NHS
Modernisation Agency

Improvement Leaders' Guide to

Process mapping, analysis and redesign

For further information see

www.modern.nhs.uk

Acknowledgements

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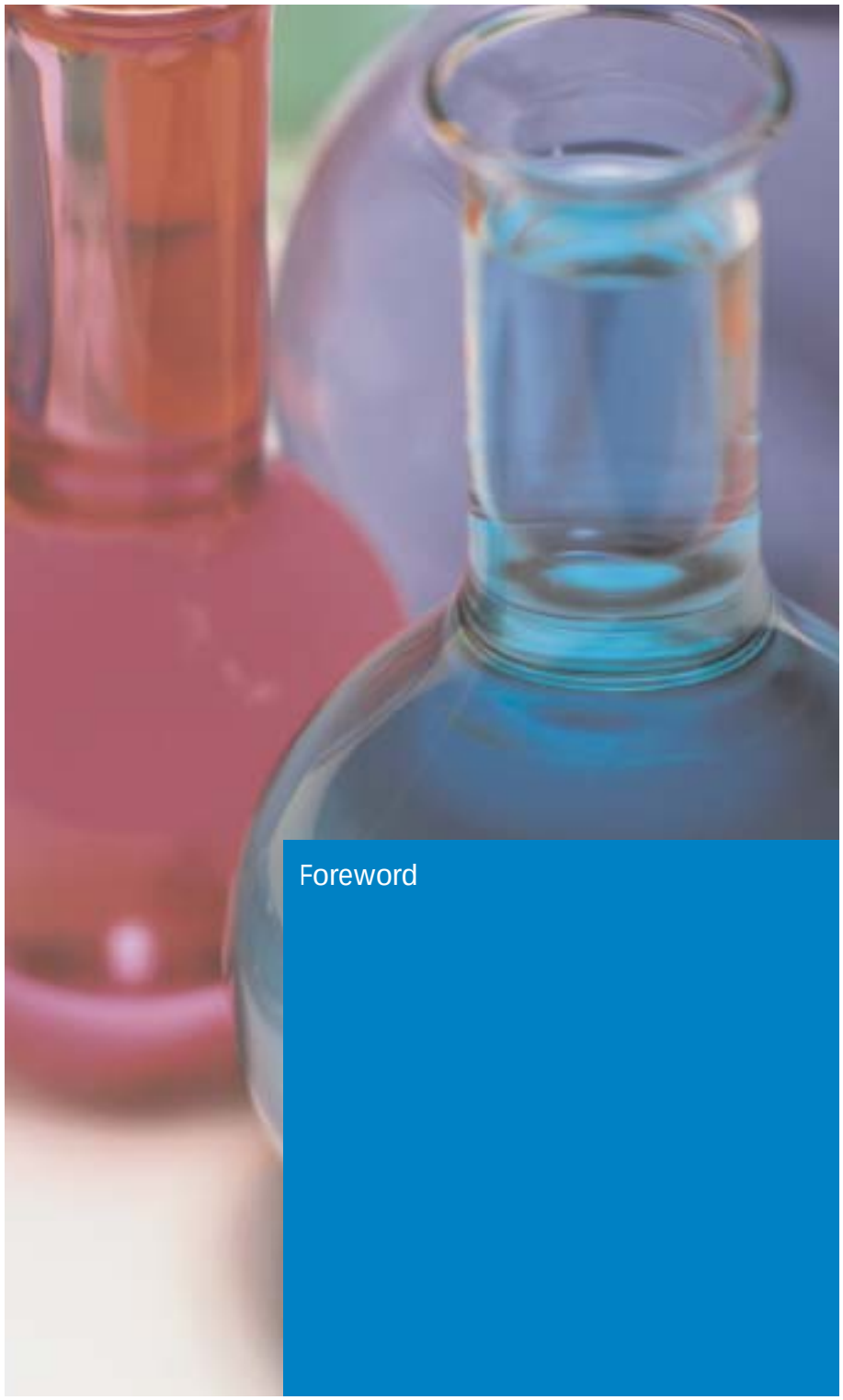


Foreword

I am pleased to present this guide – one of a series for Improvement Leaders in the NHS.

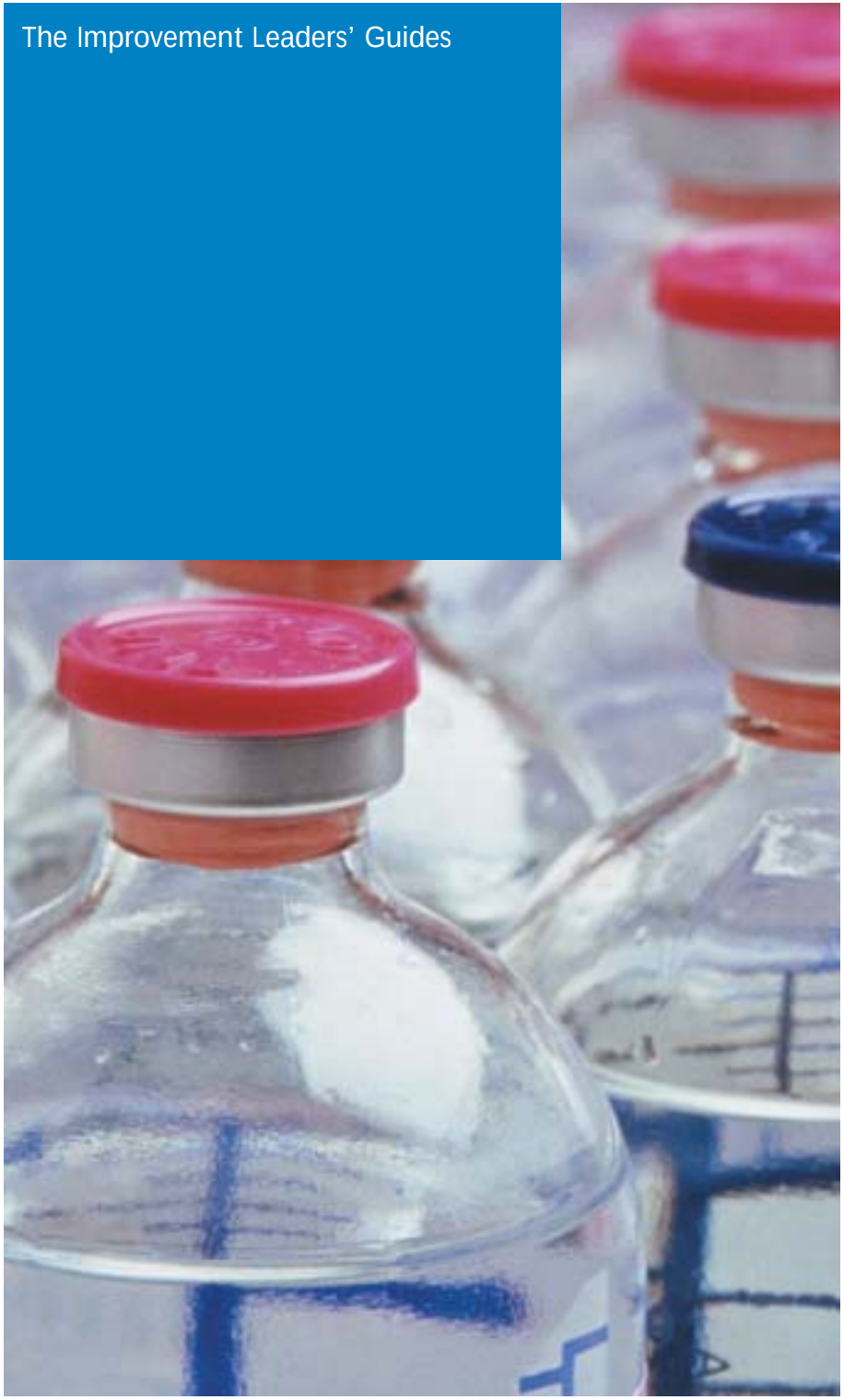
A key objective for all of us in the NHS, whatever our role, is to continually look for ways to improve the experience and care of patients. Many improvements have been achieved already, whether as part of a large national programme, or on a much smaller scale, through the commitment of a small team of healthcare staff. Everyone involved in such projects has gained so much knowledge about initiating and sustaining these improvements.

