Integrated Care Pathways for Vascular Surgery

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Objectives: a trial of the use of integrated care pathways (ICPs) for elective vascular surgical procedures.

Design: a 12-month prospective study, following a multi-disciplinary group construction of current “best practice” ICPs, with changes in practice only occurring following careful audit of results.

Materials: patients admitted to a single vascular unit for “open” repair of abdominal aortic aneurysm, carotid endarterectomy or femoropopliteal bypass grafting.

Methods: patients followed ICPs on a daily basis with signatures required to confirm that action had been taken and careful recording of variances from the ICPs. Audit of variance data allowed changes in the ICPs and, hence, provision of the best possible nursing and clinical practice.

Results: ICPs were well received by patients and staff. They improved communication, promoted an appreciation of each health group’s role in patient care, increased nursing autonomy, reduced calls to junior medical staff, improved patient education and confidence and caused a marked reduction in hospital “length of stay”.

Conclusions: ICPs have clear benefits. This study realises that benefits might be maximal for high throughput, high-cost procedures. Successful use of ICPs depends upon “clinical champions” and effective project management. Sufficient resource and training are essential.

Key Words: Integrated care pathways; Vascular surgery; Aortic aneurysm; Carotid endarterectomy; Femoropopliteal bypass.

Introduction

Integrated care pathways (ICPs) represent a multi-disciplinary approach to clinical patient care which focuses upon the events, “tools” and interventions that must occur in a particular sequence to ensure achievement of the prescribed outcomes. Uniquely, they offer an opportunity to enhance nursing and clinical practice based upon carefully audited information. They are not strict guidelines per se and their use is not intended to take away clinical freedom from any participating group; rather, they simply consign onto paper what is already done as “best practice”, with changes thereafter based upon peer-audited review rather than down to anecdote.1-6

There are several perspectives from which ICPs can be viewed. For patients, it is suggested that a pre-planned ICP, carefully explained, outlining what is expected to happen during their stay in hospital, might promote confidence and increase understanding related to the vascular surgical procedure which they are about to undergo. For nursing and allied healthcare staff, ICPs might create a more effective interaction between patients and members of the multi-disciplinary team. There might be promotion of evidence-based nursing practice, in addition to that for clinical practice. For the clinicians, ICPs might improve overall working efficiency (especially for more junior staff), aid in the understanding of surgical practice and help break down any professional barriers, whether perceived or real. Finally, for the managers, they can advertise provision of an audited, quality service and, for the first time probably, can accurately cost each (vascular surgical) procedure.

Although ICPs are not new, they are in infrequent use within the NHS.7-11 At University College London Hospitals (UCLH), we have piloted a study within a single speciality to assess their possible value, prior to “rolling out” a potential scheme encompassing several surgical specialities throughout the Trust. The Vascular
Surgical Unit was chosen and most importantly, a Consultant “clinical lead” designated who was prepared to oversee and, hence, co-ordinate the multi-disciplinary group’s activities. The pilot study focused upon elective admission for “open” abdominal aortic aneurysm repair, carotid endarterectomy and femoropopliteal bypass grafting, but excluded any emergency procedures. The pilot project was planned to recruit prospectively and to run for one year. Initial ICPs were drawn up but were not subject to change during the trial period. Data was collected on variances from these ICPs, that later would form the audited information required to initiate changes to the ICPs, so closing the audit loop. This paper records our experiences in setting up the pilot study, its strengths, its failings, the outcomes and plans for the future.

Methods and Objectives

The pilot study focused upon three elective vascular surgical procedures: “open” repair of abdominal aortic aneurysm, carotid endarterectomy and femoropopliteal bypass grafting (to the above-knee vessel). Patients were recruited prospectively and sequentially. Patients not admitted to the Vascular Unit (usually because of bed unavailability) were excluded. It was a requirement for our analysis that at least six patients should fall into each operative category. Later, comparisons were made as regards length of stay, for example, with a retrospectively studied group of patients admitted for similar procedures from the 12-month period immediately prior to the commencement of this study.

