

# CARE PATHWAYS AND THE BUILT ENVIRONMENT: CONCEPTUAL FRAMEWORK FOR UNDERSTANDING

**Amna Shibeika<sup>1</sup>, Richard Davies and Colin Gray**

*School of Construction Management and Engineering, University of Reading, PO Box 219, Reading,  
RG6 6AW, UK*

The 'Care Pathways' is a relatively recent health care management concept that seeks to make explicit the process of caring for patients. Care pathways appear central to the UK government's National Healthcare Service reforms. However, published reports of care pathways do not adequately incorporate the nature of the built environment infrastructure within and through which most care is delivered. Aligning care pathways issues with buildings' spatial system elements, we realised that the information embedded in care pathways can and arguably should be able to inform architects thinking when considering a building's spatial system. Briefing is identified as the interface where care pathways issues are discussed, and their consequences in the infrastructure tested and formulated. To understand how design requirements to encapsulate care pathways concepts is captured and assessed during the briefing process, scoping study designed with the aim to investigate the mechanisms of specification and evaluation of care pathways in current briefing practices. The study showed that Care Pathways as a term does not exist in current briefing documents. Also it revealed that delivery architects are not involved in the health care planning process furthermore they are not well informed of the outcomes of the health care planning process. As we recognised that care pathways have the potential to inform briefing if represented innovatively and in an understandable way to both health care clients and designers, we are proposing modelling as an approach to understand care pathways to capture the spatial requirements of health care facilities.

Keywords: briefing, care pathways, requirements, NHS.

## INTRODUCTION

One of the most challenging aspects of construction design is for clients to convey to the designer what they want the building to do (Barrett and Stanley, 1999). Briefing is the process that mediates between clients expressing their needs and designers formulating design solutions. Research on briefing has emphasised the importance of managing the process of brief creation, use and control (Gray and Hughes, 2001). This has included methods of structuring the briefing process into stages in an attempt to organise activities and procedures to aid decision making such as the framework developed by Blyth and Worthington which aligns briefing activities with design activities (Blyth and Worthington 2001). As well as addressing the briefing process itself, other research has concentrated on developing tools to support the process and to manage the content of the outputs. Typically this has involved the development of practitioner tools, often electronic, to manage the information burden of briefing such as guidelines, matrices and checklists. An example of this is the Client Requirements Processing Model (CRPM) developed by Kamara *et al.* (2002).

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<sup>1</sup> A.shibeika@reading.ac.uk

The briefing process implicitly relies on good quality client requirements. However well-supported by architects or process tools, the creation of these requirements require the client's representatives to do some difficult thinking about their immediate and long-term needs. Whether these requirements are 'pushed' from client to designer or 'pulled' from the clients in the course of the project itself it is essential that, "clients should be knowledgeable about their own organisations" (Barrett and Stanley, 1999). An increasingly important way in which healthcare knowledge is captured is in the form of 'care pathways'. This paper is part of a research project with the aim of developing care pathways to be an effective input into the healthcare building design process. The research is being conducted within the Health and Care Infrastructure Research and Innovation Centre (HaCIRIC): a collaboration between existing research centres at Imperial College London and the Universities of Loughborough, Reading and Salford. HaCIRIC's focus is on the underlying built and technical infrastructure for health and social care, and the interaction between this infrastructure and change and innovation in care services.

## **CARE PATHWAYS**

The 'care pathway' is a relatively recent health care management concept that seeks to make explicit the process of caring for patients. It represents an attempt to apply ideas from business process engineering and quality management to health and social care and has much in common with the idea of a business process. Improved quality, efficient resource use, better cost management, improved documentation and reduction in length of stay have all been attributed to management of care pathways in hospitals and other health care settings around the world (Davies, 2008). The term care pathways has proven to be a difficult one to define precisely. One strong definition has been developed by the European Pathway Association and reflects the nature of best practice in pathway design.

“Care pathways are a methodology for the mutual decision making and organisation of care for a well-defined group of patients during a well-defined period. Defining characteristics of care pathways includes:

- An explicit statement of the goals and key elements of care based on evidence, best practice, and patient expectations;
- The facilitation of the communication, coordination of roles, and sequencing the activities of the multidisciplinary care team, patients and their relatives;
- The documentation, monitoring, and evaluation of variances and outcomes; and
- The identification of the appropriate resources.

