

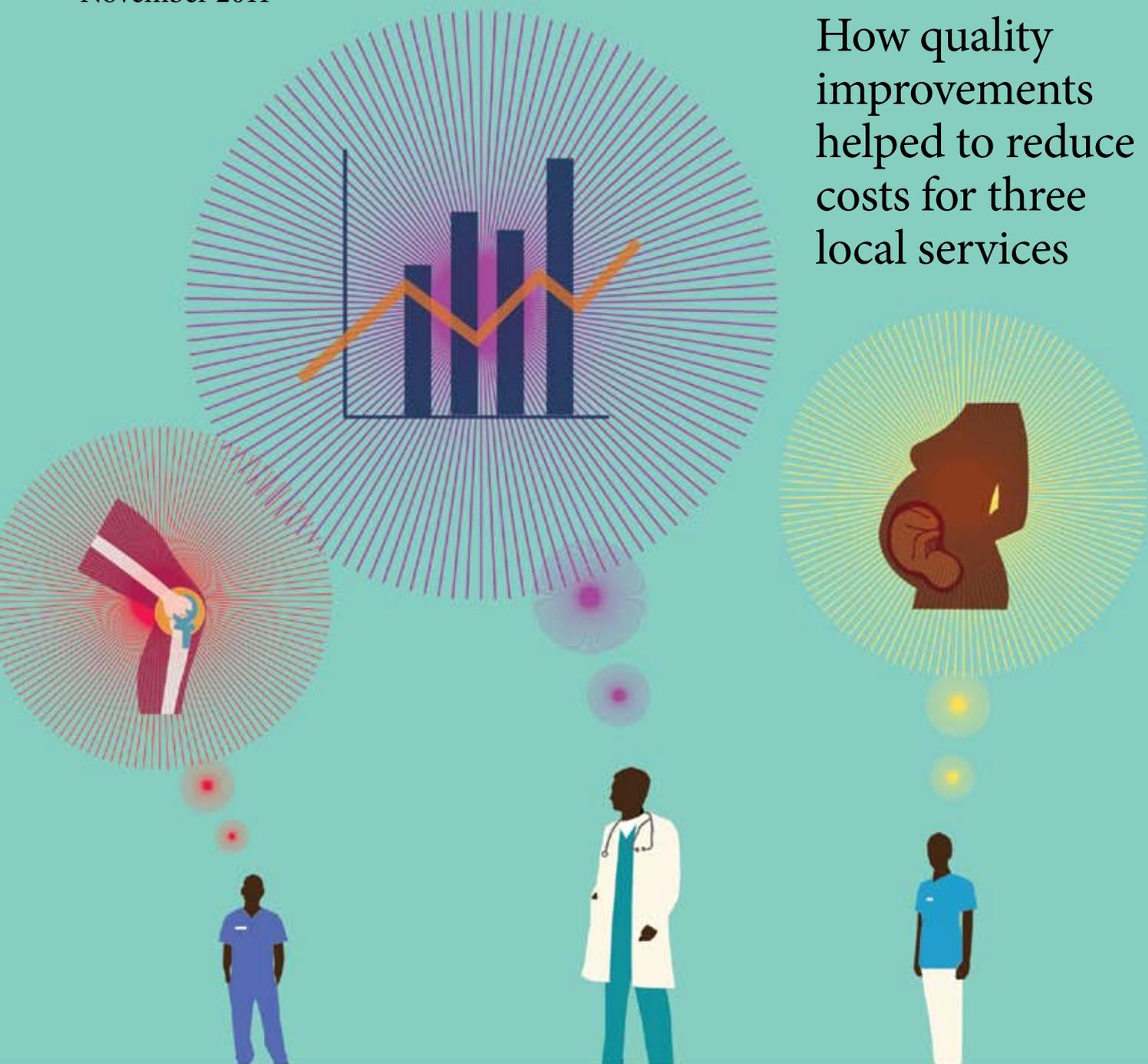
IMPROVEMENT IN PRACTICE:

COULD QUALITY BE CHEAPER?



November 2011

How quality
improvements
helped to reduce
costs for three
local services



Identify Innovate Demonstrate Encourage

‘THIS IS HARD STUFF. THE EXPERIENCES OF THE SHINE 2010 TEAMS SHOW HOW DIFFICULT IT IS TO ACCURATELY DEMONSTRATE SAVINGS...’

Health Foundation case studies

Our case studies aim to capture compelling stories about improvement in practice. Writers spend time onsite interviewing teams and individuals and, where possible, patients affected by the changes.

We use publicly available information or self-reported data provided by the case study institution. Using practical examples from our work around the UK, or other national and international cases, we create a narrative on the enablers and barriers to effective improvement. We hope they inspire and motivate others and prompt further questions and investigation.

For more information about us and the work that we do, visit www.health.org.uk

The inclusion of an organisation or health service in one of our case studies should not be regarded as an overall endorsement of that organisation and its services.

About the author

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She has worked for national consumer, medical and nursing titles as well as diverse clients in the public, private and voluntary sectors. She has completed projects ranging from patient information leaflets to position papers and policy documents. Her articles have appeared in, among others, the *British Medical Journal*, *Health Service Journal*, *The Sunday Times* and *Bella*. Clients have included the NHS Confederation, Medicines and Healthcare products Regulatory Agency, Chelsea and Westminster Hospital NHS Foundation Trust, and the Department of Health.

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At a time when the NHS is facing a tough financial regime it is more important than ever to explore new ways to deliver services that reduce costs while improving quality. This was the aim of the Health Foundation's Shine 2010 programme, which supported healthcare teams to test out their ideas for innovation and service redesign. This case study captures the achievements and challenges faced by three of the Shine 2010 projects, showing what can be done with a relatively small amount of money and over a short timescale.

Commentary

Helen Crisp, Assistant Director
of Research and Development

Intuitively we believe that improving quality should lead to reduced waste and therefore save money. However, there is little robust published evidence to demonstrate this, as concluded in the review of the evidence by Dr John Øvretveit, *Does improving quality save money?*¹ The Health Foundation aims to build this evidence base by encouraging all those involved in improvement initiatives to accurately measure costs and identify if and where savings have been made.

One reason why there is so little evidence is that this is hard stuff. The experiences of the 18 teams who took part in the Shine 2010 programme show how difficult it is to accurately demonstrate savings, especially for small-scale changes that impact on one part of a bigger service. We have picked three of the more successful as the focus for this case study, however even these projects struggled when it came to proving the release of real cost savings or how these could be scaled up across the health service. This is partly because healthcare organisations in the UK are highly complex. ►

‘THESE CHANGES HAVE BEEN ACTIVELY LED BY COMMITTED CLINICAL LEADERS WHO HAVE USED LOCAL DATA AND EXPERIENCE TO CONVINCED THEIR PEERS TO BE PART OF THE CHANGE PROCESS.’

Inevitably, changes are being introduced alongside a myriad of other new initiatives, which can confound the collection of accurate cost data, when such data can be accessed at all.

In terms of quality improvements the achievements are much clearer. The projects featured here all implemented changes that provided better quality of care and improved patient experience.

In addition the projects report how changes have benefitted staff by increasing job satisfaction, developing new skills and gaining a better understanding of the roles of other services. Common themes have also been more appropriate use of junior doctors, and enhanced team work.

What shines through is that these changes have been actively led by committed clinical leaders who have used local data and experience to convince their peers to be part of the change process.

The challenge after completion of the year-long Shine project is to ensure that these changes are sustained. We want to see successful approaches adopted by other clinical services and by trusts across the UK.

‘The challenge after completion of the year-long Shine project is to ensure that these changes are sustained.’

These innovative pioneering teams are committed to sharing their work, how they delivered change and the tools they used, not just the results. They want other services to benefit from the additional hours they have spent developing the documentation that supports the consistent implementation of their ideas. The Health Foundation is committed to promoting these materials and ensuring that they get wide dissemination, so that other organisations can benefit. ■

This case study looks in detail at three Shine projects that aimed to introduce innovations, redesign services, improve patient care and identify savings for the health service. We look at the evidence already gathered about whether improving quality saves money, and ask what these three examples can add to our knowledge. By exploring their journeys and the challenges they faced, we hope to build a clearer understanding of whether quality improvement can be a central component of cost reduction.

Shine 2010

Shine

Each year, the Health Foundation's Shine programme aims to stimulate thinking, activity and the development of innovative approaches that will improve quality. In 2010 the teams were looking at how to improve quality and save money.

18 teams from across health services in the UK took up the Shine 2010 challenge. Shine funding of up to £75,000 supported them to put their innovative projects into practice for the first time and to gather evidence of impact and effectiveness. All projects aimed to deliver savings for their local healthcare organisation over one year.

