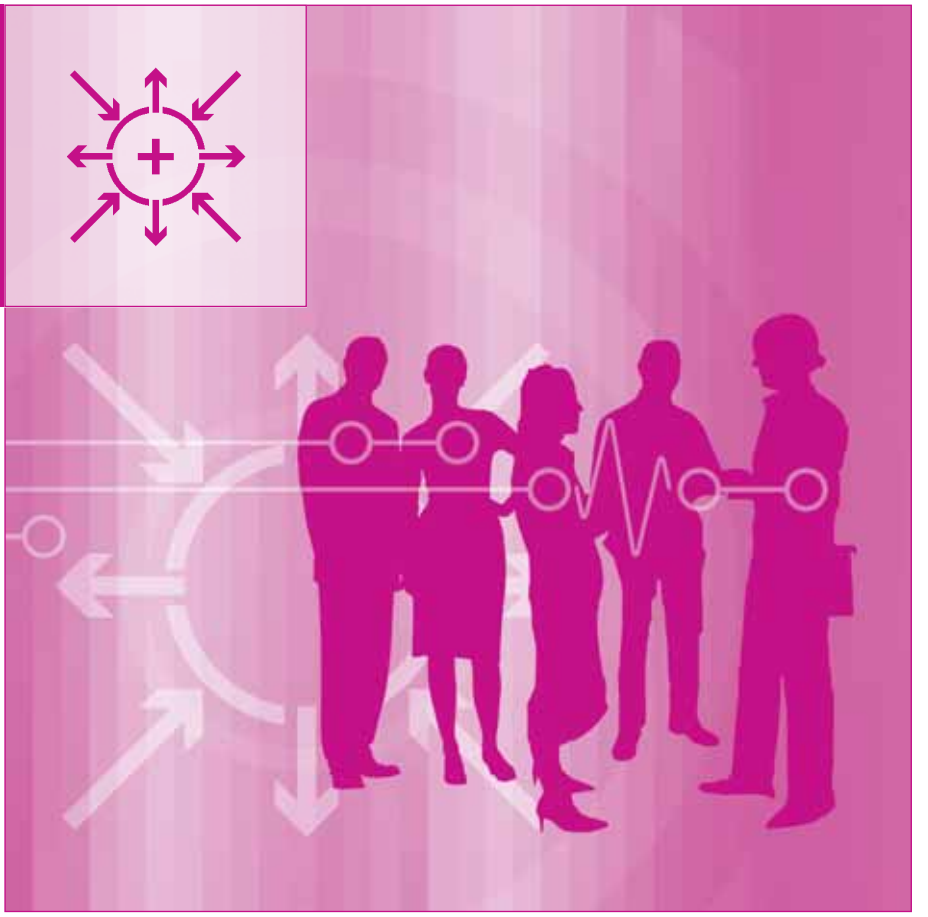
NHS
Institute for Innovation and Improvement

Improvement Leaders' Guide

Technology to improve service

Developed in partnership with NHS Connecting for Health

General improvement skills



Improvement Leaders' Guides

The ideas and advice in these Improvement Leaders' Guides will provide a foundation for all your improvement work:

- Improvement knowledge and skills
- Managing the human dimensions of change
- Building and nurturing an improvement culture
- Working with groups
- Evaluating improvement
- Leading improvement

These Improvement Leaders' Guides will give you the basic tools and techniques:

- Involving patients and carers
- Process mapping, analysis and redesign
- Measurement for improvement
- Matching capacity and demand

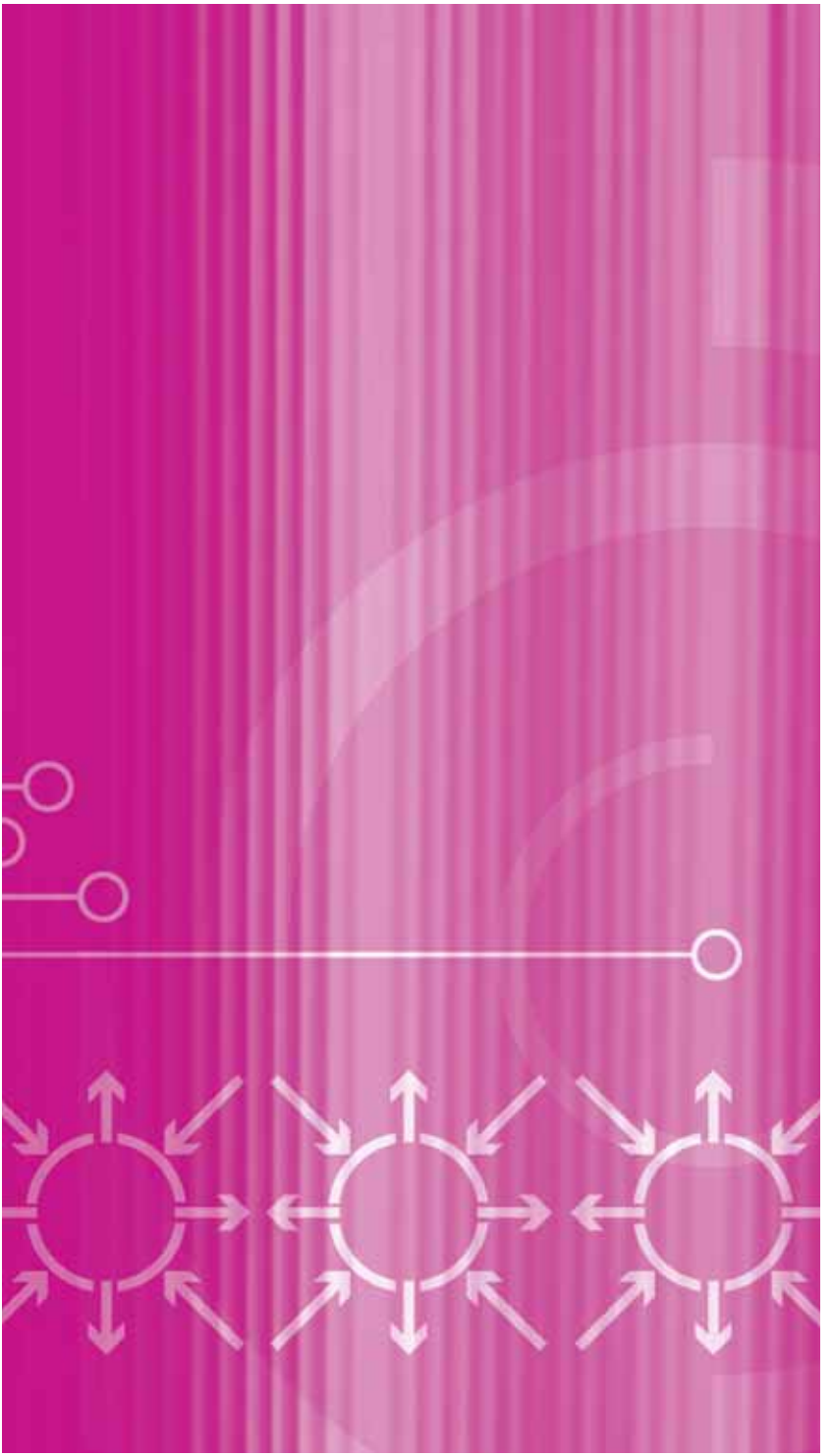
These Improvement Leaders' Guides build on the basic tools and techniques:

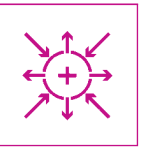
- Working in systems
- Redesigning roles
- Improving flow
- Sustainability
- **Technology to improve service**

You will find all these Improvement Leaders' Guides at www.institute.nhs.uk/improvementleadersguides

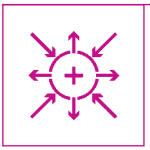
Every single person is enabled, encouraged and capable to work with others to improve their part of the service

Discipline of Improvement in Health and Social Care





Contents



1. Who is this guide for and what is it about?

This guide is for anyone in the NHS or social care - in whatever role and at whatever level - who has ever thought about improving services and care for users and patients.

It's about seeing technology for what it really is - a tool to help us do something we want to do. It's about being able to recognise all the ways that technology could benefit your patients, your colleagues and you.

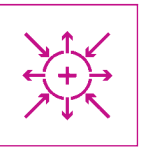
This guide - like others in the Improvement Leaders' Guide series - does not set out to give all the answers. What it does aim to do is:

- give you a good starting point
- get you thinking in a different, more confident way about how existing and new technologies can be applied in your team and in your local healthcare community
- give you an insight into how others across the service are using technology to make big and small improvements right across the NHS.

