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The *Action On Orthopaedics* programme and the Orthopaedic Services Collaborative have given many clinical teams an excellent opportunity to review and improve how their services are organised. High quality modern surgical practice has to be matched by efficient and up-to-date organisation of how NHS services are provided to patients. I am pleased that this guide is making the learning from these programmes available to a wider audience. As Clinical Chair of one of the Collaboratives, I have seen at first hand how the approaches described in this guide can benefit patients and staff.

Modern orthopaedic services depend on an effective multi-disciplinary team, and the Collaborative and *Action On Orthopaedics* programmes have demonstrated the potential for all professional disciplines to contribute to better care for patients. New roles for nurses and allied health professionals mean that they will take on some tasks previously carried out by medical staff. These new roles will need appropriate training and supervision to ensure that quality is maintained, but will free medical staff to do the work that only they can do.

As well as their responsibility to patients, consultants have a responsibility to provide high quality training. Trainees, in surgery and other professional disciplines, need an environment that provides the time, facilities and opportunities to develop their knowledge and skills. Those responsible for managing orthopaedic services must ensure that new ways of working enhance the quality of training.

There is no doubt that providing a world-class trauma and orthopaedic service in the NHS will require substantial additional staff and resources, and the government has given a commitment to providing these. Some of the new ways of working described in this guide will require more staff and more money in order to be effective.

The British Orthopaedic Association supports the principles behind *Improving Orthopaedic Services*. The examples of innovation described in this booklet are helpful: all of them have been used in clinical practice and many of them are already in widespread use. The aim of the guide is not to define absolute standards of best practice, but to spread common-sense ideas and to stimulate thinking. I would encourage colleagues to consider how they can use the principles and examples to make improvements in their own service.

Professor Paul Gregg  
President  
British Orthopaedic Association
Executive Summary

Improving Orthopaedic Services has been produced by two programmes within the NHS Modernisation Agency: Action On Orthopaedics and the Orthopaedics Collaborative. It is based on the experiences and learning from the 16 Action On pilot sites and the 160 or so teams involved in the Collaborative. However, it does not seek to lay down definitive standards of best practice. Instead its purpose is to help those involved in the provision of orthopaedic services to review their procedures in the light of the wealth of experience gained by both the Collaborative and Action On Orthopaedics.

After a brief introduction, the guide follows a logical path through the review process by looking at three sequential steps: diagnosis, solutions and implementation. The appendices then give more details about Action On and the Collaborative, as well as strategies for improvement and further sources of information.

The “Diagnosis” chapter shows the key steps where things can go wrong in the orthopaedic patient’s journey, from referral to discharge. It highlights key statistics, such as the fact that some 10% - 40% of new referrals from GPs do not need a surgical opinion. And that 5% - 40% of patients are found to be not fit for surgery at their pre-operative assessment. Process mapping the patient’s treatment journey will enable services to find out where their particular delays and bottlenecks occur.

Once problems have been diagnosed, the “Solutions” chapter may help to resolve them. It looks at three very common problems identified by the collaborative and Action On Orthopaedics:

1. The outpatient bottleneck
2. Patients being listed for surgery before they are ready
3. Delays and bottlenecks in the admission and surgery process

The guide offers approaches that can help each problem, such as:

1. Allowing professionals other than the consultant to decide what is the best pathway for an individual patient
2. Introducing pre-operative assessment where this is not currently performed, or refining it where it is performed - perhaps by involving other healthcare workers
3. The co-ordination of admissions by dedicated staff and the introduction of early discharge schemes

Finally, the “Implementation” chapter considers the problems encountered in implementing and sustaining change. It recommends running small change cycles sooner, rather than large cycles later. It points up the impact of social factors in the change process, emphasising the importance of conversation and interaction among trusted peers. To help in this process, it lists several “selling points” identified by surgeons, such as full theatre lists and freeing up time: both for individual patients and for teaching juniors.
Chapter 1: Introduction

This guide has been written to help clinicians, managers and service commissioners to improve services for their patients. It gives guidance on how to identify problems and bottlenecks, and to understand their causes. It suggests some principles for improvement, and examples of how the principles can be applied to improve services. It covers some tools and techniques to help bring about sustainable change.

The thinking and examples in this guide have come from two major programmes to improve trauma and orthopaedic services in England - Action On Orthopaedics and the Orthopaedic Services Collaborative. More information about these programmes is given at Appendix 1.

Acknowledgement is due to all the staff who have participated in these programmes, for their willingness to try out new ideas, for sharing their learning about what worked and what didn’t, and above all for their enthusiasm to carry on improving services for their patients.

How to use this guide

The guide is aimed at clinicians and managers who provide or commission services, and assumes that you do not believe that your service is already perfect! It aims to help you take three steps:

**Diagnosis**

*We know that our service could be better. How can we understand what the problems are? How can we be sure we’re addressing the right problem?*

**Solutions**

*Which solutions will help solve the problems we’ve identified? What are the likely benefits? What are the costs?*

**Implementation**

*How do we implement the solutions? How can we maximise the chances of success, and of sustaining the improvement? How do we influence our clinical and managerial colleagues? Where do we start?*

The guide refers to a number of tools and techniques for improvement which will support the “how?” questions. To find out more about these:

1. *Most NHS Trusts now have modernisation or service improvement teams, with people who are trained in process mapping.*

2. *The NHS Modernisation Agency has published a series of Improvement Leaders’ Guides, and these give more information about tools and techniques for improvement. Further details are given at Appendix 4.*
Resources or redesign?
Redesign and resources go hand in hand. Redesigning the way services are organised can undoubtedly bring big improvements in patients’ experience. It can allow more patients to be treated, and can reduce waiting times - sometimes dramatically. But there is no doubt that trauma and orthopaedic services do need extra resources: both to provide fast, convenient, high quality patient care as well as to treat more patients and so reduce the waiting list backlog. The NHS has already invested significant additional capital for equipment and facilities, and will continue to do so. The need for additional beds and staff will be quantified through local capacity plans. The number of consultant orthopaedic surgeons will continue to increase. We have to move away from the old-fashioned view that the way to get more resources is to have long waiting lists, and that reducing waiting times will weaken the case for additional resources. Redesigning services can often show quick improvements for patients, and will ensure that extra resources are spent effectively, in the right place.

