Delivering PCI in the UK – need for strategic thinking and a quality agenda

Mark A de Belder

Author

Mark A de Belder
Consultant Cardiologist

Cardiothoracic Division, The James Cook University Hospital, Marton Road, Middlesbrough, TS4 3BW

Correspondence to:
Dr M A de Belder
(mark.debelder@stees.nhs.uk)

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The UK has witnessed a seismic shift in the delivery of healthcare to patients with coronary heart disease, but there is still a lot to be done. Promoted by the National Service Framework (NSF), and supported by a £775 million capital programme from the Department of Health and Lottery Funding (£122 million towards new cath labs), waiting lists have been slashed and patients are able to be investigated and treated nearer to home.[1] In its annual audit reports for 2001, the British Cardiovascular Intervention Society (BCIS) reported on activity in 64 percutaneous coronary intervention (PCI) centres and 62 centres performing diagnostic invasive procedures only. The report for 2006 included data from 91 PCI centres and another 90 diagnostic-only centres.[2]

In this issue of the *British Journal of Cardiology*, Kelly and colleagues from Bournemouth provide the results of their initial experience in providing PCI to their local and surrounding communities (pages 244–7).[3] Over a short period of time, activity has grown rapidly and they now perform over 1,500 PCIs per year. The centre is to be congratulated on the way it has established its PCI service because the programme was developed with some serious business planning, supported by its management, the local commissioners, its traditional tertiary centre, and the Strategic Health Authority. They sought and were given approval by BCIS, they ensured arrangements were made for surgical cover, and for the review of angiograms with off-site surgeons, and they committed themselves to appropriate clinical audit (collecting information on all patients undergoing treatment and downloading this to the Central Cardiac Audit Database [CCAD]).[4] In line with the current BCIS policy, they have also evaluated their results against the predictive score generated by the North West Quality Improvement Programme (NWQIP), which has been both internally and externally validated.[5,6] Their early results demonstrate complication rates within predicted limits. This is an example of a unit that not only has delivered considerable clinical activity but has also provided evidence of the quality of the service provided.

Their reported experience raises two issues; the first relates to strategic thinking about how revascularisation is delivered on a regional basis and the second to measures of quality.

Planning development

The agreement drawn up by the Heart Team, within the Department of Health, and BCIS some years ago suggested that new centres should not be developed until existing provider units were at capacity. As more cath labs have been built and more cardiologists have been appointed it has been possible, particularly in the current National Health Service (NHS) climate, to make a case for local development of services regardless of whether current providers are able to cope with local demand or not. From a national and regional perspective it would be illogical to develop multiple small-volume centres while other existing centres, staffed and equipped to accommodate large volumes of activity, are underutilised. Each region has to plan for the best services for its catchment population, but to avoid the underuse of existing services some strategic thinking is required, and a balance struck between the desirability of care delivered close to the patient's home and the cost-effective use of national resources.

Prior to starting activity, all new centres are expected to request a site visit from BCIS, whose report is then sent to the individual site as well as the Department of Health Heart Team. Part of this process of quality control requires the production of a business case, outlining population need as well as the support of the hospital Trust, Commissioners and the Strategic Health Authority. This plan is expected to quantify the expected growth of local services required to meet BCIS's recommended minimum procedural volumes (400 per annum or more for each interventional centre). Despite this, BCIS is now aware of a number of newer centres where the anticipated growth in PCI has not occurred; some centres are failing to reach the 400 per annum minimum in spite of several years' activity. In addition, there is a growing realisation that the growth of some centres is leading to a downsizing of others. This may be an example of unintended consequence, but it should be of national concern if expensive resources, both in terms of workforce and facilities, are to be used to maximum effectiveness.

Monitoring new centres

How does the experience of other new centres compare with that described by the Bournemouth group? All units report their overall activity to BCIS, but it is highly unlikely that every centre has the analytical skills to measure its outcomes against the NWQIP score or other comparators. Through its work with the CCAD, BCIS is planning to provide this facility for every centre that inputs procedural data into the national database. The vast majority of interventional centres are now doing this, and indeed it is a requirement before BCIS approval for new centres is given, and is also a performance indicator recommended by the Healthcare Commission. Cumulative funnel plots may be the ideal way of presenting actual results against those predicted by the score.[7]

Quality of care

When asked, patients will always prefer a service to be provided locally, but not if that is at the expense of quality. They will usually be prepared to travel a little further if this results in them receiving higher-quality treatment; individuals have even travelled abroad in the past when local or regional services have been unable to provide timely care. Patient choice is a growing political drive for healthcare, but patient choice will be influenced by quality indicators as much as locality. It behoves units therefore to be able to demonstrate markers of quality.

There are a number of ways to determine the quality of care delivered by PCI services. Effectiveness and efficiency can be measured by monitoring at least short-term clinical outcomes and other markers such as length of hospital stay. These will, of course, vary depending on the case mix of patients being treated. Intuitively, one would expect that clinical outcome will have some relationship to the number of procedures undertaken by individual operators, and individual centres, and this is supported by published data.[8-12] This applies also to emergency PCI (indeed one might expect that it would particularly apply to procedures undertaken on the sickest patients), and procedural volume should be one of the major factors in determining where infarct angioplasty is performed.[12] BCIS provides an annual report to the National Clinical Audit Support Programme (NCASP), and the volume of activity performed by each centre is now being tracked at this level.[13]

Reporting of volume has to go hand-in-hand with demonstration of quality. Some regions are now working to a model of individual high-volume operators providing smaller volumes of activity on low-risk cases in their local centres, but who also perform their higher-risk cases at the surgical centre. This should be acceptable to all parties if results are good. Moreover, many of these operators are now contributing to the out-of-hours on-call service at the centres providing 24-hour cover.