The aim of this set of guides is to gather this knowledge into a summary of current thinking. We've put them together in response to a huge demand for tools and techniques to support improvement in patient care. All the guides include useful, practical advice that can be applied in healthcare settings. Written by experienced healthcare staff, they are aimed at *all* Improvement Leaders in the NHS – by which we mean everyone who wants to improve the care and experience of patients, whether a manager of a small team in general practice, a director of modernisation for a large Trust, or the clinical leader of a team of doctors, nurses or therapists.

As I said, the guides are based on current learning and thinking – but this is constantly changing. If you've found this printed version useful, keep checking the website on www.modern.nhs.uk/improvementguides
Here the guides will be regularly updated as we learn more and have new things to share.

Improvement and modernisation is really just beginning. It's an exciting time, and a great opportunity to develop and share new skills and understanding so we can truly make things better for our patients.

David Fillingham, *Director NHS Modernisation Agency*
April 2002



Collectively the Improvement Leaders' Guides form a set of principles for creating the best conditions for improvement in healthcare. The greatest benefit is when they are used to support a programme of training in improvement techniques.

Where should I start?

The seven guides are not sequential and ideally you should read them all at an early stage in your improvement project, to be aware of the tools and techniques in all the guides. However there are some things we would suggest you should do first, as you develop your plan based on local needs and experience.

Each guide includes

- some background information on the topic
- some activities which you, as an Improvement Leader, may find useful to help the teams you work with understand the basic principles
- questions that are frequently asked about the topic and suggested ways to answer them
- guidance on where to go for more information. Sources include the excellent toolkits that have been produced to support improvement programmes in specific services, such as Cancer, Critical Care, Mental Health and Clinical Governance. Useful books, papers and websites are also listed

Process mapping, analysis and redesign

What's in each guide?

Improvement Leaders' Guide to…	What the guide has to offer an Improvement Leader
Process mapping, analysis and redesign www.modern.nhs.uk/improvementguides/process	This is definitely the place to start. This guide offers help in the use of the 'Model for Improvement'. This is a framework for setting aims, identifying the possible changes and beginning to think about measures that will show that your changes have made an improvement. Then there is the vital first stage of mapping your chosen patient process and analysing it to really understand what is happening.
Measurement for improvement www.modern.nhs.uk/improvementguides/measurement	Question: how do we know a change is an improvement? Answer: by measuring the impact of the changes. This guide should also be considered very early on in an improvement project and gives valuable advice on what and how to measure for improvement and how to present the data to interested parties.
Matching capacity and demand www.modern.nhs.uk/improvementguides/capacity	In our experience the process of truly matching capacity and demand has led to some of the most exciting changes in a healthcare process. This guide explains the most effective ways to understand the capacity and demand of a service and the 'bottlenecks' in the system which often cause patients to wait. It goes on to suggest ideas to reduce or eliminate these queues and waiting lists for patients. It is vital that process mapping and analysis is done prior to using this guide.
Involving patients and carers* www.modern.nhs.uk/improvementguides/patients	Everything we do should be focused on patients and their carers. They must be involved in our improvement programmes and projects from the very beginning. We are able to offer advice based on current thinking and experience of how to involve patients and carers in the most effective way, with warnings of possible pitfalls.
Managing the human dimensions of change* www.modern.nhs.uk/improvementguides/human	Some of us take to the idea of change more easily than others. Some like to develop ideas through activities and discussions, while others prefer to have time to think by themselves. We are all different and need to be valued for our differences. This guide gives ideas of how to ensure the best possible outcome when working with different people.
Sustainability and spread* www.modern.nhs.uk/improvementguides/sustainability	It is fundamentally important that after making improvements they are sustained and built upon. This is a real challenge to anyone involved in improvement projects. It is also important that we share our learning and ideas with other areas of healthcare so that the maximum number of patients can benefit. This guide suggests methods and principles based on experience from healthcare both in England and beyond for sustaining and spreading improvement ideas.
Setting up a collaborative programme* www.modern.nhs.uk/improvementguides/collaborative	Experience has shown that working collaboratively produces the best environment for creating and sharing improvement ideas. Use this guide when a group of healthcare staff want to work in a different way, to innovate and test new models of delivering care, to dramatically improve the service for a group of patients and to create learning for their own organisation and the whole of the NHS.

* Available July 2002

A few additional thoughts:

The guides are based on current thinking and experience.

Be aware that this is constantly changing. Check updates on the Improvement Leaders' Guides website, www.modern.nhs.uk/improvement guides which will be updated often as we test out and learn from new techniques.

Be aware of your own experience.

If this field is totally new to you, plan how you can find out more through further reading or development courses. If you are familiar with leading service improvements, can you share your experiences and knowledge with others in your healthcare community and the wider NHS?

Make contact with others who have improvement skills.

Many people in healthcare have had training in the improvement skills contained in these guides. Their training will most likely have been for a particular service such as primary care, dermatology or cancer. Make contact with them to form a health community improvement network to support and learn from each other.

Try it for yourself.

These guides don't represent the only way to do things, but they provide a good starting point. Create your own case studies and then share your experiences with us.

Take the thinking forward.

The website will be a dynamic medium. Please contribute to the discussion if you can. We would welcome and value your experience.

Have fun.