The initial ICPs were first written up by the lead clinician in consultation with the nursing staff, pharmacist, physiotherapist, dietician and appropriate specialist nursing staff (e.g. for diabetes). They were based upon “best possible” clinical and nursing practice (as considered at the time of writing) and agreed by all individual healthcare groups prior to use. “Best practice” was anecdotal, based upon the combined experience of the five Consultant Vascular Surgeons comprising the Vascular Unit at this hospital, together with two experienced (vascular) ward sisters. It was appreciated that changes from the “first draft” care pathways would occur. It was decided by all members of the multi-disciplinary team at the first “care pathway” meeting as to which facets of clinical care should be included within the pathways (see Fig. 1 as an example), covering as broad a range of activities as possible. All elements of the “first draft” pathways were open to change after careful audit of incoming data, gathered at monthly review meetings. Crucially, nursing “team leaders” were given the responsibility for managing the ICPs on a “day-to-day” basis. An individual from the hospital’s Audit Department was designated to co-ordinate the project overall, and monthly group meetings and three monthly review meetings were established.

For each individual ICP, it was considered very important that the whole care pathway should be confined to a single page (of A3 size paper), written in easily understood terms (i.e. with no medical jargon which a patient might not understand), left at the end of the patient’s bed for the patient (and relatives) to read whenever they so chose, be colour-co-ordinated for each healthcare group within the multi-disciplinary team, have space for signatures to record that each task had been performed and, finally, to have sufficient space to record variance data. Fig. 1 shows a typical ICP (used in this case for carotid endarterectomy). Routine patient demographics and pre-assessment requirements were placed at the head of the ICP.

The pilot study was planned to run for a full 12-month period, to include an absolute minimum of 18 patients, with at least six patients in each of the three operative categories. At least 20 patients’ case notes were assessed for retrospective comparative data.

The main objectives for the pilot study were:
- to promote multi-disciplinary working
- to improve communication between staff and between staff and patients
- to take more efficient and effective healthcare action, based on audit of practice
- to help identify any shortcomings in particular service areas
- to increase patient confidence and to improve the patients’ understanding of their hospital “experience”
- to reduce the time spent in hospital care
- to minimise documentation.

In order to evaluate the progress being made in achieving the objectives set above, information was collected from various sources to assess patient satisfaction, staff satisfaction, length-of-stay changes, clinical outcomes and evidence of changes in clinical practice using the following:
- reports and questionnaires from staff involved
- comments and questionnaires from patients (including informal interviews and comments from relatives)
- careful audit of completed ICPs and, in particular, careful analysis of the variance data
- comparison with retrospective patient case notes.
## Variance Sheet

<table>
<thead>
<tr>
<th>Date:</th>
<th>Time:</th>
<th>Variance:</th>
<th>Action Taken:</th>
<th>Signature:</th>
<th>Status:</th>
</tr>
</thead>
<tbody>
<tr>
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</tbody>
</table>

Continue on separate Variance Sheet if necessary. Remember to photocopy once the patient has been discharged.

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### Freyer Ward Ward Care Pathway

<table>
<thead>
<tr>
<th>Pre-assessment Requirements</th>
<th>Y/N</th>
<th>Patient Details</th>
<th>Abbreviations Used By Staff</th>
</tr>
</thead>
<tbody>
<tr>
<td>CXR:</td>
<td></td>
<td>Patient Name:</td>
<td>VLA: Vascular Laboratory Assessment</td>
</tr>
<tr>
<td>CT/MRI:</td>
<td></td>
<td>Hospital Number:</td>
<td>SGPO: Surgical Outpatients Department</td>
</tr>
<tr>
<td>VLA (Duplex):</td>
<td></td>
<td>Date of Birth &amp; Gender:</td>
<td>NIS: Nursing Information System</td>
</tr>
<tr>
<td>Units Ordered:</td>
<td></td>
<td>Consultant:</td>
<td>NBM: Nil By Mouth</td>
</tr>
<tr>
<td>ECG:</td>
<td></td>
<td>Named Nurse:</td>
<td>TTA: Discharge Drugs</td>
</tr>
<tr>
<td>Angiogram:</td>
<td></td>
<td></td>
<td>PCA: Patient Controlled Analgesia</td>
</tr>
<tr>
<td>Consent:</td>
<td></td>
<td>Admission Date:</td>
<td>FBC, U&amp;E: Blood Tests</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Anticipated Op Date:</td>
<td>Waterflow: Risk assessment of pressure sores</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Actual Op Date:</td>
<td>TEDS: Anti-embolism stockings</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Anticipated Discharge Date:</td>
<td>IV: Drip for fluid replacement</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Actual Discharge Date:</td>
<td>ITU: Intensive Care Unit</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>PAC: Pressure area care</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>B/P: Blood Pressure</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>NGT: Nasal Gastric Tube</td>
</tr>
</tbody>
</table>

Each profession is responsible for completing the aspects of the pathway relevant to their discipline, legibly and in black ink.