Perhaps most importantly, the aim of this guide is to demystify the world of technology - making sure you know where to turn for help and advice whether you want to:

- understand more about what technology can do in healthcare, or
- get your idea off the drawing board and on the path to implementation.

As with all the Improvement Leaders' series (www.institute.nhs.uk/improvementleadersguides), this guide aims to be practical as well as informative, pointing you to some of the processes and activities that could help you turn your thinking into measurable and sustainable improvements in your organisation.



2. What is technology?

This is what the London Times said about the stethoscope in 1834:

That it will ever come into general use, notwithstanding its value, is extremely doubtful; because its beneficial application requires much time and gives a good bit of trouble both to the patient and the practitioner; because its hue and character are foreign and opposed to all our habits and associations.

We often think of technology as something to treat with caution; a threat to our time-tested – if imperfect – ways of doing things. What we don't always remember is the many ways we already use and actually enjoy technology.

Did you have a mobile phone ten years ago? Imagine living without it now and if you did have one, it probably didn't have a camera or play music! These are two functions that we're coming to expect as standard on our mobile phones today, even if some of us don't always feel confident about using them and actually find the increasing number of functions a bit confusing.

Although we often think of technology in only its narrowest form, it is not just about computers, information and communication - technology is anything that helps us do what we want to do. In healthcare technology can include:

- medical devices: even a handrail is a technology at the simplest level - the more complex end of the scale includes intelligent systems such as 'telecare', linking people's homes to professional care teams elsewhere
- biotechnologies: for instance wound-healing products and self-adjusting bandages that can automatically alter their tension
- surgical procedures: not necessarily equipment, but a sequence of actions that has to be learned in order to achieve a specific result.

Technology, put simply, is a tool or an 'enabler' that in healthcare we generally use for:

- improving health outcomes for patients
- saving time and often cost for us all
- accessing better information so we can make better decisions about care.

Of course, developing new uses for technology, or even mastering existing ones, can sometimes seem daunting. Yet the potential benefits are well worth the effort and can result in major improvements, not just for patients and service users, but for you, your team and others in the local health and social care community.

Some different sorts of technology in the NHS and social care:

We are capturing, storing and sharing information more effectively than ever before:

- some health communities are already sharing patient records electronically and electronic care records will soon be in place for everyone
- many hospitals are using digital technology rather than film to take, store and share x-rays and other clinical images – meaning several clinicians at several different locations can see the same images as soon as they have been taken.

We are making better use of our knowledge:

- the Map of Medicine, for instance, has been created by health professionals for health professionals and is giving staff fast access to best practice guidelines on a number of different conditions at the point of care. Users can even add to the map themselves, using their own expertise and local knowledge of services. For more about the Map of Medicine, see: www.mapofmedicine.co.uk

We are taking our technology to where it's needed most:

- paramedics in some areas carry specially adapted and robust laptops on board their ambulances. Touch screen controls allow crews to use and update the patient's record at the scene
- defibrillators are now in many public spaces – transforming the way people are cared for immediately after a cardiac arrest.

We are using everyday technology to improve care:

- patients with long-term conditions such as diabetes are being texted on their mobile phones by their health teams to remind them about routine checkups; medications; and self-testing.

We are using technology to help people with disabilities or impairments stay independent and active:

- patients suffering from head and neck cancers, for instance, can now benefit from electronic speech aids
- vulnerable people, such as those with dementia, are using telecare devices that monitor their wellbeing in their own homes.

Technology and service improvement – which wags which?

Techno tail
wagging the healthy dog

Improvement for our patients should always be the driving purpose behind the introduction and use of any technology. Most NHS organisations are signed up to this - in fact creating a more patient-led NHS is the driving force behind a raft of new technologies coming into the NHS, many under the NHS National Programme for IT (see Section 4: Understanding the bigger picture).

This is good news for most of us because:

- if you understand how healthcare services are designed and delivered and have ideas about improving them – you, not the technology, are in the driving seat
- patients and staff – the taxpayers and end-users - are protected because investment in technology should always be clearly linked to better care and better ways of working.

Why should technology matter to you?

As leaders of any sort of health or social care improvement - technology is one of the most powerful tools for change you have. Think about the 10 High-Impact Changes and some of the ways technology is already helping trusts and other organisations achieve them. The High Impact Changes are evidence based. They have been field tested and evaluated in real NHS settings, and have been developed and adapted so they have the best chance of success. Helen Bevan, Director of Service Transformation at the NHS Institute for Innovation and Improvement, says of the changes:

> If these changes were adopted across the NHS to the standard already being achieved by some NHS organisations, there would be a quantum leap in improvement in patient and staff experience, clinical outcomes and service delivery.

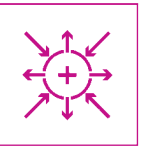
No.	High-Impact Change	How information technology is helping	Other technologies that help
1	Treat day surgery (rather than inpatient surgery) as the norm for elective surgery	Theatre systems are enabling improved booking and scheduling of theatre resources	• Keyhole surgical techniques • Fibre-optic instruments • Rapid acting anaesthetics
2	Improve patient flow across the whole NHS system by improving access to key diagnostic tests	Community-wide 'Picture Archiving and Communications Systems' (PACS) - making a patient's x-ray and scan images available almost instantly from several different locations	• Instant diagnostic tests in the community • Improved compact ECG in GP practices
3	Manage variation in patient discharge, thereby reducing length of stay.	Order communications and results reporting - enabling quicker, accurate diagnosis and earlier treatment	• Automated drug dispensing systems and patient medication bags to reduce delay in discharge
4	Manage variation in patient admission process	Patient admissions streamlined and clinics managed more effectively as the potential of the Choose and Book system is being maximised	• Pre-surgical assessments in the community using portable equipment • Avoiding unnecessary admissions through self-care monitoring devices used in the home
5	Avoid unnecessary follow-ups for patients and provide necessary follow-ups in the right care setting	Community nurses and other professionals are benefiting from mobile access to care records and assessment data, improving the care they can offer in people's homes	• Self monitoring technology - including for blood pressure, blood sugar, respiratory function

Continued on the next page

No.	High-Impact Change	How information technology is helping	Other technologies that help
6	Increase the reliability of performing therapeutic interventions through a care bundle package	Electronically-enabled Single Assessment Process (e-SAP) supporting a patient-centred care approach for older people and people with long term conditions	• Improved drugs management in the home using low-tech reminders and dose organisers (e.g. daily pill boxes)
7	Apply a systematic approach to care for people with long-term conditions	Patients with mobility and breathing problems being supported in their own homes by telephone monitoring systems that automatically alert community teams if their condition gets worse	• Devices to assist in everyday living tasks such as opening a tin, or gripping a pen
8 9	Improve patient access by reducing the number of queues Optimise patient flow through service bottlenecks using process templates	Improved 'patient administration systems' (PAS) improve flow and access to information resulting in more effective management of resources, and quicker access to diagnosis and treatment	• Specimen deliveries through pneumatic tubes
10	Redesign extended roles in line with efficient pathways to attract and retain an effective workforce	Community nurses and pharmacists are able to deliver enhanced prescribing services to patients in the community through the Electronic Prescription Service (EPS)	• Transportable diagnostic equipment - such as a respirometer - that community - based staff can use, widening their role in care delivery

Learn more:

- to find more on the 10 High Impact Changes: see www.institute.nhs.uk
- patient medication bags: get more detail about how these are streamlining care at www.saferhealthcare.org.uk
- the NHS Purchasing and Supply Agency has more on the wide range of assistive technologies available. See: www.pasa.doh.gov.uk
- all these innovations demonstrate what is happening to transform services for patients and staff. However, working out how to make the changes can often seem a complex and onerous task. The wider series of Improvement Leaders' Guides are there to help you make the link between what can be done and how to do it. They are short, readable and they introduce a range of user-tested tools and improvement techniques that you can try locally. See www.institute.nhs.uk/improvementleadersguides



3. Technology and you

Where are you coming from?

It's always useful to recognise that when it comes to introducing, using or even considering a new technology, everyone - including you - comes with their own set of preconceptions, attitudes and experiences. People will have different levels of knowledge, motivation and enthusiasm and that's what makes them the most important factor in any improvement programme.

