Is inpatient rehabilitation after a routine total knee replacement justified?

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More expensive treatment options do not always achieve better outcomes

Post-operative care and rehabilitation are integral parts of successful joint replacement surgery. Rehabilitation, whether as an inpatient or an outpatient, is necessary for regaining strength, a good range of motion, and a normal gait. As part of the pre-operative routine, patients are told what to expect after their surgery in terms of pain, mobility and hospital care. They are also prepared for inpatient or outpatient rehabilitation.

Figures provided by the private health insurer Medibank[1] suggest that neither doctors nor patients are discerning in their use of rehabilitation services: it seems that 20% of surgeons send all their patients for inpatient rehabilitation, while another 20% send none. Similarly, many privately insured patients regard inpatient rehabilitation as their right, like visiting a spa for post-operative relaxation. Not surprisingly, rehabilitation has become an industry, with rehabilitation hospitals promoting their gyms and hydrotherapy pools. There is no doubt that many of these facilities are excellent, but they are also expensive, so it is timely to audit the outcomes. Does inpatient rehabilitation result in better function for the patient?

In the research project reported by Naylor and her co-authors in this issue of the *MJA*,[2] 258 patients who had had uncomplicated total knee replacements (and half of whom had undergone inpatient rehabilitation) were followed up for twelve months after surgery, and several validated outcome measures recorded. The authors applied propensity score matching, a statistical technique that attempts to reduce bias caused by confounding variables, which they argue is almost as reliable an approach as a randomised control trial (RCT) for estimating treatment effects.

Previous RCTs for evaluating inpatient rehabilitation, by Naylor and colleagues[3] and by a Canadian group,[4] have employed different statistical methods, but their results have been similar; whether at 26 or 52 weeks, patients who had simple and inexpensive outpatient care after a total knee replacement achieved outcomes comparable with those of patients admitted for inpatient rehabilitation. The study by Naylor and colleagues reported in this issue,[2] however, found that inpatient rehabilitation is much more expensive. In addition, one could argue that prolonged confinement to a hospital also has psychological and social costs, making patients more dependent on assistance.

It is likely that some older patients, because of comorbidities, frailty or social circumstances, would benefit from extra time in a rehabilitation facility, receiving additional care from nurses and physiotherapists under the supervision of rehabilitation physicians. Rehabilitation hospitals can be seen as halfway houses between the surgical hospital and the home. Older people need more time to recover. As there is a need to shorten the length of stay in acute care hospitals, rehabilitation hospitals appear a convenient alternative.

Fiscal responsibility is not a primary concern for doctors. We have little training in health economics and grow up with the perhaps false premise that quality should always override costs when making decisions. We also work in an unusual marketplace, where we, the doctors, make decisions about patient care, but a third party — a health fund, an insurance company, the government — pays. The health dollar, however, is finite, and doctors — in this case, surgeons and rehabilitation physicians — need to justify the cost of treatment.

Rehabilitation physicians and allied health practitioners have expertise in helping patients who have had major joint replacement surgery return to an active and independent life. In 2016, some 55 000 knees and 45 000 hips were replaced in Australia.[5] While joint replacement surgery is considered cost-effective for the individual and the community, the same cannot be said for inpatient rehabilitation. As comfortable as inpatient rehabilitation may be, the study by Naylor and colleagues does not show that it provides additional benefits that justify its cost.

With an ageing and more demanding population, the frequency of joint replacement surgery is likely to increase. The number of hip and knee replacements per capita is still lower in Australia than in comparable OECD countries, such as Germany, Austria, Switzerland and the United States.[6] Joint replacement surgery will represent an increasing proportion of total health expenditure, but the Medicare budget is already under increasing strain. We therefore need to examine each element of the total care package, inpatient rehabilitation included.

Naylor and her colleagues have clearly shown that inpatient rehabilitation after an uncomplicated total knee replacement is

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more expensive than outpatient rehabilitation, yet the functional outcomes are the same. If there are indeed some individuals in our large pool of patients who need extra time and care in hospital, we will need to further analyse the benefits of inpatient rehabilitation for such subgroups. And we should perhaps ask the rehabilitation industry to show cause and to justify their costs.

Competing interests: No relevant disclosures.

Provenance: Commissioned; externally peer reviewed. ■

1 Royal Australasian College of Surgeons, Medibank. Surgical variation report: orthopaedic procedures. 2016. https://www.surgeons.org/media/24529112/mpl-racs_orthopaedic_procedures.pdf (accessed July 2017).

2 Naylor JM, Hart A, Mittal R, et al. The value of inpatient rehabilitation after uncomplicated knee arthroplasty: a propensity score analysis. *Med J Aust* 2017; 207: 250-255.

3 Buhagiar MA, Naylor JM, Harris IA, 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: 1037-1046.

4 Mahomed NN, Davis AM, Hawker G, et al. Inpatient compared with home-based rehabilitation following primary unilateral total hip or knee replacement: a randomized controlled trial. *J Bone Joint Surgery Am* 2008; 90: 1673-1680.

5 Australian Orthopaedic Association National Joint Replacement Registry. Hip, knee and shoulder arthroplasty. Annual report 2016. Adelaide: AOA, 2016. https://aoanjrr.sahmri.com/documents/10180/275066/Hip%2C%20Knee%20%26%20Shoulder%20Arthroplasty (accessed July 2017).

6 Bourlioufas N. Orthopaedic joint replacement surgery rates jump in developed nation as populations age [media release]. 6 May 2016. http://www.asos.org.au/orthopedic-surgery-rates-jump-in-developed-nation-as-populations-age.html (accessed July 2017). ■