Once the patient has been discharged, it is the responsibility of the Ward Co-ordinator to ensure that:

- The patient details above have been completed
- The pathway is photocopied and sent to Richard Sachs, Directorate of Nursing & Quality, 5th Floor, 8-11 Queen Square, NHNN
- The original copy is filed in the patient's medical notes

Ward Co-Ordinators Signature:  Date: 

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Fig. 1. For legend see overleaf.
Fig. 1. The integrated care pathway, presented on a single, folded A3 size sheet, in this example for carotid endarterectomy. On the front page, a record is made of patient demographics, pre-assessment requirements and postoperative results. An abbreviations index is placed primarily for patients and relatives. On the back page, variance data is recorded (with an example given to show how the data should be noted down). The actual variance is recorded together with how that variance problem was dealt with. Again, signatures are required to demonstrate that an individual has actioned the matter and taken full responsibility for that action. In the centre-spread, the actual care pathway is described, colour-coded to show the daily responsibilities for each healthcare group. Spaces are provided in each task box for signature, to confirm that the action has been taken.
The most difficult analysis was of variance from the ICPs as written. Variances were recorded by any member of the multi-disciplinary team on a daily basis and the information was then fed back to the monthly group meetings. Here, variances were grouped and assessed (by the lead clinician, senior nurse and trial co-ordinator) as shown in Table 1. This, then, formed the basis for changes made to the ICPs, changes based therefore upon audited practice and, hence, closure of the audit loop.

**Results and Comments**

A total of 26 patients were entered into the study: 13 femoropopliteal bypass grafts, six carotid endarterectomies and seven “open” repairs of abdominal aortic aneurysm. We estimated that up to 10 patients were not included because of failure to admit to our Vascular Unit due to bed unavailability.

Utilising the results obtained from patient and staff questionnaires and from other observational results:

- the care pathways encouraged the multi-disciplinary team to work collectively, in particular, through the design, layout and content of the ICPs themselves and through the monthly and quarterly review meetings
- staff, especially nursing staff, found the ICP documentation a distinct benefit when training new staff, as it provided a framework for discussion of clear aims, objectives and outcomes. Similarly, junior medical staff and medical students found the ICPs helpful. Nursing staff found, in general, that patients on ICPs talked to them more often, frequently asking questions based upon ICP features, which in turn required explanation, hence improving staff/patient communication
- staff had an increased opportunity to review their own practice and a chance to alter group practice, if after audit of that change in practice it will be seen to bring about a healthcare improvement, e.g. Fybogel was added to the ICP for “open” abdominal aortic aneurysm repair after reported variances were noted because of constipation
- ICPs acted as a motivating factor for the patient to aim to be discharged when the ICP suggested they should
- many patients commented on how they felt reassured by the structured nature of the ICPs and how they allowed them to understand when aspects of their care should take place
- all staff found the ICPs useful in providing an “at a glance” overview of the patient’s care. In particular, the volume of nursing documentation was minimised significantly.

Recording variance analysis proved difficult at the outset as few guidelines had been offered (deliberately) by the “steering committee” for the care pathways programme. Initially, this meant that every conceivable variation from the defined pathways was recorded, giving much too much data of dubious value. Later, once a certain pattern of variations became apparent, only those variances likely to lead to an overall change in the care pathway itself were recorded, e.g. length of stay, given medications, removal of drains or provision of intravenous fluids. Overall, for the pilot study, for variance analysis there were 139 variance recordings; the 13 femoropopliteal bypass patients had 64 variances recorded, with a range of 4–9 per patient (mean 5.8); for the aortic aneurysm repairs there were 51 variances, with a range from 3–12 (mean 7.3); and for the carotid endarterectomies, 24 variances, with a range from 1–6 (mean 3). The main categories of variances were grouped as shown in Table 1.

The length of stay data was as shown in Table 2. Overall, patients were discharged: ~13% more quickly for “open” abdominal aortic aneurysm repair, ~22% more quickly for carotid endarterectomy, and up to 38% more quickly for femoropopliteal bypass grafts.