Pioneer of diffusion theory (how new ideas and technologies spread), Everett Rogers said that with any new technology there are likely to be 'early adopters' or 'laggards' at either end of the spectrum - but most people will fall somewhere in between and are willing to have a go when they see some benefits[1].

Research[2] done for the NHS Leadership Centre shows staff are likely to fall into three groups when faced with major change projects:

- early adopters and enthusiasts (around 20%)
- pragmatists - those who tend to wait and see but will support change once they see it works (around 50%)
- sceptics and traditionalists (around 30%).

Learn more:

- Find out more about the different approaches people take to change in the Improvement Leaders' Guide on Managing the human dimensions of change. See: www.institute.nhs.uk/improvementleadersguides

1 Rogers, Everett M. (1962). Diffusion of Innovation. New York, NY: New York: Free Press

2 A literature review – evidence of the role of leadership and leadership development in contributing to the effectiveness of major IT-led transformation. Produced for the NHS Leadership Centre by Dr Sadie Williams of Henley Management College

The 60-second quiz…

Why not take this quick quiz to help you assess how technology friendly you are. It's not a formal tool, nor has it been rigorously tested, but it has been included here as a quick, fun way of getting you thinking about the many different attitudes people can have when it comes to using technology.

Q1.
Do you know what your own mobile phone can do?

- Yes, I'm a text addict; I take pictures and I'm after an integrated MP3
- Not really, the sales assistant only showed me how to make and receive calls
- No, I won't even change my ring tone or reset the clock in case I break it
- Actually, it's a good day if I remember to charge it up.

Q2.
You're going to be connected to the national NHS email network. Do you say…

- It's just another initiative – I've got real work to do
- I hope I'll be able to remember my address and find my inbox
- Fantastic – it means I can get quick, secure responses on test results and other services I need
- If my manager says we have to use it, I will.

Q3.
You're invited to training on a new computerised patient data system. Do you…

- Send back a reply asking what the system is and find out why it will help you in your work
- Ask what time you need to arrive and whether there'll be lunch
- Think: 'here we go again'
- Feel a mild panic in case you're the slowest in the group to grasp it?

Q4.
You read about a telephone monitoring system that's helping older patients maintain their independence in their own home. Do you…

- Think: 'that sounds good, wonder when it'll come to my organisation?'
- Feel relieved you only have to worry about working the normal telephones
- Look for a contact name on the article – you want to know more about the real benefits
- Think: 'that will never happen here,' and turn the page.

Q5.
You're in a meeting to discuss an IT project for your department. You don't understand a lot of the technical language people are using. Do you…

- Nod knowingly but feel inadequate and out-of-date
- Ask the facilitator for an explanation you understand
- Vow to read up on IT terms so you're more prepared next time
- Switch off and think about break time.

What does it tell you?
Have a look back at your answers and first ask yourself if you been totally honest. What do your answers tell you about your experiences and confidence with technology? Are you enthusiastic about what technology can do for you and your patients, or do you feel as though you're only ever a mouse click away from catastrophe and feel like a technology dinosaur?

You might have a little of all these attitudes in your own approach to technology. It's almost certain you'll encounter some or all of these attitudes in others as you embark on any improvement programme that involves technology.

The important message to bear in mind is that you don't have to be technical to recognise the opportunities that technology offers. What you do need is confidence in your own experiences and knowledge of patients; how they feel; how we care for them now; and, most crucially, how we want to improve this in the future.

Don't just ask 'What does the system do?' Ask 'What does the system do for my patients, my colleagues and me?'

Challenge with confidence:

You may have an existing piece of technology that you don't fully understand. Perhaps your department has introduced something new, or maybe you have an idea about how technology could be used to improve care. Whatever the case, don't be afraid to challenge the technology and ask how it will make a difference to patients' lives and your own.

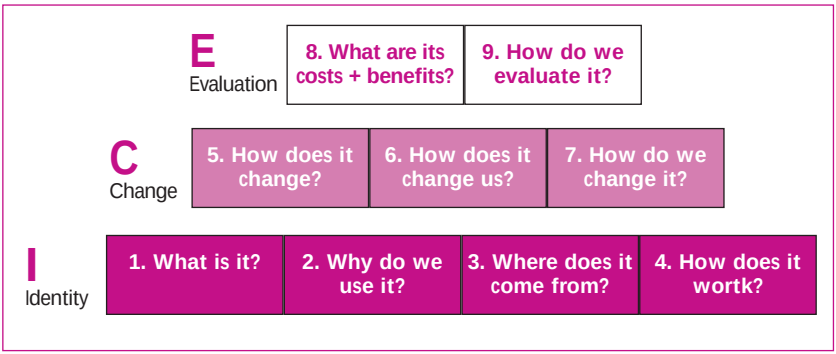
Remember:

- you have to understand what technology does to understand what it can do for you
- the end user should always be convinced of the benefits of technology – not feel pushed into using it
- good implementation teams actually welcome challenges and questions from users – it's a positive dynamic that they know will improve the final product and help make sure the desired benefits materialise.

What sort of questions could you ask?

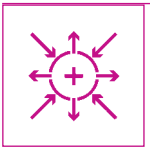
ICE-9 was developed by KnowledgeContext, a not-for-profit educational organisation based in the USA. It is a framework of nine key questions used to help us evaluate technology in a world where it is so readily available. Although originally developed for students – it's a useful tool for anyone who wants to understand more about the purpose, value and potential of any technology.

Have a go at using the questions in the ICE-9 model to think about all the technologies around you – a mobile phone; a blood glucose monitor; or even a brick because that's a technology too.



Learn more:

- for more detail on the ICE-9 questions and how to apply them, see www.knowledgecontext.org



4. Information Technology (IT) - understanding the bigger picture

In health and social care, as with other complex organisations and systems, no technology can work in isolation. That's why in thinking about ways we can use technology - and in developing and implementing it – we have to think also about the context in which it will operate. There's more about integrating technology into existing local systems in section 6, but one major technical driver affecting all NHS organisations now is the National Programme for IT (NPfIT). It's useful to understand how this is changing health and social care.

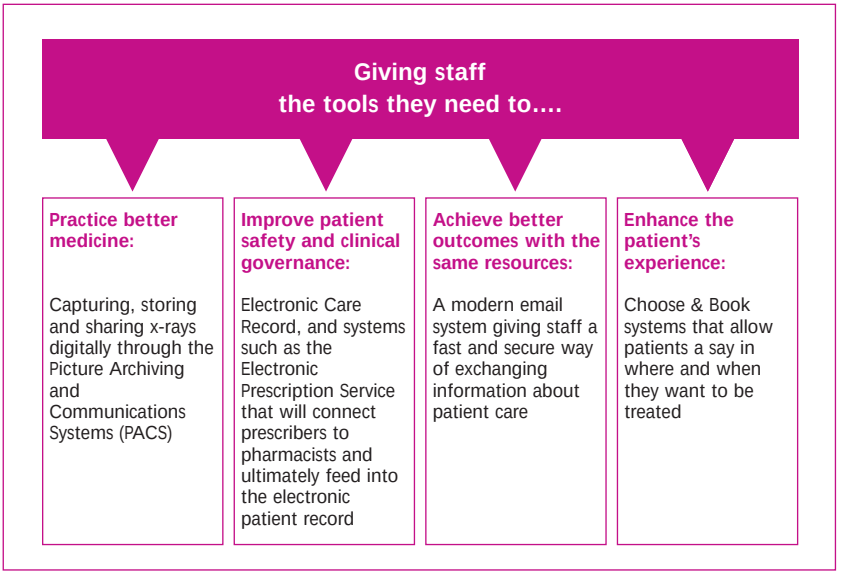
A focus on Information Technology (IT)

This national programme focuses on improving services and patient care through information technology. Fundamentally, it is about giving the NHS the tools it needs to become a patient-led service – a service that designs its systems around the needs and preferences of patients and users, rather than expecting patients to passively accept what has been decided for them.

The National Programme is the biggest civil IT programme in the world and it affects everyone in the NHS and social care: GPs; nurses; midwives; chief executives; therapists; allied health professionals; managers; hospital doctors,; booking clerks; and many others who will use the new technology to transform patient care.

The National Programme for IT is a single term for the many different technologies that are being introduced right across the NHS as part of a single national strategy. NHS Connecting for Health is the body of IT specialists, clinicians, improvement leads and other professionals who are leading the development and implementation of these technologies, and supporting the local NHS as it gets to grips with them.

These are just some of the ways the programme will change things for patients and staff:



How does all this affect you?

