

Education and debate

Redesigning cancer care

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BMJ 2002;324:164-6

We have known for some time that cancer treatment in the United Kingdom needs to improve. This report looks at an attempt to use the collaborative improvement model to enhance services. We made considerable progress in the first year, and the model is now being applied to other cancers and other medical areas.

Background: the cancer services collaborative

Cancer patients in the UK face long delays before treatment¹ and their survival rates compare badly with those in the US and many European countries.² As a response to this, the Department of Health produced the National Cancer Plan,³ which ranges from prevention to palliative care, and made cancer networks responsible for improving care. As a central part of this strategy, the cancer services collaborative was set up, initially to improve care in specific areas, and then throughout the NHS.

The collaborative involves nine cancer networks, at least one in each English region (see box), covering a population of 14 million, and coordinated by the National Patients' Access Team. This team is part of the NHS's Modernisation Agency, funded by the Department of Health to implement various aspects of the NHS's National Plan. In each network we funded a programme director and a facilitator for each of five tumour types: bowel, breast, lung, prostate, and ovary. We also appointed clinical leads to work with the facilitators, and bought clinical sessions when needed. The networks are autonomous but have to submit monthly progress reports to the national coordinating team. Altogether there are a total of 43 cancer specific project teams in the nine networks. We encourage shared learning with two day residential meetings every six months, a web based listserv, and regular teleconferences.

The collaborative aims to implement change through an "evidence based" approach.⁴ Traditional research methods are difficult to apply to rapidly changing complex healthcare processes,⁵ so we decided to use an "improvement science" model.⁶⁻⁸ The key components of this are:

- A flexible system of testing, adapting, and implementing change
- A definition of "best practice" to give project teams something to aim for
- A series of plan-do-study-act cycles
- Shared learning between project teams.

Summary points

Patients with cancer in the UK suffer more delays and worse survival than those in many other European states

The national cancer plan has set ambitious targets for improved care

The cancer services collaborative is using improvement methods to reduce delays and improve the service for patients

The nine cancer networks using these methods have cut waiting times and improved patients' experiences of care

Plan-do-study-act

The collaborative improvement method developed by the Institute for Healthcare Improvement in the United States relies on adapting existing knowledge and disseminating it.⁵ The four steps in the cycle are: *Plan* the test and predict the outcomes; *Do* the test and collect data; *Study* the results and compare with the predictions, and *Act* on the new knowledge. Many small scale cycles accumulate to produce large effects.

Members of the cancer services collaborative

- Mid Anglia Cancer Network (Eastern Region)
- South East London Cancer Network (London Region)
- West London and Environs Cancer Network (London Region)
- Merseyside and Cheshire Cancer Network (North West Region)
- Northern Cancer Network (Northern and Yorkshire Region)
- Kent Cancer Network (South East Region)
- Avon, Somerset and Wiltshire Cancer Services (South West Region)
- Leicestershire Cancer Network (Trent Region)
- Birmingham Hospitals Cancer Network (West Midlands Region)

We asked the 43 project teams to use this cycle to test changes in four related areas:

The "patient journey"—booking diagnostic tests, starting treatment

The experiences of patient and carer—providing better information

Delivery of care—strengthening the multidisciplinary approach to treatment and follow up

Capacity and demand—understanding the dynamics of waiting times.

Analysis

Each project team reported monthly to the collaborative's coordinating centre on:

- The number of cycles in each area
- Waiting times (from the general practitioner's referral to first definitive treatment, recorded as total number of days)
- The proportion of patients who had advance appointments (for specialist, first diagnostic investigation, and first definitive treatment)
- Changes which improved patient access and flow
- Patients' experiences (better information, measures of clinical effectiveness, the proportion of patients whose management was planned by the multidisciplinary team)
- A five point self assessment score (see table).

Our first year's experience

The project teams tested 4400 changes between September 1999 and August 2000, involving about 1000 patients (fig 1). Sixty five per cent of the projects showed at least a 50% reduction in the time to first treatment. The percentage of patients achieving booked admission was 56% for the first outpatient appointment, 56% for the first diagnostic test, and 62% for the first definitive treatment.