The aim of a care pathway is to enhance the quality of care by improving patient outcomes, promoting patient safety, increasing patient satisfaction, and optimising the use of resources”. (European Pathway Association, 2005)

Care pathways also appear central to the UK government's National Healthcare Service (NHS) reforms. The latest UK Government review on the 60th anniversary of the founding of the NHS ('High Quality Care for All') led by Lord Darzi called for locally led, patient-centred and clinically driven change (Department of Health, 2008). In the recommendations, Darzi's report focused around three goals: promoting well-being and prevention beside tackling illness, providing higher quality and safer care and adopting innovation in the care process and medical technology. The review adopted care pathways as the vehicle for improvement, because they are designed by

medical staff, based on clinical evidence and are patient centred. Moreover, care pathways facilitate the integration of clinical services, rather than organisational integration, which is needed to achieve Darzi's three core recommendations.

For the purposes of briefing for healthcare buildings, care pathways possess a number of useful qualities: they capture high-quality information about care delivery processes, they incorporate best practice in clinical and social care, and they reflect policy and improvement initiatives. Hence, the overall aim of the research of which we are presenting part here, is to understand how the interaction between care pathways and the supporting infrastructure can not only support infrastructure briefing, but also assist in the delivery of improved care.

## **CARE PATHWAYS, INFRASTRUCTURE AND THE BRIEFING PROCESS**

Many published reports of care pathways and their implementation can be found in the bio-medical and health management literatures. Unfortunately for our purposes, these reports do not adequately incorporate the nature of the built environment infrastructure within and through which most care is delivered (Davies, 2008). Moreover, despite the rich literature of the effect of the infrastructure on clinical outcomes, or providing healing and therapeutic environments (Codinhoto *et al.* 2008), there isn't a significant literature in the relation between care pathways and the built environment, nor the role of infrastructure in supporting and facilitating care pathways. In the absence of well established theoretical or other models to examine this relationship we have found it necessary to develop our own.

In simple process engineering terms, a care pathway is concerned with and explains three main entities:

1. Processes; this is the care steps and clinical interventions that are required to improve or solve a specific health or illness situation.
2. People; care pathways illustrate the patient chronological journey through the identified care process, with the clinical and medical staff supporting the patient through the care process.
3. Integration; care pathways are concerned with and aim to facilitate clinical and service integration. This integration may be supported, for example, by organisational integration and shared IT.

These three issues are constrained by time, and arguably by the space in which they are performed. But what do these three issues mean for the health care facility design and how can it be translated into built environment terms? To answer these questions, first we need to revisit the architectural design process and its elements and principles. Moreover, how do people perceive and experience space?

Ching in his introduction to his book (*Architecture; Form, Space and Order*) views that a building constitutes: spatial, structural, enclosure and circulation systems placed in a context (site considerations). As we are emphasising the spatial systems rather than the other mentioned systems we include the statement Ching (1996) that:

*"Architectural order is created when the organisation of parts makes visible their relationships to each other and the structures as a whole. When these relationships are perceived as mutually reinforcing and contributing to the singular nature of the whole, then a conceptual order exists- and order that may well be more enduring than transient perceptual visions." (Ching 1996: X)*

Therefore, we concur that the spatial system of a building is experienced through:

1. Physical elements: the space which includes specific activity or function to achieve a design solution, architects and designers arrange the space in a form that results from their study of the functions and the relationships between different kinds of spaces.
2. Perceptual elements: the sensory perception of spaces when experienced through the movement in space within time and this is translated in the design to access, flow and sequence of spaces.
3. Conceptual elements: These results from the relationship between a building's elements and systems and realised as images, patterns, colours, etc.

Therefore by aligning the requirements within a care pathway with a buildings' spatial system elements the information embedded in care pathways can and arguably should be able to inform architects thinking when considering a building's spatial system. The processes and people elements of the care pathway and its interaction and possible consequences to the infrastructure are outlined in Table 1.

*Table 1: Care pathways and infrastructure considerations*

Care pathway		Infrastructure spatial system	
Processes	Care procedures, steps	Space	Functions, relationships, hierarchy, etc
People	Patient, clinical staff journeys	Movement	Approach, access, sequence of spaces, circulation, etc

Moreover, the integration element is useful as it lends itself especially well to understanding integrated clinical services within one institution or across different settings (Rosen and Ham 2008).