NPfIT is by no means the only programme introducing new IT into the NHS - many local healthcare organisations are adapting existing technologies and developing new ones in response to the particular needs of their patients and communities. But taken together, the national and local drive to improve care through better IT systems means that you may feel like technology is being 'done to you' and you may wonder what level of control and influence you actually have over it.

We will say a bit more about three things you can do to take control which are:

- be informed and get involved
- get in touch and
- be hands on.

1. Be informed and get involved: When you are exploring how technology can help you with service improvement locally, you need to understand a bit about the national picture but more importantly know about the systems that are already in place locally, or are on the way.

Increase your basic knowledge of IT in the NHS

- go to the NHS Connecting for Health website www.connectingforhealth.nhs.uk for more about the technologies and benefits and what is happening in your region
- speak to your local information management and technology (IM&T) lead for a more detailed picture of what's being implemented in your trust or organisation.

Get more actively involved

Thousands of frontline staff – including clinicians and service improvement leads - are already helping to scope and test National Programme technologies. They are contributing through:

- attending road shows and local engagement forums
- participation in networks and expert reference groups

See the 'clinicians' section on www.connectingforhealth.nhs.uk for more information on how you could get involved.

Learn more:

- the European Computer Driving Licence (ECDL) is an internationally recognised qualification, adopted by the NHS as the standard for IT training. It enables staff to achieve a basic standard of IT skills and is recognised as an important step towards exploiting the full power of the new systems being introduced. To find out more contact your local training lead or visit www.ecdl.nhs.uk
- the Tabletop Challenge is an interactive engagement tool based on the traditional board-game format. It is designed to get clinicians and other staff talking about how technology affects them. It encourages staff to discuss IT in the NHS in relation to their own jobs and can be used at team meetings, learning events, or away days. See: www.connectingforhealth.nhs.uk and search for 'table top challenge'.

2. Get in touch: Find out who your local information management and technology (IM&T) leads are and ask them more about what IT systems are in place locally and what's planned for the future. Clinical leads as well as improvement or change leads can be useful sources of help and advice, whether you:

- already have an idea and need to know whether it will fit with your organisation's wider technology infrastructure and strategies
- or you want to know more about the actual or planned benefits of a local IT system.

Even with systems that have been in place for some time - the benefits may never have been made clear. If you are expected to use the technology, you have a right to understand how it should be changing and improving things for patients, and often staff too.

3. Be hands on: Do you know what your current IT systems can do? Think of your mobile phone or your DVD player. If you are like most people, you will be familiar with only a fraction of their possible functions. It might be that the technology you need to make your improvement happen is already there! Some primary care teams, for example, are capitalising on the fact that just about everyone has a mobile phone They are texting patients with long-term conditions, reminding them about appointment times; self-monitoring; and medication.

Ultimately, the only way to find out what technology can really do is to 'play' with it. Don't think this is time wasted – it will be time well invested if it leads to better services using the same resources. So be confident about asking questions, experimenting and testing out its different functions. As technologies continue to be developed with increasing numbers of functions, again think about a mobile phone that's a web browser, camera and music player, you'll need to get used to mastering more than just the basics.

Case study
Getting the most from PACS*

The PACS system is very intuitive. The advantages include speed and flexibility that is saving time. Not only do we have instant image access, but also we can do so much with the image once it's on the screen – for instance using any magnification to zoom; examining associated images and reports; taking measurements; and adjusting images to see different body tissues.

PACS has acted as an ambassador for the department. Clinics are running more smoothly and quickly, giving staff more quality time with patients.

Patients themselves are very impressed. No sooner have they had their x-rays taken and returned back to the clinic - the doctor has already viewed the image on the computer screen.

Senior radiographer on the Picture Archiving and Communications System (PACS).

Case study
Taking the pain out of prescribing

Having worked towards operating a paperless practice for 10 years, we realised straight away what potential benefits the Electronic Prescription Service could bring to both our practice and our patients.

The long-term benefit is that our GPs will not have to manually sign piles of paper prescription forms, but will use a digital signature instead. Also, our patients will be able to go straight to the pharmacy without having to call at the surgery beforehand just to collect a piece of paper - far more convenient for all involved.

The other benefit that I've seen is in data quality. People working at the pharmacy no longer have to manually input prescription information and that should improve accuracy. We've had a few instances in the past where the wrong drug was given to the patient. The new system will most certainly help to stop this.

GP practice manager on the Electronic Prescription Service

* See glossary Section 11 for explanation

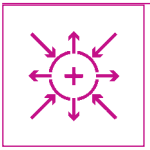
Case study
Smarter care through clinical systems

GPs and practice staff are using clinical systems to make vast improvements in the way they manage care for people with long-term conditions. By ensuring that each patient has an accurate diagnosis code entered in their electronic record, they have been able to build electronic chronic disease registers that enable primary care teams to:

- quickly identify patients who need to be invited to clinic for their routine checks
- recall those who are regularly failing to attend their reviews.

Nurses running the clinics use the system's built-in templates to record patient data in a speedy and standardised way. The information is then read on the system for the GP at the next consultation.

Other practices are using clinical systems with equal success in preventive care – in particular with annual flu campaigns. The system is helping them identify those patients who would be likely to suffer complications from 'flu – for instance those with chronic respiratory or renal diseases. A mail-merge function allows staff to pinpoint these 'at risk' patients and invite them for vaccination or send out a reminder if needed. The system can also provide accurate statistics of flu vaccine uptake for reporting to the PCT and Health Protection Agency to aid future planning.



5. Technologies beyond ICT

So far, we have focused quite heavily on information and communication technologies – more commonly known as ICT. That's because for many of us, this is the sort of technology (computers, software, phones and more) that forms such a big part of our lives.

However, increasingly in healthcare, as with other sectors, the boundary between ICT and other technologies is being blurred. Many products are being developed with an ICT component so that information generated from one process can be shared or uploaded into another. For example, a device to check a patient's blood glucose level might also send that reading straight to the patient's electronic record, as well as trigger an automatic alert to the clinical system used by the diabetes team.

However, it's important to remember – especially when you want to improve patient services and care – that other sorts of technology, including devices and products, can and do make a huge difference to patients' lives and the quality of care we can offer them.

Have another look at section 2 of this guide and remind yourself how technology is helping organisations achieve the 10 High-Impact Changes.

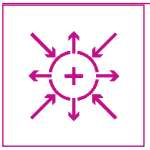
The future – it's already here:
A wide range of assistive technologies are already helping people maintain their independence – including devices to help people grip everyday items such as a hairbrush or cutlery, stair rails and vision aids. More sophisticated 'intelligent' systems are even monitoring people's daily activities in the home, generating an alert to the care team if the person's normal routine is broken.

Yet, as we know in our own device-dependent lives, technology develops at a rapid pace. There are groundbreaking products coming onto the market all the time that will have an exciting impact on healthcare over the next few years:

- robot-assisted surgery is already a reality – making new levels of precision possible in neurosurgery as well as various vascular and orthopaedic procedures
- intelligent fabrics are being developed that could soon be available as items of clothing that offer patients comfortable and unobtrusive ways of monitoring their vital signs.

How can you find out about these technologies?

- colleagues who have worked in other trusts can be a good source of information. What devices and equipment were they using in their previous jobs and how does that compare to the products your trust uses now?
- research can pay off, even if that's just scanning your professional journals or the Internet for articles on what new products and devices are being used
- local expertise often exists within trusts and is a good first port of call. Many trusts have a research and development manager or team, or an innovations lead. Most trusts will have a purchasing manager. Ask them what sort of products and devices are being used across your area and how you can find out more.



6. I have an idea - where do I go from here?

Getting your idea for a technology-enabled service improvement off the ground can be a slow and frustrating process. In fact, although the NHS spends about £6 billion each year on medical devices, the pathway that innovators (individual, companies and universities) must follow to bring their innovation into the NHS is complex, sometimes inefficient and often confusing. Even when your idea is relatively straightforward, it can be difficult knowing where to start to get your proposal off the drawing board.

From the earliest stages - you will need to ask yourself two important questions
- who should I work with?
- how should I work?

Who should I work with?

If you think your idea could be new, one of the first things you need to consider is securing the intellectual property rights. Several excellent ideas generated in the NHS have gone on to be patented and developed by other organisations because the NHS originators have not fully understood how to protect their idea.

Right at the start it's important to ask yourself:
- is this technology new?
- could it be an invention?
- or is it a novel modification of an existing technology?