Other changes improved patient flow and access. In mid-Anglia, for instance, radiologists started to refer directly to the chest physician if they found signs of cancer, which reduced waiting times from an average of 24 days to 11. In west London the backlog of those with suspected breast cancer was eliminated, so that patients are now seen in the next available clinic. In Leicestershire those suspected of having bowel cancer used to have separate visits (and two bowel preparations) for flexible sigmoidoscopy, barium enema, and consultation; now they can do all three on one day. In Avon, Somerset, and Wiltshire it used to take up to three days to notify general practitioners of a diagnosis of prostate cancer; now they are told on the same day.

There were also many changes in the experiences of patients and carers. In Birmingham, for example, where those with suspected bowel cancer found it difficult to remember what they had been told in clinics, the consultations were taped for future reference. In Merseyside and Cheshire a prebooking system reduced the waiting time for bowel biopsy results from five weeks to three. In south east London the introduction of an assessment by a palliative care nurse meant that the delay in starting care was reduced from two to four weeks to a maximum of two days. In mid-Anglia patients found information on bowel cancer hard to understand; now it conforms to the Plain English

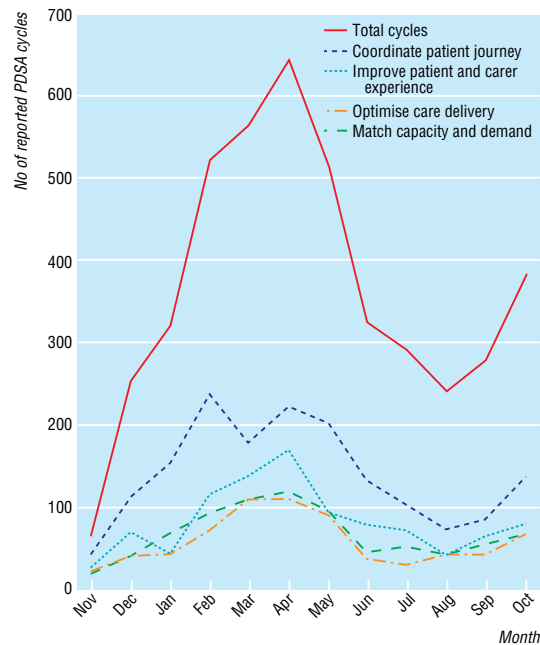


Fig 1 Number of reported plan-do-study-act cycles: total and by change strategy

Campaign recommendations. In west London patients needing surgery for ovarian cancer had to wait for up to eight hours on the day of admission to see if a bed was available; now they are asked to arrive at 10 am and a bed is available for them then.

Each project team assessed its progress monthly against common criteria (see table). A national planning group, made up of members of the National Patients' Access Team and of the Institute for Healthcare Improvement, validated these self assessment scores and, if the two assessments differed, gave feedback. The need to do this went down, and in November 2000 only six of 43 projects showed a difference of 0.5 or more between the project team's self assessment and the planning group's assessment. The validated scores from the planning group are shown in figure 2. In November 2000, 20 teams (39%) had a self assessment score of 4 or 4.5. (For further details see www.nhs.uk/npat)

The value of our findings

Generally the NHS introduces change by publishing a plan with a series of targets and expecting the service

Summary of self assessment scoring system

Self assessment score	Summary description
1 Early stages	<ul style="list-style-type: none"> • No ideas tested • No changes implemented
2 Activity but no changes	<ul style="list-style-type: none"> • Ideas to test identified • No changes implemented
3 Models of improvement	<ul style="list-style-type: none"> • Plan-do-study-act cycles testing ideas • Change implementation beginning
4 Significant progress	<ul style="list-style-type: none"> • Improvements at all key stages of patient journey • Evidence of tangible improvements
5 Outstanding sustainable results	<ul style="list-style-type: none"> • Evidence of outstanding improvements • Team recognised as an outstanding example to others