Common solutions for common problems
There is no single model for an orthopaedic service. There are some 220 hospital orthopaedic departments in England. They serve different kinds of communities and different patients. They provide services in different ways, with different staff and different levels of resource. But most services have some problems in common: patients don’t always see the right person first time, patients wait longer than they or staff would like, appointments and operations are cancelled and there are breakdowns in communication between staff in the various parts of the service.

In the same way, there is no single blueprint for improving orthopaedic services. What works in Hospital A may not work in Hospital B. The important thing is to understand the principle behind Hospital A’s change, and to translate that into a change that will work at Hospital B.

The guide sets out the change principles that other services have found the most helpful.
Evidence from the *Action On* and Collaborative programmes

Data from the *Action On* Orthopaedics pilot sites and services involved in the Orthopaedic Collaborative shows the key steps where things go wrong in the orthopaedic patient’s pathway:

1. **GP refers patient to specialist service**
2. **Put on waiting list**
3. **Called for pre-op asst (POA)**
4. **Admitted**
5. **Discharged**

- **10% - 40% of new referrals don’t need a surgical opinion**
- **5% - 15% of patients don’t want/need surgery. Waiting list inflated; wasted admin time**
- **1% - 5% of patients not fit at time of admission. Have to be rescheduled. Theatre slot lost**
- **5% - 30% of new referrals do not attend (DNA)**
- **5% - 40% of patients not fit for surgery at POA. Referred back to GP: surgery has to be rescheduled**
- **5% - 15% of discharges delayed because home arrangements not ready**
Similar problems were picked up for patients with fractured neck of femur:

- Variable pain and pressure area management
- Variable approach to management of fluids
- Avoidable delays in admission to the ward
- Wasted time in theatres
- Extended length of stay (LOS) - inconsistent approach to mobilisation
- Patients not engaged and empowered
- Variable pain management and overall patient experience
- Inconsistent approach to nutrition, hydration and prevention of deep vein thrombosis, also management of medical conditions and associated complications

And for patients with chronic back pain:

- Patients may have unrealistic expectations from the outset
- No clear guidelines
- Appropriateness of referral
- Prompts vicious cycle of inappropriate referral and overload
- Some patients inappropriately managed
- Assessment incomplete
- Delays between professionals once in the system
- Duplication and time wasted on waiting lists
- Inconsistent access to investigations
- Patients may be grateful for a less than ideal service
- Staff not empowered
- Inconsistent approach to management, promoting a sickness mindset
- Patients not engaged or empowered
- Variable pain management and overall patient experience
- Inconsistent management
- Continuous cycle of re-admission into and around the service
- Impact on home and working life
- Disenchanted patients - nowhere else to go

These findings show a huge amount of wasted effort and “re-work” for the NHS, and a great deal of frustration, inconvenience and disappointment for patients.
Chapter 2: Diagnosis

How to diagnose problems

You need to do the diagnosis stage for your own service – don’t rely on assumptions, anecdotes, or what other services have found. Otherwise there is a risk that you will put a lot of effort into solving the wrong problem.

Process mapping the patient’s pathway

Many different staff are involved in the patient’s treatment journey. Very few people accompany the patient along the whole journey, and consequently very few staff see what it looks like. Process mapping is a simple and powerful technique for understanding the whole pathway and highlighting where problems occur. It helps a team to know where to start making improvements that will have the biggest impact for patients and staff.

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

1. A starting-point for improving the service in your own organisation
2. An opportunity to bring together multi-disciplinary teams, and to create a culture of shared responsibility for improving the service
3. An overview of the complete process – helping staff to understand, often for the first time, how complicated the system can be for patients
4. A physical product: a sheet of (usually very long) paper, pinned to the wall that shows every step in the patient’s journey, the staff involved in each step, how long each step takes and how long the patient waits between steps
5. A baseline against which to test improvements
6. Brilliant ideas – especially from staff who don’t normally have the opportunity to contribute to service organisation, but who really know how things work

Involving patients

Our experience is that when staff have mapped the patient journey, the results need to be checked with patients themselves. Their experience of what actually happens is sometimes very different to what staff think is happening. Hearing this directly from patients can be a powerful lever to help staff understand that improvements are necessary.

Some techniques for involving patients in improving care are:

1. Critical incident technique – unstructured or semi-structured interviews
2. Focus groups
3. Patient shadowing
4. Patient diaries
5. Discovery interviews
6. Questionnaires
Chapter 2: Diagnosis

The Improvement Leaders’ Guides give more information about how and when to use these techniques.