1. Contact your local research and development team or local NHS Innovation Hub* who can advise on how to undertake the relevant searches to test the novelty of your idea.

2. Consider whether you need to protect your idea under Intellectual Property Rights.

3. Seek further advice from your local NHS Innovation Hub* who may be able to help you assess; develop; protect; and even fund your idea.

* To find your nearest NHS Innovation Hub see www.nic.nhs.uk

Whether or not your technology is a new idea, or whether you're simply wondering if technology can help you make a particular service improvement, it will not be easy or advisable to progress things alone. Many people can help you in these early stages.

Case study
A homegrown hit

Louis, a physiotherapist, couldn't find a hand splint that was sufficiently robust to help one client with severely reduced function in her right hand. He knew it was crucial to encourage his client to keep as much function as possible in her right arm and that meant finding a splint that would help her grip everyday items like cutlery or a hairbrush.

"The soft foam versions on the market were too flimsy for the job - so I told the client that I'd try to build her something myself," explained Louis.

Louis put together his homemade model using a few unlikely items – including a mini plastic gym cone (the sort normally used in sports activities) with the pointed end sawn off so, for instance, a wooden spoon for mixing could be slotted in.

Things grew from there. Over the next six months, Louis worked with his medical physics department who were able to help him refine his prototype and reduce the number of separate parts. He then teamed up with his local NHS Innovation Hub who introduced him to a commercial partner - with expertise in microcellular polyurethane fabrications - and a design expert.

What started out as a homegrown solution for one client is now a viable product that is not only in production, but has already attracted a positive response from other therapists.

Case study
A simple solution with visible benefits

A simple icon on the desktops of all staff PCs has helped one hospital take a more integrated approach to children's services.

The Children's Service's Network (CSN) was developed jointly by a multidisciplinary team of ward clerks, medical secretaries, nurses, doctors, faculty clerks and managers. It provides immediate access to:

Continued opposite

- an A-Z list of contacts for child and family health care
- care records and all inpatient and outpatient letters
- relevant journals, parent and patient leaflets
- statistical information and national targets.

Developed on the trust's existing software, the network needed no additional funding. The key to success, says the trust, has been the grassroots support and ownership of the project from the start. The cost-effective solution is already improving team and interdisciplinary working and is giving a wide range of staff the knowledge and information they need to improve the quality and consistency of care for children and families.

How should I work?

While you are likely to get a lot of different help and advice from the contacts you make in these early stages – it's useful to have a clear idea of the steps you need to take to move your idea from concept stage to getting together a more concrete proposal. The following five first steps should help you:

- use sound improvement tools and techniques
- think creatively
- don't reinvent the wheel –borrow and adapt
- take a holistic approach
- be clear about the need

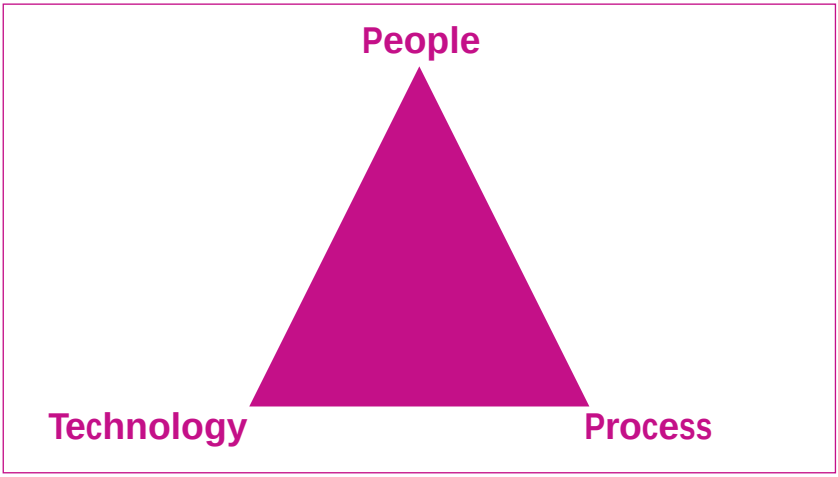
Step 1: Use sound improvement tools and techniques

A fundamental question to ask yourself is 'Is there a technical solution to this problem and will it deliver the service improvement needed?'

In fact, very few service improvements involve no technology at all – even if it is the right piece of paper being faxed at the right time to the right clinic. But – because of the likely cost involved and the often complex and lengthy adoption and implementation process - you need to feel confident that the service change you are proposing truly does depend on the introduction of more or new technology and that it can't be achieved by rethinking existing methods.

Many of these answers will come out of sound improvement practices: the methodologies and tools that underpin any sort of service improvement.

The people, process and technology triangle is a simple model that helps us properly understand the interdependency of all three elements in any change process:



Overemphasising or neglecting any part of the triangle can be disastrous for any change project. So think about the people, processes and technology aspects of your idea. Ask yourself:

- what processes might need to change?
- what technologies will help us make that change?
- how might people's roles change as a result of the new technology?
- how are patients and staff likely to feel about the change and the technology - and what needs to happen to support them?

The danger with technology-enabled improvements is that the people and process aspects are overlooked in the enthusiasm to get the kit up and running.

The following are just some of the people, process and technology issues that could emerge, for example, from a new clinical system linking GPs to hospitals. You will come across a lot more.

People issues:

- are the staff involved happy to use the new system?
- have users been involved in development?
- do users need new skills?
- does it slow down practice?
- what benefits are there for patients and staff?

Technology issues:

- how will the technology fit with existing systems?
- has adequate planning gone into setting up the technology and testing it?
- is there local support such as a helpdesk?
- what data security issues are there?

Process issues:

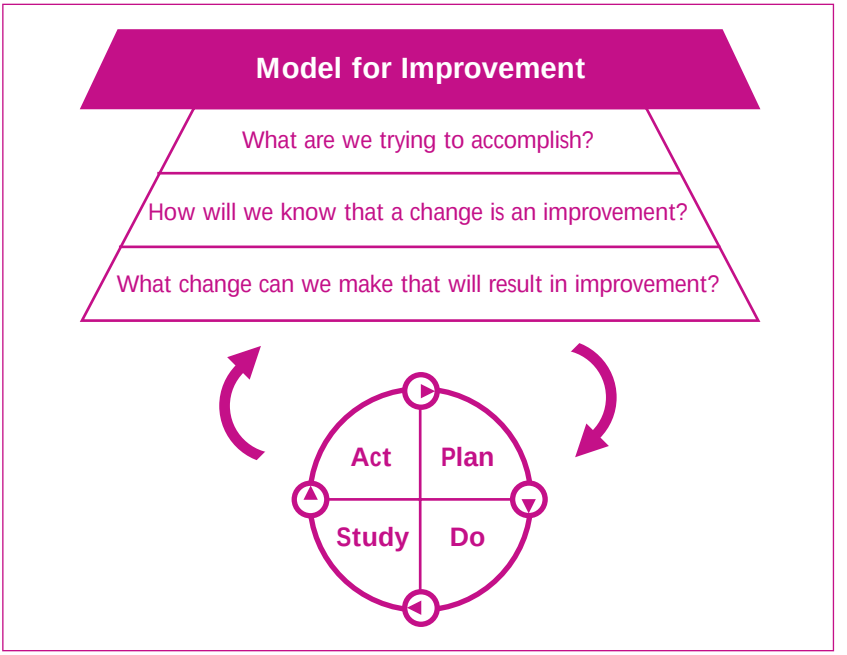
- how will the technology change current working practices?
- when will it be used?
- how can the system feed into other areas e.g. producing statistics for reporting and planning?
- will it save time and resources and how can these be reused?

Making sure you balance all three sides of the triangle will help you avoid scenarios like the following:

- scenario 1: People factors are strong but technology is weak…
  Users are initially enthusiastic and have the skills but there is a lack of on-going technical support – for instance no helpdesk. This demoralises everyone involved
- scenario 2: Technology is strong but process factors are weak…
  Users are trained and supported to use the system, but the data input by others is poor. This makes it difficult to search and retrieve data at the user end
- scenario 3: Process factors are strong but people factors are weak…
  Data quality is good, but core users lack the new skills and confidence to use the system. The users are reluctant to abandon the old paper-based methods

Model for Improvement[4]: a valuable tool described extensively across the Improvement Leaders' Guides as relevant in most settings. Designed to provide a framework for developing, testing and implementing change, the model reduces the urge to take immediate action, and highlights the benefits that careful study and planning can bring to any improvement idea.