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**Table 1. The main groups of variances as recorded throughout the trial.**

<table>
<thead>
<tr>
<th>Variance group</th>
<th>Number</th>
<th>Percentage of all variances</th>
</tr>
</thead>
<tbody>
<tr>
<td>Medication</td>
<td>45</td>
<td>32</td>
</tr>
<tr>
<td>IV fluids</td>
<td>10</td>
<td>7</td>
</tr>
<tr>
<td>Wound care</td>
<td>10</td>
<td>7</td>
</tr>
<tr>
<td>Discharge delay</td>
<td>20</td>
<td>14</td>
</tr>
<tr>
<td>Bowel issue</td>
<td>6</td>
<td>4</td>
</tr>
<tr>
<td>Clip/suture removal</td>
<td>7</td>
<td>5</td>
</tr>
<tr>
<td>Drain removal</td>
<td>10</td>
<td>7</td>
</tr>
<tr>
<td>Other</td>
<td>31</td>
<td>24</td>
</tr>
</tbody>
</table>

**Table 2. The length-of-stay data as recorded for the trial in comparison with a retrospective analysis of at least 20 care records.**

<table>
<thead>
<tr>
<th>Procedure</th>
<th>AAA</th>
<th>FPB</th>
<th>CE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of patients</td>
<td>7</td>
<td>13</td>
<td>6</td>
</tr>
<tr>
<td>Stated length of stay on ICP (days)</td>
<td>11</td>
<td>9</td>
<td>5</td>
</tr>
<tr>
<td>Actual length of stay on ICP (days)</td>
<td>14</td>
<td>10.5</td>
<td>7</td>
</tr>
<tr>
<td>(Retro question group length of stay in days)</td>
<td>16</td>
<td>17</td>
<td>9</td>
</tr>
<tr>
<td>(No)=number of patients</td>
<td>(6)</td>
<td>(7)</td>
<td>(7)</td>
</tr>
<tr>
<td>~% reduction in overall length of stay</td>
<td>13%</td>
<td>38%</td>
<td>22%</td>
</tr>
</tbody>
</table>
Discussion and Conclusions

Integrated care pathways (ICPs) represent a “process” approach to multi-disciplinary, patient-focused care. The variance-analysis component of the ICP identifies any deviances from the pre-suggested, standardised route. Gathering such variance data is fundamental and allows for the earliest possible identification of problems in the provision of the planned care, which in turn is audited and used to improve the outcome indicators such as quality of service provision and effectiveness of medical and nursing intervention, length of stay and cost of a completed healthcare episode. It was agreed that ICPs should represent an application of “evidence-based medicine” and, indeed, be a cornerstone in ward management for the new United Kingdom Government concept of “Clinical Governance”.

ICPs have the potential to instigate and evaluate really fundamental changes in both nursing and clinical practice and can improve significantly the quality of service provided in terms of continuity of care and patient involvement. Others have made observations that additional benefits may be achieved through use of ICPs in terms of:

- clearer presentation of patient information and greater patient involvement in the healthcare process
- better staff co-ordination, saving time, avoiding duplication and minimising paperwork
- reductions in length of hospital stay

It should be emphasised again that ICPs are not “set in stone”. When formulated initially, they simply represent, on a piece of paper, what is already done in practice. It is appreciated that the “first draft” care pathways were anecdotal, based upon the combined experience of five Consultant Vascular Surgeons and two vascular ward sisters but it was always known that such a “first draft” would be subject to prompt, but evidence-based change. However, anecdotal change in that practice is removed and replaced by change through proper audit of practice. Clinical freedom is not removed from any of the multi-disciplinary groups involved. Rather, change is positively encouraged if it can be shown to improve the overall patient care process.

In the process of constructing our ICPs for use with the vascular surgical procedures mentioned, we were of the opinion that each group within the multi-disciplinary team should feel that they “owned” a part of the process and that, in so doing, they generated an in-built desire to “look after” their part of the chart – to instill good ICP “house-keeping”. We were also keen to make sure that each group from patients, nursing staff, clinical staff and managers could see the potential benefits of using ICPs for their own particular reasons. Hence, we considered ICPs from each perspective:

(1) Patients
- the ICP should increase the patient’s (and relatives) understanding of what will happen during a given hospital stay for a particular procedure and actively encourage participation and questioning of the whole care process
- the ICP should be freely accessible to the patient (and relatives), which had a “user friendly” format enabling them to monitor their own progress throughout their hospital stay.

