

Continuous passive motion following total knee arthroplasty in people with arthritis

NICE has developed the Cochrane Quality and Productivity topics to help the NHS identify practices that could be significantly reduced or stopped completely, releasing cash and/or resources without negatively affecting the quality of NHS care. Each topic has been derived from a Cochrane systematic review that has concluded that the evidence shows that the practice is harmful or ineffective and should not be used, or that there is insufficient evidence to support widespread use of the practice.

Unless otherwise stated, the information is taken with permission from the Cochrane systematic review.

NICE summary of Cochrane review conclusions

Evidence shows that continuous passive motion following total knee arthroplasty in people with arthritis is not effective and should not be used. Reducing or stopping continuous passive motion following total knee arthroplasty in people with arthritis will reduce the use of ineffective treatments and may be of value in terms of productivity savings although this is difficult to quantify.

The 'Implications for practice' section of the Cochrane review stated:

'The effects of continuous passive motion (CPM) on range of motion (ROM), pain, function and quality of life are too small to justify its use and costs but the effects of CPM on participants' global assessment of treatment effectiveness are unclear. This review provides very low-quality evidence that CPM reduces the risk of manipulation under anaesthesia; however, these findings need to be interpreted with caution because they are inconsistent with the moderate-quality evidence indicating that CPM has no effect on knee ROM even though the main indication for manipulation under anaesthesia is joint stiffness.'

Details of Cochrane review

Cochrane review title

Continuous passive motion following total knee arthroplasty in people with arthritis

Citation

[Harvey LA, Brosseau L, Herbert RD. Continuous passive motion following total knee arthroplasty in people with arthritis. Cochrane Database of Systematic Reviews 2014, Issue 2. Art. No.: CD004260. DOI: 10.1002/14651858.CD004260.pub3.](#)

When the review content was assessed as up to date

24 January 2013

Quality and productivity category

Cochrane Quality and Productivity topics

Productive care

Relevant codes	OPCS	ICD10	HRG
	U503	Z96	UZ01, VC18

Programme budget:

Problems of the musculoskeletal system

Evidence

Relevance to the NHS

The Cochrane review investigated the effect of continuous passive motion (CPM) as a treatment to improve range of motion and function after knee replacement surgery, in people with arthritis.

Range of motion was investigated in 10 trials with a total of 470 participants. The mean difference was 2 degrees more range of motion in patients undergoing CPM compared to control groups (CPM mean 78 degrees, control mean 80 degrees; 95% CI -0 to 5; P value = 0.07; $I^2 = 43\%$). This was not considered clinically significant.

Pain was investigated in 8 trials with a total of 414 participants. The mean difference was -0.4 points on a 10 point scale for the CPM groups compared to control groups (CPM mean 2.6, control mean 3.0; 95% CI -0.8 to 0.1; P value = 0.1; $I^2 = 50\%$). This was not considered clinically significant.

Function was investigated in 6 trials with a total of 405 participants. The mean difference was -1.6 points on a 100 point scale for the CPM groups compared to control groups (CPM mean 56.0, control mean 57.6; 95% CI -6.1 to 2.0). This was not considered clinically significant.

Quality of life was investigated in 2 trials with a total of 156 participants. The mean difference was +1 point on a 100 point scale for the CPM groups compared to control groups (CPM mean 41, control mean 40; 95% CI -3 to 4). This was not considered clinically significant.

Manipulation under anaesthesia was investigated in 8 trials with a total of 581 participants. The mean difference was -4% absolute risk of manipulation for patients undergoing CPM compared to control groups (CPM mean 1.6% risk, control mean 7.2% risk; 95% CI 0.9 to 6.4). This might be clinically significant but was based on very low quality evidence.

The risk of adverse events was investigated in 16 trials with a total of 1040 participants. The mean difference was -1.3% absolute risk for patients undergoing CPM compared to control groups (CPM mean 15.0%, control mean 16.3%; 95% CI -5% to 3%). This was not considered clinically significant.

Overall APM does not have clinically important effects on range of motion, pain, function or quality of life that justify its routine use. It may reduce the risk of manipulation under anaesthesia and risk of adverse events although the quality of evidence is poor. The effects of CPM on other outcomes are unclear.

Relevant NICE guidance and products

No relevant NICE guidance was available at the time of publication (July 2016).

Cochrane Quality and Productivity topics

Other accredited guidance and products

No other accredited guidance was available at the time of publication (July 2016).

Potential productivity savings

Estimate of current NHS use

No information is available on the current levels of NHS usage of continuous passive motion following total knee arthroplasty in people with arthritis.

Level of productivity savings anticipated

Cannot be quantified – savings may include avoiding purchasing a machine to undertake CPM and staff time to supervise CPM.

Type of saving

A mixture of real cash savings and improved productivity is expected.

Any costs needed to achieve the savings

Costs are unlikely to be a barrier to implementation.

Potential impact on quality of NHS care

Impact on clinical quality

Not expected to affect clinical quality in terms of outcomes.

Impact on patient safety

Not expected to affect patient safety.

Impact on patient and carer experience

Improved patient and carer experience anticipated by reducing the use of ineffective therapies.

Likely ease of implementation

Time taken to implement

Can be achieved quickly: 0–3 months

Healthcare sectors affected

Affects one department or team

Stakeholder support

May get a mixed reception if equipment has already been purchased; otherwise likely to be supported by key decision makers

References

[Harvey LA, Brosseau L, Herbert RD \(2014\) Continuous passive motion following total knee arthroplasty in people with arthritis. Cochrane Database of Systematic Reviews.](#)