The model uses three key questions and the now well established 'plan, do, study, act' (PDSA) cycles.



Design for success: The National Audit Office's report – Delivering successful IT-enabled business change (17 November, 2006) sets out some clear and simple success factors that you could apply to your own ideas about using technology to improve services and care.

The report sets out three core principles of success. In brief these are:

- senior managers should be fully on board and engaged. For example, are they demonstrating their commitment and are they clearly aligning the objectives of the technology-enabled change with your organisation's wider business objectives?
- the benefits need to clearly identified and managed. For example, have you clearly identified the 'what's in it for me' factors that will be crucial in selling the technology to key staff groups and your wider stakeholders?
- make sure you are acting as an 'intelligent client'. For example, are you creating constructive relationships with the people who will supply the technology and are you managing the risks associated with it?

Learn more:

- the core principles and activities that contribute to success are set out in full in a useful diagram on page 28 of the NAO's report Delivering successful IT-enabled business change. See www.nao.org.uk
- the Model for Improvement is explained in The Improvement Leaders' Guide to Process mapping, analysis and redesign. See www.institute.nhs.uk/improvementleadersguides

4 Source: 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.

Step 2: Think creatively

Technology is transforming the way services are designed and delivered right across the NHS. This is happening because improvement leaders are opening their minds to the creative and sometimes radical ways in which technology can be used.

Staff at all levels are being inspired by what technology can achieve. However, as an improvement leader, your whole-system thinking and your appetite for new thinking could put you in a stronger position than anyone to bring home the benefits of technology not just to your own organisation, but also to your wider health community.

Step 3: Don't reinvent the wheel - borrow and adapt

A lot of the time, the solutions we want for our local use are already solving similar problems somewhere else in the NHS, industry or other sectors. Finding out how technology is helping others is time well spent. There are multiple sources of information and inspiration you can use. Look again at the circle of people who may help you in section 6.

Others ways to find the help you need include:

- NHS Institute for Innovation and Improvement's National Innovation Centre - offering links to useful organisations as well as online tools to assess your idea www.nic.nhs.uk
- NHS Connecting for Health - the website contains a wide variety of health-related case studies and gives links to national and regional support teams www.connectingforhealth.nhs.uk. Search under 'accolade' for some of the best local technology solutions
- CHAIN - 'Contact, Help, Advice and Information Networks' - are online networks for people working in health and social care. They are based around specific areas of interest including service improvement, and give people a simple and informal way of contacting each other to exchange ideas and share knowledge. For more information about joining this network see www.chain.ulcc.ac.uk

Step 4: Take a holistic approach

No technology, especially information technology, can ever be introduced in isolation – it will always need to be part of a wider business change process and it can often benefit more than one part of the system. Detailed mapping of the interdependencies and links between a new technology and existing systems will be an important part of your formal business case and project. However, even at the earliest stages of exploring an idea, it is wise to think widely about the possible impact of the new technology.

Ask yourself:

- does the technology and its benefits fit with my organisation's wider strategy and business priorities?
- does it fit with current systems and the existing infrastructure?
- does it meet the required national or local standards - for instance the way a new software application might code a patient's diagnosis?
- is something similar already on the way - through for instance the National Programme for IT?
- if it's not included in the National Programme for IT - can it still be supported under your organisation's local service provider contract?
- what maintenance will your technology need - will it need specialist cleaning, for instance, in which case you may need to speak to your sterilisation and decontamination unit?

Case study
Bringing clinicians closer to technology

A new role was introduced in one large teaching trust to make the connections between governance, service improvement and the introduction of new technologies under the National Programme for IT.

As well as improving staff understanding of data definitions and quality standards - the new 'informatics change co-ordinators' significantly reduced the cultural barriers between IT professionals, managers and clinical professionals. They developed new opportunities for clinicians to work with the health informatics team and established communities of practice for different areas of clinical information and service improvement. This maximised the involvement of clinicians in technology-related service change, while still enabling them to retain their professional status in their clinical areas.

Step 5: Be clear about the need

No matter how good your idea, there are many reasons why you could face an uphill struggle in getting it off the ground. There may well be issues of cost. Also, people often like what they know and aren't usually ready to embrace something new when what they have seems okay.

Being very clear right from the start about the need to introduce a technology and being able to make a strong case for it, is crucial. It's not enough to say there **is** a problem: for instance, outpatient waits remain long because clinic time is being wasted by 'did not attends' (DNAs). You need to say **how** technology will tackle this; what **benefits** will result for patients and staff; and what **costs** are likely to be involved.

Most improvement programmes are justified and formally approved on the strength of their expected benefits – researching, mapping and communicating these as early as possible will:

- help you to 'sell' your idea to other stakeholders – if you're not crystal clear about the benefits, how likely is it that others will come on board
- make the later stages of your improvement work easier
- help you make informed decisions about whether or not to continue if it hits problems – do the benefits justify the extra work or costs involved in overcoming the hurdles?

While exact figures vary, research[5] suggests that more than 60% of projects significantly fail to deliver the intended benefits, and even when they are achieved, they are often not fully realised or sustained.

Why does this happen? In many cases it's because:

- the benefits have not been identified and clearly defined in the first place
- they are not aligned to clear business objectives
- no-one has been given clear 'ownership' of the benefits
- or, if there are owners, they see their job as complete once the project is delivered, when in fact the benefits will only be realised over time.

At their simplest level benefits are the 'what's in it for me' factors. They need to be relevant to patients and all staff using the system as well as the wider stakeholder community. Moreover, they need to be measurable – if you can't measure it, ask yourself whether it is in fact a benefit at all. Remember the first two questions in the model for improvement in section 6:

- what are you trying to achieve?
- how will you know a change is an improvement? This means measuring the effect the technology has.

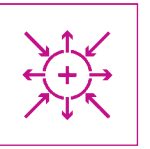
5 Project Management Informed Solutions www.pmis.co.uk

A benefit can be financial or non-financial – and there will generally need to be a balance between both types in any change project.

Technology-enabled improvement:	benefit:	potential measure:
Computerised telephone monitoring system in home setting for people with chronic lung disease	More timely advice for patients when their condition worsens and better use of community nurse resource	• reduction in unplanned hospital admissions • reduction in length of hospital stay • increased positive feedback from patients
Text messaging to remind patients about their outpatient appointments	Less waste of clinic time and more timely intervention for patients who are seen at the right time	• reduction in 'DNA' rate • reduction in appointments needing to be rearranged • reduction in administration costs
Introduction of a patient advice and information database	Health professionals have immediate access to up-to-date patient advice leaflets at the point of care. Patients feel better informed and more confident. A record is generated of what information each patient is given	• increased % of patients being offered the relevant information at the right time
Network-linked personal digital assistant (PDA) technology replaces bedside charts to record and check patients' vital signs	Important information about pulse rate; blood pressure; temperature etc are captured at bedside and sent direct to team rather than staff having to search for it. Staff can prioritise care on basis of need. Patients get more timely care	• increased frequency and accuracy of recordings • reduction in time for information to be shared

Learn more:

- about measures and measuring in the Improvement Leaders' Guide to Measuring improvement and Increasing flow. Both can be found on www.institute.nhs.uk/improvementleadersguides
- the Office of Government Commerce website has more advice on business cases and a wide range of standard templates at www.ogc.gov.uk



7. Implementing a technology-enabled improvement

While the same improvement principles, change management and project working skills will still be highly relevant and form the basis of your activity, studies[6] show that success or failure of technology-enabled service transition hinges on one factor more than any other – people and in particular excellent leaders.

Technology alone is not enough to guarantee successful change. It won't in itself improve people's ability to work together and it won't turn an ineffective process into an efficient one. Effective improvement requires changes in behaviour and ways of working. That means:

- using leaders who cannot only promote the technology, new behaviours and benefits – but are ready to enthuse about them and 'translate' them for patients and staff
- ensuring that even those leading the project from the technical side have a sound understanding of the business and excellent people management skills.

Good improvement leaders are also excellent communicators so communicate, communicate and then communicate some more

A good communications strategy is central to any technology-enabled change and according to research, particularly critical in healthcare. This may be because clinicians often expect immediate benefits while at the same time can be more reluctant to buy into systems they feel will slow down their practice or erode their autonomy.

Strong communications need to run throughout the lifetime of the implementation and well beyond, as some benefits will only materialise over time and you will want your improvement to be sustained.