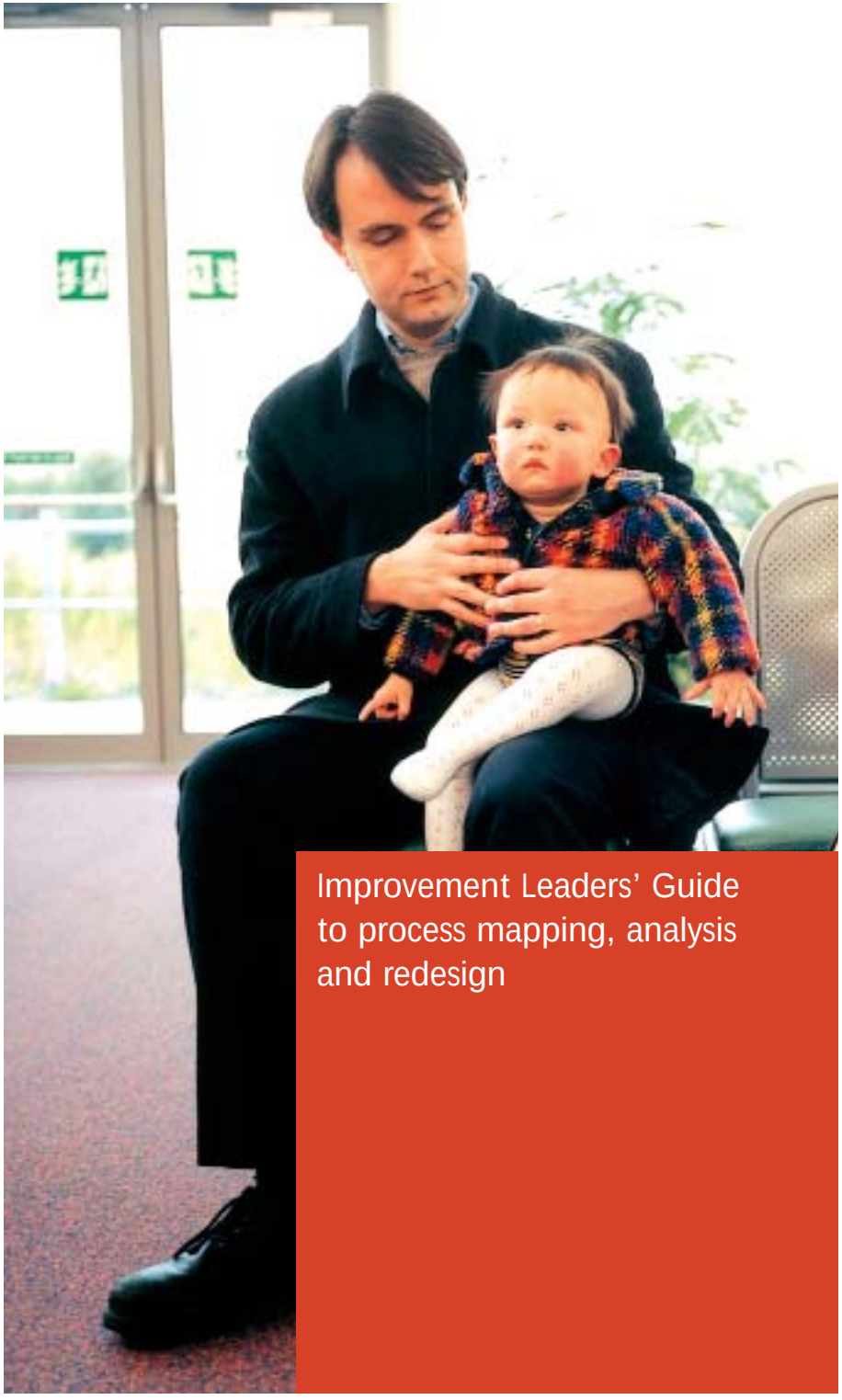
Many have said that leading an improvement project has been one of the most enjoyable and fulfilling roles of their careers!

Let us know what you think of the guides.

We want your comments and thoughts about the Improvement Leaders' Guides. Our aim is to keep improving them so let us know what you think.

- how can we improve the guides? Is there anything we have left out?
- have you found them useful? If so which guide in particular and which section?
- how have you used them? Can you tell us any stories?
- if there were to be other guides, what topics should they be on?
- have you visited the website? How can we improve it?
- is there anything else you would like to tell us about the Improvement Leaders' Guides?

Email us now on **improvementguides@npat.nhs.uk**



Improvement Leaders' Guide to process mapping, analysis and redesign

‘Every system is perfectly designed to get the results it achieves.’

Don Berwick

Contents

1. Introduction

Process mapping is a simple exercise. It helps a team to know where to start making improvements that will have the biggest impact for patients and staff. The *‘Model for Improvement’* helps a team to set aims, targets and measures, and introduces a way of testing ideas before implementing them. So it’s logical to consider the two together.

A plan for improvement could include the following steps.

Step 1	define the aim for the project including: • the group of patients you are considering • your targets
Step 2	consider how you are going to know if a change is an improvement: • what measures you are going to use • how are you going to report progress to all the interested parties
Step 3	involve the staff in mapping and analysing the process: • to really understand the problems for the patients, their carers and the staff • to start to measure and create the baselines for your improvements. You may need to revisit your targets at this point
Step 4	investigate all the changes that are likely to make an improvement in line with the aims set: • talk to other healthcare services, organisations and the patients • look at the various Service Improvement Guides. You can find more information in the useful reading section
Step 5	test out the change ideas to see if they actually do make improvements: • consider the knock on effects that making one change will have to that process and other parts of the system or different systems
Step 6	implement the changes that will make improvements
Step 7	congratulate the team and celebrate your success but continue to: • ensure the improvements are sustained • look for ways to continue to improve • offer help, advice and support to other improvement teams

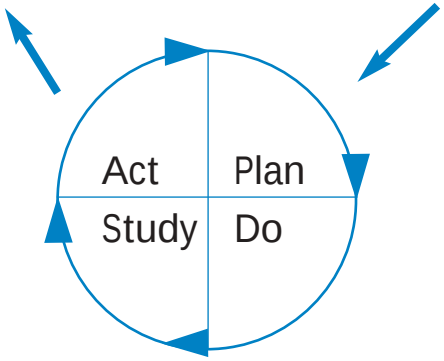
2. Model for Improvement

2.1 Introduction to the Model for Improvement

The model for improvement was designed to provide a framework for developing, testing and implementing changes that lead to improvement. It attempts to temper the desire to take immediate action with the benefits of careful study. Its framework includes three key questions and then a process for testing change ideas using Plan, Do, Study, Act (PDSA) cycles.

The Model for Improvement (© IHI)

Model for Improvement
What are we trying to accomplish?
How will we know that a change is an improvement?
What changes can we make that result in improvement?



The Model for Improvement

Langley G, Nolan K, Nolan T, Norman C, Provost L, (1996), *The Improvement Guide: a practical approach to enhancing organisational performance,* Jossey Bass Publishers, San Francisco.

2.2 The aims statement: what are we trying to accomplish?

You and your improvement team need to set clear and focused goals. These goals will require clinical leadership and should focus on problems that cause concern for patients and staff.

