Delivering value with digital technologies
Briefing: April 2022

Making a difference with digital technologies: identifying and evaluating benefits

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Delivering value with digital technologies

Digital technologies such as digital medicine, genomics, artificial intelligence and robotics have a huge potential to transform the delivery of healthcare.[1]

These technologies can empower patients to participate actively in their care, with a greater focus on wellbeing and prevention. They also support the prediction of individual disease risk and personalise the management of long-term conditions.

The HFMA, supported by Health Education England, is delivering a 12-month programme of work to increase awareness amongst NHS finance staff about digital healthcare technologies, and enable finance to take an active role in supporting the use of digital technology to transform services and drive value and efficiency.[2]

Ensuring that investment in digital technologies makes a difference is key to sustainable transformation.

The HFMA briefing *Accounting for revenue and capital: implications for the digital age*[3] explores the key funding and accounting issues that need to be considered when developing business cases for digital transformation projects.

This briefing focuses on identifying and realising benefits for digital transformation. It is not a comprehensive guide to benefits management, but explores some of the key issues, illustrated with examples. It covers:

- understanding the problem that needs solving
- making the case for investment by identifying the potential benefits
- understanding the resource impact of new care models
- defining the metrics and identifying sources of evidence
- measuring success.

[1] HFMA *Introduction to digital healthcare technologies*, July 2021
[2] HFMA *Delivering value with digital technologies*
[3] HFMA, *Accounting for revenue and capital: implications for the digital age*, December 2021

Understanding the problem

Digital technologies are increasingly being recognised as part of the solution to addressing some of the major challenges the NHS faces, but without a clear understanding of the problem at the outset, there is a danger that poor investment decisions will be made, and the benefits of digital technologies not realised.

> *'It is important to start with looking at how a patient pathway needs to be improved, and then think how technology might help. Often organisations start with technology they feel might be beneficial and think "here is a bit of kit, let's use it".'*
>
> Bradley Quinn, associate director of insight
> Health Innovation Manchester[4]

Focusing on the patient

Digital transformation is not about deploying technology to replicate the current service model. Instead, placing the patient at the centre, digital technology, such as digital medicine, artificial intelligence, robotics and genomics can be used to radically transform the service model.

> *'The digital transformation agenda is not about implementing electronic staff records – it's about putting the citizen/ patient at the centre of healthcare delivery and using digital technology to transform the service.'*
>
> Patrick Mitchell, director of innovation, transformation and digital
> Health Education England

Understanding the problem and identifying solutions must be done with the patient as the focus.

> '*Patients need to be included as partners and informed about health technologies, with a particular focus on vulnerable/ marginalised groups to ensure equitable access.'*
>
> Health Education England
> The Topol Review, February 2019

Clinical teams, patients and carers, informatics professionals, change management experts and finance staff all have a role to play in understanding the problem and coming up with the best solutions. This is likely to include mapping patient pathways from end to end and considering where digital technology could be an enabler for improvement.

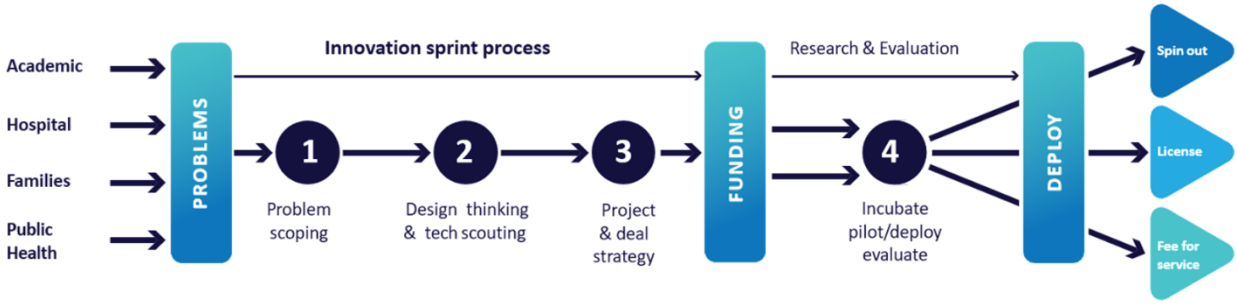
[4] Health Innovation Manchester is an academic health science and innovation system, formed by bringing together the former Greater Manchester academic health science network and Manchester Academic Health Science Centre

Illustration 1: Scoping the problem at Alder Hey Children's NHS Foundation Trust Innovation Hub[5]

Alder Hey's vision is to build a healthier future for children and young people using innovative digital and medical technologies as a key enabler. The trust's Innovation Hub aims to solve real-world health care challenges with cutting edge technology.

