# Clinical workflow and practice-based evidence

**Mark Olive and Tony Solomonides**

*Bristol Institute of Technology, University of the West of England, Bristol, UK*

**Abstract**

*Integrated care pathways (ICPs), a fine-grained form of medical guideline including the explicit recording of any deviation, have been perceived as overly prescriptive, limiting clinical freedom and promoting cookbook medicine. However, feeding the results of the analysis of 'variance' into the development of pathways could be an effective way of capturing evidence from practice. This paper is a summary of our research into the development and use of ICPs, and their research potential.*

***Keywords:***

Guidelines, Knowledge management, Care pathways

## Introduction and background

This work arose in part from the SHARE [1] project. Part of the project's final report explored the future use of grid/cloud technology for general healthcare; it noted the use of off-label drugs with respect to guidelines and care pathways, variations in evidence supporting treatments in different locales, and that not only can various forms of evidence feed into guidelines, but this knowledge can be both declarative and operational in nature. SHARE's vision of future healthcare brings these together through appropriately controlled secondary use.

## Guidelines, Care Pathways and Variance

Evidence can be taken from numerous sources, and is graded according to a hierarchy. According to the NHS, 'Grade D' evidence includes expert and consensus opinion. This requires relatively little validation; the proportion of such evidence in national guidelines can be surprisingly high. In practice, there are certainly cases where clinicians have disagreed with NICE guidance, and where it was claimed they would be detrimental to other department of health or local priorities [2]. But ignoring them can have disastrous results. High profile enquiries into healthcare failings, such as the investigation of Mid Staffordshire NHS Foundation Trust, inevitably mention inadequate adherence to accepted national guidelines. When deviations occur, an adequate reason must be provided.

Integrated Care Pathways (ICPs) are a means of operationalizing guidelines, providing a patient-centred multidisciplinary journey through the planned course of care and documenting actual care received by the patient. They allow 'variance tracking', where deviations from planned care are recorded with the reason and resolution – in theory, an 'alternative plan of care' rather than the negative 'non-compliance' [3]. The analysis of variations from an ICP is a form of continuous audit and review; aims include refining the pathway, which is essential or they risk promoting outdated practices. Variance can be analysed individually, statistically at a local level, and occasionally wider, involving data from multiple institutions [4]. Categorisation (and coding) of variances is vital for this analysis. Multiple or branching pathways can be used to compare alternative approaches.

Integrating and mapping ICPs to electronic health records (EHRs) is one area of interest. A branching pathway or guideline for a specific diagnosed condition could be expressed as a series of possible paths, each with anchor points such as referrals or key test results. EHRs could be mined for these, which may correspond to periods where a patient's care followed a particular pathway. When mapped, the record could then be analysed to determine if any variance was likely. Expressing the pathway using a formal guideline modelling language (i.e. PROforma) would be a prerequisite for this approach.

A pilot qualitative study of ICPs and variance has raised a number of issues that influence the development and use of ICPs in practice, including authorship and control, adoption by other bodies, financial support, and how these influence the involvement and cooperation of those consulted during development and those using the completed pathway. Also, how dramatic outcomes and preconceptions can skew an individual clinicians perception of a particular drug or patient. Notable failures were attributed to writing pathways for the wrong audience, incorporating only the best practices of those regularly performing core activities, rather than balancing these with the activities on the periphery. Experts felt confident disregarding portions if evidence was weak and they had a valid reason.

If properly implemented, variance analysis could have the potential to effect rapid changes in guidelines by incorporating evidence from practice as it emerges. Further technical details of this work are present in our paper for Healthgrid 2010.

## References

[1] Andoulsi I et al (2008). SHARE the Journey: A European Healthgrid Roadmap. European Commission, Information Society and Media.

[2] Cullum N, Dawson D, Lankshear A et al (2004). The Evaluation of the Dissemination, Implementation and Impact of NICE Guidance. NCCRM.

[3] Middleton S & Roberts A (1998). Clinical Pathways Workbook, Clinical Pathways Reference Centre, VFM Unit.

[4] Proceedings of Integrated Care Pathways 2007, London, June 2007.

**Address for correspondence**

Mark2.Olive@uwe.ac.uk