In both instances, the general comments received from both patients and relatives were that ICPs were beneficial. They did seem to improve the patient’s grasp of what was done and for what reason and they did seem to motivate patients to leave the Unit at roughly the time predicted by the ICP.

(2) Nursing (and allied) staff
(a) Education, research and development
- the introduction of ICPs should allow the development of evidence-based nursing practice
- the ICPs would provide a teaching tool for nursing students and new members of staff
- that nurses, at all levels, would be more directly involved with quality issues, setting of standards and auditing of those standards as set.

Nursing staff, in particular, did use the ICPs as a teaching aid for new nursing staff and student nurses. They provided a framework for understanding the particular operation and the reasons as to why post-operative events occurred. Because nursing staff were the most frequent recorder of variances from the ICPs, there was a feeling that they in particular were responsible for changes to healthcare practice.

(b) Job satisfaction
- ICPs should inspire new ideas and promote enthusiasm
- overall team communication should be improved
- ICPs should provide a simple, clear framework to facilitate more effective staff/patient interaction
- they should allow increased autonomy for the expression and utilisation of nursing skills
- that overall documentation should be reduced.

ICPs were especially liked by nursing staff, who considered that they did allow increased autonomy over the clinical staff. Anecdotally, no clinical staff felt “threatened by the ICPs”. Certainly, when patients
were on an ICP, there was increased discussion about that patient, and the presence of the single A3 piece of paper made gaining rapid overview of a patient’s progress very straightforward.

(c) Communication
• the ICPs should allow an increased understanding and appreciation of each other’s roles in the care of a patient and, hence, help to break down any real or perceived professional barriers
• they should encourage constructive discussion with the nursing team as regards patient management
• ICPs should encourage a more meaningful discussion between patients and relatives.

In general, more questions were asked by patients who were on ICPs. Frequently, if something was not done that was listed to be done for that day, the patient would bring that matter rapidly to the attention of the healthcare staff.

(3) Medical staff
• ICPs should provide a clear framework for the management of a patient (for both junior staff and medical students)
• they function as a teaching tool, with variances prompting an analysis of peer practice, which can be audited
• routine calls to junior medical staff concerning simple patient management issues can be minimised
• because signatures are required, there will be certification that routine tasks have actually been done, thereby enhancing efficiency
• real or perceived professional barriers can be broken down, so that there can be improved interdisciplinary communication and, again, a better appreciation of one another’s roles.

Medical staff were perceived to be sometimes less enthusiastic about ICPs than other staff. Whether this was because ICPs were seen still as a potential threat to clinical freedom is unclear. However, they were useful as teaching “tools”, especially for the medical students, and calls to House Officers for routine management procedures were reduced considerably. The requirement for signatures to be placed alongside each task done improved the quality of service provision, and meant full responsibility had to be taken by whoever signed.

(4) Management
• the Trust could be promoted through development of the patient-focused ICPs
• the Trust could advertise the provision of a quality service, where practices are audited and fully open for review

• they could be given a series of measurable clinical outcomes
• they could aim to standardise the management of elective (vascular) surgical patients to plan and monitor accurately: length of stay, improved bed management and consumables management, and allow, possibly for the first time with any degree of accuracy, an audited cost-analysis of elective procedures
• “purchasers” could be aware well in advance what the “total care package” on offer was
• ICPs might provide a planning tool for the future to allow effective and auditable resource utilisation.

Hospital managers were fully supportive of the project. Of particular importance was the reduction in length of stay that occurred whenever patients were on an ICP. It also became apparent that with length of stay variance frequently less than 2 days, costing of elective (vascular) surgical procedures was very much a possibility. The Trust would now wish for ICPs to be extended to other surgical specialities.

We found the monthly and quarterly meetings very beneficial in maintaining the enthusiasm and momentum during the year-long pilot study. These frequent sessions were important to make sure that all groups had a chance to express their opinions, hence, not making it seem as though only the clinicians could change practice. The patient and staff questionnaires sent round by the (administrative) trial co-ordinator were most helpful in highlighting both the strengths and weaknesses of the study, as considered below:

(1) Strengths:
• that ICPs did in fact, encourage the multidisciplinary team to work together collectively
• regular meetings provided ample opportunity for staff involved to review their own progress both within the study and for consolidating their own personal achievements
• there was a benefit to gain in seeing a daily overview of what had happened to the patient
• the patients commented on the ease of being able to understand the pathways, how they stimulated question-and-answer sessions with medical and nursing staff, and how, overall, they felt reassured at the presence of the ICP
• because care was more carefully structured and planned, we achieved a reduction in length of stay for each procedure assessed (compared with patients drawn retrospectively from the 12-month period immediately before the trial started
• nursing staff noted a significant reduction in paperwork
junior medical staff noted a significant reduction in the number of times they were called to the ward.