Quantify the problems

To complete the process map, you need to quantify the problems you have found. For example:

1. What proportion of new patient referrals did not need a surgical opinion?
2. How many hospital visits did patients make before a diagnosis and treatment plan were agreed?
3. How many patients came off the waiting list because they did not want, or need, the operation for which they were listed?
4. What proportion of patients who came for pre-operative assessment were found to be unfit?
5. How many patients had their admission or operation cancelled because beds, staff or equipment were not available?
6. How many bed-days were taken by patients who came into hospital earlier than necessary simply to ensure that they had a bed?
7. What were the causes of delayed discharges, and how many acute bed-days did each account for?
Chapter 3: Solutions

The “diagnosis” step will have given you:

1. A process map of the patient’s journey
2. An understanding and quantification of where the problems occur

Experience from Action On Orthopaedics and the Orthopaedic Collaborative identifies three very common problem areas. This chapter looks at these three areas, and gives examples that have proved to be safe and effective in resolving them.
Chapter 3: Solutions

**Problem 1: the outpatient bottleneck**

For most patients, the first point of contact with the specialist service is referral to a consultant orthopaedic surgeon, usually with a long wait. The consultant decides which pathway the patient travels next:

1. Refer back to the GP with advice
2. Wait and see
3. Investigations
4. Treatment by another professional
5. Surgery

Since (under the current system) virtually every patient has to see the consultant, and since consultant surgeons are the scarcest resource, this creates a bottleneck.

Between 10%-40% of patients referred to an orthopaedic consultant do not need a surgical opinion, or do not need this until other treatment options have been tried. It would be better for the patient to be put on the right pathway from the outset, and it would be better for the service to ensure that the consultant’s time is spent on seeing the patients who do need a surgical opinion.

**Approaches that can help**

1. Better information to GPs and patients about which pathway is best for a given set of symptoms (written or web-based guidelines, email/phone advice from specialist service). A local forum for clinical discussion can help to develop agreement, and local programmes of education for GPs may be useful.

2. Agree care pathways for common conditions/procedures. The most common are back pain, joint replacement, knee pain and carpal tunnel syndrome. The benefits of an agreed care pathway are:
   
   i. Consistency in clinical policies
   ii. All staff know what treatment and care should be given to the patient
   iii. The patient understands the treatment plan too

3. Where possible, Primary Care Trusts (PCTs) to identify and develop GPs with a special interest (GPwSIs) in orthopaedics or musculoskeletal medicine.

4. Let the GP refer direct to other pathways (eg imaging, orthotics, podiatry, extended scope physiotherapy, GPwSI)
Chapter 3: Solutions

5. Let other professionals decide which is the best pathway. Other disciplines may be more aware of non-surgical options, and have shorter waits because they are less scarce resources. So the decision on the pathway is made much earlier.

Examples of how to do this:

i. All patients who are referred to the specialist service are seen in a multi-disciplinary clinic (physio, occupational therapist, rheumatologist, musculo-skeletal physician/GPwSI). Decision taken on which pathway is best. Clear definition of who is responsible for the patient’s ongoing management is essential. At first sight this appears more resource-intensive than the traditional sequential approach, but this will be balanced by reducing appointments with the “wrong” specialist.

ii. All referral letters seen by extended scope physio practitioner (ESPP) or nurse practitioner. Patient given appointment with most appropriate discipline, for diagnosis and/or treatment. ESPP contacts patient to get any further information necessary for the decision. ESPP might use scoring/assessment tools to help make the decision.

iii. ESPP/nurse practitioner selects referral letters from consultant’s in-tray and sees patients who appear unlikely to need a surgical opinion. Sees patients concurrent with consultant’s clinic – can then discuss with consultant on the spot if necessary – or might see patients in separate clinic session.

The ESPP/nurse practitioners are not deciding which patients need surgery. They are sifting out the patients who do not need to see a surgeon, or not until other treatment options have been tried first. This arrangement usually begins with the consultant and the practitioner reviewing referrals together. The ESPP gains a better understanding of the consultant’s approach; the consultant gains confidence in the ESPP’s ability to interpret and reach decisions on referral letters. In due course the consultant is usually happy to let the ESPP see referral letters and deal with them, with the proviso that they discuss any where the appropriate course of action is unclear or debatable. A few teams have developed this arrangement to the extent that the ESPP/nurse practitioner can discuss with the surgeon and list the patient for surgery if appropriate. The consultant surgeon doesn’t need to see the patient at this first visit.

iv. Pooling of generic referrals, so that the patient gets the earliest available appointment with the most appropriate specialist

All these approaches need clear agreement about clinical pathways, and confidence in each other’s professional skills. This takes time to build.

Using booking for outpatient appointments will achieve a substantial reduction in DNAs and late cancellations. While waiting times are long, partial booking can be used for new or follow-up appointments.
Chapter 3: Solutions

Resource implications

If these arrangements are effective, the consultant surgeon will see a greater proportion of patients who go on to have surgery - a higher conversion rate. So that the waiting list does not grow, it will be necessary to review the balance between clinic and operating sessions. Many consultants have a programme of three clinic sessions and three theatre sessions. A ratio of 2:4 may be better, and managers will need to plan for extra theatre sessions.

For multi-disciplinary clinics to work effectively, the team will need enough rooms in outpatients.
Chapter 3: Solutions

Problem 2 – patients listed for surgery before they are ready

Some 25% of patients added to the orthopaedic waiting list are removed without treatment. For joint replacements, the figure can be as high as 35%. The main reasons are:

1. Not sure they want surgery (or not yet)
2. Not fit for surgery, and no active steps are being taken to get them fit

Usually these problems do not surface until pre-operative assessment – when the patient may already have been on the waiting list for 12 months.