The projects covered many different areas in the health service, including restructuring antenatal care for high-risk pregnancies, reducing hospital admissions from nursing homes,

reducing harm in mental health wards and developing innovative approaches to rehabilitation.

All 18 projects submitted final reports to describe what they achieved and to capture their learning. Three projects were able to convincingly demonstrate quality improvements alongside actual cost savings. All but three of the remainder were able to provide estimates of potential savings based on productivity improvements and releasing capacity, but found it harder to produce evidence to substantiate their claims regarding cost savings.

For more information about all the Shine 2010 projects, visit: www.health.org.uk/areas-of-work/programmes/shine-ten/

SUMMARY

CHALLENGE

Gaining support and funding for improvement projects during difficult financial times in the health service is a challenge in itself. The three Shine projects featured here exemplify how healthcare teams can rise to the quality and innovation challenge and transform services for the benefit of patients and health organisations.

All three projects had to overcome an initial reluctance to change from clinicians and managers. They also faced challenges in demonstrating how improving quality really can reduce costs, finding it difficult to disentangle funding streams when savings and costs are linked to different budgets.

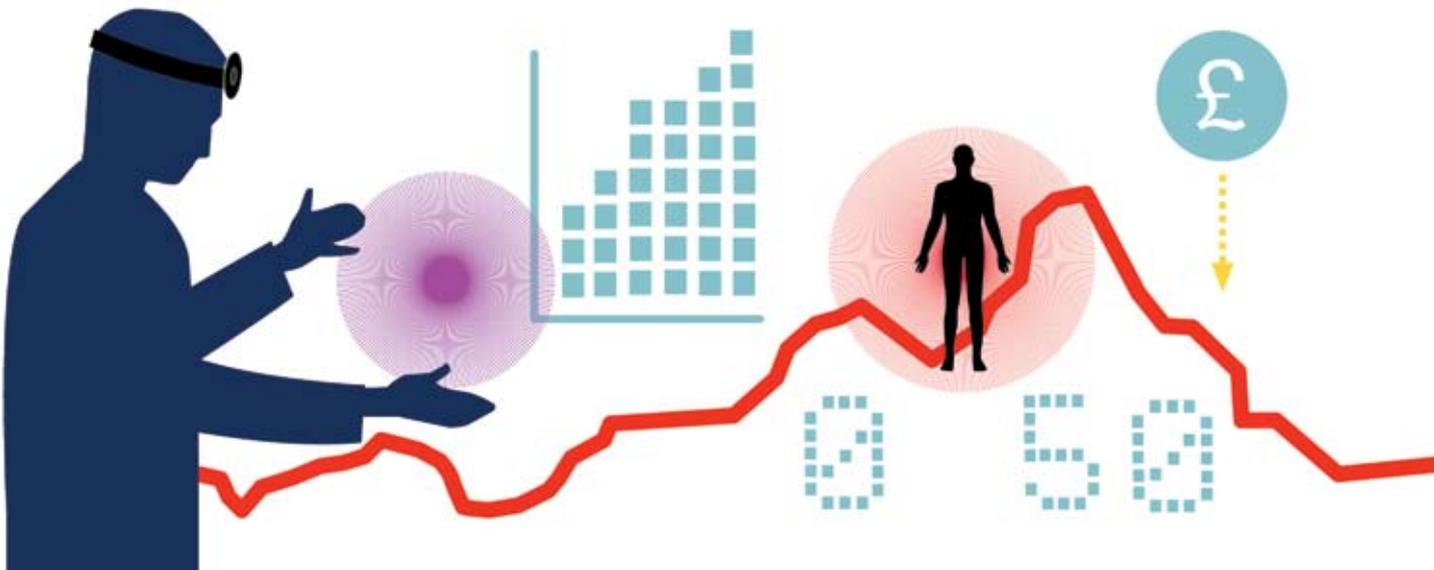
The three projects

Airedale NHS Foundation Trust reduced the need for blood transfusions in joint replacement surgery by testing and treating for anaemia at an earlier point in the care pathway. This successfully reduced the number of transfusions and the average stay in hospital, while limiting associated complications and

readmissions. Their project improved the quality of care for patients while making cost savings at the same time.

At the **University Hospital of Wales** operative hysteroscopy changed from a procedure under general anaesthetic in theatre to an outpatient procedure performed under local anaesthetic, with reusable equipment. Patients are now treated faster. It is convenient, safe, and cheaper for the hospital. Newly acquired skills and positive patient feedback have also boosted staff morale.

Finally, **Great Western Hospitals NHS Foundation Trust** restructured antenatal care for higher risk pregnancies, replacing generic clinics with condition based clinics and creating clear care pathways. The streamlined service has reduced the average number of antenatal appointments per woman and cut unnecessary inductions and caesarean sections. This was better for patients, eased pressure on the service, and saved money for the trust.



SUMMARY

STRATEGIES

Projects looked for variance, wastage and patient dissatisfaction to identify areas for improvement through streamlining and innovation. Local data and patient and staff feedback helped to convince everyone of the need for change. Comprehensive evaluation of impact on patient outcomes, resources, and overheads provided the evidence required to sustain changes and demonstrate how they could be replicated elsewhere.

