



REHABILITATION MEDICINE SOCIETY OF AUSTRALIA AND NEW ZEALAND

RMSANZ Private Practice Special Interest Group

Position Statement on Rehabilitation following Total Knee Replacement

Introduction:

Data from the previous 10 years in Australia and the USA have shown that there are significant numbers of patients being referred for inpatient rehabilitation following total joint arthroplasty. Currently in Australia, 40% of privately insured and 20% of patients from public hospitals are referred for inpatient rehabilitation [1]. The US health system with its managed care policies and the 2007 changes to the US Medicare rules, has deliberately affected referrals so that smaller numbers receive inpatient rehabilitation and larger numbers are being referred for home based rehabilitation [2]. From 1998-2009 the numbers being referred for inpatient rehabilitation halved to 13% of TKR in 2009 and the number of those referred to home based rehabilitation doubled to 30% [2].

Notwithstanding, there is an increase in numbers of TKRs being undertaken globally with a growth rate of 5-17% pa quoted in international literature [3]. Of concern, 25% of those having knee arthroplasty do not make minimally important clinical gains by 6 months [4]. A further 15% of patients report moderate to severe pain 2 years after surgery [5], while 20% of patients report moderate-to-severe activity limitations at 24 months post TKR [6], which suggests the need to offer better clinical and patient reported outcomes through appropriate referred post-operative rehabilitation courses of treatment.

Due to the rising number of total knee replacements being performed and improvements in the quality of surgical care and prosthetics [7], together with a downward pressure on costs in the private health sector (where much of the private arthroplasty surgery is taking place), many patients are being transferred for rehabilitation in the home following surgery without review of the clinical indications for post joint arthroplasty rehabilitation. Indeed the available evidence to date indicates that rehabilitation physicians are rarely consulted to identify the clinically appropriate setting for rehabilitation. In an environment where non-clinical drivers such as commercial interests, business models, consumerism and transport costs will often dictate the settings for rehabilitation care, the RMSANZ feel that there is a need to state the clinical indicators and minimum safety standards for rehabilitation settings post-TKR.

The RMSANZ and its Private Practice Special Interest Group have undertaken a review of the literature and discussed the clinical indicators and safety standards for rehabilitation across 4 settings of rehabilitation [8]: in-reach; inpatient; outpatient; and ambulatory settings. The document below presents clinical indicators for rehabilitation following joint replacement in the ambulatory setting.

Further, in relation to the constitution and mission of the RMSANZ to both “advocate for our patients” and “promote professional education”, the following position statement is offered to clarify clinical need for services and minimum safety standards for care in post knee replacement rehabilitation.

Clinical indicators for home-based rehabilitation:

All patients and clinicians who wish to refer patients for ambulatory rehabilitation following TKR need to have a rehabilitation assessment post-operatively. This assessment needs to be undertaken by a rehabilitation physician or on behalf of a rehabilitation physician who will take responsibility for the decision being made.

Current evidence suggests that clinical indicators for home-based rehabilitation should include all of the following:

- a. 71 years of age or younger [9]
- b. Have no post-operative complications
- c. Have adequate social supports
- d. Have someone living at home with them
- e. Less than 5 comorbidities, with no comorbidity affecting the ability to undertake aerobic exercise [10, 11]
- f. Able to walk >35% of the expected final 6 Minute Walk Test distance, at 2-weeks post-operation [12]

Minimum safety standards for home-based rehabilitation:

In studies of home-based rehabilitation following joint replacement, patients who have one or more of the following criteria are typically excluded from trials of home-based rehabilitation, or noted to have poorer outcomes:

- a. Over the age of 72 years
- b. More than 5 comorbidities
- c. Obese
- d. Poor social supports
- e. Living alone
- f. Complicated surgery
- g. Poverty/low socioeconomic status
- h. TKR revision
- i. Bilateral joint replacements
- j. Not being able to ambulate prior to surgery
- k. At high risk of referral to a nursing home or respite care
- l. Inflammatory arthritis, septic arthritis or traumatic arthritis as a cause

(see [11, 13-17])

Therefore it is recommended that patients be assessed post-operatively to ensure that they do not have any of the indicators for inpatient admission stated above as the safety of these patients being managed at home by allied health or nursing staff have not been tested and may result in poorer clinical outcomes, and/or higher readmission rates for conditions such as wound infection and joint stiffness requiring manipulation under anaesthesia.

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As home-based rehabilitation may be associated with a higher infection rate [14] or joint stiffness rate at risk of requiring manipulation under anaesthesia [18, 19], it is recommended that therapists and/or nurses delivering home-based rehabilitation have an ability to contact and coordinate care with doctors who are trained in or have experience in post-surgical rehabilitation including a rehabilitation physician, a general physician or a general practitioner.