Uniform audit

It is important that all centres collect equivalent audit information. Centres can look good by not providing details of adverse outcomes (but there are statistical processes where this behaviour can be identified!). The Bournemouth model uses non-medical staff to help them with this, and this is essential. However, they perform a lot of day-case PCI, and thus (like a number of units) do not collect all the variables recommended by BCIS. It will be a challenge to the audit teams in each centre to collect appropriate outcome data relating to procedures performed, particularly if patients are 'repatriated' to their local hospital immediately after an emergency procedure.

24-hour service

Although Bournemouth is to be congratulated on its achievements it is notable that their programme is not yet fully developed. The interventionists still do not provide a 24-hour service, and although they are treating patients with ST elevation myocardial infarction between 9 am and 5 pm, their volume of activity for this patient cohort is disproportionately low. This is potentially worrying when one compares it with the German experience, where outcomes are significantly worse for patients treated at centres performing infarct angioplasty on small numbers of patients.[12] Moreover, patients presenting outside these 'office' hours presumably receive a different level of care. This may be understandable as a phase in the development of a local service but is almost certainly not a model of optimal patient care in the longer term. The concept of 'Heart Attack Centres', specifically mentioned in Professor Roger Boyle's *Mending Hearts and Brains*[14] is one where the catchment population of any centre should receive the same optimal reperfusion service 24 hours per day, seven days per week. This move towards a programme of primary PCI is endorsed by Lord Darzi's *Next Stage Review* of NHS services, which enshrines a philosophy of fairly accessible, well co-ordinated and integrated care.[15] There are a variety of ways in which such a service may be delivered, involving one or more centres, but the message is clear; when commissioners determine the optimum model of care for their population this should be delivered consistently, in a timely fashion, and irrespective of time of presentation. Whatever arrangements are made, protocols should be simple and easy to follow by the ambulance services that will feed it, and there should be strategic agreement by all stakeholders. Provision of an in-hours only infarct angioplasty service should not be at the expense of providing an inferior service out-of-hours.

Patient consent

Another issue that this paper raises, albeit one that is not specific to off-site PCI centres, is how best to inform patients about their treatment options when they are booked for follow-on angioplasty (a diagnostic angiogram with the option to proceed to PCI at the same procedure) but then found to have multi-vessel disease. This requires a lot of input to patients before they go to the lab (perhaps best achieved with the services of nurse practitioners) but liaison with surgeons is also important. Whenever there is doubt, interventionists should not persuade patients to have an angioplasty without a full discussion of the risks and benefits of each option (as well as the option of continuing medical therapy), even if this results in a PCI procedure being undertaken at a separate time from the diagnostic angiogram.

Collecting data on patients to hospital discharge is not a substitute for predicting longer-term outcomes. New centres should not only consider arrangements for surgical cover in the event of acute complications of PCI, but should work out methods for discussion of individual cases when the most appropriate treatment option is uncertain or contentious. This will potentially be more of a challenge to off-site centres but is not insurmountable. As with Bournemouth, this will require electronic links between centres to allow discussion of individual patients, and the use of inter-disciplinary review meetings should probably become mandated.

Community needs

The authors quite rightly point out that not all new centres have been shown to provide the best quality of service for all patient subsets.[16] Fortunately in the UK, we have developed an audit machine around coronary heart disease (CHD) services that has been shown to drive up clinical standards. Whether this process will lead to a re-appraisal of some units' activity, or whether it will lead to additional investment to allow further development remains to be seen. It is important to concentrate on the need of the community when planning such services. Where there are still populations with a high prevalence of disease with high standard mortality ratios then services must mature, but in an organised and strategic way that ensures quality (and not just quantity) of care. Services should most definitely not be offered by hospitals merely to generate income. It is likely that patient choice and commissioner approval will depend on the demonstration of safety, the case volume and a commitment to an ongoing assessment of outcomes.[17]

Some clinicians believe that we have 'saturated the market' and that all their local patients are being provided with evidence-based treatment. Given that there are still many patients with acute coronary syndromes around the country that are not looked after by cardiologists, and that nationally we fall behind many European countries in our revascularisation rates, it is likely that we have more of the iceberg of disease to expose. Unacceptable regional variations in the delivery of care are recognised.[18] BCIS is currently having discussions with the Department of Health about the need for additional strategic thinking in development of services, and the British Cardiovascular Society and the British Heart Foundation are also taking a fresh look at the current epidemiology of CHD in the UK.

Although there has been a slowing in the growth of PCI, it is most unlikely that we are nearing a peak, and we must look to see where new resources will be best directed in delivering services to patients. All new centres could benefit from the experiences of the Bournemouth Unit in establishing its PCI service, and should watch with interest the next phase of its development into a fully-fledged 24-hour service

Conflict of interest

DdB has sat on advisory boards of several corporations that manufacture PCI equipment and has received research grants from some of them. He works in a tertiary centre that has provided infarct angioplasty for many years, but does not believe that this represents a conflict of interest as regards this article. Although he is the current President of the British Cardiovascular Intervention Society and is involved in discussions with the Department of Health on delivery of PCI activity in England, this editorial reflects his personal views.

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