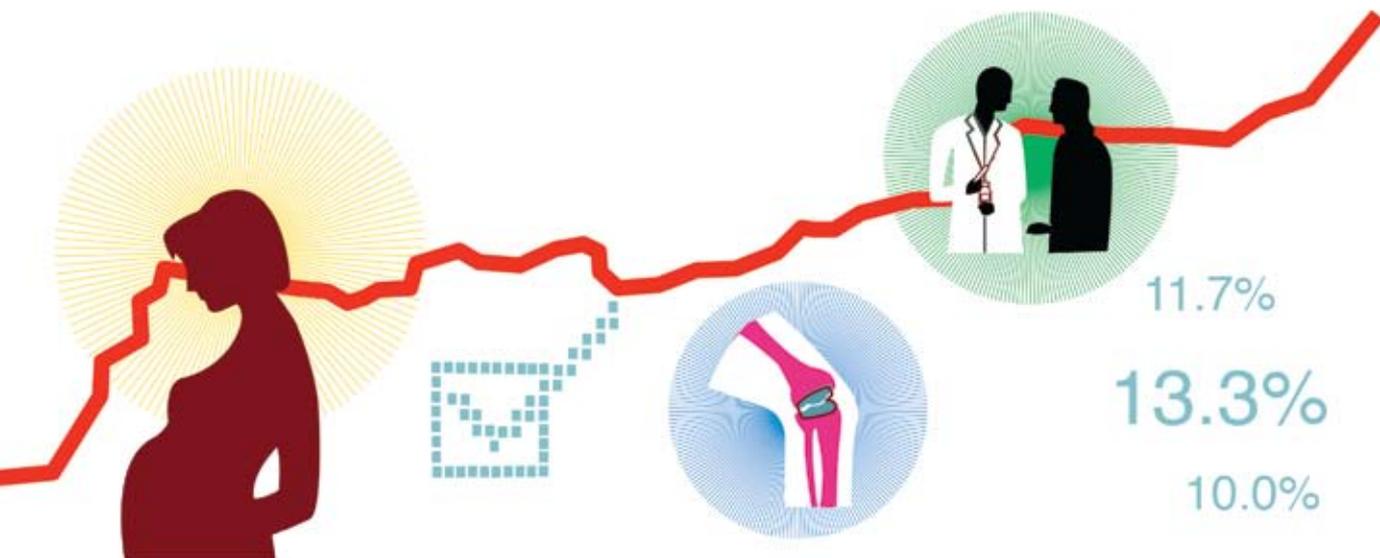
AGENTS OF CHANGE

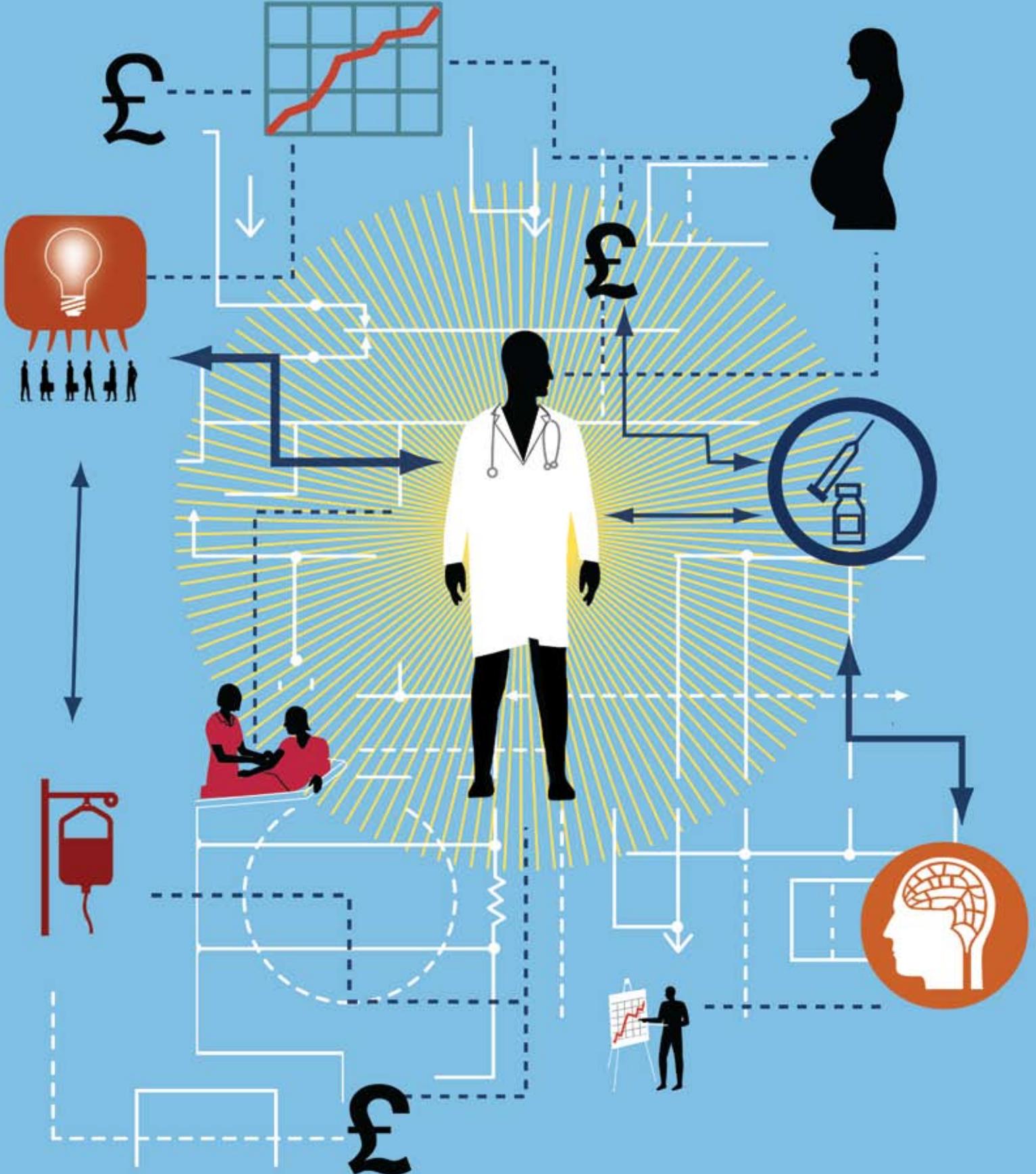
All three projects were led by strong clinical leaders with a personal commitment to the project.

LEARNING POINTS

- Improving quality can save money but local savings are often modest.
- Teams found it hard to disentangle funding streams and therefore analyse where real savings could be made.

- It was easier to show productivity improvements, time saving and better demand management but harder to substantiate savings that were directly cost releasing such as workforce changes or reduced consumption of resources.
- Scaling up success to show how local improvements could release bigger savings across the health service is challenging. Comprehensive evaluation, including detailed financial analysis, is vital to sustaining change and wider dissemination across the NHS.
- Implementing change also comes with its own costs and demands on resources, which need to be measured.
- Clinical leadership is an essential ingredient in successful service redesign.
- Evidence (particularly local data) is needed to support the case for change.
- Support from senior staff will help see through changes over the long term.





A LOOK AT THE EVIDENCE

Faced with a £20 billion funding shortfall by 2015 amid escalating demand and overheads, the NHS needs to raise its game if it is to save money without compromising patient safety and still improve the quality of care. It has been estimated that an increase in productivity by 7% is required to achieve these savings.²

Does improving quality save money?

But the NHS has a poor record of implementing and spreading innovation, and so far there isn't strong evidence to inform how improving quality saves money. How can we drive innovation? And can we make quality improvement an important component of cost reduction?

Case studies of successful local quality improvement initiatives are often used to argue the potential financial benefits to the whole system by scaling up the findings. Although there is an inherent appeal in this approach, the reality is often more complicated and questions remain about these savings being achievable across UK health services.

The Health Foundation commissioned Dr John Øvreit in 2009 to review the published evidence about whether improving quality saves money.

His findings³ show that improvement interventions are often lacking in clear evidence about their effectiveness. And there is even less evidence of what it costs to implement quality improvements and whether these costs are higher than any savings that have been achieved.

'There is strong evidence that simple and small scale clinical changes are effective in reducing adverse events and generating savings.'

Whether savings can be made depends in part on whether there is an effective change that prevents the problem, and whether it can be implemented locally at a low cost. There is strong evidence that simple and small scale clinical changes are effective in reducing adverse events and generating savings. However, the effect on overall service delivery costs is often likely to be small.

More complex organisational changes have a greater potential for reducing waste, improving quality, and making savings, but they come with bigger risks. For these ►

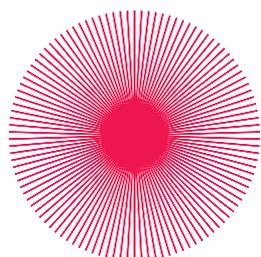
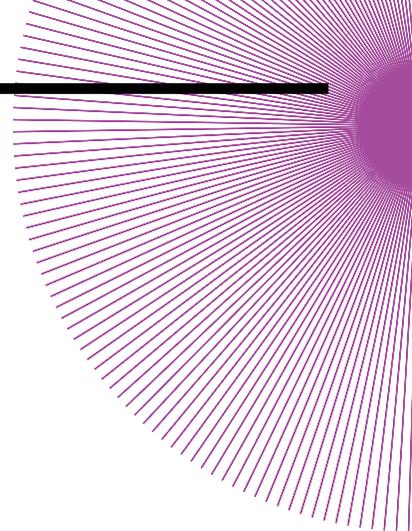
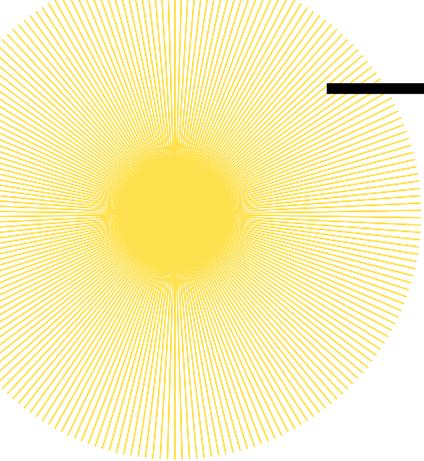
‘THE REVIEW FOUND THAT MANY STUDIES THAT REPORTED SAVINGS DID NOT ASSESS THE IMPLEMENTATION COST OF THE INTERVENTION...’

changes, there is less evidence of effectiveness. It is possible that, the more professions and organisational units involved, the higher the risk of failure due to challenges in coordination and reaching agreement.

The review found that many studies that reported savings did not assess the implementation cost of the intervention, or left out some costs, or did not use actual cost data from the service. Costs are often distributed between multiple stakeholders and providers often do not save because the finance system does not measure or reward higher quality.

The lack of evidence and the challenges do not mean that improving quality cannot save money. There is published research that demonstrates effective improvement that has saved money, with clear information on where and how it was implemented. This information can help other healthcare organisations to select value improvements, to implement them more effectively, and to make changes to enable improvement. ■





Why is scaling up important?



While the effects of introducing innovations at a local level are often modest, the potential impact of delivering them across the health service could be massive as the examples below show. This is why the scaling up of health innovations has become such a central theme in international public health agendas.

Treating atrial fibrillation to prevent strokes

Atrial fibrillation affects over 600,000 patients in England and is a major predisposing factor for stroke. NHS Improvement worked with 18 sites to identify ways to prevent strokes in these patients. They treated patients with Warfarin which reduces the risk of stroke by 50-70% and costs £383 per patient each year.

This work has helped to increase efficiency and reduce the financial and resource demands placed upon secondary care and other services. The cost to the health service of each stroke prevented is estimated at between £9,500 to £14,000. Findings show that scaling up such innovative work could generate savings of £134.5m for the first year of care after a stroke in patients with atrial fibrillation.

