

## Cochrane Corner



## Is multidisciplinary rehabilitation effective for individuals with hip fractures? - A Cochrane Review summary with commentary

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The aim of this commentary is to discuss from a rehabilitation perspective the Cochrane Review “Multidisciplinary rehabilitation for older people with hip fractures”<sup>1</sup> by Handoll et al.<sup>1</sup>, published by Cochrane Bone, Joint and Muscle Trauma Group. This Cochrane Corner is produced in agreement with the Journal of Musculoskeletal and Neuronal Interactions by Cochrane Rehabilitation with views\* of the review summary author in the “implications for practice” section.

### Background

Hip fracture is one of the most frequent conditions in the rehabilitation of frail older people, where it usually results from a fall. It is a major health care problem in developed countries, with women more involved mainly due to greater osteoporosis and impaired balance. Due to the advanced age of the individuals and the concurrent cognitive and physical comorbidities, mortality is estimated to be up to 30% in the first year<sup>2</sup>. Hip fractures can lead to permanent disability and incur significant health-related and social costs, which are

expected to increase over the next decade around the world.

Rehabilitation after surgical treatment of hip fracture is a challenging task. The rehabilitation process is aimed at the early restoration of function in the basic activities of daily life (mobility and self-care). The rehabilitation programme is generally adapted to the patients’ general health status, their previous state of disability and for the different types of surgical intervention. The rehabilitation setting may vary depending on the different health systems, with the possibility of inpatient, outpatient and/or home-based rehabilitation programmes. Multidisciplinary rehabilitative care of hip fractures is provided by a team of healthcare professionals with different specialities, led by a geriatrician or other medical specialist.

### Multidisciplinary rehabilitation for older people with hip fractures<sup>1</sup>

(Handoll HH, Cameron ID, Mak JC, Panagoda CE and Finnegan TP. 2021)

The author declares no conflicts of interest.

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<sup>1</sup>This summary is based on a Cochrane Review previously published in the Cochrane Database of Systematic Reviews 2021 Nov 12;11(11): CD007125. DOI: 10.1002/14651858.CD007125.pub3. (see [www.cochranelibrary.com](http://www.cochranelibrary.com) for information). Cochrane Reviews are regularly updated as new evidence emerges and in response to feedback, and the Cochrane Database of Systematic Reviews should be consulted for the most recent version of the review.

\* The views expressed in the summary with commentary are those of the Cochrane Corner author (different than the original Cochrane Review authors) and do not represent the Cochrane Library or Wiley.



### **What is the aim of this Cochrane review?**

This Cochrane Review aimed to analyze the effectiveness of the multidisciplinary rehabilitation approach in inpatient and outpatient settings after hip fracture of older people, in terms of mortality and recovery of functions in activities of daily living, quality of life and pain.

### **What was studied in the Cochrane review?**

The population addressed in this review are older people with any type of proximal femur fracture, aged 65 years or over. Trials that also included younger individuals were included, provided the latter comprised a relatively small sample without major methodological biases. However, trials confined to people younger than 60 years old and or with polytrauma, metastatic disease, or high-energy fractures (e.g. motor vehicle accidents) were excluded. The interventions studied were rehabilitative treatments addressed to improve mobility and self-care delivered by an appropriate physician-supervised multidisciplinary team, provided in an inpatient or outpatient setting (day hospital, home or nursing home). The intervention was compared with usual orthopaedic or medical care or to a rehabilitation programme with less intensity or different components.

The main outcomes studied in the review were death or deterioration of functional status (poor outcome), all causes of mortality (at hospital discharge and follow-up assessments), dependency in activities of daily living (requiring assistance of another person) and mobility, health-related quality of life and pain. Secondary outcomes included: outcome at discharge; major medical complications or sequelae of diseases and delirium; economic outcomes; and carer burden. For the assessments, time was considered as short-term (4 months) and long-term (12 months) for the main outcomes.

### **Search methodology and up-to-dateness of the Cochrane review?**

The review authors searched for studies that had been published up to October 15, 2020, in Cochrane Bone, Joint and Muscle Trauma Group Specialised Register, the Cochrane Central Register of Controlled Studies (CENTRAL), MEDLINE, MEDLINE In-Process & Other Non-Indexed Citations, Embase, ClinicalTrials.gov, WHO International Clinical Trials Registry Platform without language restrictions.

This review updated a previous review, published in 2009<sup>3</sup>.