Adopting the approach used by large corporations, they start with problem scoping: what is the unmet need? If, in the process of scoping the problem, the Hub team realise it can be solved by transformation rather than digital technology, they hand it over to the transformation team.

One problem they have looked at is children not being brought to outpatient appointments. Despite various attempts to tackle the problem, it remained unsolved. 50% of the missed appointments were families who lived in deprived areas. The Innovation Hub has developed an artificial intelligence (AI) model which identifies those children who are likely to miss their appointment, and alerts the clinical teams. The teams then adopt different approaches to ensure these children are cared for. This allows the trust to reduce the number of missed appointments and increase equality in accessing care, as well as improve the use of healthcare resources by maximising outpatient capacity.



Alder Hey Children's NHS Foundation Trust Innovation Hub ©

Looking through the value lens

Identifying solutions requires looking through the value lens across the whole patient pathway. An inpatient stay might achieve a good outcome, but could the same or a better outcome be delivered in the community using fewer resources? Looking at the whole pathway enables the identification of low and high value interventions, some of which may be digital solutions.

What do we mean by value?

The notion of value in healthcare is largely based on the work of Professor Robert Kaplan and Professor Michael Porter of Harvard Business School in the US. They define value as the 'health outcomes achieved that matter to patients relative to the cost of achieving those outcomes'. This is often referred to as the value equation or **technical value** (figure 1).

[5] Alder Hey Innovation Centre

Figure 1: Value equation

Achieving technical value as described by the value equation is important for both individual organisations and systems, but integrated care systems (ICSs) are starting to ask themselves 'how should we allocate healthcare resources across the system to maximise outcomes for our local population?' This is often described as **allocative value** or **allocative efficiency.**

Digital technologies can play a key role in driving value. In some cases this may be about improving outcomes without reducing costs. In other cases costs may be reduced without a change in outcomes, or there may be improvements in both outcomes and costs.

> *'We believe that the ingredients are now in place for technology to help deliver the 'Triple Aim' of health care and make significant gains in quality, efficiency and population health.'*[6]
>
> Nuffield Trust

Illustration 2: Addressing the gap in detection of atrial fibrillation[7]

The problem

Data showed that there was a detection gap in the identification of atrial fibrillation (AF) amongst the population served by Hillingdon CCG, with about 2,000 patients potentially undiagnosed. One third of patients who have AF are asymptomatic, often leading to a delay in diagnosis. Too often, AF is only detected when the patient presents with a serious complication, such as a stroke.

The solution

The pathway for patients with AF was re-designed. Community pharmacists now measure the heart rate and rhythm of patients identified with risk factors for developing AF, with the aid of mobile electrocardiogram (ECG) monitors. The monitor works with a compatible mobile device (such as an iPad) running the app, which analyses the ECG recording and sends it to the hospital for interpretation by a cardiologist.

Improving value

It is expected that the new pathway will improve patient outcomes, with fewer people being admitted to hospital with a stroke. The cost model also forecasts significant savings for both the NHS and social care (see illustration 6).

[6] Nuffield Trust, *Delivering the benefits of digital health care*, 2016
[7] HFMA, *Using digital technologies to prevent stroke*, January 2022

Digital technologies as enablers to address NHS challenges

The NHS faces unprecedented challenges as it emerges from the pandemic. Digital technologies are seen as one enabler for these challenges:

- optimising patient pathways which improve patient outcomes, release staff time, free up estates and improve efficiencies
- enabling new ways of working so that workforce and bed capacity is released
- reducing downstream costs associated with complex co-morbidity conditions by investing in prevention and supporting patients to self-manage
- aiding the improvement of safety across health and care systems.