Delivering the cytology screening target ahead of schedule

The Cancer Reform Strategy set targets for all women to receive their screening test results within two weeks. NHS Improvement supported pilot sites over one year to test how this could be achieved using lean methodology. They identified practical ways to reduce turnaround times and improve quality, safety and productivity which teams could adapt to meet their local setting.

The ten initial pilots are now achieving full delivery of the two week target and 80% of sites achieve this within seven days. There has been a big effect on productivity and potential savings of up to £100k have been identified per site. If the improvements identified were applied by all cytology labs in England the potential national saving is £18m per annum.

THE DRIVE FOR CHANGE

The coalition government has emphasised the importance of focusing on quality both as an instrument of reform, as outlined in its white paper for England, Equity and Excellence: Liberating the NHS, and as a means of achieving the best value for money. And it is keen to foster innovation, on the grounds that this will be critical to improving healthcare outcomes, driving up quality and productivity, and helping to support investment in the UK economy.

How can we encourage innovation to drive up quality?

The government is therefore pressing ahead with the Quality Innovation Productivity and Prevention (QIPP) programme for the NHS in England, in a bid to help healthcare organisations become more sustainable—now and in the future. In Wales, the Efficiency and Innovation Programme Board aims to transform the operational efficiency of public services, and promote innovation and workforce engagement in the way that services are designed and delivered. Scotland's Healthcare Quality Strategy also proposes to make a significant impact on efficiency and productivity, while Northern Ireland promotes efficiency and innovation through targets and arms-length agencies.

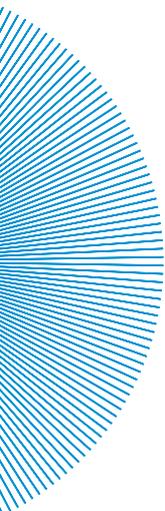
Candace Imison, Deputy Director of Policy at the health think tank The King's Fund, urges trusts to look seriously at programmes like QIPP in order to motivate change.

‘There are lots of things that people do that are deeply unproductive and QIPP forces them to look at that in ways they have not done before. “Quality saves money” really does hold true in many instances; no one likes being part of a wasteful process.’

Alan Wilson, Director of Service Development for the National Leadership and Innovation Agency for Healthcare in Wales says: ‘It is not new to say we could provide better care with less waste nor that prevention should be better and cheaper than cure. We have seen through our own work in Wales on the 1,000 Lives Plus Programme how harm reduction and increased reliability can improve outcomes and save money.’

The real challenge for the NHS, he says, is in making this a permanent change. ‘Achieving best value needs to be the way we work not the result of single isolated projects.’ ▶

‘DON’T UNDERESTIMATE HOW HARD IT MIGHT BE TO BRING STAFF WITH YOU IF SAVING MONEY IS THE PRIMARY OBJECTIVE.’



David Stout, Director of the NHS Confederation’s Primary Care Trust Network, emphasises that behaviour change is just as important as the idea. ‘The mechanisms can be more important than the content. You need not just to replicate the idea, but the thinking and leadership,’ he contends.

Speaking at The King’s Fund in January 2011, Jim Easton, Director of Improvement and Efficiency at the Department of Health, recognised that the 2011/12 Operating Framework represented a ‘step change’ in terms of what it was asking the NHS to do from now on, and the challenging environment in which it had to be achieved.

The obvious savings to be made from more efficient procurement, medication use, and staffing would plug only half the funding gap, Easton warned. The rest would have to come from service redesign and a willingness to learn from others in order to effect the pace and scale of change required. But the NHS has traditionally been slow at implementing and disseminating innovation.

David Stout agrees. ‘It’s not part of the [NHS] culture. That may partly be because it’s not a competitive environment, and “adapt or die” doesn’t apply in healthcare, or it might be the autonomy of clinicians,’ he suggests.

The Health Foundation believes that improved commissioning, better organisational business

and clinical processes, and improved quality of patient care are routes to savings. David Stout agrees there is scope for quality and productivity gains in the new era NHS, but the enormity of efficiency savings means there is a danger that healthcare organisations might opt for the quick fix solution and simply cut services.

‘Quality is at risk from the scale of the deficit. We could end up in crisis management mode, but if it is planned, and staff and patients engaged, it’s possible to do.’

But it is clear that appealing to healthcare professionals to make changes on the grounds of cutting costs alone is unlikely to work.

‘They are much more likely to respond if they can see how change will improve the quality of care for patients. Don’t underestimate how hard it might be to bring staff with you if saving money is the primary objective.’

‘The most obvious barrier to change is change itself,’ insists David Stout. ‘People don’t like stopping doing what they have always done in the past, even when confronted with evidence that it’s not working.’

‘Building critical mass for change needs determination, persistence, leadership and a willingness to listen. These are often in short supply in an environment where people don’t feel they have the time to change,’ he says. ■

This Shine project aimed to reduce the need for blood transfusions in joint replacement surgery by testing and treating for anaemia at an earlier point in the care pathway. This successfully reduced the number of transfusions and the average stay in hospital, while limiting complications associated with transfusion and resulting readmissions. Their project improved the quality of care for patients while making cost savings at the same time.

Cutting the need for blood transfusions in knee and hip replacement surgery



Blood transfusions are expensive and joint replacement surgery uses up around 10% of national blood stocks. Although extremely effective in the short term to boost oxygen supply to tissues, transfusions can be problematic after surgery. Transfused patients are more prone to complications and take longer to recover from surgery.

‘No matter how closely the transfusion is matched to the patient’s own blood type, the body still recognises it as a foreign protein and mobilises the immune system to mop it up, so that person effectively becomes immune suppressed and vulnerable to infection,’ explains Dr Alwyn Kotzé, Consultant Anaesthetist, who led the project at Airedale General Hospital, West Yorkshire.

Reviewing the evidence

A Department of Health audit of blood use in elective primary hip replacements in 2007⁴ showed extensive variation in the use of blood transfusions among 180 hospital trusts. The findings prompted Airedale NHS Foundation Trust to carry out its own audit of 250 hip replacement procedures. This showed a definite link between transfusion rate and patient outcomes.

A more extensive audit of the proportion of blood transfusions required for 361 hip and 356 knee replacements in 2008 and 2009⁵ revealed that the trust was slightly below the national average of 24%. But closer scrutiny revealed that this figure masked considerable variation for both procedures.

‘Many transfusion decisions are not made by the surgeon, but by junior doctors and nurses. Surgeons and anaesthetists don’t realise how common transfusion is. So it is really important to look at the data and see exactly what the relationship is between transfusion and outcomes,’ emphasises Dr Kotzé.

Scrutinising and understanding variation can be a powerful tool for quality improvement. The key factor in the variation at Airedale was preoperative haemoglobin (Hb). Normal levels are more than 12 grams per decilitre (g/dl) for women and more than 13g/dl for men, anything below this is classed as anaemia.

‘People who had low blood counts before their operation had a greater chance of needing a blood transfusion, and they stayed in hospital longer, which was a surrogate marker for complications,’ explains Dr Kotzé.

The figures pointed to between 3.8 and 4.5 more days in hospital for transfused patients. The chances of readmission within 30 days of discharge were also significantly greater: 21% versus 5% for knee patients and 12% versus 6% for hip patients.

The published evidence^{6,7} backed up these local findings, showing orthopaedic surgery patients with anaemia are more likely to need blood transfusions, stay longer in hospital and be less satisfied with their care. Anaemia is also associated with an increased risk of death, heart attack and stroke, falls and fractures, and poorer quality of life.⁸ The Airedale audit evidence also points towards a possible reduction in length of stay and complications if the anaemia can be corrected before surgery. This is supported by wider published evidence.⁹⁻¹¹ ‘If you can bring haemoglobin up from 10 to 13 g/dl, that’s equal to a 10-fold lower risk of needing a transfusion and about two fewer days in hospital,’ says Dr Kotzé, who adds that the prevalence of anaemia in joint replacement patients is around 20%—a figure that’s similar across much of Europe. ▶

SHINE PROJECT: AIREDALE NHS FOUNDATION TRUST

Power of local data

The next step was to convince the orthopaedic surgeons, anaesthetists and haematologists that change was needed in light of the local audit results.

‘Lots of people read research and think: “how interesting,” but until they see their own data, they are not really motivated to change. But once we showed them [this], agreement wasn’t difficult to reach,’ says Dr Kotzé.

The team needed to reassure colleagues that this new approach would not interfere with the management of a case or lead to cancellations of scheduled surgery. Providing evidence that the change would save money proved rather more challenging. ‘Most hospitals have a silo structure financially: drugs don’t come out of the same budget as length of stay, nurses’ salaries and blood products, so it can be quite difficult to quantify savings. And to managers it can just seem like an extra cost for no benefit,’ he says.