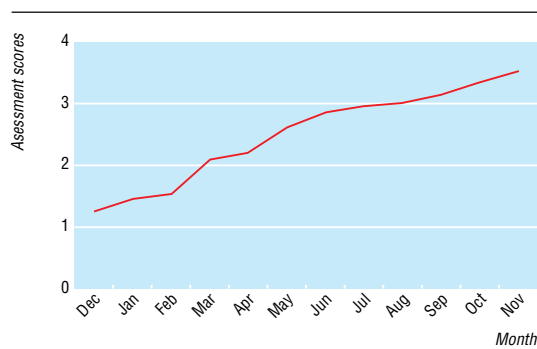


Fig 2 Progress from December 1999 to November 2000: assessment scores

to adapt appropriately. The collaborative was the first NHS programme to adopt the redesign model developed by the Institute for Healthcare Improvement³ and was also the first programme in which the institute was directly involved. Both organisations felt they were breaking new ground.

Nevertheless, the collaborative ran into some problems. At first senior clinicians were sceptical because the first meeting made too much of the theoretical model, clearly alienating those who wanted simple examples they could apply to their own clinical practice. Only patchy progress was made in some bottlenecks, such as radiology and radiotherapy waiting times, but these may have been related to particular staffing problems.

The collaborative was not designed as a randomised trial, and we cannot be certain that our interventions actually caused the improvements. However, the project teams applied the improvement methods to some patients and changes clearly took place, in line with the plan-do-study-act methodology. We mapped the cancer path for each tumour type at the beginning of the project and measured baseline activity, such as waiting times and percentage of booked investigations. Using the baseline data as denominator showed relative changes throughout the networks to which we applied the improvement methods. We do not have

data comparing those cancer networks that used the improvement methods with those that did not, mainly because of the way in which the NHS collects data.

Nevertheless, significant progress was made in the first 12 months of the programme. We met most of our initial targets, and devised many ingenious solutions to local problems.

Expanding the programme

In phase 2 we will include each of the 34 cancer networks in England and plan to extend the work to cover all cancers. The collaborative receives central funding from the Department of Health to employ the programme managers and facilitators who work with clinicians to achieve the aims of this ambitious project. We have published a book containing 250 case studies from phase 1 and are producing a tool kit with 14 improvement guides (Service Improvement Guides, www.nhs.uk/npat). Collaboratives have now been established for coronary heart disease, orthopaedics, and primary care, so that the lessons learnt from cancer care will feed back into other groups aiming to improve the nation's health.

Competing interests: DB is chief executive of IHL, a non-profit making organisation which has a contract to support the NHS Cancer Services Collaborative.

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One hundred years ago

A nameless medical hero of the Franco-Prussian war

Dr Gordon Sharp, of Leeds, has sent us the following interesting account of an American student whose devotion at the siege of Metz entitles him to a place in the Valhalla of medical heroes.

"After the surrender of Metz on October 29th, 1870, it was found that 'black typhus fever' was raging amongst the French soldiers who had survived the siege. The Grande Place or great square of Metz was packed with railway wagons belonging to the Eastern Railway Company of France brought within the fortifications in order to save them from falling into the hands of the Germans.

During the siege these wagons had been converted into field ambulances, in which the typhus patients were placed after their removal from the hospitals. Each truck had accommodation for at least 6 patients, and as there were 320 wagons, the typhus patients must have numbered 1,800. After a certain lapse of time a detachment of German soldiers entered the Grande Place in order to remove the dead for burial. A large quantity of quicklime was brought in wagons and thrown from long-handled shovels

over the corpses in the trucks. The bodies were then swung by the legs into the wagons, carted away into the fields outside the walls, and thrown promiscuously into huge trenches prepared for their reception. The soil was at once shovelled over them. 'Tools,' as Byron bitterly protests, 'the broken tools which tyrants cast away.' Among the bodies thus unceremoniously huddled into the trenches was that of a young doctor, who had volunteered to attend on the sick men in the railway wagons, and who had himself fallen a victim to the fatal malady. The pathetic story of this youth of 22, which I afterwards heard from my friend Whitwell, who had it from what he considered to be a reliable source, deserves mention as a remarkable instance of magnanimous self-sacrifice and courageous devotion to duty. He was a medical student of American nationality, unknown to me even by name. He had served in the French army as a surgeon throughout the campaign, and had been shut up with it during the siege of Metz. (BMJ 1902;ii:539)