The recent Wade-Gery review *Putting data, digital and tech at the heart of transforming the NHS*[8] highlights the opportunities digital technology has to reimagine how care is delivered:

'Now is the moment to put data, digital and technology at the heart of how we transform health services for the benefit of citizens, patients and NHS staff.'

'The NHS must be bolder in stating that the health and care system should empower citizens to manage their health and well-being and give them the tools to take ownership.'

> *'Developing a digital business case is not like putting together a normal business case because of the unique 'game changing' potential of digital developments. It can be difficult for people to envisage totally new opportunities and completely and utterly change pathways and processes. The challenge is to think the unthinkable when constructing investment business cases, and not be constrained either by the past or the present.'*
>
> Paul Miller, non-executive director
> Salisbury NHS Foundation Trust

Making the case for investment – identifying benefits

Before investing in digital technologies, a business case needs to be developed that sets out what the problem is and how the proposed solution will deliver value for the NHS and patients. The business case will need to set out a compelling case for investment, clearly articulating what the anticipated benefits (both financial and non-financial) are.

What are benefits?

'Benefits are the measurable improvement resulting from an outcome that is seen as advantageous by stakeholders where system or business value is created. Examples include shorter length of stay, improved quality of life, staff experience or a reduction in operating costs.[9]*'*

Types of benefit

Benefits can fall into one of four categories, these are set out below.

[8] HM Government, *Putting data, digital and tech at the heart of transforming the NHS*, November 2021
[9] *Innovation collaborative - digital health*

Qualitative benefits

These are benefits where value is added but cannot be measured in monetary terms, for example:

- improvements in safety, experience or outcomes for patients
- better integrated care
- improved staff experience.

Cash releasing benefits

Cash releasing benefits reduce the cost of the care model so that the resources can be completely re-allocated elsewhere, or the cost can be removed from a budget, for example reduced number of healthcare staff required to deliver the same amount of care.

Non-cash releasing benefits

Non-cash releasing benefits provide economic value through savings from increased efficiency and effectiveness, but they do not release cash. This may result in better use of healthcare services or a saving in staff time which can reallocated elsewhere. Examples include reducing the staff time required to undertake a particular clinical procedure, reduction in unnecessary A&E attendances or length of hospital stay.

Societal or public benefits

Societal or public benefits are non-cash releasing benefits from which the NHS does not directly benefit, for example reducing the carbon footprint, investing locally and improving the wellbeing of the local population.

