

Mapping out the patient's journey: experiences of developing pathways of care

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Introduction

A patient's experience of an episode of care is sometimes likened to a journey. But the patient as traveller may feel more like an intrepid explorer continually coming up against the unknown rather than a modern traveller whose journey has been planned with a travel agent and who has possession of a detailed written itinerary. Planned journeys carry less risk than unplanned ones, and knowledge of the journey's steps and stages reduces anxiety and fear. Our patients should expect at least the same amount of planning for and information about their health care as they get from travel agents about their travel plans.

Much health care, even that which is elective and a routine part of the function of a department within a hospital is delivered as a series of unwritten steps, shared only partly within the clinical team, and often dependent on memory. With the inevitable turnover of professional staff, checks on the process of care may get left out. For example, the routine use of prophylactic antibiotics in bowel surgery may be forgotten.¹ And as a patient's care may often extend beyond one clinical department and include other teams—for example, radiology and anaesthetics—there is a clear potential for the breakdown in the process of care. Examples of such lapses include patients admitted for a routine operation, which has to be cancelled because the anaesthetist did not know in advance of a medical problem—such as hypertension. Furthermore there are many published and local data that show that many people who would benefit from effective and appropriate interventions simply do not get them. Aspirins and β blockers, for example, have been shown to improve survival after myocardial infarction, but studies show that many of those eligible do not get these drugs.²

We describe in this paper the experience of one hospital in developing care plans (sometimes referred to as care pathways or care protocols) for many groups of patients and incorporating these within a multiprofessional single record of patient care. These protocols describe explicitly all the expected processes of care,^{3–5} and are tools that determine predictable good quality patient care.⁶ Professional staff were involved in these changes from the outset as they had to explain and agree the pathways that for years had been unwritten. The process of doing this was not straightforward and many staff found the process difficult. But now almost 8 years on, experienced and new staff alike not only accept the new approach to patient care but would find it difficult to go back to the old ways. We are able to show clear

benefits in patient care; in saving staff time, and in attitudes to team work.

Setting out care plans

The prospect of setting out a multidisciplinary plan of care for each person may seem daunting. Ideally for each patient an outline of their expected treatment pathway should include details of best practice described in the context of the organisational structures of the individual hospital. An episode of care for any individual patient is a complex series of interactions that make up the *processes of care*. These often involve many people—for example, over 20 people may have a role in the outpatient care and investigation of a patient with lung cancer that occurs *before* referral to a surgeon for consideration of surgery. But for many conditions, the stages of care are predictable. This is particularly evident for those undergoing elective surgery for whom a well defined series of inputs achieves a desired outcome. Medical conditions have a rather lower predictability, but usually follow a common pattern and even for those admitted as medical emergencies the course of care will be largely predictable.

Mapping out a protocol

The process of mapping out the plan of care begins with agreeing the condition type, such as cardiac chest pain. This is to set a boundary around an episode of care. High volume conditions are preferable, because if you are wanting to make a change in managing care you need a critical mass. And it is helpful to start with a relatively easy and straightforward condition, with a high degree of predictability, and which is likely to be a success, so at the Central Middlesex Hospital we began with total hip replacement. At the outset the scientific literature is always reviewed and evidence sought. A group meeting is set up with a representative selection of staff to talk through the process, facilitated by a member of the quality or audit department. This meeting is the key to setting and planning the process. It highlights all the steps in the process for the team, in which traditionally professionals see only their part of the process. Despite the fact that individual people meet and talk to each other often about the patient's progress. In the normal case of clinical work, doctors, nurses, and professions allied to medicine seldom meet to agree, or even discuss a common plan for patients with particular conditions in which they relate what it is they do and how this impacts on the overall plan. Surprising as this would seem to the thousands of patients entering hospitals each day few organisations will have agreed a common plan with all the contributing members of the team.

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In these meetings key milestones for the protocol are identified. They include evidence-based standards—such as discharging postmyocardial patients on aspirin and β blockers unless contraindicated—areas of great variation, critical steps in the process, and priorities for the organisation such as duration of stay (box 1).