(2) Weaknesses:
- the throughput of patients was quite low (although the target number of at least six per operation type was achieved). ICPs are likely to show the largest initial returns when there is a procedure assessed of high volume, high cost and wide variation in treatment methods
- the admission of patients to other wards meant that the population study group was lower than hoped for (we estimate that up to 10 patients were lost)
- due to the nature of arterial disease, patients were often elderly and perhaps, therefore, more prone to complications. That said, however, the ICPs as initially laid out seemed quite accurate in the estimation of likely lengths of stay
- where groups of staff as individuals had not been involved with ICPs (or the project right from the start), or had minimal opportunities for training and feedback, there was an obvious lack of participation and enthusiasm
- variance-recording proved quite difficult to implement, probably due to a lack of training and a full appreciation of what was wanted. We are very aware of how central variance analysis is to the whole process and the need to strive to improve aspects of recording variances and how best to alter practice, based upon auditing such data.

In general, the concept of ICPs has been very well received by all groups within the multi-disciplinary team. Several recommendations were made by the pilot-study co-ordinating team following its completion:

- for other pilot studies or whenever the ICP scheme is to be launched on a wider front, perhaps more high throughput or high-cost procedures should be selected first, as low throughput and low-cost procedures are likely to be more difficult to analyse
- Consultants need to be identified very early on as “clinical champions”, establishing their multi-disciplinary team, identifying suitable procedures, chairing the construction of the ICPs and guiding progress. Consultants should be given the full backing of the Trust Board
- ICPs, if to be initiated on a Trust-wide basis would need to be integrated within any other “patient-focused care” developments such as a move towards computer-generated and held information as opposed to paper-based documentation
- a project implementation structure should perhaps include the following:

(i) at organisational (Trust) level, a “Project Board” should be established to monitor overall progress, give each project credibility and act to support the changes that might occur as a result of their implementation
(ii) to promote ICP “ownership” at speciality level, each project should have a “Steering Group” of senior personnel who will take a positive lead throughout
(iii) at ward level, “multi-disciplinary working parties” should be set up for the purpose of writing, implementing, collecting and reviewing variance data on the ICPs. The working party members should contribute to their local clinical audit group meetings, where variance data will be reported and variances monitored. Improvements for patient care management will be identified from this audit process. These working parties must be given adequate authority to ensure ownership of their own work and to implement change
- training, informing and motivating are of prime importance and such tasks must be given to dedicated personnel
- our experience to date is that ICPs are demanding of administration support, especially early on. Effort must be expended in the distribution of information in the form of written reports, data analysis, feedback, presentations, etc. Once again, training the team in the use of ICPs and variance recording is necessary, as is being available to advise staff on an ongoing basis – identifying “clinical champions” and ensuring that they remain well informed is a big element to success, but can be time-consuming.

In conclusion, integrated care pathways have some clear benefits, most notably, perhaps, a significant reduction in overall lengths of stay per procedure. It is noted that the sample sizes are small in this study and that use of mean values might be improved by use of median data. However, continuation of this project with a later update of information may provide, from a larger study population, the key answers as to whether clinical practice has altered substantially, and exactly what actual cost benefits are possible. All groups within the multi-disciplinary team saw advantages, as did the patients themselves. It is likely that more dramatic outcomes could be achieved if ICPs were used in high throughout (and, perhaps, high-cost) procedures. Conceptually, ICPs could be used with any surgical speciality or procedure (but with more difficulty, probably, for medical specialities). Successful use of ICPs is dependent upon effective project-management. This must be well structured from a group of dedicated and enthusiastic personnel.
provided with adequate resources. Training and regular review of the projects are essential. However, with increasing use and acceptance, ICPs are likely to offer the best opportunity yet for development of nursing and clinical practice based upon properly audited information.

Acknowledgements

To the ward staff of Freyer Ward (the Vascular Unit) at The Middlesex Hospital London, the Audit and Quality Department of UCLH NHS Trust and all associated staff from all disciplines who took part in the pilot study.

References


Accepted 15 January 1999