6 A literature review – evidence of the role of leadership and leadership development in contributing to the effectiveness of major IT-led transformation. Produced for the NHS Leadership Centre by Dr Sadie Williams of Henley Management College

Communications checklist:
You could use these ideas to help you think more broadly about the timing of your communications activities, your different audiences, and your methods.

Ask yourself...	suggestions	impact
Is it ever too early to start the communications process?	No. A project's success is not only determined by its budget or timing – but also by how ready stakeholders are to accept and adopt the technology Timing your communications wisely and managing expectations is also important	• builds awareness and trust • starts a two-way dialogue with end-users that can be crucial in shaping the final system • cultivates positive attitudes
Who should I be communicating with?	Your whole stakeholder community including patients and the public as well as all the staff involved	• stakeholders feel valued • strong relationships are established • you have a firm foundation for later stages in the implementation such as training
Who can help me?	Think about identifying and using: • champions – especially clinical champions • chief executive and other senior leaders • early adopters – the people who will be keen to try it out • your technology leads	• your message has greater credibility • using a range of people brings in useful perspectives which can help shape the final system

Continued on the next page

Ask yourself...	suggestions	impact
What do I need to be saying?	You need to be translating the benefits for your stakeholders: • bring out the 'what's in it for me?' factor for different staff • link the benefits to clear business objectives • think about the benefits that people can relate to easily and can be achieved early • but also be honest – tell people when you simply don't have the information, as well as when you do	• users are more open to training and less likely to lose interest if the project is delayed or hits problems • honesty generates greater trust between you and stakeholders
How do I need to be saying it?	Use many different methods. Consider: • two-way dialogue where staff can quiz leaders • team briefings to talk about progress • special bulletins • posters • webcasts and podcasts	• staff feel their concerns matter • useful feedback from staff is channelled back into the development
How do I deal with any negative attitudes?	Expect them - they are a normal part of any change process - but don't ignore them: • think about some of the barriers people face, including lack of awareness, feeling threatened and being pushed not persuaded	• negative attitudes are discussed openly and aren't allowed to fester • slow-adopters feel they are being taken seriously
How do I keep it inclusive?	Look for formal and informal opportunities to get users together to explore how they might use the technology and what impact it will have on their work.	• builds user confidence • opens up new ideas to inform the development of the system

Learn more

- look at the Improvement Leaders' Guides Leading improvement and Sustainability on the NHS Institute for Innovation and Improvement's website www.institute.nhs.uk/improvementleadersguides

In any change process, things can go wrong. But where technology is involved, expecting a smooth and rapid ride is almost certainly setting yourself up for disappointment:

- expect setbacks and prepare for them: this is a normal part of the implementation process and if you have done enough work to identify and communicate the benefits of the new idea, these should give you the motivation and justification to stay on track even when things are slow and difficult
- learn from mistakes: often in healthcare, we forget to see mistakes and even failures as a valuable chance to develop our knowledge and do things better next time.

Value your professional judgement

Technology has a huge potential to improve not just the quality of care for patients, but safety too. The shared electronic record, for instance, will make sure that a professional treating a patient has appropriate access to important clinical data at the point of care – including information about drug allergies. But the flip side is that we can over-estimate the reliability of technology and forget to use our own professional experience and instincts. Although they have the potential to improve safety and save lives, computers and devices can create new types of errors:

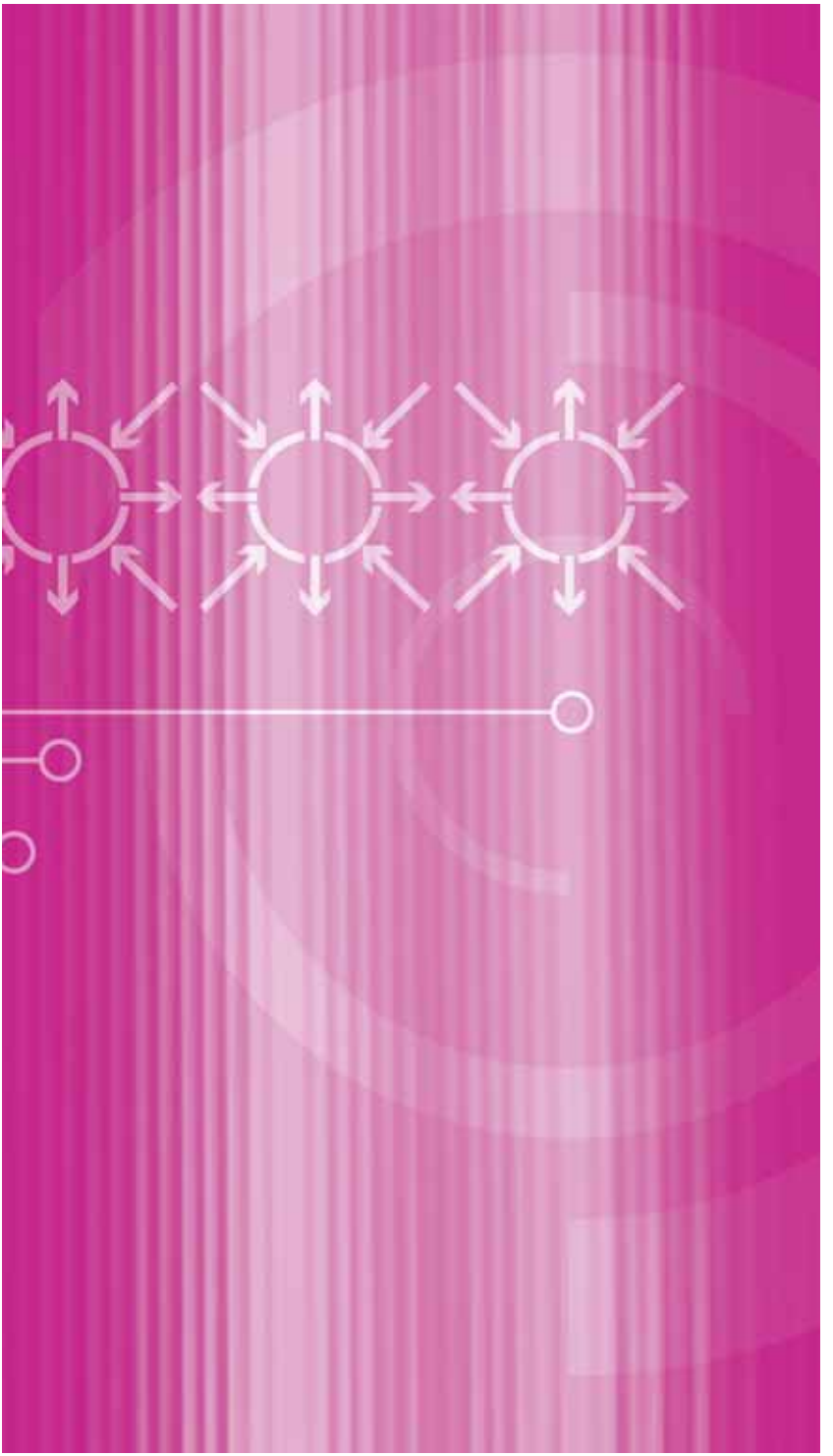
- at the broadest level, we need to remind ourselves that technology is just one of our tools. It is everyone's responsibility in healthcare to remain vigilant and careful around technology – for instance would you use a syringe pump without checking it was working first?
- at the more detailed stages of scoping and implementing any technology-related improvement, we need to recognise and minimise these risks through sound governance and a strong learning culture within our teams and organisations.

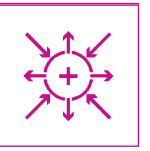
Whatever technology you use, use your common sense to help avoid errors and keep patients safe.

Case study
Caught in the headlines

An ambulance crew hit the national headlines after taking a patient 200 miles in the wrong direction due to a faulty satellite navigation system.

The paramedics were transferring the patient 12 miles across Essex but ended up near Manchester before they realised their mistake. The crew were asked to take the patient to a specialist hospital in a journey that should have taken about 30 minutes, but a faulty on-board navigation system meant they were 'sent' north and ended up on an eight-hour round trip.





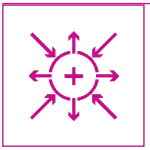
8. Top messages to take-away

Scoping and implementing any sort of improvement in a complex healthcare system can seem like a daunting task. And when technology is involved too, you might feel you are facing a mountain of difficulties such as costs, benefits, communications issues, business cases, procurement protocols and more.