Approaches that will help

1. If GPs believe surgery is likely to be needed, they should check that the patient will consider an operation before making the referral to a surgeon

2. Clear criteria for offering surgery, using structured assessment. This may be strictly clinical (eg Oxford hip score), or may include social factors (eg New Zealand hip/knee scoring). The aim is to ensure that patients are offered surgery at the right time, and to take account of the health needs of the local population rather than the referral practice of individual GPs or the listing practice of individual surgeons. Scoring will also provide a baseline against which to measure the outcome of treatment

3. Minimise the number of separate queues, or waiting lists, both for outpatients and for admission. Clinical priorities should be treated first, and other patients treated in chronological order

4. Early health assessment for patients who have been offered surgery, to include:
   i. Health screening to identify co-morbidity which might affect fitness for surgery
   ii. A full explanation of what the patient can expect at the time of surgery, and post-operatively
   iii. Confirmation that the patients still want surgery
   iv. Any appliances or adaptations required by the patient after the operation to be sorted out in good time (sometimes, simply providing the necessary equipment can meet the patient's needs and they then decide not to have surgery)
   v. A contact point for patients while waiting
   vi. Advice on how to cope with symptoms while on the waiting list

This is most effective when done at the time the decision is taken to offer surgery, when the patient is added to the waiting list - or ideally, before adding to the list.
5. Education classes to prepare the patient for surgery, to include:
   
i. **Physical fitness**
   
ii. *Preparation for hospital admission and post-operative rehabilitation* - this might include an opportunity to meet patients who have already had the operation, and to meet the staff who will be treating the patient
   
iii. **Make sure the patient's home arrangements will enable discharge on time**
   
These classes seem to work best when done a couple of months before the expected admission, rather than at the beginning of the patient’s wait. They could be combined with pre-operative assessment, and with an opportunity for the surgeon to confirm the patient’s consent to surgery. Obtaining consent after the patient has been admitted for surgery is inappropriate.

6. **Pre-operative assessment.** Surprisingly, pre-operative assessment is still not universal in orthopaedics. Services which do not undertake it find that 40%-60% of patients are not fit for, or do not want, surgery at the time of admission.

7. For otherwise fit patients, having minor procedures, POA can be done by phone

8. **Pre-operative assessment for major surgery** may easily take an hour or so. It is not necessary for the consultant to be involved in the whole of the assessment process, and this would not be the best use of their time. In some services, the consultant comes at the end of the clinic, seeing each patient for five minutes or so to check whether they have any final queries, and to obtain written consent. Senior house officers may not have sufficient experience to give information and answer patient queries. Pre-operative assessment is probably best undertaken by nurses, with the involvement of other disciplines as necessary (physio, occupational therapist (OT), anaesthetics). Encourage patients to visit the ward. For some patients, a home visit by an OT may be helpful.

9. **Pre-operative assessment two weeks before surgery** is probably too late. If the patient is unfit, there is not enough time to change this. Hospitals that assess six weeks before admission have reduced their postponement rate from 40% to 5%. Few patients develop problems such as infections in the intervening period.
Problem 3 – delays and bottlenecks in the admission and surgery processes

For surgical patients, the actual operation is the central step in the whole pathway. Theatre time, and within this, surgeon time, are the scarcest resource. All other resources should be subordinated to this.

The main causes of delay are:

1. Bed availability: no beds, or uncertainty about bed availability, because emergency admissions take priority. These emergency admissions may be from other specialties or from peaks in trauma activity

2. No effective bed planning: “to come in” decision is based on constructing a theatre list, without taking into account expected length of stay

3. Avoidable length of stay: admitting all patients on the day before surgery; low day case rates; excess post-operative days
Chapter 3: Solutions

4. Poor co-ordination of the surgical process including:
   i. Key staff/equipment not available
   ii. Differing understandings of list start/finish time
   iii. Fixed length theatre sessions of 3½ or 7 hours that do not match the casemix
   iv. Delays during the theatre list
   v. Extended time between cases

Approaches that will help:

1. Some surgeons use simple booking forms completed at the time of listing: these can include identification of appropriate surgeon(s), equipment required, theatre time needed and expected length of stay

2. Ensure key staff and equipment will be available at time of surgery: plan annual leave at least six weeks ahead

3. Plan admissions on the basis of expected time in theatre and expected bed use. Involve ward and theatre staff in planning admissions

4. The co-ordination of admissions by dedicated staff rather than lists being booked by consultants’ secretaries. Admissions staff can liaise with theatres, wards and Theatre Sterile Supplies Unit to ensure all resources are available on the day

5. Keep emergency patients out of elective beds and theatre sessions. Ring-fencing beds is a help, but is not sufficient – elective care processes have to be streamlined and efficient. Dedicated trauma lists are essential

6. Admit patients on the day of surgery unless the patient needs or wants to come in earlier. Clerking, consent and anaesthetic assessment should have been done at pre-operative assessment, although will need review and confirmation. The majority of patients will go straight to theatre when they come to the hospital, and, as with day cases, changing space will be needed.

7. Dedicated trauma lists, including weekend lists

8. Make sure everyone knows what time the theatre list will start, and that everyone understands what this means – is it the time when staff arrive in theatre, the time the first patient arrives in the anaesthetic room, or knife-to-skin time?