The aims statement should:

- be consistent with national and local targets, plans and frameworks
- be bold in its aspirations
- have clear numerical targets

demonstrate improvement. They should not be used to create 'league tables' of different services, because each team or service will have a different starting point, a different culture and a different target population. *The Improvement Leaders' Guide to Measuring for Improvement* gives valuable advice on what and how to measure and how to present the data to interested parties. www.modern.nhs.uk/improvementguides/measurement

2.3 How will we know if a change is an improvement?

If we make a change, this should affect the measures and demonstrate over time whether the change has led to a sustainable improvement. The measures used within this model exist as tools for learning and to

2.4 What changes can we make that will result in improvement?

The list of potential changes that improvement teams could make to improve care delivery is very long. However, evidence from scientific literature and from previous

An example of an aims statement for patients with cancer

Aim

To improve access, speed of diagnosis, speed of starting appropriate treatment and patient and carer experience for those with suspected or proven bowel cancer.

This will be achieved by:

- introducing booked admissions and appointments
  – target – more than 95% of patients will have a booked appointment
- reducing time from GP referral to first definitive treatment
  – target – less than 50 days
- ensuring patients are discussed by the multi-disciplinary team
  – target – more than 80% of patients

Efforts and measurements will be concentrated on a defined group of patients at four key stages of care: GP referral, first specialist appointment, first diagnostic test and first definitive treatment.

improvement programmes points to a small number of potential changes that are most likely to result in improvement.

A number of tried and tested change ideas have proved successful for many of the national and regional improvement programmes, such as the Cancer Service Collaborative, Booked Admissions Programme and Orthopaedic Services Collaborative. You can find these change ideas in the various improvement guides on the Modernisation Agency website www.modern.nhs.uk or in the recommended reading section of the Improvement Leaders' Guides www.modern.nhs.uk/improvementguides/reading

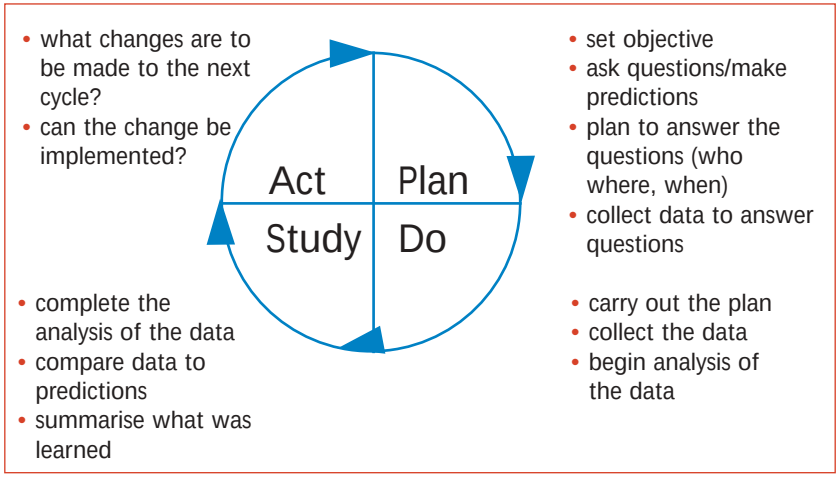
2.5 Testing the change ideas

Use of Plan, Do, Study, Act (PDSA) cycles is a way of testing an idea by putting a change into effect on a temporary basis and learning from its potential impact. This is quite different from the approach traditionally used in healthcare settings, where new ideas are often introduced without sufficient testing.

There are four stages to a PDSA cycle:

- Plan:
  plan the change to be tested or implemented
- Do:
  carry out the test or change
- Study:
  study data before and after the change and reflect on what was learnt
- Act:
  plan the next change cycle or plan implementation

The PDSA cycle to test a change idea (© IHI)



A PDSA cycle involves testing the improvement ideas on a small scale before introducing the change. By building on the learning from the test cycles in a structured and incremental way, a new idea can be implemented with greater chance of success. We have found that barriers to change are often reduced when many different people are involved in trying something out on a small scale before implementation.

The PDSA cycle

So why test a change before implementing it?

- less time, money and risk are involved
- the process is a powerful tool for learning. As much is learned from ideas that do not work as from those that do
- it is safer and less disruptive for patients and staff
- where people have been involved in testing and developing the ideas, there is often less resistance on implementation

How to test:

- plan multiple cycles to test. Ideas can be adapted from other services, meaning that there is already evidence that the change works
- test on a really small scale. Start with one patient or with one clinician at one afternoon clinic and then increase the numbers involved as the ideas are refined
- test the proposed change with volunteers, people who believe in the improvement that is proposed. Do not try to convert people to accepting the change at this stage
- only implement the idea when you are confident you have considered and tested all the possible ways of achieving the change

2.6 Other models

There are a variety of other models to help teams set their aims, measures and targets and then plan the introduction of changes that will result in improvement. RAID is another model for change currently used by the Clinical Governance Support Team of the Modernisation Agency. RAID stands for:

- review:
  look at the current situation and prepare the organisation for change
- agree:
  ensure staff are signed up to the proposed changes
- implement:
  put in place the proposed changes
- demonstrate:
  show that the changes have made improvements.

Case study
Orthopaedic Service in the South East
When mapping the orthopaedic patient's journey, a team realised that many patients had to stay in hospital over the weekend waiting for physiotherapy. The team carried out a PDSA cycle to introduce weekend physiotherapy onto two orthopaedic wards over two weekends, and monitored the results. These showed that the length of stay reduced for patients involved in the test. A further test cycle was carried out over the next two weekends, when the service was withdrawn. This was to make sure that it was the service change, and not other external factors, that caused the improvement. Results of this second test showed that the length of stay increased for those patients not receiving the weekend physiotherapy service. The weekend physiotherapy service has now been introduced for two orthopaedic wards.

3. What is a process?

A good definition of a process describes it as a series of connected steps or actions to achieve an outcome.

A process has the following characteristics:
- a starting point and an end point. This is the scope
- a purpose or aim for the outcome
- rules governing the standard or quality of inputs throughout the process
- it is usually linked to other processes
- it can be simple and short, or complex and long

Patient processes in healthcare
Patient processes have often evolved over the years as changes have been grafted on to established working practices. There can be many different layers in addition to the patient process or journey. These include communication processes and administration or paperwork processes, and often involve a number of organisations or departments. It's no wonder that they are not always as effective as they should be.

Examples of different processes:
- from first developing symptoms of a gastric ulcer to being discharged as fit
- from a referral letter being typed in the GP's surgery to the appointment letter arriving with the patient
- from the doctor saying that you need a chest x-ray to knowing the results

4. The benefits of mapping and analysing the patient journey

Process mapping is a really simple exercise. It is one of the most powerful ways for multi-disciplinary teams to understand the real problems from the patients' perspective, and to identify opportunities for improvement.

