexion
      - Anterior glide to increase extension
    - Patellofemoral joint position into restricted motion:
      - Distal/inferior glide to increase flexion
      - Medial/lateral glide for patellar mobility
- Strengthening:
  - Therapeutic exercise: quad is most important, then hamstring, important to also focus on all lower extremity musculature including hip and ankle. Utilize NMES over the quadricep paired with active exercise: (continued on next page)
    - Quadriceps isometrics
    - SAQ
    - SLR
    - LAQ
    - Prone TKE
    - Standing TKE
    - Step up
    - Squat
    - Heel slides
    - Knee flexion seated

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Phase 2 – Sub-Acute (1-4 weeks)

        - Knee extension hangs
        - Ankle pumps
        - Bike
        - Closed chain
        - Hamstring
        - Hip strength, non-weight bearing and weight bearing
- Flexibility and stretching:
    - Quadricep, hamstring, hip flexor, psoas, gastroc, ITB, adductor – work into multiplane stretching
- Gait:
    - Progress out of AD, normalize gait, WB
        - AD are discontinued when patient demos adequate LE strength/balance during functional activities
        - Stairs when patient has sufficient concentric/eccentric strength
- Balance training:
    - **1-2 weeks:** Side stepping
    - **1-4 weeks:** Braiding activities
    - **2-4 weeks:** Tandem walk
    - **3-5 weeks:** Cross-over steps
    - **3-5 weeks:** Shuttle walking
- Modalities:
    - NMES* if atrophy or poor quad contraction present
        - ES+ for edema if edema present
- Patient education on footwear, need for OTC/custom orthotics to aide in alignment

* Pulse width 20-60 μsec, freq 30-50 pps, intensity to tolerance + a little more, Time 10-30 min (on 5 sec, off 5 sec), daily (5x/week)

+ Edema: Pulse width 200-400μsec, freq 5 pps, intensity: strong but tolerable contractions, duration: 30 minutes, 2 x/day best, 1 electrode over 1-2 muscle distal to edema and other electrode over 1-2 muscles proximal to edema

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Phase 3 – Return to Function (5-8 weeks)

Goals for Phase 3

- ROM 0-120
- 4+/5 for all lower extremity strength
- Normalized gait
- 100% Independent with HEP
- Fitness/wellness program
- Return to activities
  - Low impact aerobics, bowling, golf, dancing, walking, swimming

Evaluation

- Pain
- Incision/swelling
- ROM
- Patellar mobility
- Quad contraction, LE strength
- Ambulation/transfers
- Patient reported OM – LEFS/KOOS

Treatment

- EOM
  - Same as phase 2

Manual Joint Mobilizations

- Tibiofemoral
- Patellofemoral
- Contract-relax
- Soft tissue mobilization – IASTM as indicated, myofascial release
- Strengthening
  - Same as phase II, plus
  - Weight machines, continue to emphasize hip/glut strength
- Gait training
  - Normalize gait on various surfaces, stairs
- Balance training
  - Cross-over steps
  - Shuttle walking
  - **4-6 weeks:** Multiple changes in direction
  - **4-6 weeks:** Foam activity
  - **6-8 weeks:** BAPS board or tilt board
  - Balance beam forward and backward walk
- Modalities
  - NMES* if atrophy or poor quad contraction present.
    - ES+ for edema if edema present

* Pulse width 20-60 µsec, freq 30-50 pps, intensity to tolerance + a little more, Time 10-30 min (on 5 sec, off 5 sec), daily (5x/week)

+ Edema: Pulse width 200-400 µsec, freq 5 pps, intensity: strong but tolerable contractions, duration: 30 minutes, 2 x/day best, 1 electrode over 1-2 muscle distal to edema and other electrode over 1-2 muscles proximal to edema

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