Dr Kotzé therefore approached the trust’s medical director and chief executive and got them to commit to taking a long term holistic view, which he believes made all the difference.

Once his fellow consultants and management colleagues backed the change, it was a question of looking at the published data to find which treatments worked best and drawing up evidence based guidelines. These focused on assessing and treating patients’ iron levels four to six weeks before their scheduled surgery.

Those with an Hb of under 12 g/dl are deemed to be at high risk (more than 50%) of needing a transfusion. Those with an Hb of 12-13 g/dl fall into the medium risk category (likelihood of transfusion of up to 40%), while those with an Hb above 13 g/dl are considered to be at low (10%) risk of transfusion.

At risk patients are treated with iron therapy or erythropoietin (a hormone that increases red blood cell production) before surgery. If necessary they are given tranexamic acid (a drug to reduce blood loss) or have their blood pressure lowered to stem blood flow during surgery. These treatments minimise the need for transfusion. They also cost significantly less than the costs of the blood and related activity needed during a transfusion, making savings for the trust.

Streamlining for improved efficiency and outcomes

The project has resulted in some great quality and cost improvements. ▶

Direct cost savings from the Shine project



SPEND: ON PRODUCT COSTS OF PREVENTATIVE TREATMENT

Erythropoietin (@£600/course)	£9,000
IV iron (@£150/dose)	£2,250
Total	£11,250

SAVING: THROUGH REDUCED NUMBER OF TRANSFUSIONS

Blood (@£132/unit)	£18,480
Direct cost saving	£7,230

‘THE CHANGES HAVE EMPOWERED NURSING STAFF, ALLOWING THEM TO MAKE A REAL DIFFERENCE TO PATIENTS’ FITNESS FOR MAJOR SURGERY.’

The new approach has streamlined the flow of patients through the system, with people now assessed when they are listed for surgery rather than weeks later after referral back to their GP. Those who are anaemic are started on corrective treatment, making full use of the ‘dead time’ before their scheduled operation. And they don’t need to return for routine preoperative assessment as this is done at the same time.

The changes have empowered nursing staff, allowing them to make a real difference to patients’ fitness for major surgery. Involving patients in improving their own health before surgery has also made care more person centred.

The project has exceeded expectations, bringing down the transfusion rate from around one in four (23%) to around one in 13 (7%) for hips and from one in 13 (7%) to one in 100 (0.9%) for knees. With blood a scarce and valuable resource for the health service this also helps to reduce the burden on the donor pool.

The average length of stay, which costs around £300/day, has fallen from 7.5 days for both procedures to 6.5 days for hips and to just over 5 days for knees. The readmission rate has also fallen by around 40% for both procedures.

In terms of money spent on drugs, the new pathway seems expensive. However, the team have been able to demonstrate that when offset against the money saved on blood by avoiding the need for transfusion, the new pathway actually releases savings.

The wider financial implications are harder to measure, but reductions in related costs (such as blood giving sets, nurse time and bed days treating complications) indicate potential savings for common orthopaedic procedures across the trust of hundreds of thousands of pounds per year. ■

‘Most hospitals have a silo structure financially... so it can be quite difficult to quantify savings.’

This Shine project changed operative hysteroscopy from a procedure under general anaesthetic to an outpatient procedure performed under local anaesthetic, with reusable equipment. Patients are now treated faster and it is convenient, safe and cheaper for the hospital. Newly acquired skills and positive patient feedback have also boosted staff morale.

Moving operative hysteroscopy to outpatients and deploying reusable equipment

At the University Hospital of Wales in Cardiff procedures such as surgical removal of uterine polyps and fibroids had traditionally been carried out under general anaesthetic in the operating theatre.

Local anaesthetic began to be used more in theatre due to the number of postmenopausal patients with other medical problems, such as diabetes or obesity, that made general anaesthetic more risky. The team found this approach was surprisingly successful and so started to extend it to other patients.

‘Because the average age of the women was 70, I wasn’t sure they would respond well to being awake during the procedure.

‘The move to outpatients therefore seemed the next logical step.’

But it worked. Patients coped with it fine and actually preferred it,’ recalls Nurse Hysteroscopist and Surgical Assistant Lizzie Bruen.

But when Ms Bruen formally surveyed 50 patients about their experience of the process, the feedback prompted the gynaecology team to think about moving the procedure into outpatients. ▶



Use of patient feedback

While patients found pain levels tolerable and felt well supported, being awake in the theatre environment intimidated them. They also had a much higher chance of their surgery being delayed due to the tendency for major general anaesthetic procedures to overrun.

There were several other disadvantages too. Patients still faced lengthy delays before they got a theatre slot, and when they did, spent most of the day in hospital, arriving early in the morning but not having the procedure until later in the day.

And it was not a good use of expensive staff resource according to Consultant Obstetrician and Gynaecologist at the hospital, Dr Richard Penketh, who spearheaded the move to outpatients.

‘For cases under general anaesthetic, you need a lot of staff: an anaesthetist and an anaesthetic assistant; two theatre nurses to scrub in; and another nurse to hand over instruments,’ he explains. ‘Fewer staff are required for a small [local anaesthetic] procedure, but they still need to be on hand to give general anaesthetic if necessary, so that’s very poor use of staff time.’

The move to outpatients therefore seemed the next logical step. Evidence showed this had been done elsewhere. However it had previously been assumed that an expensive piece of disposable equipment was needed for the procedure to take place in an outpatient setting. What made the Shine project innovative was that the project team tested the use of reusable equipment under local anaesthetic and found it to be feasible and safe. They were also able to train outpatient nursing staff to function like theatre nurses and assist the procedure.

Making change happen

The prospect of moving the procedure to outpatients delighted the theatre team, because it freed up valuable theatre time. Other clinical colleagues took more convincing.

The hospital already had reusable equipment, but only for use in theatre. At a time of cutbacks, managers were not readily persuaded that an additional outlay on expensive equipment would definitely reap financial and clinical benefits further down the line.

‘It’s hard in an organisation that is already stretched and being very careful with money [to get new ideas going],’ says Dr Penketh. ‘That will become worse under the current financial restraints, but now is exactly the time we should be innovating.’

In the end Karl Storz, a leading German instrument company, stepped in and agreed to loan the team almost £100,000 of equipment. But there were other logistical hurdles to surmount.

These included a lack of dedicated rooms, which required some juggling of schedules, and adaptations to existing space. Then there were extensive training needs, a redesign of supplies, such as drapes and trays, and a large amount of paperwork to be completed.

Outpatient nurses had to be trained in how to use, record, and assemble theatre equipment, and in sterilisation procedures. This included the need to train on patients under general anaesthetic to avoid disconcerting them while awake. And healthcare assistants also had to be trained in how to make patients comfortable and feel at ease during the procedure. ▶

‘ROUTINE WAITING TIMES HAVE MORE THAN HALVED FROM 26 WEEKS TO AROUND EIGHT TO 12, AND CASES OF SUSPECTED CANCER ARE SEEN WITHIN THREE TO SIX WEEKS.’

Numerous new protocols and policies were drawn up to comply with clinical governance and infection control requirements, all of which took some time to approve. ‘I knew all about health and safety protocols and the need to train people who didn’t have theatre experience, but I didn’t realise how time consuming this would be,’ comments Ms Bruen.

The project received a boost when one of the hospital’s consultant gynaecologists used the service herself. ‘She had a good experience and that gave it a lot of credibility,’ comments Dr Penketh.

Persistence pays off

The extensive preparatory work has paid off. Routine waiting times have more than halved from 26 weeks to around eight to 12, and cases of suspected cancer are seen within three to six weeks.

The procedure itself is marginally quicker to perform under local anaesthetic, but the change has also streamlined the whole process and significantly shortened the time patients need to spend at the hospital. Patients also no longer have to fast beforehand. Instead of the best part of a day, patients are in and out within 90 minutes.

Analysis of the feedback from 71 patients treated between May 2010 and February 2011 shows that 87% said they would prefer

a local anaesthetic if they needed this procedure again.

An increase in pain had been an area of concern, but respondents gave an overall average pain score of 3.4 (out of 10) and, as Ms Bruen points out, ‘providing plenty of information on the procedure and talking patients through it, really help to minimise pain.’

Staff have also benefited, gaining a tremendous sense of achievement out of the success of the project and their newly acquired skills. ‘Staff morale is very high and they are now very willing to consider other new developments,’ says Ms Bruen. ‘Urology are now looking at trying to shift procedures to outpatients as well.’