Use these messages as a quick reference to help you stay on track, in control and enthusiastic about your improvement idea. The journey may be long, but the benefits are often well worth the struggle:

- technology can seem daunting, but remember it makes life easier and often more enjoyable when we've mastered it
- technology is developing fast – everyone has to deal with this so don't let the pace of change put you off but remember that all users need to be trained
- take time to find out what technology can do for you and your patients. Be confident about exploring the technologies you already have – can you get even more out of them?
- often it feels like technology is being thrust on us – and sometimes it is. But think creatively about how it might improve patient care and make life easier for you
- get involved and find out how you can influence the technologies being introduced in your organisation
- whether you just want to find out more about technology or you have a specific idea in mind - there are people out there who can help you
- don't focus exclusively on the technology itself – remember that people and processes are equally crucial parts of the equation
- remember too that technology can make major improvements across both health and social care – so try to think about the whole system not just your part of it
- technology can improve patient safety, but it can lead to new sorts of errors too, so anticipate the risks and control them
- be patient – the full set of benefits from a new technology can take time, sometimes years, to materialise

Remember why you are using or introducing technology in the first place – to make care faster, safer and better for patients.



9. Frequently asked questions

Question
What is NHS Connecting for Health and why is it different from the National Programme for IT?

Answer
NHS Connecting for Health is an agency of the Department of Health and it is the organisation responsible for supporting the implementation of the National Programme for IT – or NPfIT as it is sometimes called. NPfIT is a multi-billion pound programme to introduce a range of technologies into the NHS to:

- give healthcare professionals the information they need to improve services for patients – for example through the electronic patient record which will help patients get faster, better care wherever they are
- give patients more choice and control over their care – for instance through booking systems that will allow them choice over the time and place of their treatment.

Question
How does my organisation make decisions about what technology to introduce and use?

Answer
Your organisation's broader development strategy, business plans and its IM&T (Information Management and Technology) strategy will all be important factors when it comes to considering any new technology or technology-enabled change. Your organisation will also need to think about wider local and national directives and initiatives – for instance the local implementation of National Programme for IT technologies, or national patient safety standards. It will need to make sure that any additional technology supports, or at least does not hinder, these.

Question
Why are there so many ways to describe different types of technology – for instance assistive technologies; information and communication technology; intelligent technology?

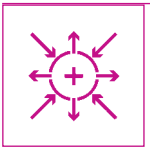
Answer
If you find the number of different categories for describing technology confusing – you're not alone. There is still global debate about the categorisation of technologies and no clear solution in sight. Perhaps the more important thing to focus on is what a technology can do; why we use it; and what benefits it can bring. These and other fundamental questions you should ask about any technology are outlined in section 3 of this guide.

Question
Where do I go for more detailed help and information on implementing a technology-enabled improvement?

Answer
While this guide is a good starting point for people who are new to technology or have only a basic knowledge of it, there are other good sources of help if you want to know more about preparing for and managing a technology-enabled improvement. Look again at the circle of people who could help in section 6. Other titles in the Improvement Leaders' Guides will be useful because they talk about the wide range of skills and tools you need to lead and manage any sort of improvement. Find the NHS Institute for Innovation and Improvement's Improvement Leaders' Guide series on www.institute.nhs.uk/improvementleadersguides

Question
Where does using technology for knowledge sharing and learning fit?

Answer
Technology has had and will have a tremendous impact in the area of sharing knowledge. There are so many applications that it is beyond the remit of this Improvement Leaders' Guide. There is also more available in the form of e-learning and for those more adventurous amongst us there are wikis, blogs and podcasts. For all of us there are the search engines on the internet and sites like the National Library for Health www.library.nhs.uk and the Clinical Knowledge Service www.cks.library.nhs.uk. Our advice to you would be talk to those who can advise as identified in section 6 and then go out there and find the knowledge areas most useful to you and your work.



10. Some of the best links

Here's some good websites giving you more information about technology – the many forms it is taking and how it is being applied in a range of settings, including healthcare. It's just a small selection to get you started – why not add your own favourites as you explore further?

General technology news

- BBC - a lively roundup of some of the newest uses for technology across all settings, including health and social care. www.news.bbc.co.uk/1/hi/technology/default.stm

- The Guardian Unlimited - a good way to get a feel for trends in technology and a quick way to browse The Guardian's weekly technology section online. technology.guardian.co.uk

IT in health and the public sector

- eHealth Insider - news, research and comment on how information technology is being used in healthcare. Try this site if you like listening to podcasts. www.e-health-insider.com/

- PublicTechnology.net - takes a broader view of how technology is being used right across the public sector. There's specific sections for local government as well as the NHS. www.publictechnology.net

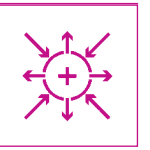
Assessing and progressing health technologies

- HealthTech Knowledge Transfer Network - a useful site particularly if you have a firm idea for a new technology and you need help progressing it. www.healthtech.globalwatchonline.com

- Cochrane Collaboration - if you want in-depth evidence about a particular technology try browsing the 'health technology assessment database'. Go to the link below, click on the 'Cochrane Library' icon at the top of the page and then select 'technology assessments'. www.cochrane.org/reviews

- Centre for Evidence-based Purchasing - run by the NHS Purchasing and Supply Agency and offering objective evidence about innovative products and procedures related to health and social care. www.pasa.doh.gov.uk/evaluation

- International Network of Agencies for Health Technology Assessment (INAHTA) - will give you a greater insight into what's happening globally to assess different technologies in healthcare. www.inahta.org



11. Jargon buster

Care Records Service: Currently under development, this will be an electronic store of over 50 million health and care records which can be accessed by health professionals where and when they are needed. It will also give patients secure internet access to their own health record.

Data management: This comprises all the disciplines related to managing data as a valuable resource.

Device: Often known as 'assistive devices' these are technologies that help people with everyday living tasks – such as special grips for turning taps or cooker knobs.

Dictionary of Medicines and Devices (dm+d): The source of terminology and a common health language for medicines and devices used in healthcare.

EPR: Electronic patient record that replaces the cumbersome paper-based record and can be accesses at any time by any appropriate care professional.

IM&T: Information management and technology – a term covering the use and management of information through any organised systems, including paper-based or technology-led.

Informatics: In health, this is the knowledge, skills and tools that enable information to be collected, managed, used and shared to support the delivery of healthcare and to promote health.

Interface: The method or piece of equipment for connecting units or systems – at its simplest level the buttons on a television are the 'interface' between the machine and the user.

LSP: Local service provider - a third-party that manages and distributes technology software and services to customers.

N3: The new fast, broadband communications network for the NHS. N3 is delivered by BT and replaces the existing private NHS network, NHSnet.

Networked: Simply means two or more computers connected together so they can communicate with each other and enable users to share information.

Output-based specification (OBS): These set out the rigorous technical requirements that prospective suppliers of technology to the NHS must meet.

PACS: Picture Archiving and Communications System - enabling images such as X-rays and scans to be stored and sent electronically so that doctors and other health professionals can access the information from different locations with the touch of a button.

PAS: Patient administration systems used by local organisations to record and store patients' details.

PDA: Personal digital assistant – a small hand-held computer that many use as personal organisers but are now being increasingly used by clinicians at the point of care.

Spine: The name given to the national database of key information about a patient's health and care and forms the core of the NHS Care Records Service. It will include patient information like NHS number, date of birth, name and address, and clinical information such as allergies and adverse drug reactions.

Telecare: Systems that enable the remote care of elderly and vulnerable people, allowing them to remain living in their own homes. They range from devices that the person operates themselves – such as a 'panic button' or automatic early-warning systems that trigger a message to the health care team if, for example, a person has not carried out their normal routine.

For more help with jargon busting see the NHS Connecting for Health website at www.connectingforhealth.nhs.uk

The Improvement Leaders' Guides have been organised into three groups:
General improvement skills
Process and systems thinking
Personal and organisational development

Each group of guides will give you a range of ideas, tools and techniques for you to choose according to what is best for you, your patients and your organisation. However, they have been designed to be complementary and will be most effective if used collectively, giving you a set of principles for creating the best conditions for improvement in health and social care.

The development of this guide for Improvement Leaders has been a truly collaborative process. We would like to thank everyone who has contributed by sharing their experiences, knowledge and case studies.

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To download the PDFs of the guides go to www.institute.nhs.uk/improvementleadersguides

The mission of the NHS Institute for Innovation and Improvement is to support the NHS and its workforce in accelerating the delivery of world-class health and healthcare for patients and public by encouraging innovation and developing capability at the frontline.

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