### **What are the main results of the Cochrane review?**

The review included 28 trials, with a total of 5351 individuals (average age in the trials ranged from 76.5 to 87 years, mostly women) who had undergone hip fracture surgery. The certainty of the evidence varied for different results. All evidence was downgraded one level for study limitations that may result in a serious bias risk (blinding, incomplete data, and possible confounding due to imbalances

in key baseline characteristics). The evidence for most outcomes was downgraded either one or two levels for serious or very serious imprecision (insufficient data and/or large confidence intervals).

For the multidisciplinary inpatient rehabilitation versus usual care comparison, tested in 20 trials, the review update shows the following results:

- There is moderate-certainty evidence of a lower risk of a poor outcome in the intervention group (deaths or deterioration in residential status as requirement for institutional care) at 6 to 12 months follow-up (RR 0.88, 95% CI 0.80 to 0.98; 13 studies, 3036 participants).
- There is low-certainty evidence that multidisciplinary inpatient rehabilitation may result in reduced mortality risks during hospitalization (time of assessment: up to hospital discharge; RR 0.77, 95% CI 0.58 to 1.04; 11 studies, 2455 participants) and after discharge (4 to 12 months of follow-up: RR 0.91, 95% confidence interval 0.80 to 1.05; 18 studies, 3973 participants). However, the confidence interval does not exclude a slightly higher risk for this intervention.
- There is very low-certainty evidence of a lower risk or no difference of dependency at short-term and long-term follow-up in inpatient multidisciplinary rehabilitation group due to wide variation among the used measures of physical functioning, limiting the data pooling.
- There is low-certainty evidence of better mobility after inpatient multidisciplinary rehabilitation at 6 to 12 months (RR 0.83, 95% CI 0.71 to 0.98; 5 studies, 1085 participants).
- There is very low-certainty evidence that inpatient multidisciplinary rehabilitation determines a better quality of life at early follow-up. Long-term hip-related pain was not reported.

For the supported discharge and multidisciplinary home rehabilitation versus usual care comparison for people living in their own home, which was tested in three studies (377 participants), the review update shows the following results:

- There is very low-certainty evidence of a minimal or no difference between groups for all the main outcomes at 12-months follow-up.

For the multidisciplinary rehabilitation versus usual care comparison for nursing home residents, the review update shows the following results:

- There is low-certainty evidence derived by 1 study (240 participants) of no or minimal between-groups differences for older people living in nursing homes in terms of poor outcomes (RR 1.04, 95% CI 0.87 to 1.24), mortality (RR 1.13, 95% CI 0.86 to 1.49) and mobility (RR 0.97, 95% CI 0.64 to 1.48), while there is very-low certainty evidence for the other assessed outcomes.

### **How did the authors conclude?**

The authors concluded that there is moderate-certainty evidence that inpatient rehabilitation, delivered by a multidisciplinary team (dedicated professionals with a

supervision of a medical specialist as a geriatrician or a physiatrist), results in fewer cases of poor outcome at 6 to 12 months' follow-up. Multidisciplinary inpatient rehabilitation may also result in fewer deaths in hospital and at 4 to 12 months' follow-up, and better mobility at 6 to 12 months' follow-up compared with usual care. The other main studied outcomes show very low-certainty evidence, and no conclusions can be drawn.

Based on the generally very low-certainty evidence available for supported discharge and multidisciplinary home rehabilitation (either own home or nursing home residents), the authors indicated they were very uncertain whether the findings of little or no difference for all outcomes between the intervention and usual care is true.

### **What are the implications of the Cochrane evidence for practice in rehabilitation?**

Multidisciplinary rehabilitation and usual care differ greatly in terms of their characteristics in terms of clinical heterogeneity, populations and outcomes. Treatments can be provided in a variety of settings, from acute hospitals with early rehabilitation services to care homes where specialised rehabilitation is delivered.

In a hospital setting, rehabilitation delivered by a multidisciplinary team, supervised by an appropriate medical specialist, probably reduces poor outcome (death or deterioration in residential status). Additionally, it may reduce hospital deaths and deaths at 4 to 12 months and poorer mobility at 12 months (low-certainty evidence). Since there is very low-certainty of evidence regarding the other outcomes, it is not possible to draw any further conclusions.

Based on the evidence available, there is very low-certainty of little to no difference between supported discharge and multidisciplinary home rehabilitation

versus usual care for people living in their own homes and a low-certainty of no or minimal differences between multidisciplinary rehabilitation versus usual care for nursing home residents.

Therefore, the effectiveness of the various strategies employed for the rehabilitation of people with hip fractures should be continuously evaluated<sup>4</sup>. As well, a rigorous evaluation should be conducted prior to the implementation of any proposed rehabilitation service models for people with hip fractures. In future studies, the costs could be carefully monitored both for cost-effectiveness of the treatments and for caregiver burden.

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