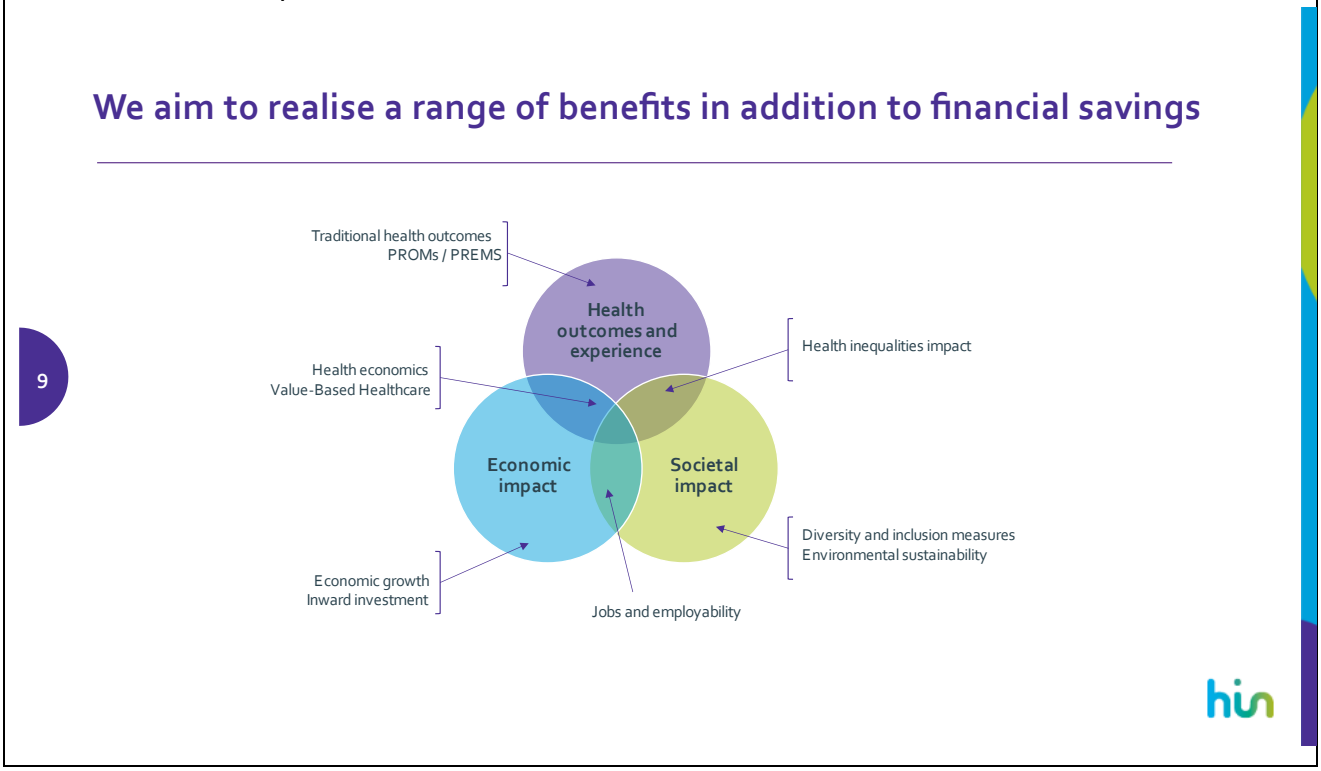
> *'How does the NHS embed environmental sustainability into digital design? Even if the cost of carbon is included within a business case, it is unlikely to be the deciding factor. We have developed a number of draft tools to support the NHS with this challenge. If you are interested in piloting them, we would be interested in hearing from you.'*[10]
>
> Ben Tongue, digital net zero lead
> Transformation Directorate, NHS England and NHS Improvement

[10] Please contact Ben on ben.tongue@nhs.net

Illustration 3: Identifying a wide range of benefits

The Health Innovation Network South London[11] leads on digital innovation across the 15 academic health science networks. It seeks to realise a range of benefits in addition to financial savings.

> *'We are increasingly trying to quantify the non-financial benefits. We need to be able to measure them on a consistent basis so that we have comparable returns on investment'*
>
> Dr Rishi Das-Gupta, chief executive, Health Innovation Network South London



[11] Health Innovation Network is the academic health science network (AHSN) for south London

Illustration 4: Identifying benefits for digital investment in mental health and community services

Berkshire Healthcare NHS Foundation Trust, a mental health and community services provider, is part of the Global Digital Exemplar programme[12]. NHS Digital has assessed the trust as having a high level of benefit realisation maturity.

Trust business cases for digital projects demonstrate the value they will add to the patient/ carer, organisation or economy. The benefits align to the trust's four objectives:

- harm-free care
- supporting our staff
- good patient experience
- money matters.

The benefits are developed collaboratively between clinical services, technical services, finance and other relevant departments. Benefits are categorised into four main types:

- **cash releasing benefits**, for example reduction in mental health teams' mileage
- **non-cash releasing benefits**, for example reduction in waiting times for treatment and overall treatment duration, reducing out-of-area placements
- **public/ economic (financial) benefits**, for example reduction in non-elective avoidable hospital admissions
- **qualitative benefits**, for example improvement in physical escalations compliance, improvement in PHQ-9[13] patient outcome scores.

> *'Linking benefits to the value agenda is key. With the constrained workforce environment, it is important to emphasise the non-cash releasing benefits and their impact on capacity just as strongly as the cash releasing benefits.'*
>
> Alex Gild, deputy chief executive, Berkshire Healthcare NHS Foundation Trust

Illustration 5: Taking a wide-ranging view on the benefits of digital innovation

Milton Keynes University Hospital NHS Foundation Trust prides itself on trying out innovative technology to support improvements to patient care.

