

# Integrated care pathways: disease-specific or process-specific?

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**ABSTRACT – Background/Aim:** conventional teaching on integrated care pathways (ICP) suggests that they have to be specific both to a particular setting and to a specific diagnosis. We wished to explore the potential for a generic process-based care pathway.

**Study design:** we evaluated three different, disease-specific ICPs in use on a neurological rehabilitation unit to identify prompts common to and differing between them. Variance types and goal outcomes in all three diagnostic groups were compared.

**Results:** 93% of prompts on the care pathway were common to all three diagnostic groups. The prompts that differed were unique to each diagnostic group and provided important guidelines about management.

**Conclusion:** in neurorehabilitation, where the process of multidisciplinary care is well defined, it is possible to develop a process-based ICP. Process-based ICPs may not be unique to rehabilitation but may also be relevant to other settings in which patients with differing diagnoses share similar needs.

**KEY WORDS:** integrated care pathways, neurorehabilitation

Integrated care pathways (ICPs) consist of a document setting out what interventions should occur during a specified period of patient care. The key elements of an ICP are that it:

- is patient centred
- implements evidence-based management guidelines
- reflects consensus-based multidisciplinary practice
- provides detailed documentation of the clinical process, and
- facilitates the audit of process and outcomes.<sup>1</sup>

Guidelines are now being developed at a national level, for example by the National Institute for Clinical Excellence and the Scottish Intercollegiate Guideline Network. Guidelines are usually developed by multidisciplinary working groups, based on a systematic review and critical appraisal of the current

scientific literature. Guidelines can achieve better treatment outcomes for patients, but local ownership of the implementation process is crucial to success in changing practice. For this reason, the implementation of guidelines into practice is, through clinical governance, the responsibility of each individual NHS trust. ICPs are one means of achieving this.

The rehabilitation ICPs in use on the Neurological Rehabilitation Unit (NRU) at the National Hospital for Neurology and Neurosurgery consist of three main components:

- the pathway
- the goal category assessment sheet, and
- the variance sheet.

The pathway lists all the anticipated interventions that a patient will experience during the admission. When an expected intervention or outcome does not occur, the reasons are recorded on the variance sheet. This may be procedural (ie an element of the defined process was omitted) or goal-related (ie a goal was not achieved). Individual variances are neither good nor bad; they are simply a method of recording what happened to a specific patient and why.<sup>2</sup> The patterns of variances across a group of patients will identify strengths and weaknesses in the management process.

The drive for ICPs comes from the desire to improve the quality of clinical care and decrease the length of stay, thus improving efficiency and reducing costs.<sup>3</sup> Although initially used in the management of specific medical or surgical conditions with detailed daily interventions, ICPs have subsequently been successfully utilised in more flexible clinical settings such as stroke and neurorehabilitation units.<sup>4</sup> Conventional teaching on ICPs states that they are specific to a particular condition and setting.<sup>5</sup>

The NRU is an 18-bed unit specialising in goal-oriented rehabilitation of patients with predominantly physical neurological deficits.<sup>6</sup> The interventions used have been described in detail elsewhere.<sup>6,7</sup> At the end of the week of admission, the team set short-term goals which are reviewed throughout the patient's admission on a two- or three-weekly basis, depending on the length of stay. The outcome of each goal is documented as:

- achieved
- achieved after an extended time frame
- not achieved
- not achieved even after time extension
- goal inappropriate, and
- patient declined the goal set.

The NRU has developed and used three disease-specific ICPs in patients with stroke,<sup>4</sup> multiple sclerosis (MS)<sup>8</sup> and spinal disease,<sup>9</sup> to provide multidisciplinary documentation of the process of their inpatient neurorehabilitation. These ICPs evolved to reflect local consensus-based multidisciplinary rehabilitation processes aimed at minimising disability and handicap. Although most patients admitted to the NRU are managed with an ICP, patients with less common conditions such as Guillain-Barré syndrome are not. Rather than develop further disease-specific pathways, consideration was given to the possibility of developing a single process-based ICP for all patients admitted to the NRU.

## Methods

To investigate the feasibility of establishing a single, disability-based ICP, the differences in the process data collected using the three disease-specific ICPs were analysed. First, processes prompted by the three ICPs were directly compared to establish their concordance. The numbers of short-term goals set within each pathway were then counted as well as their outcomes for the period January 1999 to May 2001 and compared for each diagnostic group. Outcomes were categorised as achieved or not achieved. Similarly, the number and type of variances found in each patient group were compared. Variances (ie departures from the expected pathway) were categorised as goal-related or procedural. All 'between group' comparisons were made using the Kruskal-Wallis test (non-parametric data). Bonferroni corrections were applied for multiple subgroup comparisons.

## Results

Over the 29-month review period 229 patients were admitted to the NRU. Five patients who had not undertaken a full course of rehabilitation were excluded, leaving a cohort of 224 patients (103 with MS, 74 with stroke and 47 with spinal cord lesions). The mean age was 48.4 years  $\pm$  14.2 (range 18–82 years). There was a significant difference between the mean age of the MS cohort (44.0 years  $\pm$  11.3) and the other two disease groups (stroke 52.8 years  $\pm$  14.1,  $p < 0.0001$ ; spinal cord 51.1 years  $\pm$  17.3,  $p = 0.004$ ), but not between the stroke and spinal cord cohorts. The mean length of stay for all patients was 35.5  $\pm$  22.4 days (range 11–149). There was a significant difference between the mean length of stay of the MS cohort (24.0 days  $\pm$  10.4) and the other two groups (stroke 47.6 days  $\pm$  25.0; spinal cord 41.5 days  $\pm$  25.0,  $p < 0.0001$  for both), but not between the stroke and spinal cord cohorts.