For new projects and even changes to existing infrastructure the consequences and interaction of care pathways with its supporting facilities needs to be captured during the briefing process. Briefing is the stage where care pathways issues are discussed, and their consequences in the infrastructure tested and formulated.

The theoretical discussion outlined above attempts to deal with some complex issues. We recognise that our current understanding of these relationships is partial and we intend to develop it further through empirical and action research in this area. The remainder of this paper describes a scoping study conducted with UK healthcare architects to examine the extent and nature of the use of care pathways in existing practice.

## **A SCOPING STUDY TO INVESTIGATE THE USE OF CARE PATHWAYS IN CURRENT BRIEFING PRACTICES IN THE NHS**

### **Objectives**

Given the lack of available literature on care pathways and briefing, it was necessary to conduct empirical research with practitioners to assess the ways in which care pathways are, or are not, used in current healthcare briefing practice. We suspected that, despite the literature findings, that pathways were used in the thinking of clients and architects. In fact, as care pathways are representations of care delivery processes

around which buildings are inevitably designed it seemed unlikely that pathways were not incorporated in some form.

Hence, a scoping study was designed with the aim to investigate the mechanisms of specification and evaluation of care pathways in current practice. The objectives associated with this aim were:

1. To explore the wider briefing process for health care facilities, from the perspective of care pathways.
2. To determine how designs, as they are formulated, are evaluated in terms of pathways delivery, patient experience and efficiency of operation.

## **Methods**

The study used a combination of research interviews, document analysis and informal discussions.

Semi structured interviews were carried out in summer of 2008 within three leading UK architectural practices; all of them are specialised in health care design in the UK and overseas. Semi structured interviews were chosen because it was felt that it was the best form of interview to gain the insight of the required information without on the one hand restricting the interviewee or, on the other, losing the control of the topics discussed (Fellows and Liu 2003).

Topics discussed included, but were not limited to, the following:

3. Briefing and early design activities; to achieve a grounded understanding of the briefing process by providing a scenario of the briefing process activities, what were good and bad briefs and the difficulties of interpretation they experienced.
4. How the care pathways / care delivery practices information was provided within the briefing documents architects receive and how understandable it was.
5. Communication and decision-making process during the briefing and early stages of design of the underlying medical and care practices.

The interviews lasted between 60 and 100 minutes and were recorded and transcribed. Following the interviews, sample briefing documents provided by two of the three practices were studied followed by further discussions.

The following sections describe some of the relevant findings from the analysis of the data collected.

### **How was briefing for healthcare buildings performed?**

Rather than developing it in collaboration with the client, architects normally receive the brief from the health care trust. The architects assess, study and question the information within the brief document before they proceed with design solutions.

This means that there is a wide range of activities performed before the brief arrives in the architect's hands. Health care plans and client requirements are developed before the appointment of the design team, usually performed by in-house expertise and/or external consultants for the NHS client (healthcare planners or architect advisors). The NHS has a wealth of guidance and reference with regard to functional requirements and schedules of accommodations that inform this stage (although our participants agreed that much of it needs to be updated). The health care service needs and targets are considered and documented at this stage. The information from this stage is then

combined with site and engineering information to form a document which is the brief itself.

It is typically only after this process has been completed that the design team is appointed. The appointed architect will challenge the design brief and proceed with sketches, diagrams and discussions with the client to formulate designs. Architects have wide range of techniques to aid their efforts at this stage including previous experience, comparisons with national and international developments and best practice. Moreover, the NHS clients sometimes provide exemplar design as a guide and point of reference for the architects.

### **Do care pathways exist in current briefing process?**

The study showed that care pathways as a term does not exist in current briefing documents. However, terms such as model of care, service philosophy, patient pathways, workflow patterns, etc, are used to express the same issues demonstrated by a care pathway, nevertheless it was vague and more abstract. There was a lack of a clear and precise vision of how care is planned and service will be delivered

Additionally, representations of the health care service delivery targets and processes were poor and difficult to interpret. This resulted in architects spending more time trying to understand the health care service delivery process. As the service delivery is rapidly changing this added more tension and difficulty to the design situation particularly given the long time the briefing normally takes for health care developments. Moreover, architects had concerns that questioning the clients it might affect their relation with the client bearing in mind that they are in competition with other architects.

## **DISCUSSION**

The findings of the scoping study, revealed a clear gap in current briefing practices for health care facilities in that they do not relate to the current emphasis on the pathway as the model from which to deliver efficient patient centred care.