A map of the patient's journey will give you:

- a key starting-point to any improvement project, large or small
  – tailored to suit your own organisation or individual style
- the opportunity to bring together multi-disciplinary teams from primary, secondary, tertiary and social care of all roles and professions and to create a culture of ownership, responsibility and accountability
- an overview of the complete process
  – helping staff to understand, often for the first time, how complicated the systems can be for patients. For example, how many times the patient has to wait (often unnecessarily), how many visits they make to hospital and how many different people they meet
- an aid to help plan effectively where to test ideas for improvements that are likely to have the most impact on the project aims
- brilliant ideas – especially from staff who don't normally have the opportunity to contribute to service organisation, but who really know how things work
- an event that is interactive, that gets people involved and talking
- an end product – the map – which is easy to understand and highly visual

Process mapping is also easy, creative and fun.

Case study
Orthopaedic Service in the South West
The Trust opted to map the whole patient journey, from referral to discharge from the orthopaedic service. It took time but gave a clear idea of some of the key issues and frustrations. They had not realised how many hoops the patient had to jump through in order to get from beginning to end. The team found the map an invaluable source of reference for their improvement work from the beginning. They realised they had to carefully prioritise the changes to be made. They focused on the 'achievable' and were able to make significant improvements as a consequence.

5. Mapping the patient's jouney

5.1 Getting started

Ideally you should have the support of people in the following roles:

Sponsors: these are senior leaders in the organisation/service who:

- sanction the mapping event and the resulting changes
- make links between the service, the organisation and the health community
- align the key stakeholders in the service and beyond
- obtain and mobilise participation
- handle any 'power' issues
- convey support in one to one and small group meetings
- talk to those who have concerns
- create an environment that allows change to happen
- devote time, attention, energy and action to the cause

Project Leaders/Change Agents: these are respected clinical or managerial staff who:

- facilitate the change
- help those who deliver the service to improve it
- provide support and expertise
- plan the process mapping event
- build relationships
- ensure deadlines are met
- maintain momentum
- ensure effective communication to all

Champions: these are respected clinical leaders who:

- believe in the improvement project and demonstrate support in public
- are willing to test out new ideas
- reach out to colleagues who do not support a change and try to influence them
- contribute expertise and experience

5.2 Organising an event to map the patient journey

As an Improvement Leader, you will find you need to devote time, effort and energy to all stages of organising the event. Developing and maintaining good relationships will be crucial.

Preparation

- identify the patient group(s) whose care would benefit most by redesign. Consider groups of patients who:
  – share common characteristics
  – who present in a relatively high volume
  – whose appearance in any day, week or month is highly predictable
  – whose care could be standardised based on good evidence
  – whose care could be relatively fast if we took out all the waits and delays in the system
  – whose care could be mainly pre-scheduled

- define the objectives, scope and focus of the workshop
- meet with clinical, managerial and service leaders beforehand so that they feel involved in and committed to the process
- identify the staff groups that are involved in the relevant stage of patient care. Ideally invite 15-25 representatives to map the patient journey. Any more than this number can be difficult to manage, as you want everyone to feel involved at all times
- organise the event for one full day, or for two half-days, no more than two weeks apart. This will, of course, depend on the length of the pathway you want to map and how complex it is
- arrange a suitable venue, preferably off-site, as this provides a neutral setting and prevents participants dipping in and out

– check the venue is a suitable size with good facilities and food
– give participants at least a month's notice of the event. If you want medical staff to come, you will need to recognise local policies for cancellation and leave
– invite participants; explain their roles; set goals for the event and outline your expectations of what the event should achieve. Emphasise the contribution each participant is expected to make

Running the event

- allow at least an hour for setting up before participants arrive
- get the lead clinician or the general manager to attend and preferably to chair or open the event
- an independent facilitator is really useful as it allows you to participate more fully in the mapping exercise. It also ensures that there is someone who is removed from the process who can ask the more challenging questions without risking a breakdown in working relationships. You might ask someone who is a colleague from another department or different organisation

Other resources needed:

- a roll of brown paper or wallpaper to record the map on
- lots of Post-it notes in several colours
- a flip chart and coloured marker pen

The event will generate lots of comments, thoughts and ideas. You don't want to lose them so have an extra pair of hands ready to help by recording them on separate flip charts: issues and ideas 'car parks'. This will allow you to focus on the job in hand – mapping and analysing the patient journey

- don't be tempted to try and solve the problems until you have fully mapped the process and analysed it. Only then will you and the team be able to think of the ideas for improvement that you may want to test
- make the event practical, visual and fun. Most people like sweets and they help lighten the atmosphere and get people talking

Create and agree a preliminary action plan before the event finishes.
It could include:

- which parts of the process need to be mapped in more detail and how this should be arranged
- who should communicate with the people who have not been able to be at the event
- when and how you are going to generate ideas to test once the process is fully understood

Key messages for participants

- it's not rocket science
- processes are all around us, but in healthcare our roles limit us to seeing only one small part of the whole patient process
- it's not about blaming or criticising anyone or any department
- it leads into other redesign tools and techniques such as:

– measuring for improvement www.modern.nhs.uk/improvementguides/measurement
– involving and improving the experience for patients, carers and staff www.modern.nhs.uk/improvementguides/patients
– managing capacity and demand at the bottlenecks www.modern.nhs.uk/improvementguides/capacity

- it's fun!

Taking it forward

- once a group has mapped the patient journey, check it out with others who were not able to attend the event. Perhaps display it in the staff room for comment. This should help people feel involved and gain commitment
- it is a good idea to take photographs to illustrate the main steps and make a large, portable photo-board showing the patient journey (this could be done before the event as preparation)
- send a copy of the notes and an action plan to each participant as well as to those who couldn't attend
- meet with the service leader and the lead clinician to agree what will happen next, such as finalising the action plan
- at a later date consider mapping the information given to patients and carers:

– who gives information and at what stage?
– what does the information say? are there any duplications or contradictions?
– are there stages in the patient journey when there is no information available?

- don't forget to celebrate successes
- you will need to review the action plan with the project manager and the participants at regular intervals, for example, after one month and then at three-monthly intervals

5.3 How to map a healthcare process

It's always useful before you start to agree some ground rules with the group. These might include:

- respect the diversity of the group and any differences in opinion
- use the five minute rule: if the group cannot agree what happens in five minutes, park the issue and follow it up after the session
- focus on the system as a whole
- avoid blame!

Emphasise that process mapping is about trying to really understand the patient's experience at various stages of their journey and there is no blame attached.

To map the journey:

- define and agree the group of patients to be mapped
- define and agree the scope – that is, the first and last step of the process to be mapped

– be careful not to limit the process unnecessarily

- identify all staff groups involved within the scope of this part of the process
- map that stage of the patient journey
- record on Post-it notes or draw on flip charts **who does what to the patient**
- there are bound to be variations, so record what happens 80% of the time

Concentrate initially on what happens to the patient. Don't get side-tracked by what happens to a referral form or request card. In the process described below the stage between patient step 2 and step 3 is an administration process and may cause the patient a long wait. These are parallel processes, which you may need to map separately in detail.

Example: a short part of a patient's journey

Who does what to the patient?