The process of mapping out such details often shows activities that either do not contribute to care, or are wasteful repetitions of tasks done by others. Duplication of tasks is a common feature—such as varying degrees of dietary advice provided by dieticians, nursing staff, and the specialist rehabilitation nurse. The role of the quality or audit department in this process is to challenge the status quo, a role with which most audit departments would feel distinctly uncomfortable. During the discussion on the mapping out process the question often posed is: “what is the most appropriate activity, when is the most appropriate time for it to be carried out, and who is the most appropriate person?” Should consensus not be achieved before implementation, the outcomes are audited and the process reviewed at a later date.

Designing protocols to suit individual needs

Care may be predictable but alterations to a prescribed pathway will be needed for some people. This should not be seen as an argument against protocols but rather as an indication of the need for flexibility to account for different needs of patients and also of how they should be used—as templates to guide care. Clinical judgement and decision making are required even when the processes of care are written down and shared with all those concerned. Protocols should incorporate branches in the pathways for care that describe possible pathways for care. A successful protocol will include these branching points that leave discretion about decision making to the clinician. Examples of the need for flexibility include indications for alternative drugs for those persons allergic to standard prophylactic antibiotics and the need to alter the care pathway for those who do not respond to treatment as predicted.

When patient progress or any aspect of patient care does not match the pathway set out in the protocol this is described as a “variance”. Variances may simply be because a patient responds slowly or does not respond to treatment. Other variances, however, may reflect difficulties in delivering care. For example, 8 years ago when we developed the first protocol in our urology wards we found that a proportion of patients undergoing prostatectomy were being discharged home on average two days later than their predicted date of discharge. On investigation we found that for some patients in this group, the urinary catheters were scheduled to be removed on a weekend, and when their doctor was off duty this was deferred until Monday. Setting out the process of care in a protocol identified a situation which had probably been happening for years. Once noticed the problem was resolved by agreeing criteria for removal and giving

nurses the authority to decide about removal of catheters within prescribed parameters agreed by the consultant surgeon.

The patient record

If care is to be planned, made explicit, and shared, then the details of care need to be easily accessible as a written record. The ideal place for this is the patient record. Traditionally the *medical* notes are the main record of patient care and nurses and therapists usually keep their notes as a separate record. Unstructured medical notes normally include a retrospective record of what happens to a patient but even so cannot be guaranteed to contain all the information necessary for quality assessment and may include much redundant detail.⁷

A structured patient record includes not only the space for detailing the retrospective story of patient care but also a forward plan of expected treatment and includes prompts and reminders. Such plans are not simply a record of actions of the different professions⁸ but are written so that the whole team work to a shared plan that is available also to the patient. Duplication of activity and documentation is minimised. All healthcare professionals record their notes in the single record that is the only record of patient care. In the complex environment, the use of the multiprofessional record of care encouraged the close team working that is essential for good patient care.

Using the protocols

The predicted plan is designed in such a way as to provide clarity and reduce time in documentation. Staff indicate simply by documenting on the protocol whether an activity or milestone has been met and the reason if not, providing a basis for audit data. Space for free text adjacent to the plan is provided for additional details or information. The problem with a structured paper document is getting the amount of free space just right. Inevitably it is too much or too little and this process is helped when staff write on each line and not across the whole page. As a multidisciplinary record is used by all staff, notes made, for example, during a ward round are only needed to be documented once.

In accident and emergency departments the protocols are symptom based—such as “painful hip”, they follow the same structure and are designed for use as the record of care. They are placed on the computer system, and are printed out for use after triage.

Throughout the hospital, where a patient's diagnosis does not fall within a written protocol, then staff use multidisciplinary notes that mirror an empty protocol.

One key hurdle to overcome was the location of the unitary record. This may sound relatively unimportant, but it can prove to be one of the most difficult problems to put right. Many factors influence this, mainly professional differences and preferences in recording care. A natural concern expressed by clinicians surrounded the issue of confidentiality. To resolve this issue, we have chosen to keep most records in a central

TOTAL ABDOMINAL HYSTERECTOMY PROTOCOL

POST-OP DAY 2 Date: _____ NAME: _____ HOSPITAL NUMBER: _____

MILESTONES:	REASONS IF NOT MET at 4 00pm
■ Apyrexial	Y / N
■ HB > 10.5 g/dl and no clinical symptoms of anaemia	Y / N
■ Passing urine normally	Y / N
■ Bowels open	Y / N
■ Evidence of wound healing	Y / N
■ Pain free with or without analgesia	Y / N
■ Independently mobile	Y / N

