A clinical pathway reduced length of stay, time to ambulation, and complications after hip and knee arthroplasty

Dowsey MM, Kilgour ML, Santamaria NM, *et al.* *Clinical pathways in hip and knee arthroplasty: a prospective randomised controlled study.* *Med J Aust* 1999 Jan 18;170:59–62.

Question

Does the use of a clinical pathway improve patient outcomes after hip or knee arthroplasty?

Design

Randomised, unblinded, controlled trial with ≥ 3 months follow up.

Setting

A tertiary referral hospital in Melbourne, Victoria, Australia.

Patients

175 patients who had hip or knee arthroplasty between January 1996 and December 1997. 12 patients (6.9%) were excluded after randomisation because they were having revision arthroplasty, simultaneous bilateral joint arthroplasty, arthroplasty for acute trauma, or complex tumour surgery. The remaining 163 patients (mean age 66 y, 66% women) completed ≥ 3 months of follow up.

Intervention

92 patients were allocated to the clinical pathway group and 71 were allocated to the control group. Patients in the clinical pathway group received "proactive" treatment whereby specific daily goals were set for the patient and the healthcare team. A written protocol identified milestones to be achieved, tests to be ordered, and daily tasks for patients and the healthcare team. Patients in the control group received "reactive" treatment, whereby the healthcare team provided care in response to the patient's condition and wants.

Main outcome measures

Length of hospital stay, time to sitting out of bed, time to ambulation, complications (wound infections, chest infections, deep venous thrombosis, joint dislocation, decubitus pressure areas, failure to cope at home, and decreased range of motion after

discharge), readmission for complications, and discharge matching (between discharge destination as planned at pre-admission and actual destination after discharge).

Main results

Patients in the clinical pathway group had a shorter mean length of stay (7.1 v 8.6 d, $p=0.01$), sat out of bed earlier (1.9 v 3.4 d, $p=0.001$), and walked earlier (2.2 v 3.6 d, $p=0.02$) than patients in the control group. Fewer patients in the clinical pathway group had complications (table). The groups did not differ for number of patients who were readmitted (4.3% v 13%, $p=0.06$) or number of patients matched to their planned discharge destination (70% v 61%, $p=0.3$).

Conclusion

Among patients who had hip or knee arthroplasty, proactive post-operative care guided by a clinical pathway reduced length of hospital stay, time to sitting out of bed and ambulation, and complications compared with patients who received standard reactive care.

Clinical pathway v usual care after hip or knee arthroplasty*

Outcome at ≥ 3 months	Clinical pathway	Usual care	RRR (95% CI)	NNT (CI)
Complications	10.9%	28.2%	61.4% (24.3 to 80.6)	6 (4 to 19)

*Abbreviations defined in glossary; RRR, NNT, and CI calculated from data in article.

Source of funding: no external funding.

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Commentary

Clinical pathways are becoming important to the provision of efficient and effective health care. A clinical pathway is a tool by which a clinical practice guideline based on the best available evidence is adapted for implementation in a specific setting. Pathways involve input from all members of the healthcare team and form part or all of the patient's record, allowing documentation of interventions, progress, and outcome. Pathways promote standardisation of care and may be based on diagnoses, symptoms, or procedures.¹ Campbell *et al* suggest that although a sizeable literature exists about the development of care pathways, there are few evaluations of their effectiveness in changing practice and improving patient outcomes.² The study by Dowsey *et al* is one of the first randomised controlled

trials to evaluate the effectiveness of a clinical pathway.

Strengths of the study include random allocation to comparison groups by a clerical assistant who was unaware of the patients' clinical profile and follow up of all study participants for a minimum of 3 months. With respect to study limitations, we do not know whether chart abstractors were blind to patient allocation or whether the quality of charting differed between groups and could have affected the results. The study would have been strengthened if patient satisfaction with care had been examined.

Patients in both groups who attended the pre-admission clinic or the patient information seminar had shorter hospital stays. It would have been interesting to compare the patients in the clinical pathway

group who did and did not attend these education sessions to determine whether pre-admission education influenced the study outcomes.

Clinical pathways may be part of the way forward for healthcare provision but their evaluation is essential. Dowsey *et al* contribute towards evaluation by showing that a clinical pathway for hip and knee arthroplasty may improve patient outcomes.

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- 1 Kitchiner DJ, Bundred PE. Clinical pathways. *Med J Aust* 1999;170:54–5.
- 2 Campbell H, Hotchkiss R, Bradshaw N, *et al*. Integrated care pathways. *BMJ* 1998;316:133–7.