9. Minimise delayed starts and down time between cases on theatre lists. Use surgeon’s assistant to position limbs and close wound.
10. Consider using other disciplines in the team to do surgery: nurse/theatre practitioner may perform selected minor surgical procedures such as carpal tunnel surgery; podiatric surgeon may perform forefoot surgery

11. Post-operative mobilisation is the responsibility of ward staff - to help patients sit up in bed, in a chair, get out of bed, “get going” faster. Formal therapy services to be provided seven days a week. Providing mobilisation at weekends for joint replacement patients reduces the length of stay by at least one day

12. Patients to be discharged when agreed criteria are met - there is no need to wait for the ward round. The principle works just as well for outpatients, who can be discharged by nurses or physios when appropriate

13. Early discharge schemes: hospital-at-home; orthopaedic outreach and community rehab teams; step-down or rehabilitation beds

14. Aim for patients to be out of their beds by mid-morning on the day of discharge. This frees up the bed for patients coming from theatre

15. Reducing unnecessary post-operative outpatient attendances: after minor procedures, patients to come back only if they have a problem. After bigger procedures, nurse practitioner to see straightforward patients – consultant sees patients with problems, not every patient (although doctors in training will need to see the full range). Get agreement between local surgeons on when specific procedures should be followed up

16. Trauma-specific approaches include:

   i. **Fast-track patients with obvious fractured neck of femur by admitting straight to the ward.** Assessment by orthopaedic team to be done on ward not A&E bearing in mind the need to assess for other co-morbidities

   ii. **Trauma co-ordinators are working successfully in some centres**

   iii. **Daily trauma meeting to review patients admitted and plan theatre lists**

   iv. **Holding multi-disciplinary meetings to determine care of complex patients**

   v. **Trauma team on-take to be freed up from all elective commitments**

   vi. **Dedicated trauma theatre, not required for other emergency or elective cases**

   vii. **Running dedicated trauma lists at weekends (Saturday and Sunday, if workload requires this).** Sharing emergency lists with other specialties does not work well – emergency cases in other specialties usually take priority, and the trauma team has to wait around all day. The trauma list does not need to be a fixed length – staff can go home once the list is finished

   viii. **The use of femoral nerve blocks for elderly fractured neck of femur patients to reduce confusion arising from use of opiates**
Chapter 3: Solutions

ix. Fracture clinic: even the workload across five days by spreading appointments given at the weekend - don’t tell everyone to come back on Monday

x. Nurse practitioners/ESPPs to see selected new and follow-up patients, working to agreed protocols

xi. Dedicated imaging equipment

xii. Capacity of fracture clinics to be varied according to expected workload (Mondays, day after Bank Holidays for example)

xiii. For patients who need assessment from consultants specialising in care of elderly people, referral and assessment should be on a daily basis.

These changes will not be effective for every service, but most services which have tried them have found them to be helpful. Some of them will need additional resources, and managers need to be aware of this.

The Modernisation Agency has published a Step Guide to Improving Operating Theatre Performance. This includes toolkits for improving how theatres work, and many examples of effective changes from NHS hospitals. Details are given at Appendix 4.

Change principles
Changes can be categorised by the change principle behind them. If a particular change does not seem appropriate for your service, or has not worked, look at the principle and use it to develop a change which will be effective in your local situation.

The table at Appendix 3 shows the change principles which services taking part in the Orthopaedic Service Collaborative have found useful. It is based on Reducing delays and waiting times (Nolan TW, Schall MW, Berwick DM, Roessner J, Institute for Healthcare Improvement, Boston Ma 1996).

Conclusions
Learning from the Action On Orthopaedics pilot sites and Collaborative participants is that:

i. There is no single “magic bullet” solution to the problems of delays and inefficiency. It is the combination of the approaches listed above that makes the change, and that needs to be adapted to local circumstances

ii. Redesign has to go hand-in-hand with resources, where it is shown that these are necessary. Extra resources will be wasted if they are not applied in the right place. Doing more of the wrong thing will not help

iii. Redesign of hospital processes needs to involve GPs as primary care practitioners, and PCTs as planners and commissioners of services

iv. It is sometimes difficult to quantify in advance the impact of the solutions on throughput and waiting. Proposed changes need full discussion to ensure that all those affected are aware and have considered what impact it will have on them, and the action they need to take
Chapter 3: Solutions

v. Many of the approaches take time to plan and implement effectively. Not many of them can be implemented off the shelf. Very few of them will give instantaneous results.

vi. The approaches which involve extended roles for nurses and allied health professionals are often treated with initial caution by consultant orthopaedic surgeons. It takes time and understanding to introduce these changes. They do not work if they are imposed.

vii. A trauma and orthopaedic service consists of perhaps five to eight sub-specialty services. Their patients, ways of working and cultures are different, and it cannot be assumed that innovation in one will be adopted automatically or easily by the others.

viii. Nothing beats the in-depth involvement in redesign of the operational management team, although the addition of a dedicated management resource (e.g., project manager or development practitioner in nursing or allied health professions) will speed up the redesign process, as well as increasing the chances of successful implementation.

ix. Significant redesign and improvement across the whole trauma and orthopaedic service will in most cases take 12-24 months, but there is usually potential for some quick wins much sooner than this.

x. All grades and disciplines of staff must be involved in redesign.
Chapter 4: Implementation

How do we implement the solutions? How can we maximise the chances of success, and of sustaining the improvement? How do we influence clinical and managerial colleagues?