ASSESSMENT	
■ Vital signs; fluid balance; pain; bowels	

INVESTIGATIONS	
■ FBC Y / N Result: _____ Remove venflon (If blood transfusion not required). Removed	Y / N
■ Is patient pyrexial? (2–3 ^o rise above baseline recorded presurgery) If YES Review blood count, wound and chest. Consider blood cultures (Ideally 3 separate samples NOT taken through the IV line)	Y / N
Consider urine sample (Infection unlikely to be caused by a catheter if only in situ for 24 hours especially if the patient has received prophylactic antibiotics)	Y / N

DRUGS	
■ Obtain TTOs	Y / N
■ Sodium heparin 5000 iu sc twice daily	
■ If additional antibiotics are required the PR route for flagyl is recommended until oral doses are tolerated	

MANAGEMENT	
■ Walk to washroom to carry out ADLs	Y / N
■ Check TEDs used correctly and heels not discoloured	Y / N
■ Normal diet	Y / N
■ Wound: Abdominal: Dressing checked and satisfactory	Y / N
Vaginal: Check PV loss not excessive	Y / N
■ Confirm patient for CCT + commence discharge checklist	Y / N

am	pm	Night
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Box 1 Examples of protocols.

notes trolley, although in some areas—such as short stay elective surgery and orthopaedics, the records are held at the end of the bed.

Progress so far

About 85% of surgery is now managed according to protocol, 40% of medicine and 70% in accident and emergency, which includes both specific and general protocols.

The focus to date has been on the inpatient episode of care (box 2). The emphasis now needs to move to the outpatient arena, and engage our primary care partners in agreeing a common plan which crosses the primary and secondary care interface.

Difficulties and barriers to development of protocols

The process of introducing these changes was not straightforward and initially each protocol was developed through several months of discussion. Concerns and anxieties were expressed by some throughout the development. Eight years after we started this project the use of care protocols within structured notes are now fully embedded in the routine process of care delivery, and the improvements in patient care are tangible. However, there remain a few who would be like to return to the plain history sheet, or traditional nursing or paramedic model.

ADULT ASTHMA PROTOCOL

Patient name: _____ DAY 2 _____ Ward _____

MILESTONES/OUTCOMES	MET	If no please give reason
<ul style="list-style-type: none"> ■ Inhaled steroids commenced <input type="checkbox"/> 		

ASSESSMENT	Better	Same	Worse
<ul style="list-style-type: none"> ■ Nocturnal breathlessness <input type="checkbox"/> ■ Able to speak full sentences <input type="checkbox"/> ■ Wheeze <input type="checkbox"/> 			
<ul style="list-style-type: none"> ■ Observations: TPR and BP 6 hourly Peak flow pre and postnebuliser Daily urinalysis for glucose _____ 			

INVESTIGATIONS	Yes	No	Comments:
<ul style="list-style-type: none"> ■ U + Es for K⁺ <input type="checkbox"/> <input type="checkbox"/> <i>If not already taken or low admission</i> 			

DRUGS	Yes	No
<ul style="list-style-type: none"> ■ Commence inhaled steroids (with device most suited to patient) ■ Continue with oral steroids ■ Commence inhaled B₂ agonists and discontinue nebulisers IF PF plateaued AND MD < 20% of highest PEFR AND O₂ saturation on air normal Commenced <input type="checkbox"/> <input type="checkbox"/> 		

MANAGEMENT	Yes	No (sign)
<ul style="list-style-type: none"> ■ Care plan discussed and explained to patient by: _____ ■ Disease management: Discuss management of disease, check understanding and suggest coping skills Asthma leaflets given <input type="checkbox"/> <input type="checkbox"/> ■ Inhaler technique: Check technique and record: Type: _____ Device: _____ Competent: <input type="checkbox"/> <input type="checkbox"/> ■ Smoking: If patient smokes discuss ways/help to give up. Advice leaflet given <input type="checkbox"/> <input type="checkbox"/> 		

ADDITIONAL INFORMATION

RGN: am	pm	Night
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Box 1 Examples of protocols.

Although the arguments for making the processes of care explicit were very strong, many healthcare professionals found this a difficult process that was met with anxiety and some scepticism. Mapping out care in this way confronts both the nature of the clinical team and perhaps unstated power struggles within it. For doctors a particular concern was the potential threat to individual autonomy.⁹ Protocols were described by some as “cook book medicine” and were initially regarded as inferior structured notes despite evidence that it may be better to follow a guideline than to improvise.¹⁰ An extreme example was one consultant who instructed the medical team

when on call at night to remove medical notes from the multidisciplinary protocol thus recreating separate nursing and medical records.