The team have also been able to prove the financial benefits of their changes. The new approach uses less resource and requires only one senior doctor, which is where a large chunk of the savings has been made. Compared with a day case procedure under general anaesthetic, it costs £651 less. It is £272 cheaper when compared with an outpatient procedure using disposable equipment. Based on 150 cases, the potential savings come to nearly £100,000 a year and more than 100 hours of theatre time (producing a further opportunity cost saving of £160,000). ▶

Comparative costs per case of different methods



	Option A: (Shine): Outpatient with reusable equipment	Option B: Theatre with general anaesthetic	Option C: Theatre with local anaesthetic	Option D: Outpatient with disposable equipment
Staff and admission	£274	£915	£427	£274
Single use equipment	£23	£23	£23	£299
Reusable equipment	£9	£9	£9	£7
Drugs	£7	£17	£7	£5
Total	£313	£964	£466	£585
Saving with option A		£651	£153	£272

Financial analysis calculated that if just half of the 40,000 or so similar uterine resection procedures carried out in 2009/10 were performed under local anaesthesia with reusable equipment, the NHS in England alone could potentially save £12.5m a year.

‘The organisation is very pleased, and they have already put money into looking at other innovations. I think our success has helped that,’ says Dr Penketh, who is planning to present the data to the National Institute for Health and Clinical Excellence in a bid to change national practice guidelines.

And to encourage future sustainability, Dr Penketh has already considered how other staff could take on the senior doctor’s role. ‘So far we’ve only had consultants carrying

‘Using this approach in just half of the similar uterine resection procedures across England could save £12.5m a year.’

out the procedure, who are already trained, but senior junior doctors could do it. Could a nurse practitioner with the appropriate training take on this role? The answer is probably yes.’ ■

This Shine project restructured antenatal care for higher risk pregnancies, replacing generic clinics with condition based clinics and creating clear care pathways. The streamlined service has reduced the average number of antenatal appointments per woman and cut unnecessary inductions and caesarean sections. This was better for patients, eased pressure on the service, and saved money for the trust.

Restructuring antenatal care for complex pregnancies

Four out of 10 pregnancies are deemed to be at 'high risk', either due to pre-existing medical conditions, such as high blood pressure, epilepsy, diabetes, or fresh problems such as pre-eclampsia. Evidence clearly shows that high quality antenatal care has a big impact on pregnancy outcomes for these mothers and babies.^{12, 13}

Successive governments have recognised that antenatal care needs to become more integrated and patient centred. In 1993, *Changing Childbirth*¹⁴ concluded that antenatal care for low risk pregnancies should be provided in the community, with only high risk pregnancies dealt with in hospital.¹⁵

But despite a raft of policy documents, audits, and patient surveys, relatively little has changed in 50 years in the way antenatal care has been delivered to these women, contends Dr Harini Narayan, Lead Obstetrician and Consultant in Obstetrics and Gynaecology at Great Western Hospitals NHS Foundation Trust.

'This is a commonly acknowledged problem. Vast wastage of resources is seen in the provision of antenatal care, with low value repetitive clinical activity that has little evidence of clinical benefit,' she says.

But the traditional model of named consultant clinics, with minimal patient involvement and fragmented care, was pushing the service at Great Western to its limits. Care was inconsistent, fragmented and involved significant duplication with the community services. Not only did this generate inconvenience and anxiety for patients but as care was opinion based rather than evidence based, two patients with exactly the same complicating factor of pregnancy could be offered varying, sometimes contradictory advice.

This was all too well recognised by staff at the front-line of service.

'We were often doing investigations and interventions that were unwarranted simply because of the label "high risk pregnancy". There was little consistency in the pattern ►





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of care and such a stretched service could not cope with the double whammy of significantly increasing birth rates and increasingly complex pregnancies’ admits Dr Narayan.

She recognised that the service would come under further pressure, as rates of obesity, diabetes, pregnancies among older women and multiple IVF births continued to climb. The birth rate at Great Western rose 25% between 2003 and 2008, but with no corresponding increase in staff or resources.

‘If resources are finite, you need to be able to use them in the most efficient manner, and ask yourself: does this patient really need five different scans ordered by different people and the results picked up by different doctors?’ she points out.

Making a strong case

Records for a sample of patients showed that 1,600 high risk pregnancies generated a staggering 17,800 antenatal hospital appointments. However when a survey of more than 800 patients was carried out in 2008, it was revealed that most women hadn’t seen the named consultant for the clinic they attended during the time frame of the study. Instead, service delivery relied heavily on junior doctors, who were not always sufficiently experienced to deal with the complexity of the caseload.

‘The biggest complaint women had was a lack of continuity of care,’ explains Dr Narayan. ‘This was compounded by not having integrated care plans, and a lack of effective communication between primary and secondary care.

‘In the traditional model, there was little acknowledgement of the normality that exists in even high risk pregnancies. It is essential that the team involves the specialist obstetrician and both hospital and ►

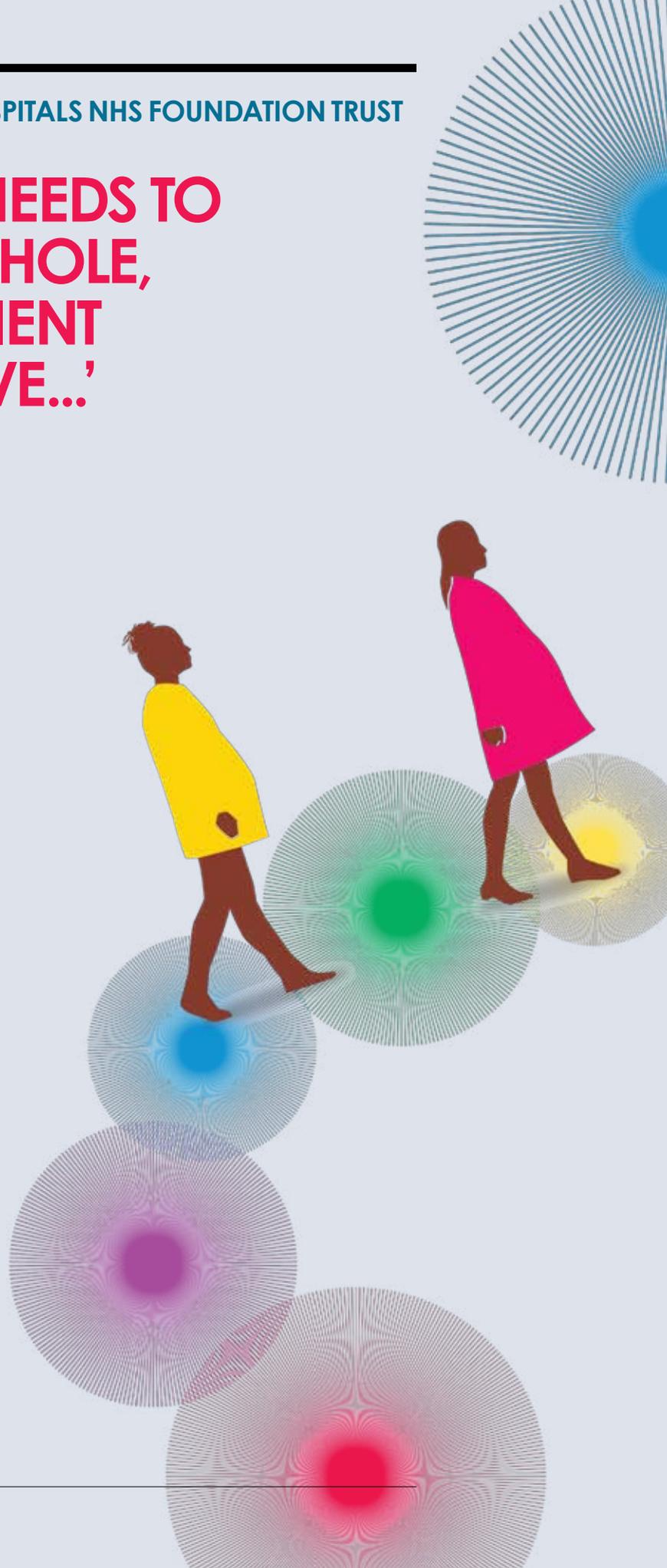
‘THE PREGNANCY NEEDS TO BE TREATED AS A WHOLE, NOT JUST AS A PATIENT WITH A LEAKY VALVE...’