Trying out new ways of working

The Action On Orthopaedics programme and the Orthopaedic Services Collaborative have used a tried and tested framework for improvement. It is based on three fundamental questions:

1. What are we trying to accomplish?
2. How will we know that a change is an improvement?
3. What changes can we make that will result in an improvement?

and then a process for testing change ideas using Plan, Do, Study, Act (PDSA) cycles:

Teams have found that it is often better to run small cycles sooner, rather than large cycles later. The idea may be ambitious and innovative, but it should be tested on a small scale: with one or two patients, or with one clinician in one clinic. Increase the numbers involved as the ideas are refined. Test the proposed idea with volunteers: people who believe in the improvement that is proposed. Do not try to convert people into accepting the change at this stage. Only implement the idea when you are confident that you have considered and tested all the possible ways of achieving the desired change.
**Spreading new ideas: what makes people adopt innovation?**

The innovation itself?

Research literature suggests that five qualities of innovations determine their successful spread:

1. Relative advantage over the current way of doing things
2. Compatibility with current systems and values: with “the way we work”
3. Simplicity of change and its implementation
4. Ease of testing - can you try it out without committing irrevocably?
5. Observability - demonstrate the practice, not just the concept

The people?

The research literature suggests that there are several “adopter categories”:

The evidence is that adoption and spread have a large social component. Ideas travel through conversation and interaction among trusted peers. Identify the early adopters and opinion leaders in teams, and in the various professional groups. Make sure they are informed about an idea for improvement and work through them to disseminate the idea to others.
“What’s in it for me and my patients?”

In looking at how to engage staff in change, it is helpful to think what will make changes attractive. Surgeons involved in Action On Orthopaedics and the Collaborative identified several selling points that they felt would make changes attractive to other surgeons:

1. More time for individual patients at the outpatient consultation
2. Full theatre lists
3. Theatre lists of the patients you have been trained to deal with
4. Control of theatre lists
5. More time to teach juniors
6. Ability to collect data and analyse results
7. Being part of a team

Think about how you can show the link between the changes you want to make and these “attractors”.

**Constraints**

Most of the literature on spread and adoption of change refers to the process of individuals’ choices and actions. In the case of an idea to be adopted in clinical practice within an organisation like the NHS, it could be that individuals are quite ready to adopt a change, but the way is blocked by organisational constraints or by professional regulation.

**Sustaining improvement**

Sustainability means not just holding the gains, but continuing to make improvements. It is useful to ask yourself what you are trying to sustain. Is it:

1. The specific change
2. The change principle
3. The measured outcome of the change
4. The underlying culture
5. The set of relationships that enabled you to make the change
6. Some combination of these?
Factors that will increase the sustainability of change are:

1. **Clear benefit to stakeholders**: when everyone can answer positively the “what’s in it for me?” question, the change has won hearts and minds.

2. **Training and education**: to ensure that all staff understand the change and are confident about working in a new way.

3. **Building the change into the structure of the team or organisation, and making it the new standard**: is it reflected in policies, procedures and job descriptions?

4. **Build in ongoing measurement**: this communicates that the new way of working is a priority. Seeing the good results continue is a powerful motivator, and any slippage can be picked up quickly.

5. **Make it mainstream**: build it into regular reporting and audit mechanisms, don’t refer to it as a project, build it into training and induction for new staff.

More information about all these approaches can be found in the Improvement Leaders’ Guide series.
Appendix 1: About *Action On* and the Collaborative

The **Orthopaedic Services Collaborative** was initially set up by the South East Thames Regional Office in 1999. Teams from 40 local services across four NHS Regions worked together over 18 months to look at how they could improve their joint replacement services. Each service picked several “opportunity areas” for improvement. Some opportunity areas were clinical - better pain control, reducing the use of blood transfusion, reducing the number of X-rays taken. Other opportunities covered efficient service organisation - reducing delays and cancellations, reducing length of stay. The philosophy of the Collaborative is that there is a gap between what we know, and what we do. Rapid, small-scale cycles of change are used to find the most effective way to narrow that gap. The services undertake continuous measurement of the results to be sure that changes result in improvements for patients. Subsequent waves of the Collaborative used the same methodology to make improvements for other groups of patients: those with fractured neck of femur, and back pain. About 160 teams have now taken part in the Collaborative. Management of the Collaborative transferred to the NHS Modernisation Agency in 2001.

The Collaborative methodology has been widely adopted as an effective model for service improvement in the NHS and in other healthcare systems. The Orthopaedic Services Collaborative is acknowledged internationally as one of the leading programmes for achieving sustained, system-wide improvement.
Action On Orthopaedics was set up by the Modernisation Agency in 2000. Unlike the Collaborative, it was a national programme from the outset, one of a series covering Cataracts, ENT and Dermatology (and subsequently General Surgery, Urology and Plastic Surgery). The aim of Action On Orthopaedics is to spread good practice across all orthopaedic services in England. It has three workstreams:

1. Developing innovative practice
2. Helping services implement solutions which are already known to be effective: through visits, presentations and advice on good practice, and links with other Modernisation Programmes
3. Support to services with particular problems, specifically waiting times: through visits and continuing support from Action On Orthopaedics staff

Action On Orthopaedics funded 16 pilot sites (two in each then NHS region) to develop innovative practice and to act as demonstration sites. A further 13 Extended Development Projects joined the programme in 2002.

Ministers used the programme as a channel for substantial capital investment in trauma and orthopaedic services. Over the past three years, about £80 million has been invested to increase capacity and provide better facilities for musculo-skeletal and orthopaedic services both in the community and in hospitals.

The combination of redesign and additional resources has been effective. At the start of the programme, Action On Orthopaedics identified 22 sites which had exceptional challenges in meeting access targets. With support to redesign their services, and targeted capital investment, all but two of these services were able to meet the NHS waiting time targets for March 2002.