Three main reasons appear to be responsible for this gap. First, delivery architects are not involved in the health care planning process which is mainly due to procurement reasons and the need for competitive solutions. Second, delivery architects are not well informed of the outcomes of the health care planning process because it is, in itself, very difficult and there are few tools which allow processes to be mapped. Finally, there is a lack of the NHS in-house expertise which can translate and clarify the care delivery service process to the architects whenever needed

Health care facility development normally takes a long time and the relatively rapid change in the health care service delivery processes, compounded by the change in operational personnel within the care system leads to many of the difficulties. Architects remain responsible of dealing with the consequences of this fluidity, as one of our interviewee stated:

*"We're the only people left who were there at the start of the project, and a paradoxical shift occurs where we, who are there to devise a building, become the custodians of the original vision and the idea."*

The results of the scoping study have demonstrated that in addition to their value in representing and capturing client requirements in themselves, care pathways have a role in reducing the negative impact of the current practice of employing different architects for the brief and design stages.

## CONCLUSIONS

Care pathways stand as a potential source of information to clarify the briefing requirement. Bearing in mind that care pathways are now dominating the NHS agenda, we argue that an adequate understanding of care pathways is necessary to enhance the current briefing practices. Care pathways can be considered as a carrier of valuable information with regard to the health care delivery process. Therefore, they have the potential to inform briefing if represented innovatively and in an understandable way to both health care clients and designers

## FURTHER WORK

We have established that care pathways have a valuable role to play in briefing for healthcare buildings. However, even where they exist, care pathways as published are text based paper documents for the management of procedures. These forms do not fulfil the necessary role identified by the scoping study of representing care delivery processes in ways that provide useful information to clients, and the different building designers involved in the distinct stages of the briefing and design process.

What is required is a form of representation and capture of care pathways to meet this need and to integrate health care planning and spatial design processes as outlined in table 1 and to ensure that at the macro and micro level the infrastructure is designed to enhance health care delivery.

We are pursuing modelling as a 'tool for thinking' (Pidd 1996) to understand the health care facility needs of care pathways in the belief that:

*"These tools for thinking may be used to add leverage to human thoughts and analysis" (Pidd 1996 p 29)*

The next stage in our research is to develop a generic approach that can be populated and tailored to specific instances in the future. The addition of simulation to the model will allow the model to test various scenarios and to be able to consider variations in the process and patient demands over time. Moreover, capturing client's requirements, or understanding the client's business process and providing an approach using modelling to overcome the limitation in current practices of briefing, will provide useful lessons for briefing outside health care projects.

## REFERENCES

- Barrett, P, and Stanley C. (1999) *Better Construction Briefing*. Blackwell Science.
- Blyth, A and Worthington, J (2001) *Managing the brief for better design*. London: Spon Press
- Ching, F (1996) *Architecture: Form, Space and Order*. 2ed. John Wiley and Sons
- Codinhoto, R, Tzortzopoulos, P, Kagioglou, M, Aouad, G and Cooper, R (2008) *The effects of the built environment on health outcomes*. HaCIRIC Report, Available via [www.haciric.org](http://www.haciric.org) [Accessed 29/06/09]
- Davies, R (2008) *Care pathways and the healthcare built environment: an explanatory framework and research agenda* in HaCIRIC 1st symposium 1st- 2nd April 2008 London.
- Department of Health (2008) *High Quality Care for All, NHS next stage review final report* London: TSO Department of Health.
- European Pathway Association (2005). Slovenia Board Meeting, Dec 2005. [www.e-p-a.org/000000979b08f9803/index.html](http://www.e-p-a.org/000000979b08f9803/index.html) [Accessed 30.09.2008]

- Fellows, R and Liu, A (2003) *Research Methods for Construction*. 2ed. London:Blackwell Publishing
- Francis, S, Glanville, R, Noble, A and Scher, P (1999) *50 Years of ideas in health care buildings*. The Nuffield Trust
- Gray, C. and Hughes, W. (2001) *Building Design Management*. London: Butterworth-Heinemann
- Kamara, M., Anumba, C. and Evbuomwan, N. (2002) *Capturing Client Requirements in Construction Projects*, London: Thomas Telford.
- Pidd, M. (1996) *Tools for Thinking; Modelling in Management Science*. London: John Wiley and Sons Ltd England
- Rosen, R and Ham, C (2008) *Integrated Care: Lessons from evidence and experience*. London: The Nuffield Trust.