Further, the RMSANZ do not recommend that those patients at higher risk of MUA [20-22] are referred for ambulatory rehabilitation as their risks of readmission for MUA are higher than the standard population. From literature to date [22], these risk factors include:

- a. low socioeconomic status
- b. poor pre-operative knee range of movement
- c. diabetes, and
- d. hypothyroidism

Decision making for post-TKR rehabilitation:

While RMSANZ acknowledges that there may be non-clinical drivers to select inpatient rehabilitation for many patients [1], including patient drivers (such as previous experience, insurance entitlements, concepts of improved safety); surgical drivers (such as surgeon preference and location of rehabilitation facilities); and economic drivers (such as cost of transportation, private hospital business models and private health fund insurance product structures); it is primarily the clinical indicators that should determine the need for a clinically relevant service delivered in a setting that is safe for patients. As such RMSANZ recommends that all patients undergoing TKR have a rehabilitation assessment post-operatively to determine whether they have clinical indicators that allow for safe and effective ambulatory rehabilitation.

Telemedicine for post TKR rehabilitation:

The RMANZ notes the relevance and importance of telemedicine as an alternative to face-to-face care for those living remotely or for those who cannot receive other forms of ambulatory or inpatient rehabilitation. However the RMSANZ recommends further research in this area over and beyond currently published patient satisfaction, non-inferiority and cost effectiveness studies [23-26]. Larger studies are needed to ensure safety of patients and ensure that outcomes are maintained over time.

Summary of Recommendations:

1. That all patients undergoing TKR have a rehabilitation assessment post-operatively to determine whether they have clinical indicators that allow for safe and effective ambulatory rehabilitation.
2. That no patient be referred for home based rehabilitation until their safety for rehabilitation in this setting is assessed post operatively by a rehabilitation physician or another physician qualified in prescribing home based rehabilitation programs.

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3. That therapists and/or nurses delivering home-based rehabilitation have an ability to contact and coordinate care with doctors who are trained and qualified in managing patients during post-surgical rehabilitation including a rehabilitation physician, a general physician or a general practitioner.
4. That those patients at higher risk of Manipulation Under Anaesthesia (lower socioeconomic status, diabetic, those with hyperthyroidism and those with poor range of movement post-operative) are not referred for ambulatory rehabilitation as their risks of readmission for MUA are higher than the standard population.
5. That further research in tele-rehabilitation service delivery be undertaken in the area of post joint arthroplasty rehabilitation.

References:

1. Buhagiar MA, Naylor JM, Simpson G, Harris IA, Kohler F. Understanding consumer and clinician preferences and decision making for rehabilitation following arthroplasty in the private sector. *BMC health services research* 2017;**17**:415.
2. Ong KL, Lotke PA, Lau E, Manley MT, Kurtz SM. Prevalence and Costs of Rehabilitation and Physical Therapy After Primary TJA. *The Journal of arthroplasty* 2015;**30**:1121-6.
3. Kurtz SM, Ong KL, Lau E, Widmer M, Maravic M, Gomez-Barrena E, et al. International survey of primary and revision total knee replacement. *International orthopaedics* 2011;**35**:1783-9.
4. Maxwell JL, Felson DT, Niu J, Wise B, Nevitt MC, Singh JA, et al. Does clinically important change in function after knee replacement guarantee good absolute function? The multicenter osteoarthritis study. *The Journal of rheumatology* 2014;**41**:60-4.
5. Beswick AD, Wylde V, Gooberman-Hill R, Blom A, Dieppe P. What proportion of patients report long-term pain after total hip or knee replacement for osteoarthritis? A systematic review of prospective studies in unselected patients. *BMJ open* 2012;**2**:e000435.
6. Singh JA, O'Byrne M, Harmsen S, Lewallen D. Predictors of moderate-severe functional limitation after primary Total Knee Arthroplasty (TKA): 4701 TKAs at 2-years and 2935 TKAs at 5-years. *Osteoarthritis and cartilage* 2010;**18**:515-21.
7. AustralianOrthopaedicAssociationNationalJointReplacementRegistry. Hip, Knee and Shoulder Arthroplasty - Annual Report 2016 Adelaide, Australia 2016.
8. ACI. NSW REhabilitation Model of Care - Care Settings NSW Agency for Clinical Innovation 2017 [15/12/2017]. Available from: <https://www.aci.health.nsw.gov.au/resources/rehabilitation/rehabilitation-model-of-care/rehabilitation-moc/care-settings>.
9. MedicalAdvisorySecretariat. Physiotherapy rehabilitation after total knee or hip replacement: an evidence-based analysis Toronto, Canada: Ontario Ministry of Health and Long-Term Care 2005.
10. Ong KL, Lau E, Suggs J, Kurtz SM, Manley MT. Risk of subsequent revision after primary and revision total joint arthroplasty. *Clinical orthopaedics and related research* 2010;**468**:3070-6.
11. Fransen M, Nairn L, Bridgett L, Crosbie J, March L, Parker D, et al. Post-Acute Rehabilitation After Total Knee Replacement: A Multicenter Randomized Clinical Trial Comparing Long-Term Outcomes. *Arthritis care & research* 2017;**69**:192-200.