Coming from separate starting-points, the Collaborative and Action On Orthopaedics have worked closely together. Many local orthopaedic services have participated in both programmes, and learning about successes and failures has been shared. Both programmes have relied on professional associations, clinical opinion-leaders and patient groups to help define what good practice looks like. The programmes have worked together to advise Ministers and the Department of Health.
Appendix 2: Action On Orthopaedics Pilot sites

Pilot Sites

1. The University Hospitals of Leicester NHS Trust
2. United Lincolnshire Hospitals NHS Trust
3. Ipswich Hospital NHS Trust
4. Luton & Dunstable Hospital NHS Trust
5. Peterborough Hospitals NHS Trust
6. Royal National Orthopaedic Hospital NHS Trust
7. The Hammersmith Hospitals NHS Trust
8. Stockport North PCG
9. The Morecambe Bay Hospitals NHS Trust
10. Dewsbury Health Care NHS Trust
11. North Tees & Hartlepool NHS Trust
12. East Kent Hospitals NHS Trust
13. Heatherwood & Wexham Park Hospitals NHS Trust
14. South Devon Healthcare NHS Trust
15. Royal Cornwall Hospitals NHS Trust
16. Burton Hospitals NHS Trust
17. Royal Orthopaedic Hospital NHS Trust
### STRATEGY ONE: IMPROVE THE FLOW OF WORK

<table>
<thead>
<tr>
<th>1. Do tasks in parallel</th>
<th>Instead of doing tasks sequentially, redesign the system to do some or all tasks in parallel</th>
</tr>
</thead>
<tbody>
<tr>
<td>2. Customise processes for specific patient groups</td>
<td>Rather than use a single “one size fits all” process, use a tailored process to meet the different needs of patients</td>
</tr>
<tr>
<td>3. Minimise handoffs (where the care of the patient is passed from one person, department or place to another)</td>
<td>This reduces the time that the patient journey will take as well as costs and potential quality problems. Organisations can train their workers to handle many functions</td>
</tr>
<tr>
<td>4. Synchronise all the steps around a start time</td>
<td>In many organisations there will be different understandings of a start time – aim to synchronise all the processes to be ready for one agreed time</td>
</tr>
<tr>
<td>5. Use pull systems</td>
<td>Most systems operate a push system, for example an A&amp;E will attempt to push patients into a hospital bed in order to maintain a safe working environment in their department – in a pull system, the timely transition of work from one step in the process to the next is the primary responsibility of downstream i.e. the next part of the process</td>
</tr>
<tr>
<td>6. Move steps closer together</td>
<td>Move the actual location of adjoining steps in a process so that the work can flow from one step to the next and the patient does not need to travel the length of the building during their consultation</td>
</tr>
<tr>
<td>7. Use automation</td>
<td>Consider automation to improve any process to reduce costs, eliminate human error, reduce repetitive manual tasks</td>
</tr>
<tr>
<td>8. Create a single system of people working on the same process</td>
<td>Encourage colleagues to see themselves as part of the same process of patient care and working towards common goals – then you can start to optimise the work of the whole system</td>
</tr>
<tr>
<td>9. Extend the time of specialists</td>
<td>Specialists will invariably have the longer queues – make sure that they are only engaged in the tasks that require their specialist skills</td>
</tr>
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</table>
### STRATEGY TWO: ELIMINATE WASTE

<table>
<thead>
<tr>
<th>Number</th>
<th>Strategy</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>Extinguish demand for ineffective care</td>
<td>A great deal of healthcare has little or no scientific foundation and some care used regularly is known to be harmful. Few healthcare organisations appear to have become adept at directing patient’s expectations away from unnecessary or harmful care. This is fertile terrain for process innovation.</td>
</tr>
<tr>
<td>11</td>
<td>Eliminate multiple data entry</td>
<td>Multiple data entry is frustrating for patients, their carers and staff – it is also wasteful – identify the best place to collect the data initially and ensure that other legitimate users have access thereafter</td>
</tr>
<tr>
<td>12</td>
<td>Removing intermediaries</td>
<td>All contributors to the patient care pathway should be there solely because of their specialist skills or knowledge and the value that they bring – process mapping will help to identify any areas where this is not the case</td>
</tr>
<tr>
<td>13</td>
<td>Sampling</td>
<td>Data collection exists for a variety of uses – in many cases a sample of data will be sufficient to establish a general trend – assess whether the data that you currently collect has to be collected as extensively to meet each use</td>
</tr>
<tr>
<td>14</td>
<td>Standardise rooms, equipment and processes</td>
<td>Minimise the impact of maintenance and down-time, reduce learning time for new staff</td>
</tr>
</tbody>
</table>

### STRATEGY THREE: REDUCE VARIATION

<table>
<thead>
<tr>
<th>Number</th>
<th>Strategy</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>15</td>
<td>Improve predictions</td>
<td>Predicting demand based on past predictions and planning capacity to meet that demand</td>
</tr>
<tr>
<td>16</td>
<td>Understand and manage the flow of work</td>
<td>Workflow can fluctuate widely as a result of changes in demand – try to even out the workflow by taking action to distribute the demand more effectively. Doing work in batches (eg reviewing referral letters once a week) should be avoided - it produces fluctuations in workload ‘downstream’</td>
</tr>
<tr>
<td>17</td>
<td>Adjust to peak demand</td>
<td>If you cannot reduce fluctuations in demand any further then use data to predict periods of peak demand and have contingency plans in place</td>
</tr>
<tr>
<td>18</td>
<td>Identify and manage the constraint</td>
<td>Patients will only ever move through the system at the pace of the bottleneck or constraint – analyse your process to identify the bottleneck and then look to widen or remove it</td>
</tr>
<tr>
<td>19</td>
<td>Reduce classifications</td>
<td>The use of categories to differentiate between types of patients or treatments is useful but each one adds to the process. Review whether they can be reduced without loss</td>
</tr>
</tbody>
</table>
## Appendix 3: Strategies for improvement