> *'When putting together the business case, it is important to take a wide-ranging view on the expected benefits as well as being up-front about the challenges. There will be a period of learning and adaptation which should not be underestimated. In 2019 Milton Keynes started using a robotic system for general surgery, gynaecology, and other areas of surgical treatment. Robots enable a much wider uptake of keyhole surgery, are generally less invasive with faster patient recovery times and subsequently a reduced risk of infection. They also help support the trust to attract and retain high calibre clinical staff.'*
>
> Terry Whittle, director of finance, Milton Keynes University Hospital NHS Foundation Trust

[12] NHS England » Global Digital Exemplars

[13] Diagnostic tool for screening adult patients for the presence and severity of depression

Understanding the resource impact of new care models

Understanding the resource impact of a new care model across the whole patient pathway is key when putting together a case for investment. This will require input from finance, clinical teams and informatics, as well as experts in change management. The pathway is likely to be across several organisations, for example primary care, secondary care (acute, mental health and community) and possibly social care.

There are likely to be increases in some cost categories and decreases in others, and the resource impact is likely to span several organisations. Cost savings also need to be considered. Innovation should result in changes in the ways of working rather than simply adding new ways of working on to existing processes.

Before building the cost model, assumptions have to be developed, using the evidence available, for example what changes will there be to patient flow and demand? Some costs will only be incurred in the first year, while others will be incurred on an ongoing basis. Figure 2 provides a checklist of the types of costs that need considering when putting together a cost model for the business case.

Figure 2: Cost model checklist

Implementation costs including:

- capital costs of non-current assets that are either purchased or leased
- costs of digital technologies which are not capital expenditure[14]
- licence costs
- installation and estate costs, including interoperability[15]
- the costs of dual running when new arrangements are being tested
- information governance arrangements
- staff and patient training
- project management
- change management.

Ongoing costs including:

- licence costs
- maintenance
- consumables costs
- IT support
- information governance arrangements
- staff and patient training
- cost of evaluation/ benefits realisation
- depreciation, impairment and PDC dividend costs relating to non-current assets
- increase or decrease in healthcare staff costs due to new ways of working (for example more community interventions).

Cost savings, for example:

- reduction in hospital admissions
- reduction in length of stay
- reduction in clinical procedures.

[14] More details about capital and revenue can be found here: HFMA, *Accounting for revenue and capital: implications for the digital age,* December 2021

[15] Interoperability: the ability of computer systems or software to exchange and make use of information

Some of the data in the cost model will be based on estimates, but it should provide a robust base line for the business case. Illustration 6 describes how one multi-disciplinary team developed a cost model for their digital project.

Illustration 6: Building the cost model for Capture AF[16]

The clinical team worked with finance colleagues to develop a cost model which identified the resource impact of the new pathway over a five-year period.

First some assumptions were developed to inform the cost model, based on previous pilot work:

- how many patients would be screened by the community pharmacist?
- of those patients screened, how many would be detected to have atrial fibrillation (AF)?
- of those detected with AF, how many would start treatment?

This provided them with an estimate of how many strokes would be avoided.

The cost model includes the following types of cost:

- salary costs including primary and secondary care arrhythmia pharmacists, consultant cardiologist, admin staff and project manager
- screening costs including the cost of buying ECG monitors and iPads for use in the community pharmacy, licence fee for use of ECG monitors, payment to community pharmacists for each patient screened and subscription to the web platform
- additional costs incurred by the NHS due to identifying new patients with AF including medication and screening of patients on medication.

The team estimated the financial savings of treating fewer stroke patients, using cost data from a 2017 study which derived patient-level estimates of the cost of stroke care, both in the NHS and social care.[17]

The cost model demonstrates that the Capture AF service has the potential to make substantial savings for both the NHS and social care. The initial set-up costs in year one means that the NHS savings start in year two, but there are already savings for social care in the first year. Some of the costs, for example salary costs will be incurred each year, while others will be up front like the cost of the iPads, although these will need to be replaced after a few years.