1. GP tells patient that they are being referred to the hospital
2. GP tells patient to go home to wait
3. appointment letter is delivered by post to the patient
4. patient arrives at the hospital for their appointment
5. clinic clerk receives the patient and checks their details
6. nurse checks the patient's details before they see a doctor
7. doctor examines the patient
8. doctor refers the patient to the relevant department(s) for diagnostic tests

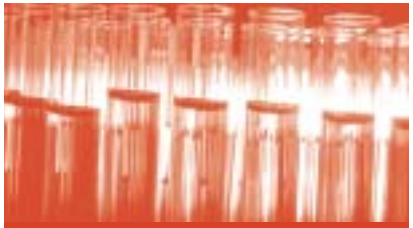
6. Analysing a patient's journey

Having mapped the patient journey, get the team to analyse it by considering the following questions:

- how many steps are there for the patient? This is often a real revelation to staff
- how many times is the patient passed from one person to another (hand-off)?
- what is the approximate time taken for each step (task time)?
- what is the approximate time between each step (wait time)?
- what is the approximate time between the first and the last step?
- when does the patient join a queue or is put on a waiting list?
- how many steps add no value for the patient? Imagine that you, or your parent or child, is the patient – what steps add nothing to the care being received?
- where are there problems for patients? What do patients complain about?
- where are there problems for staff?

Ask:

- is the patient getting the most appropriate care?
- is the most appropriate person giving the care?
- is the care being given at the most appropriate time?
- is the care being given in the ideal place?



Case study
Mental Health Service in London

A Mental Health Trust in London and the Community Mental Health Trusts realised there were problems with access to outpatient clinics, which were being described as a 'lottery system'. The team used process mapping to really understand how new patients were referred, where they had to wait and what the patient experienced. The team soon realised that there were high non-attendance rates, lengthy waiting lists, misuse of consultant resources and a high potential for gaps in communication.

Case study
Department of Psychological Medicine in the Midlands
The Department of Psychological Medicine is a key point of access to mental health. A team from the department, primary care, local acute hospitals and mental health services got together to map the patients' pathway and the administrative process. They are using the understanding to develop a referral protocol and an electronic referral form for the department as well as for access to other mental health services.

At the steps where there are the longest delays:

- keep asking 'why' to try to discover the real reason for the delay. For example, if your starting point is 'the clinic always overruns and patients have to wait for a long time' ask 'why'. Possible response: 'because the consultant does not have time to see all his patients in clinic.' Why? Possible response: 'because he has to see everyone who attends (including first visit assessments and follow-up patients).' Why? Possible response: 'because that is what he has always done' – and so on. In this case, for example, the change might be to increase the nurse specialists' responsibilities so that they see routine follow-up patients – freeing up the consultant to spend more time with new referrals or ask if a follow-up visit by the patient is really needed at all

- estimate the number of queues (groups of people waiting) and the amount of time and effort required to manage those queues.
- look to see if administration work or patients are 'batched'. This is when the work accumulates for hours, or even days, before it is considered to be enough to bother attending to. For example, reporting a whole week's X-rays in one go, or allocating appointments for a whole week's referral letters at one time, rather than dealing with them as they come in
- look to see if the 'expert is doing what they should be doing', or whether they have to do other things that take up their time. 'Experts' include all staff with expertise including medical, nursing, administration and technical staff
- map in more detail those parts of the process where there are particular waits and delays for patients. These are often the parallel processes for tests or administration

Case study
GP's surgery in Northern England
The surgery had 6 partners, each with 3 different appointment types: urgent, soon and non-urgent. With two surgeries per day, this meant there were up to 36 different queues to manage each day and 180 queues to manage from Monday to Friday.

Parallel processes are really important and often are the cause of delays for patients and frustration for staff. Mapping, analysing and improving parallel processes will often deliver great benefits. Parallel processes include:

- processes involved in generating a referral letter and in getting the appointment details to the patient
- processes involved in dealing with pathology specimens – from the time the specimen is taken to the point when the requesting clinician receives the test results
- processes involved in the imaging reporting system - from the image being requested to the image and the report being received by the referring clinician
- processes involved in medical records – from getting the notes to returning them to 'file'
- processes involved in communicating by letter – from deciding the need for a letter, to the letter being received by the designated person

Activity and role lane mapping

For the parts of the process that are causing problems, consider activity and role 'lane mapping'. To do this, take the role out of the activity so that

nurse records vital signs
becomes
record vital signs

List the process activities and the roles involved and ask 'who does this now?' as in the diagram below.

This could be followed by discussion around who could do each activity if it were redesigned.

Activity and role lane mapping – current situation in an outpatient clinic

Activity/role	clerk	nurse	porter	doctor
Move patient		x	x	
Record details	x		x	
Record vital signs		x		x
Take history		x		x
Examine patient				x
Write pathology request				x
Write imaging request				x

7. Redesigning a patient's journey

Redesign around the patient

Always focus on the patient when considering what changes to make. Avoid processes arranged around the needs of staff, departments or organisations at the expense of patient care and experience.

Change ideas

Co-ordinate the patient process of care:

- establish formal links between primary and secondary care teams to manage the transition from inpatient to outpatient as effectively and easily as possible
- create opportunities for staff across the wider process of care to meet, share problems and develop integrated objectives
- fax or email orders and clinical information between care settings
- reduce the number of hand-offs. Each time there is a hand-off there is potential for delay, duplication of work and errors
- reduce the number of steps in the process – particularly those that do not add value

Pre plan and pre schedule care at times to suit the patient:

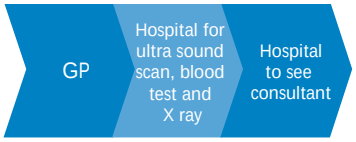
- co-ordinate the scheduling of appointments for patients with multiple providers. For example, if a patient needs multiple tests, book the test with the longest wait for results first. This way all the results are given at the same time
- provide the patient with a comprehensive care plan with booked, convenient times for future care
- create a trigger system so that booking a diagnostic test triggers a future appointment

Reduce the number of times a patient has to travel to visit the hospital or surgery:

- reduce the number of follow-up appointments for patients, freeing up clinic slots to see new referrals
- ask if the patient really needs to return to clinic to see a consultant? If not, can the follow-up be done by someone else in another location – for example, by the GP or community nurse?
- consider introducing open follow-up appointments where the patient requests a follow-up only if indicated by the progress of their condition
- are there procedures that could be, done in the same visit?
- can clinics be held in parallel?
- could the patient have several investigations at the same visit?

Case study
Ovarian Cancer Service in London
When the team got together with staff to map the patients' journey for patients with suspected ovarian cancer, they realised how many times the patient had to go between the GP and the hospital before they were diagnosed and how long it took.

This was redesigned to cut out multiple visits to hospital and reduced the time for the process:



- could patients complete a symptom or information form at home before attending a clinic?
- could patients carry their own records? This would mean they wouldn't have to fill in the same information several times
- could the care be carried out nearer to the patient's home, or at the place of the patient's choice?

Reduce or eliminate batching:
- do work when it arrives, rather than waiting to deal with a whole set of similar tasks at the same time

Reduce the number of queues to be managed.