A concern expressed by nurses was that protocols may detract from their opportunities to communicate directly with patients. Nursing, traditionally and importantly, incorporates nurturing, caring, and advocacy as defining functions. The quality of interpersonal communication is not a function of the model of care, but reflects a basic respect for people. In any interaction between clinician and patient the presence of protocols does not exclude the necessity to engage in a meaningful dialogue.

<p>Medicine:</p> <ul style="list-style-type: none"> Asthma Cardiac chest pain Acute sickle cell crisis Diabetic ketoacidosis Chronic obstructive pulmonary disease Stroke <p>Surgery:</p> <ul style="list-style-type: none"> Fractured neck of femur Total joint replacements: hips and knees Transurethral resection of the prostate Hysterectomy: vaginal and abdominal Miscarriage or ectopic pregnancy <18 weeks Ear, nose, and throat: short stay protocol (grommets / submucosal diathermy / tonsillectomy / myringotomy / bilateral atrium washout / adenotonsillectomy / dewaxing / EUA postnasal space) <p>Accident and emergency:</p> <ul style="list-style-type: none"> Postcoital contraception Nasal injury and epistaxis Ankle injury

Box 2 Examples of protocols in use.

Benefits of structured protocols

Organisational changes—such as the introduction of care plans—are not subjected to the same sort of proof of effectiveness as new clinical interventions. Yet showing whether such changes produce benefit and if so how much and at what cost is important if we are to develop and refine them and if others are to adopt them. But evaluation is difficult. The changes we describe were necessarily introduced incrementally and over the 8 years of this project there have been other factors, both internal and external, that could effect expert changes. Thus it is impossible to prove beyond reasonable doubt the benefits of these changes. But we do have data about some aspects of care and about duration of stay that suggest—perhaps on the balance of possibilities—that these protocols have benefited patient care. Explicit planning of care incorporated in the protocol provides a tool for the assessment of the quality of care and it is easier to assure the

use of effective interventions. Other benefits include reduction in duplication of tasks; reduction in duration of hospital stay for some patients; and better team functioning. These benefits are discussed later.

QUALITY ASSESSMENT AND BETTER USE OF EVIDENCED-BASED CARE

Staff from the quality department coordinate the development of the protocols. This involvement in a process, now considered to be integral to patient care, has resulted in the quality department being viewed as working with the clinical team and not as a separate external group uninvolved in patient care. As clinicians use protocols and structured notes as part of their daily involvement in patient care, they are also continuously recording the basic data required for audit by charting variance as and when it occurs—a process simplified by the design of the record.

The collection and analysis of data for audit is also regarded as part of the care process. Staff—for example the gynaecology sister—collect the data as they oversee the process of care. Ward staff are involved in its analysis with the quality department, looking for trends, or areas requiring more detailed focused audit, and consider themselves “part owners” of the data because of their direct involvement in the process. The role and impact of audit has thus been extended by the decentralisation of the audit process. Several staff have commented that this method of audit provides a helpful framework on which to oversee or case manage their care delivery.

Clinical teams are now more able to respond to problems highlighted by suggesting and implementing change. Audit data collected retrospectively from unstructured notes were often incomplete; lacked some of the richness of this form of concurrent data as they can include details that are not always routinely documented; were always at least 6 months out of date, and seemed to have less impact on clinical staff.

For example, after confirmation of an acute myocardial infarction, information on time from admission to hospital, to receiving thrombolytic therapy—door to needle time—has been available for all patients admitted with myocardial infarction since concurrent audit for acute myocardial infarction was introduced 3 years ago. It is collected by and owned by the staff involved. They have undertaken detailed analysis of the process from the allocation of the triage category to the time seen and the initiation of treatment by the medical registrar. Their input has helped streamline a difficult and complex process (box 3).

