

# Review: In-hospital care pathways for acute stroke do not improve clinical outcomes and lower quality of life

Kwan J, Sandercock P. In-hospital care pathways for stroke. *Cochrane Database Syst Rev.* 2002;(2):CD002924 (latest version 4 Feb 2002).

## QUESTION

In patients who have been admitted to the hospital with acute stroke, are care pathways effective for improving clinical outcomes?

## DATA SOURCES

Studies were identified by searching MEDLINE, EMBASE/Excerpta Medica, and CINAHL (to 2000) and the Cochrane Controlled Trials Register, the Index to Scientific and Technical Proceedings, and HealthSTAR (to 2001); hand searching the *Journal of Managed Care* (1997 to 1998), which became the *Journal of Integrated Care* (1998 to 2001); checking reference lists; and contacting authors and researchers.

## STUDY SELECTION

Studies were selected if they were randomized controlled trials (RCTs) that compared care pathways with standard medical care in patients admitted to the hospital with acute stroke. Studies of subarachnoid hemorrhage only were excluded. A care pathway was defined as a plan of care that involved  $\geq 2$  of assessment, investigation, diagnosis, or treatment and involved  $\geq 2$  disciplines. Nonrandomized studies were also reviewed, but they are not included in this abstract.

## DATA EXTRACTION

Data were extracted on patients, interventions, and outcomes (including death, dependence, readmission or emergency department visit, length of stay, and quality of life).

## MAIN RESULTS

3 RCTs were included. 2 RCTs included patients with all types of stroke; 1 RCT included ischemic stroke only. Care pathways and standard care did not differ for death, death or dependence, discharge to institutional care, discharge to home, or length of hospital stay (Table). The care-pathway group had fewer readmissions or emergency department visits, less patient satisfaction (Table), and a lower quality of life at 6 months than did the standard-care group (median EuroQol score 63 vs 72,  $P < 0.005$ ).

## CONCLUSIONS

In patients admitted to the hospital with acute stroke, care pathways reduce emergency department visits but also reduce patient satisfaction and quality of life. Care pathways do not reduce death or dependence.

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### Care pathways vs standard care for hospitalization of patients with acute stroke\*

Outcomes	Number of studies	Care pathway	Standard care	RRI (95% CI)	NNH
Death at 6 mo	1	13%	7.9%	67% (-34 to 324)	Not significant
Death or dependence at 6 mo	1	72%	66%	10% (-11 to 37)	Not significant
				<b>RRR (CI)</b>	<b>NNT (CI)</b>
Readmission or ED visit at < 30 d	1	10%	43%	77% (34 to 92)	3 (2 to 9)
Discharge to institution at 6 mo	1	13%	21%	38% (-26 to 69)	Not significant
				<b>RBI (CI)</b>	<b>NNT</b>
Discharge to home at 6 mo	1	74%	71%	3.7% (-15 to 27)	Not significant
				<b>Weighted mean difference (CI)</b>	
Patient satisfaction (scale 1 to 10)	1			1.1 (0.29 to 1.9)†	
Length of hospital stay (d)	2			3.9 (-2.9 to 8.3)‡	

\*ED = emergency department. Other abbreviations defined in Glossary; RRI, RRR, RBI, NNT, NNH, and CI calculated from data in article using a random-effects model.

†Mean difference not weighted and favors standard care.

‡Not significant.

## COMMENTARY

The concepts prompting development of clinical care pathways seem incontestable: Systematic, coordinated approaches to patient care should improve efficiency and enhance compliance with quality standards. In fact, care pathways have been shown to reduce lengths of stay and resource consumption for several conditions. One of the most impressive demonstrations of the utility of care pathways was the Community Acquired Pneumonia Intervention Trial Assessing Levofloxacin (CAPITAL) study (1), which included 1743 patients with community-acquired pneumonia. The trial showed that use of institutional resources was lower at 9 hospitals randomly assigned to follow a care pathway than at 10 control hospitals and that quality was not adversely affected.

Findings in the review by Kwan and Sandercock suggest that care pathways may not always produce benefits. The authors review the literature, which is disappointingly sparse, on care pathways in stroke. The systematic review identified 3 RCTs, the largest of which included only 152 patients; each of the trials had other limitations. First, none of the studies considered the institution or ward rather than the patient as the unit of analysis. Outcomes for all patients allocated to a care pathway used on a single ward may be influenced by other characteristics of

the ward. For example, a superior nursing coordinator on 1 ward could influence the quality or efficiency of care, producing an imbalance between treatment groups. The sample size of a trial may be effectively reduced to the number of wards. The CAPITAL trial solved this problem by allocating an adequate number of hospitals rather than patients and by statistically comparing the institutions. Second, no 2 care pathways are the same. More systematic care can be detrimental if the new systems are not beneficial. Third, the setting is important. Improvements may be more dramatic when existing care is complex and inefficient. 2 of the studies were done in rehabilitation units in which care was probably efficient already.

The data are too sparse to conclude that clinical pathways are not useful in patients with stroke. Additional large-scale trials are necessary, with randomization of several institutions rather than of patients within a single institution.

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## Reference

1. Marrie TJ, Lau CY, Wheeler SL, et al. *JAMA.* 2000;283:749-55.