Extend staff roles:
- encourage staff flexibility in the roles they undertake and the hours they work
- nurse – or radiographer-led clinics can reduce delays and improve the patient experience

Match capacity and demand:
- in our experience, the process of truly matching capacity and demand has led to some of the most exciting changes in a healthcare process. The Improvement Leaders' Guide to matching capacity and demand www.modern.nhs.uk/improvementguides/capacity explains the most effective ways to understand the capacity and demand of a service and reduce or eliminate the 'bottlenecks' in the system which often cause patients to wait.

More change ideas

You can find more information in the useful reading section on the web site, including lots of ideas and examples where teams have made improvements in a wide range of healthcare settings.
www.modern.nhs.uk/improvementguides/reading

Case study
Endoscopy Service in the West Midlands
The team started with long and variable waits for patients and the realisation that they were a key bottleneck in the journey for cancer patients. The team mapped the patients' endoscopy journey to understand where the problem areas were, and created what they wanted the ideal patient's journey to be.
By doing this, staff became more aware of the problems patients experienced and were more willing to change. Among other things, they found that they were managing more than 73 queues. So the whole booking process was redesigned, booking rules agreed and booked appointments started. This has enabled demand and capacity to be measured, thus helping with further redesign ideas.

8. Activities to support process mapping

Before organising any activity, consider the following:
- who is the audience?
- what is their prior knowledge?
- is the location and timing of the activity correct?
- recognise and value that participants will want to work and learn in different ways. Try to provide information and activities to suit all learning preferences

Why is this important?
Some of us take to the idea of change more easily than others. Some like to develop ideas through activities and discussions, while others prefer to have time to think by themselves. We are all different and need to be valued for our differences. The Improvement Leaders' Guide to Managing the Human Dimensions of Change www.modern.nhs.uk/improvementguides/human gives ideas of how to ensure the best possible outcome when working with different people

8.1 Building a tower

Objective
- to encourage lateral thinking

Benefits
- can be used as ice breaker

Time required
- five minutes maximum

Preparation
- participants to work in teams of five
- each team has a pack of cards and an area with a flat surface
- facilitator to be judge

Instructions to participants
- you have two minutes to build the tallest tower

Learning points
- look and encourage lateral thinking – for example, cards on top of door or on head of tallest participant
- encourage lateral thinking when considering ways to overcome problems that are identified

8.2 Customer needs

Objective
- to help participants think about quality and process

Benefits
- very easy to do

Time required
- ten minutes

Preparation
- resources: flip chart paper and pens

Instructions to participants
- think about what we as customers want at a supermarket
- participants discuss in small groups and collect their ideas on flip chart
- facilitator summarises finding of whole group

Learning points
The elements of any good service are similar to what patients want from healthcare. Points that come out usually include:
- process: no wait, no crowds, convenient opening hours etc
- facilities: well laid out, good signposting, extras eg café
- staff: courteous, knowledgeable, available
- technology: internet access
- quality: value for money, good quality products

8.3 Mapping an everyday process

Objective
- to help participants understand the elements of a basic process in an everyday setting

Benefits
- easy to do
- good introduction to concept of process thinking

Time required
- ten minutes, with ten minutes for discussion

Preparation
- participants: work in small groups, preferably on round tables in cabaret style
- resources: flip chart paper, pens and Post-it notes

Instructions to participants
- think about and map the process of going to work in the morning
- where does the process start and where does it end?
- what are the main process steps?

Analyse by considering the following
- what are the outcomes?
- what are the quality standards?
- do any steps run in parallel?
- where are the bottlenecks and how do you manage them?

Learning points
- identifying process steps
- recognising that processes, bottlenecks and parallel processes are familiar concepts
- understanding and relating everyday bottleneck management with healthcare
- process mapping is easy, fun and anyone can do it

Variations
- any process common to all participants can be mapped, for example making a breakfast of tea, toast and a boiled egg

8.4 Mapping a healthcare process

Objective
- to give participants an opportunity to experience mapping and analysing a healthcare process

Benefits
- demonstrates key points when training facilitators to lead process mapping with their own teams

Time required
- defining and mapping the process, 60 minutes
- process analysis, 45 minutes

Preparation
- participants: small groups, preferably working in teams, who have some knowledge of a common care pathway, in their own breakout room
- resources: lots of Post-it notes, brown paper or wall paper, marker pens

Instructions to participants to
- think about their common process and agree start and end points and outputs
- map the key process steps of the patient journey
- encourage teams to view each other's maps and ask questions

Analyse by identifying:
- number of steps in process
– number of steps that do not add value to the patient
– steps where patients have to wait

Redesign by considering:
- changes they would like to test
- encourage teams to share possible changes and consider if these could be adapted for their own process

Learning points
- that process mapping is easy and fun
- how much there is to understand about what really happens to patients
- a good activity for you and your team to start with

9. Frequently asked questions and answers

Question
How can we make sure that we involve patients and their carers?

Answer
This is so important that there is an Improvement Leaders' Guide dedicated to this topic. Everything we do should be focused on patients and their carers – so they must be involved in our improvement programmes and projects from the very beginning. We are able to offer advice based on current thinking and experience of how to involve patients and carers in the most effective way, with warnings of possible pitfalls.
www.modern.nhs.uk/improvementguides/patients

Question
How do I persuade colleagues of the value of spending more than an hour mapping the service?

Answer
Explain that this is the best way to start making improvements and perhaps refer them to other services or colleagues who have done it. Stress the importance of understanding their contribution to the work of the service. Also consider if the team is ready for change and whether the problem with arranging a meeting is really a reluctance to be involved. In which case engage your change agents, champions and sponsors – perhaps a letter from the Chief Executive may help. Understand also that some of us take to the idea of change more easily than others. Some like to develop ideas though activities and discussions, while others prefer to have time to think by themselves. We are all different and need to be valued for our differences. The Improvement Leaders' Guide to the Human Dimensions of Change will give you ideas of how to ensure the best possible outcome when working with different people.
www.modern.nhs.uk/improvementguides/human

Question
What happens if you cannot get everyone together at the same time?

Answer
Consider any of the following variations on process mapping
- mapping can take place with very small groups or even getting one or two people to walk through and record the patient's journey. Use this to take to other small groups or even individuals
- issuing the instructions of how to map and setting up the blank "map" in a place where people go to have their coffee breaks. Encourage them to keep adding to the map over a two-week period and then produce a tidied up version for final amendments
- organise a process mapping day, inviting all relevant staff to 'drop in' at any point within a given timeframe.

Question
Where do you start when you know that you need to look at the whole patient process, from the patient's visit to the GP to the time they are discharged as fit?

Answer
You may want to do a very high level process map with a small group of stakeholders to establish where there is the greatest potential for improvement. Then focus on those stages in the process in more detail.

Question
Why do you suggest using Post-it notes and paper, when there are some excellent computer programmes around?