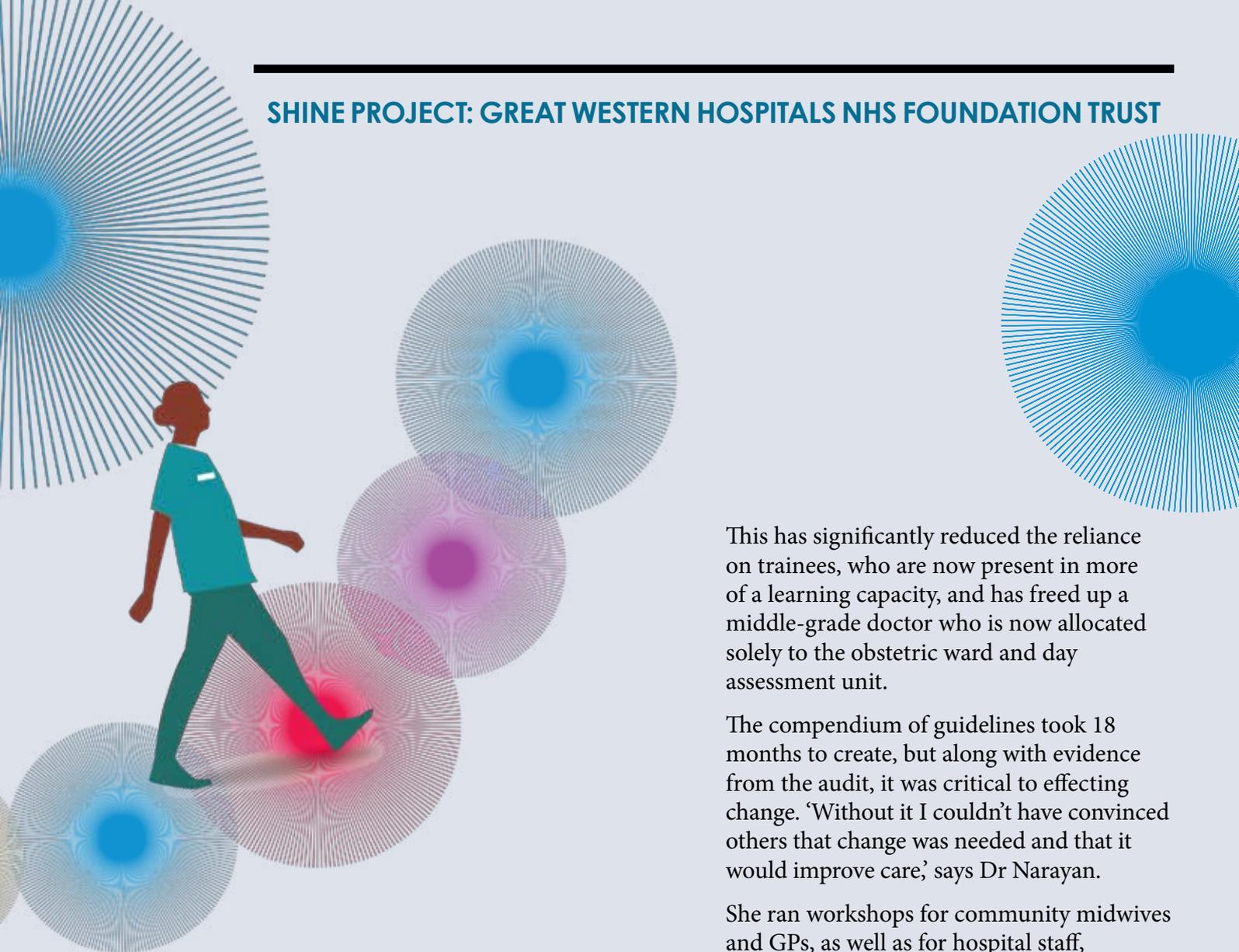
community midwives to attain a sensible balance,’ emphasises Dr Narayan. ‘The pregnancy needs to be treated as a whole, not just as a patient with a leaky valve or dodgy liver function.’

With few comprehensive national care pathways integrating primary and secondary care for individual complex conditions of pregnancy, Dr Narayan set about developing a compendium of clear evidence based clinical guidelines. This was a major undertaking, and Great Western were fortunate to have a clinician willing to make such a personal commitment, a common theme among the three case studies discussed here.

The guidelines outlined integrated care pathways for 85 different high risk conditions in pregnancy, explaining what tests needed to be done, when and with what follow up. These care pathways were developed with input from colleagues across a range of specialities. Each was accompanied by appropriate patient information leaflets, developed with input from patients themselves.

Streamlining care involved restructuring 16 generic clinics into 11 clinics based around clusters of conditions. Each clinic is staffed by a core team of senior doctors and midwives with a special interest in that area. ▶





This has significantly reduced the reliance on trainees, who are now present in more of a learning capacity, and has freed up a middle-grade doctor who is now allocated solely to the obstetric ward and day assessment unit.

The compendium of guidelines took 18 months to create, but along with evidence from the audit, it was critical to effecting change. ‘Without it I couldn’t have convinced others that change was needed and that it would improve care,’ says Dr Narayan.

She ran workshops for community midwives and GPs, as well as for hospital staff, encouraging referral to the new condition based clinics and setting out the benefits of the changes. Initial concerns of senior doctors about how the changes could affect them were allayed by mutually suitable job plans being agreed with senior management. Because the new system involved root and branch changes to the individual professional practice of clinical and midwifery staff, ‘the issues had to be tackled sensitively, with the benefits to consultants and the unit made very clear,’ she explains.

‘We also ran a six month feasibility pilot to reassure people that it would not be the end of civilisation as we know it,’ she adds, emphasising the importance of a consensual approach. ►

How does the new model work?

The changes are best illustrated with a simple example of a pregnant woman with pre-existent epilepsy.

Under the old system, women with epilepsy would have received nearly all their antenatal care in hospital, with limited input from community midwives. Unnecessary and potentially problematic interventions, such as early induction of labour or caesarean sections, could be recommended on the basis of opinion, or due to a misinterpretation of the label 'high risk pregnancy'. The patient was often a passive player in her care, with little information given about the impact of epilepsy on her pregnancy, or the effect of pregnancy on her epilepsy.

Under the new system, antenatal care is centred on the individual, taking into account their epilepsy. Ideally care starts before pregnancy when GPs are encouraged to refer patients to pre-pregnancy assessment clinics. Otherwise antenatal care starts with early advice from community midwives or GPs, who refer patients to the correct condition-based antenatal clinic in the hospital.

The patient is at the centre of all discussions and plans. She is given a detailed information leaflet, useful websites, emergency contact numbers and a schedule of subsequent visits

in both primary and secondary care.

The *Epilepsy in pregnancy: algorithm for antenatal care*, which includes what she can expect from each antenatal clinic visit and any relevant investigation, is shared with the pregnant woman and all those involved in her care.

The same specialist multidisciplinary team, which in this case would include input from a neurologist, looks after the patient throughout her pregnancy, thus ensuring continuity of care and consistency.

Recognising the pregnancy as normal, even when it is high risk, is an integral aspect of the care pathway. Interventions such as induction of labour are recommended only for obstetric reasons, not just because the woman has epilepsy.

Demonstrating long term feasibility

Obstetrics and gynaecology research fellow Dr Francesca Garrard designed and led a twelve month in-depth evaluation of the new model of antenatal care. This showed that patients are significantly happier with the service. Among 1,500 patient responses, 94% said they had enough time for a full discussion and questions compared with 68% before the changes were implemented. Over 90% now rate their consultation as 'good' compared with just over half in the old regime. Patient complaints have also fallen. ►

'ITEMISED COSTINGS SHOW THE NEW SERVICE IS UP TO 6% CHEAPER THAN THE OLD ONE.'

Despite an increase in caseload of 25%, there has been no increase in patients waiting for appointments. On average, the number of follow up appointments has reduced by 10%, allowing capacity to accommodate the rising number of women with high-risk pregnancies.

The project was achieved with no additional funding, apart from the evaluation study, which was paid for by Shine funding. Dr Narayan and her team volunteered the extra time needed to design and implement the new service. Without this voluntary work, they estimate the staff time needed to deliver the change would have cost the trust approximately £128,000.

Due to the antenatal clinic budget being merged with gynaecology it was difficult to show a bottom line saving. However based on itemised costings, the new service is up to 6% cheaper than the old one. Reducing unnecessary interventions means that admissions to the obstetric ward have fallen, allowing closure of 13 surplus antenatal in-patient beds. This has enabled the opening of a new co-located birthing centre. Ninety-two fewer bed days alone translate into potential savings of £12,000.

Clinical outcomes have also improved since the reorganisation, with avoidable inductions of labour reduced by a third. Patients with pelvic pain in late pregnancy, for example, are now referred to the maternity physiotherapist rather than to the obstetric unit. This has brought down the rate of early inductions for this condition from over 40% to just 5%.

Multiple pregnancies are all cared for in the same clinic, and steroid prophylaxis, which lowers the risk of respiratory distress in prematurity, is offered. This in turn has cut down on the need for expensive treatment and bed days in the special care baby unit. Incubators are 59% more expensive than a postnatal ward bed.