### STRATEGY FOUR: ENHANCING PATIENT RELATIONSHIPS

<table>
<thead>
<tr>
<th>STRATEGY</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>20.</td>
<td>Listen to stories from patients and carers. Ascertain what patients want from the service, whether it is currently being provided and the potential for so doing.</td>
</tr>
<tr>
<td>21.</td>
<td>Coach patients to use the service better. Patients often unintentionally disrupt services by being unaware of all aspects – consider whether there are better ways to inform the patient on how to get the most out of your service.</td>
</tr>
<tr>
<td>22.</td>
<td>Develop a common language. Many staff within the service will use different language to describe the severity of the patient’s condition – this makes the patient journey confusing for patient and carers.</td>
</tr>
<tr>
<td>23.</td>
<td>Anticipate demand. Meet a need for care before it arises.</td>
</tr>
<tr>
<td>24.</td>
<td>Promote self care. This is probably the most powerful of all change concepts in shaping demand, yet it still remains to be explored in process changes in real healthcare settings.</td>
</tr>
<tr>
<td>25.</td>
<td>Combine services to meet the needs of specific patient groups. Re-shape individual requests for services into a larger group. Meet recurrent need with a standardised process.</td>
</tr>
<tr>
<td>26.</td>
<td>Offer a service at other places. A service that is too centralised may be inconvenient for users – equally one that is too distributed may create logistical problems for providers – new technology now provides opportunities not previously available – review the scope to provide services elsewhere.</td>
</tr>
<tr>
<td>27.</td>
<td>Focus on patient outcomes. If the outcome to the patient is the driving force of the service provision, then a quality service will follow.</td>
</tr>
</tbody>
</table>
# Appendix 3: Strategies for improvement

## STRATEGY FIVE: IMPROVE THE QUALITY OF WORKING LIFE

<table>
<thead>
<tr>
<th>Strategy</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>28. Developing co-operative relationships</td>
<td>Interactions across organisations often rely more on good will and may sometimes be confined to ‘when things go wrong’. Determine how best to build and develop working relationships.</td>
</tr>
<tr>
<td>29. Improving access to information</td>
<td>Information is the oxygen of a high quality service, allowing people to make good decisions, do their jobs better and suggesting changes that will lead to improvement. Review the information that you need and ensure that it is available to everyone who needs access.</td>
</tr>
<tr>
<td>30. Reducing demotivating aspects of the job</td>
<td>Where morale is low, quality will inevitably suffer. Removing or reducing individual concerns often improves services. See if there are ways in which morale might be lifted for those providing the service.</td>
</tr>
<tr>
<td>31. Invest in training</td>
<td>Too often people are merely taught on the job and then not kept up to date – without the appropriate training and development, individual’s standards fall and the quality of service suffers – consider where more or refresher training is required.</td>
</tr>
<tr>
<td>32. Implementing cross training</td>
<td>Often the skills of an individual are more than the job requires. Use these more widely to benefit the whole process and improve morale.</td>
</tr>
</tbody>
</table>

## STRATEGY SIX: AVOID ERRORS AND REDUCE MISTAKES

<table>
<thead>
<tr>
<th>Strategy</th>
<th>Description</th>
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<tbody>
<tr>
<td>33. Positive prompts</td>
<td>With choice comes the potential to make the wrong choice – processes prompting users to make the right choice and alerting them to the dangers of wrong choices are less likely to result in failure – consider how this principle might be applied locally in order to minimise error.</td>
</tr>
<tr>
<td>34. Create differentiation</td>
<td>Things that look similar are easily mistaken for each other – identify aspects that have this risk and plan accordingly.</td>
</tr>
<tr>
<td>35. Provide constraints</td>
<td>If the risks are high enough, it is appropriate to make the wrong choice really difficult to make – consider what errors have happened that might be designed out in this way.</td>
</tr>
</tbody>
</table>
Appendix 4: Useful sources of information and ideas

1. Published by the British Orthopaedic Association, and downloadable from www.boa.ac.uk

   i.  *Total Hip Replacement – a guide to best practice*
   
   ii.  *Total Knee Replacement – a guide to good practice*

2. Published by the NHS Modernisation Agency and downloadable from www.modern.nhs.uk

   i.  *Improvement Leaders’ Guides. Current titles in the series are:*
   
      •  *Process mapping, analysis and redesign*
      •  *Matching capacity and demand*
      •  *Measurement for improvement*
      •  *Sustainability and spread*
      •  *Involving patients and carers*
      •  *Managing the human dimensions of change*
      •  *Setting up a Collaborative programme*

   ii.  *Step Guide to Improving Operating Theatre Performance*

   iii.  *Action On ENT Good Practice Guide*

The *Action On* team has put together a simple software package to enable Trusts, PCTs and Strategic Health Authorities to benchmark their own performance on a range of non-clinical indicators. The benchmarking information can be downloaded from the *Action On* website at www.modern.nhs.uk/action-on.
Appendix 4: Useful sources of information and ideas