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12. Naylor JM, Crosbie J, Ko V. Is there a role for rehabilitation streaming following total knee arthroplasty? Preliminary insights from a randomized controlled trial. *Journal of rehabilitation medicine* 2015;**47**:235-41.
13. de Pablo P, Losina E, Phillips CB, Fossel AH, Mahomed N, Lingard EA, et al. Determinants of discharge destination following elective total hip replacement. *Arthritis and rheumatism* 2004;**51**:1009-17.
14. Zmistowski B, Restrepo C, Hess J, Adibi D, Cangoz S, Parvizi J. Unplanned readmission after total joint arthroplasty: rates, reasons, and risk factors. *The Journal of bone and joint surgery American volume* 2013;**95**:1869-76.
15. Naylor JM, Hart A, Mittal R, Harris I, Xuan W. The value of inpatient rehabilitation after uncomplicated knee arthroplasty: a propensity score analysis. *The Medical journal of Australia* 2017;**207**:250-5.
16. Buhagiar MA, Naylor JM, Harris IA, Xuan W, Kohler F, Wright R, et al. Effect of Inpatient Rehabilitation vs a Monitored Home-Based Program on Mobility in Patients With Total Knee Arthroplasty: The HIHO Randomized Clinical Trial. *Jama* 2017;**317**:1037-46.
17. Austin MS, Urbani BT, Fleischman AN, Fernando ND, Purtill JJ, Hozack WJ, et al. Formal Physical Therapy After Total Hip Arthroplasty Is Not Required: A Randomized Controlled Trial. *The Journal of bone and joint surgery American volume* 2017;**99**:648-55.
18. Coyte PC, Young W, Croxford R. Costs and outcomes associated with alternative discharge strategies following joint replacement surgery: analysis of an observational study using a propensity score. *Journal of health economics* 2000;**19**:907-29.
19. Riggs RV, Roberts PS, Aronow H, Younan T. Joint replacement and hip fracture readmission rates: impact of discharge destination. *PM R* 2010;**2**:806-10.
20. Chughtai M, McGinn T, Bhave A, Khan S, Vashist M, Khlopas A, et al. Innovative Multimodal Physical Therapy Reduces Incidence of Repeat Manipulation under Anesthesia in Post-Total Knee Arthroplasty Patients Who Had an Initial Manipulation under Anesthesia. *The journal of knee surgery* 2016;**29**:639-44.
21. Su EP, Su SL, Della Valle AG. Stiffness after TKR: how to avoid repeat surgery. *Orthopedics* 2010;**33**:658.
22. Issa K, Rifai A, Boylan MR, Pourtaheri S, McInerney VK, Mont MA. Do various factors affect the frequency of manipulation under anesthesia after primary total knee arthroplasty? *Clinical orthopaedics and related research* 2015;**473**:143-7.
23. Shukla H, Nair SR, Thakker D. Role of telerehabilitation in patients following total knee arthroplasty: Evidence from a systematic literature review and meta-analysis. *Journal of telemedicine and telecare* 2017;**23**:339-46.
24. Russell TG, Buttrum P, Wootton R, Jull GA. Internet-based outpatient telerehabilitation for patients following total knee arthroplasty: a randomized controlled trial. *The Journal of bone and joint surgery American volume* 2011;**93**:113-20.
25. Moffet H, Tousignant M, Nadeau S, Merette C, Boissy P, Corriveau H, et al. In-Home Telerehabilitation Compared with Face-to-Face Rehabilitation After Total Knee Arthroplasty: A Noninferiority Randomized Controlled Trial. *The Journal of bone and joint surgery American volume* 2015;**97**:1129-41.
26. Tousignant M, Moffet H, Boissy P, Corriveau H, Cabana F, Marquis F. A randomized controlled trial of home telerehabilitation for post-knee arthroplasty. *Journal of telemedicine and telecare* 2011;**17**:195-8.

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