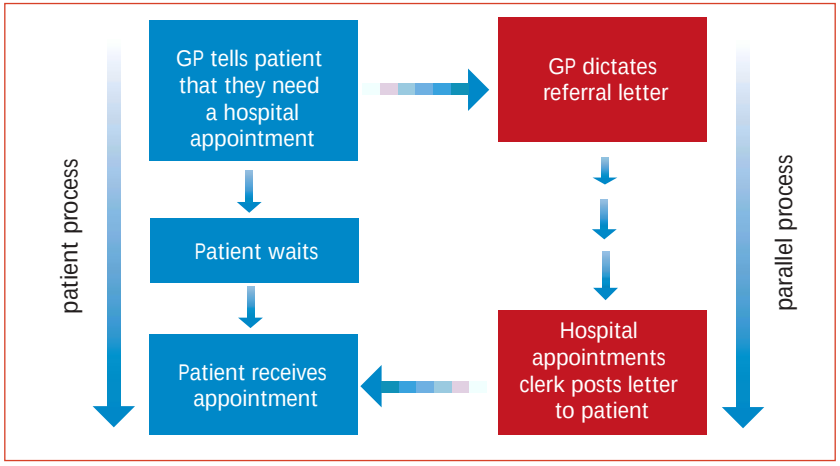
Answer
One of the main objectives of process mapping is getting people around a table talking to each other and understanding each other's problems. The excellent software available could be really useful when everyone agrees on the process map. It allows you to organise the information from the Post-it notes into a more manageable format.

Question
What other kinds of processes can I map?

Answer
Any processes (parallel processes) that cause problems to patients, their carers or staff can be mapped, including:

- administration processes e.g. referral (see picture below)

A parallel administration process



- diagnostic processes e.g. imaging, pathology
- communications processes between primary and secondary care
- supporting services e.g. catering, ambulance

Question
How can you separate out the parallel processes from patient processes?

Answer
The two best and easiest ways are to

- make them look different by using a different colour
- map the parallel process alongside, but separate from the patient process

Question
Where can I get more help with process mapping?

Answer
There are more and more people becoming experienced in mapping and analysing and redesigning patient processes. If you need help, talk things through with your colleagues in your healthcare organisation or contact anyone involved in any of the Modernisation Agency programmes in your health community, or visit the Modernisation Agency web site www.modern.nhs.uk There are a number of ways to contact others who will be able to help you.

Question
Can you suggest an agenda for a process-mapping workshop?

Answer
A good agenda might include:

- introductions
- agreeing the aims for the day
- setting the scene – short presentations of background information or progress so far
- mapping the current process
- feedback, discuss and agree that the process map is correct
- analysing the process
- identifying what is done well / what could be done better
- feedback and look for opportunities to make improvements
- introducing the idea of PDSA and how to test ideas for improvement
- actions and further work – who, what, where, when, etc

Remember that you may need to split the participants into groups, depending on the scope of the process and the number of participants

Question
How do I handle the meeting – supposing it gets out of hand or doesn't take off?

Answer
It is always helpful to engage one or two other colleagues who have experience of process mapping. One can be helping the team to map and the other can be noting any ideas or issues that are bound to come up during the event. This will help to give you confidence. But you will find that, with the right preparation, this will be a meeting to which people really want to contribute.

Question
How will all this really help us?

Answer
The combination of process mapping and analysis, measuring for improvement www.modern.nhs.uk/improvementguides/measurement and matching capacity and demand www.modern.nhs.uk/improvementguides/capacity will show when changes introduced begin to make improvements – a great boost for the team and other interested people. It will also help to show other areas for improvement and provide wonderful support in business cases for extra resources, as you can show that all other options have been considered and tested.

Question
How can I be sure that when we make a change it doesn't just fizzle out over time?

Answer
Planning to keep the improvement is just as important as making the change in the first place and is a real challenge to anyone involved in improvement. It is also important that you and your team keep building on your initial improvement ideas and that you share your learning with other areas of healthcare. This way, the maximum numbers of patients can benefit. The Improvement Leaders' Guide to Sustainability and Spread considers these issues in far more detail. www.modern.nhs.uk/improvementguides/sustainability

A few words to end

Whilst you may not have everything right from the outset, you will make quicker progress in mapping and analysing a patients' process if there is a willingness and commitment to:

- making real improvements in your service
- describing your service honestly, warts and all
- sharing your conclusions with everyone involved in delivering that service, including your patients and their carers
- allowing the enthusiasts to get on and test out the good ideas that will come out of process mapping

Process mapping will give you

- a living document that shows the current patient care pathway and some great ideas from colleagues, patients and carers about changes that will make a real difference
- a natural pathway into some of the other tools and techniques that have been shown to be invaluable when making service improvements
- an improved service which both enhances your relationship with patients and the quality of the working life for staff working in that service

10. Useful reading for more information and ideas

Much has been written about improvement and change. So much, that it is very easy to get overwhelmed by all the material. So we've gathered together the things that we think you might find most useful. We would like to guide you in three directions:

1. Toolkits

These have been developed by national and regional programmes for staff addressing the issues for one particular aspect of care. This can range from general workforce planning issues to addressing the problems of a particular service, e.g. mental health, endoscopy or orthopaedics. They are written for clinical staff in the specific service and will give you many more change ideas, lots of case studies, national contact names and information on how to access up-to-date improvement activity in that particular area or service.
Use when you have identified a problem associated with a particular service.

2. Books, papers and articles

These have been written by international experts in their field addressing the science and theory behind many of the tried and tested tools and techniques in the guides. Use when you want a deeper understanding in any of the topics.

3. Websites

Time is precious and the World Wide Web is vast. Therefore, we want to guide you to the selected web sites designed to extend your knowledge and thinking on improvement theory. Use when you want to extend your general knowledge and gain access to improvement thinking around the world.

So visit the Improvement Leaders' Guide web site for the useful reading section www.modern.nhs.uk/improvementguides/reading This will be continuously updated as new editions are published and you tell us what you find useful.

11. Glossary of terms

Some of the words used in improvement have been defined. Use them carefully.

Activity	All the work done. This does not necessarily reflect capacity or demand, as the activity in June may well include demand carried over from May, April, or even March
Backlog	Previous demand that has not yet been dealt with, showing itself as a queue or a waiting list
Batching	Piling up a type of work as it comes in until a later time when all this type of work is done together
Bottleneck	Part of the system where patient flow is obstructed, causing waits and delays
Capacity	Resources available to do work. For example, the number of pieces of equipment available multiplied by the hours of staff time available to run it
Constraint	The actual cause of the bottleneck. Usually a necessary skill or piece of equipment *[NB Goldratt uses constraint to mean the same as bottleneck, but recognises that there are different types of constraints]*
Demand	All the requests/referrals coming in from all sources
Hand-off	When the patient is passed on from one healthcare professional to another
Parallel processes	Different activities that take place in the same time period
Queue	Work waiting to be done at a given point. For example, patients waiting to be seen in the clinic or people on a waiting list to come in to hospital for surgery.
Scope	A definition of the boundaries of the area under examination. For example, the beginning and end points of the stage of the patient journey under review