REDUCTION IN DURATION OF HOSPITAL STAY

We have also noted many other improvements in care that clearly benefit patients and improve the efficiency of the hospital. For example, using protocols for the care of women admitted because of threatened miscarriage of pregnancy has resulted in most women who need a procedure now waiting less than 24 hours. The average duration of hospital stay for many groups of

Milestone targets met	1995 n(%)	1996 n (%)	1997 n (%)
Postmyocardial infarction (unless contraindicated):			
Aspirin on discharge†	124/126 (98)	79/80 (99)	72/73 (99)
β Blockers on discharge†	68/73 (93)	53/56 (95)	42/44 (95)
Cardiac rehabilitation†	40/48 (83)	83/87 (95)	72/75 (96)
Acute adult sickle cell crisis:			
Intramuscular analgesia within 15 minutes of arrival at accident and emergency	2/20 (10)	8/12 (67)	15/24 (63)
Primigravida mothers received Anti-D:			
28 Weeks		31/48 (65)*	26/27 (96)
36 Weeks		37/48 (77)*	25/25 (100)
Postnatal		94/136 (69)*	58/58 (100)
Abdominal hysterectomy:			
Operated on day of admission	4/118 (3)	91/109 (83)	47/50 (94)
Miscarriage:			
Operated on within 24 hours of confirmation of miscarriage	20/50 (40)	181/189 (96)	50/56 (89)

* Before implementation of protocol.
† Protocol implemented in 1993—limited data available.

Box 3 Example of protocol milestone targets met.

	1995	1996	1997
Total knee replacement:			
Target duration of stay (nights)	12	11	7
Met target (n (%))	27/57 (47)	43/57 (75)	16/31 (52)
Abdominal hysterectomy:			
Target duration of stay (nights)	6	5	3
Met target (n (%))	32/116 (28)	83/111 (75)	22/36 (61)

Box 4 Protocol duration of stay targets met.

patients has fallen by up to 4 days. In orthopaedics for example, over the past 5 years, the predicted duration of stay for total knee replacement has been reduced from 13 days after operation to 7 days. This has been met, in part by improved, more coordinated working and by providing continuing support for patients at home through the setting up of a collaborative care team.^{11 12}

Miscarriage, although not a clinical emergency, is for the patient one of the most traumatic experiences. Prompted by complaints from patients, the current process was reviewed to look at where the problems or blocks lay, a protocol was developed, and specific theatre slots were allocated on a daily basis, the need for which was identified in the review.

Priorities for the organisation have been to reduce duration of stay while improving quality. Detailed analysis of process highlighted that in many respects duration of stay was prolonged due to poor management of process. Commonly held assumptions—such as not discharging patients with a catheter in to a home care team service—need to be and continue to be challenged.

SAVING STAFF TIME

The introduction of protocols have resulted in a notable reduction in the time spent recording information. During a routine day the total time spent by all of the nursing staff planning and documenting care was on average 16 hours. The introduction of protocols has reduced this by half, freeing up precious time for “direct patient care”.⁶

STAFF ATTITUDES

Making explicit and accessible the roles and inputs of all professions has had a positive impact on the way in which individual clinicians work together in a team. This having been said, no one should underestimate the strong pull exerted by individual people and professional groups to a more individualistic approach to care management.

Nursing staff have readily adopted protocols and are happy to acknowledge that the previous nursing models used were both functionally restrictive and difficult to follow.

Doctors, particularly those new to the hospital, found the protocols a very accessible way of getting to know agreed practice—for example, the management of acute sickle crisis. They were not so happy to follow a protocol for a condition which they thought they were competent in. Asthma is a good example of this, whereas the junior doctor thought that the correct treatment protocol or guideline was carried out, audits often suggested otherwise.

RISK MANAGEMENT

Involvement in developing protocols was a powerful stimulus to thinking about risk management. This was particularly true in accident and emergency where the nurse's role was being extended in such a way as to incorporate the traditional doctor's role. The protocol set clear and defined boundaries for practice. Examples include ordering x ray films and prescribing medications, initiating treatment, and discharging patients.

FINANCIAL PLANNING

Optimum clinical and financial performance often go together, and if a protocol is well designed its exact operation should deliver both. Structured protocols can be used as a management tool in planning healthcare delivery and provide a rational method of examining costs which is perhaps more effective than traditional methods of assessing the costs of clinical practice. Protocols can also be used to control costs through managing duration of stay, reducing duplication of staffing activities, and promoting the use of agreed drug treatments.

Costs of introducing protocols

The start up costs were initially much greater than they are currently. Initially one project worker was identified and funded to facilitate the implementation of protocols. This person needed to have clinical credibility and be senior enough to challenge the status quo. This role is now absorbed within the audit and quality department. There are the obvious additional costs of clinical staff time to attend meetings; however, these are far outweighed by the clear benefits of improved team awareness and working and the financial benefits of reductions in duration of stay.