Analysis of the three ICPs revealed that the processes they reflected were similar. The three ICPs consist of 224 prompts requiring a response, 168 of them common to all three patient groups. Most of the inconsistencies occurred because the stroke and spinal cohorts had a three-weekly pattern of goal-review and goal-setting whereas the MS cohort was reviewed two-weekly due to their shorter mean length of stay. When the items on the ICPs were listed, only 16 items differed significantly between the ICPs (93% concordance). Most were found in the spinal ICP, with bowel assessment, surgical collar and autonomic dysreflexia specifically itemised. Spinal and stroke ICPs included directions regarding prophylactic antithrombosis stocking management, while MS and stroke ICPs included cognitive evaluation. Only MS patients required assessment with a disease-specific measure, the Kurtzke Expanded Disability Status Scale.<sup>10</sup>

There were 3,688 short-term goals across the 224 admissions, of which 3,142 (85.2%) were achieved, 141 of them after an extension period. Approximately 13.8 % of all goals were not

**Table 1. Variance and length of stay data.** The goal and procedural variances in relationship to length of stay are shown for each diagnostic group.

	All		MS		Stroke		Spinal	
	Median	Range	Median	Range	Median	Range	Median	Range
Goal variances per patient	1.0	0–22	0	0–7	2.0	0–16	1.0	0–22
Procedural variances per patient	5.0	0–30	4.0	0–14	6.0	0–30	5.0	0–22
Total variances per patient	6.0	0–31	5.0	0–15	6.0	1–31	8.0	1–31
Ratio of goal to procedural variances	0.45		0.31		0.69		0.37	
Length of stay in days	25.0	11–149	24.0	11–83	41.5	11–149	32.0	11–109
Ratio of length of stay to number of variances	6.69		6.30		6.97		7.05	

MS = multiple sclerosis.

achieved and only 1% were deemed inappropriate or declined by the patient. When normalised for length of stay, there was no significant difference in the number of achieved goals (with or without extension) or in the number of goals not achieved between the groups.

The median number of total (both goal- and process-related) variances per patient for all admissions was six (range 0–31) but they differed within each patient group (MS 5, range 0–15; stroke 8, range 1–31; spinal cord lesion 6, range 1–31) (Table 1). This difference was significant between the MS cohort and the other two cohorts ( $p < 0.001$  for both) but not between the stroke and spinal cohorts ( $p = 0.12$ ). These differences did not reach significance when the number of variances was normalised for length of stay. There was no significant difference in the number of normalised procedural or goal variances between the three groups. The mean ratio of goal to procedural variances was 0.45 (Table 1).

## Discussion

ICPs have traditionally been based on specific medical or surgical conditions, for example, hip fracture.<sup>11</sup> The ICPs used on the NRU were developed along these lines, with specific ICPs for patients with MS, stroke and spinal cord disease. All patients received a programme of multidisciplinary care based on an assessment of their needs. When analysed, the process of care that the patients with different diagnoses underwent was almost identical. There were only minor differences in the make-up of the three ICPs, most of which could be removed with simple readjustment of the ICP layout. The ICPs had similar goal outcome distributions and rates of goal and procedural variance.

Care pathways are a means of putting guidelines into practice. The British Society of Rehabilitation Medicine has produced standards and guidelines for inpatient and community based rehabilitation.<sup>12,13</sup> These guidelines were explicitly written as generic process-oriented standards to be applicable to different groups of patients in various rehabilitation settings. The guidelines are now presented in such a way that it is clear where they mirror each other and where they diverge.<sup>14</sup> The observation that the processes of multidisciplinary care are similar during rehabilitation whatever the diagnosis or setting may also apply in other settings where patients with differing diagnoses have similar needs.

Using process-based ICPs has some advantages. First, variance coding can be used in a number of different ways. Individuals can have their care tailored to their personal needs, with the reasons for departure from the pathway recorded. Although the care pathway is generic, the analysis of variance can be disease-specific. For example, cognitive assessment is clearly more useful in MS than in Guillain-Barré syndrome. Patterns of variance may be compared and contrasted in different disorders, and can highlight particular clinical needs or issues.

Secondly, contrary to previous belief,<sup>5</sup> patients with complex or unusual diagnoses can benefit from ICP-driven management, provided the patient's needs are met by the interventions. Potential disadvantages arise when a specific group of patients

has a particular need, for example, patients with high tetraplegia needing environmental controls. These specific needs will not be met with a generic care pathway and additional care pathways may be needed. Discussion about the benefits and difficulties of process-based and disorder-specific ICPs is not dissimilar to the debate which surrounds the comparison between generic- and disease-specific health status measures.<sup>15</sup>

The major weakness of this study is that it was conducted in a single centre with a particular expertise in patients with complex, but predominantly motor, disability requiring relatively short periods of rehabilitation. None the less, we feel that in neurorehabilitation, where the process of multidisciplinary care is based on activity and participation rather than on the underlying pathology, a single process-based ICP should lead to a more focused and effective neurorehabilitation service. We have developed such a pathway and use it daily. ICPs based on the processes of assessment and care may be of wider use than previously thought.

## Authors

Diane Playford (guarantor for the study) and Alan Thompson were responsible for the conception and design of the study. Simon Edwards analysed the data. All three authors were responsible for drafting and revising the paper. We thank the anonymous referees for suggesting setting its message in a wider context.

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