The restructured service has now proved itself with senior management and is here to stay. Dr Narayan is confident that the compendium can easily be adapted for other local units with just a few tweaks.

'The changes and benefits we have achieved are transferable to any other maternity unit in the country as we all face the same challenges. The service changes can be adapted with little cost and relative ease by others as we have already done the work and gone through all the labour pains!' she says. ■

SO WHAT HAVE WE LEARNED?

So what do these Shine projects tell us? Can improving quality also help to save money? And is it possible to scale up the findings of local improvement initiatives to realise the potential financial benefits across the wider system?

Innovation improved quality but it's still hard to quantify cost savings

Elements of all three projects would appear to be replicable. If approximately one in five patients in the UK are anaemic when they present for joint replacement surgery then, in theory, a similar approach to treating anaemia earlier in the pathway could release savings and quality improvements in hospitals across the UK. The Airedale team are currently designing formal treatment protocols, which could be shared and adapted. Similarly, the compendium and service model developed by Dr Narayan could be adapted to help streamline maternity units across the country.

While it is clear that the changes shown in these three projects have delivered efficiencies, the teams have struggled to provide detailed financial data to substantiate their claims. Only the Cardiff team have had enough information to accurately do the maths about scaling up, suggesting yearly savings of £12.5m in England alone through moving just half the number of similar uterine resection procedures to outpatients. ►



SO WHAT HAVE WE LEARNED?

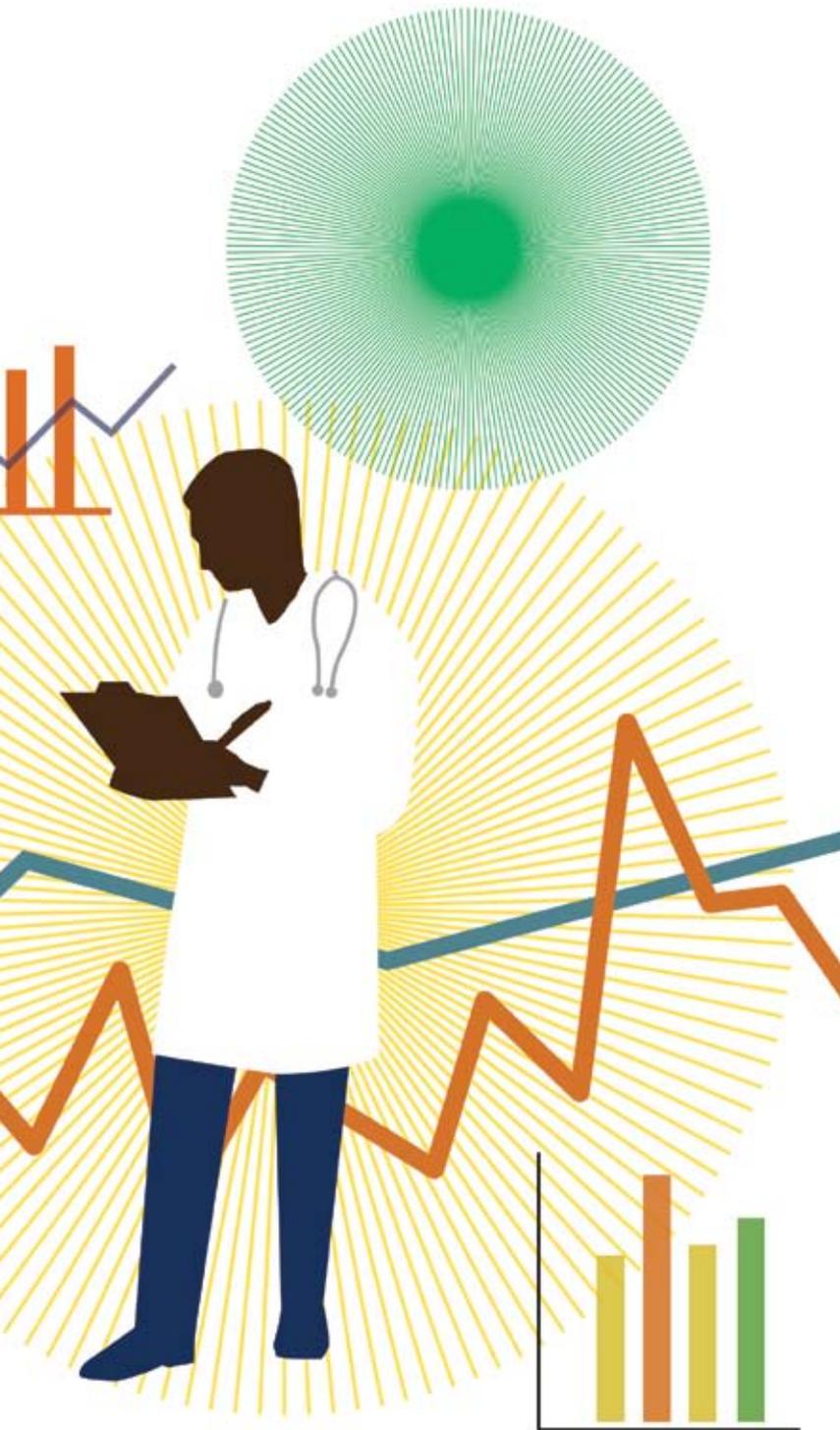
‘Projected savings based on spread or longer term outcomes are often difficult to substantiate.’

This lack of data is partly because quantifying cost savings in the NHS is such a complicated process. Often finance systems are unable to drill down to the level needed to accurately cost interventions. Costs may also be shared across departments or even organisations. In fact, in some cases the commissioning and payment systems can act as a disincentive to change, as trusts could end up losing funding. Current changes to the commissioning framework also make it hard to pin down which organisations will save money as a result of activity in the future. As a result projected savings based on spread or longer term outcomes are often difficult to substantiate.

However all three projects did succeed in substantially raising quality and making some local cost savings. With the limited investment, time and resources available, this was a considerable achievement.

Although the projects were different, there were common themes behind their success. All combined a desire to improve quality, and make care more patient centred, with a determination to implement each project despite major obstacles. In each case, innovation was inspired by the driving force of a clinician leader who felt passionate about improving care and was determined to prove the effectiveness of their solution.

Evidence was used well to support the case for change and to convince key players to back it. ►



SO WHAT HAVE WE LEARNED?

‘ALL THREE PROJECTS DID SUCCEED IN SUBSTANTIALLY RAISING QUALITY AND MAKING SOME LOCAL COST SAVINGS, A CONSIDERABLE ACHIEVEMENT.’

This came in a variety of valuable forms: audits of performance and patient views, scrutiny of several sources of data, reviews of published evidence, and assessment of the likely impact on financial/clinical outcomes and work patterns.

For clinicians and managers, local evidence proved a more powerful lever for change than national data as it was often more relevant and harder to ignore. Scrutinising headline or summary data in more detail also proved important, as even ostensibly good performance figures could be masking considerable variance.

Teams shared a clear vision and took time to communicate this to key players, disseminating their findings widely and helping to allay concerns and head off difficulties. All projects demonstrated the vital ingredients of good leadership and successful team working. Securing buy in from senior staff with an organisation-wide remit, who were committed to seeing through changes over the long term, was also vital.

It is easy to forget that change also comes with a cost, and an estimate of savings alone is insufficient to create a successful case for a quality improvement initiative. New policies and protocols often involve a great deal of paperwork and time, for example.

All three teams invested time in evaluating their projects, with varying degrees of

financial analysis. By doing this they have managed to produce evidence which is normally scarce in this field (see Øvretveit, 2009¹⁶) about how reductions in waste can improve quality and reduce costs.

However while it was possible to show how changes had led to productivity improvements, time saving and better demand management, some found it harder to substantiate savings that were directly cost releasing such as workforce changes or reduced consumption of resources. This kind of detail is fundamental when arguing that new services should be continued and scaled up across the health service.

At the core of these successful improvement projects were the clinician leaders and their staff teams. From inspiring innovation and change, through set-up and delivery of a project, to evaluation and analysis of outcomes, clinician leaders and staff are critical factors to the success of local improvement and cost saving initiatives.

Saving money alone is not a strong motivator for clinicians and it is not the only reason to improve quality. Instead, clinicians are inspired by the knowledge that services can be better for their patients. However, by showing that local quality improvements can also save money, their work has helped to build the argument for other teams seeking political and management support for innovations. ■

Further information

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For more information about all the Shine 2010 projects, visit:
www.health.org.uk/areas-of-work/programmes/shine-ten/

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