Discussion

The changes that we have made to the delivery of care through the process of developing protocols has had an enormous impact both on the quality of care and staff attitudes and approach to practice. Teams work much better when they share the same goals.¹³ By incorporating the work of all those who contribute to care as one protocol in one set of notes, people can understand their role in patient care relative to contributions of others. Patients too can see their pathway of care and can link together and make sense of the separate interventions and interactions from different healthcare professionals.

Those who have been involved in any change process, particularly one which involved clinicians, will not be surprised to read that the effort involved in bringing about such change has been monumental.

In one sense the changes have not been that great—after all we only asked clinicians to describe and make explicit care pathways used by their own teams, to re-evaluate that process, and in the light of that, where required, to change the way they looked after patients. There has been little change in *intended* patterns of clinical care. The improvements are because of changes to the organisation of care and to the way people work together. The twin

processes of collating details of care pathways and including these in a single patient record changed the system of delivery of care, a prerequisite for real improvement.¹⁴

The protocols that we have introduced are not a new idea. We did not invent them. Work on the implementation of clinical guidelines, which are similar in some respects to the protocols, shows that clinical practice guidelines can have an impact on clinical practice. Two conditions that increase the likelihood of clinical guidelines influencing clinical practice—taking account of local circumstances and operating directly on the patient-professional interaction—for example, through restructuring medical records—are both key parts of this project. Our experience is in line with this evidence. But we emphasise that implementation in this way requires the stamina for major change.

Now that we are seeing clear benefits from this project it is easy to forget the problems that we encountered. We underestimated the time that it would take to embed this new approach to care delivery as part of routine practice. And looking back there are many things that we would do differently. For example, one complaint voiced by clinicians was that they did not know what was going on. Although we involved everyone—or so we thought—we clearly did not communicate enough. The process of agreeing care protocols was in itself beneficial as clinicians realised that processes they had assumed were taking place were only happening haphazardly, and the endemic duplication of work became apparent. But many of these discussions were difficult and although in the end these could be described positively as being cathartic we certainly did not predict some of the resistance. There is no doubt that developing care protocols challenged professional boundaries—perhaps crucial for cementing future working partnerships.¹⁵ The need for the changes we have described may seem obvious but we should not underestimate the difficulties; and for some the process of change was painful.

The measured improvements in the use of effective interventions contrast markedly with the much more limited changes that we were able to promote through clinical audit. Some of the changes to care identified through audit seemed to focus simply on the role of one person—for example the person responsible for prescribing preoperative prophylactic antibiotics. But even when the input of an individual clinician is the key contribution, it will only be one of many inputs into patient care. Changes to any one of the many inputs to care may affect the work of others, and conversely, for quality improvement to be effective the whole process of care needs to be shared within the team.

Nevertheless the audit programme did have an influence on this project. Until the introduction of audit clinicians did not have access to aggregated data about the quality of care. The data collected through audit enabled clinicians to see that there were problems with the delivery of care and that new approaches to care

were needed. And the development of the protocols has been led by the hospital's quality department, formerly the audit department.

It was crucial for eventual success that we had the support of senior clinicians—both doctors and nurses—who understood the importance of keeping going through initial difficulties. It meant accepting the need to take risks and learn both from our success and mistakes, and keeping committees to an absolute minimum; there is no more effective mechanism than committees to block change.

The work described here represents the beginning of a process that started 8 years ago. The project is a long term one and there is no predicted completion date. Making these sorts of changes is not a quick fix. More work needs to be done within the hospital and also in developing links with the community so that the hospital care can be seen in the wider context of overall care. The project has not yet been extended to outpatient care. There is a need for continuing development of protocols as care pathways will need to change in response to new demands and pressures—for example, to new advances in anaesthesia and less invasive technologies. But having made the major step of introducing a system in which processes of care are explicit we should be able to respond to the challenges of incorporating new clinical interventions. Berwick has long argued for an approach to quality improvement that is not just about dealing with the problems and deficiencies in health care but is rather about finding systems that work better, which allow readjustments and improvement to take place continuously.¹⁶ At the Central Middlesex Hospital, we may have just taken the first step towards that ideal.

We acknowledge and thank all the people involved in protocols at the Central Middlesex Hospital.

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