Estimated savings for Hillingdon

	Year 1	Year 2	Year 3	Year 4	Year 5
	£	£	£	£	£
NHS savings	-112,777	134,276	728,808	1,595,194	2,769,578
Social care savings	198,616	701,490	1,499,644	2,588,304	3,967,469

[16] HFMA, *Using digital technologies to prevent stroke*, January 2022
[17] European Stroke Journal, *The economic burden of stroke care in England, Wales and Northern Ireland: Using a national stroke register to estimate and report patient-level health economic outcomes in stroke*, 2017

Defining metrics and identifying sources of evidence

Having identified the potential benefits, the next stage is coming up with a set of metrics and sourcing data so that a baseline can be established against which to measure change.

> *'The best business cases or health tech proposals have access to appropriate datasets, and access to the most granular level of patient activity data allows the building of comprehensive proposals that demonstrate real value to the NHS and across the whole system.'*
>
> Dr Wayne Smith[18]

Types of metrics and data

NHS England and NHS Improvement (NHSE&I) is partnering with regional teams across England and the Academic Health Science Network (AHSN) Network to create an Innovation Collaborative to support the rapid deployment of innovative technologies to enable care to be delivered to people at home.[19]

> *'Data is a vital aspect of any benefits realisation process whether that be engagement data collected from a digital product or patient experience questionnaire, outcome data collected from primary and secondary care or unit cost data used to monetising benefits.'*[20]
>
> NHSE&I Innovation Collaborative delivered in partnership with the AHSN Network

The Innovation Collaborative has put together a useful summary of the types of data needed for measuring benefits and how they might be sourced with reference to available datasets (figure 3).

Figure 3: Data types for benefits realisation[21]

The Innovation Collaboration states:

- **engagement data** helps to better understand how the product is being used and perceived by the users
- **patient-reported outcome data** captures a patient's perception of their health and wellbeing when using a new digital product or service
- **patient-reported experience data** identifies patient satisfaction and experience, rather than health status
- **healthcare utilisation data** demonstrates the impact that a new intervention has on healthcare service usage
- **cost data** measure the amount of resources consumed.

Depending on the nature of the digital project, other types of measures that may be needed include:

- **health outcome measures** monitor the change in health attributable to an individual or series of interventions
- **environmental measures** demonstrate the impact the project has on protecting and improving the environment
- **health inequalities data** measures the impact the project has on tackling health inequalities
- **staff satisfaction data** identifies the change in staff morale
- **quality of life** data to measure the state of health of a person or group (see figure 4).

[18] HFMA blog, *The art of the digital business case*, November 2021
[19] *Innovation Collaborative - Digital Health - FutureNHS Collaboration Platform*
[20] Innovation Collaborative, *Data sources for monitoring benefits realisation*
[21] Innovation Collaborative, *Data sources for monitoring benefits realisation*

Figure 4: Quantifying the quality of life – Quality-adjusted life years

The National Institute for Health and Care Excellence (NICE) uses quality-adjusted life years (QALYs) as the primary outcome for quantifying the expected health benefits associated with a given treatment regime. By comparing the present value (through a calculation of discounting) of expected QALY flows with and without treatment, or relative to another treatment, the net/ relative health benefit derived from such a treatment can be derived. When combined with the relative cost of treatment, this information can be used to estimate an incremental cost-effectiveness ratio (ICER).

QALYs quantify the quality of life using the concept of 'utility.' Utility is a measure of preference or value that an individual gives a particular health state. It is expressed on a numerical scale of 0 to 1 where 0 represents utility of the state 'dead' and 1 represents utility of a state lived in 'perfect health'. The utilities assigned to a specific state of health can be estimated using a series of techniques such as EQ-5D[22].

EQ-5D is a standardised self-reporting questionnaire that measures patient-reported health outcomes. The patient is asked to rate their health state by selecting a level for each of five dimensions (mobility, self-care, usual activities, pain/ discomfort, anxiety/ depression). This results in a five digit number that describes the patient's health state.

Illustration 7: Ensuring the key performance indicators are robust and focused

Jonathan Whittaker, delivery lead - digital transformation, at University Hospitals Birmingham NHS Foundation Trust, has tightened up how key performance indicators (KPIs) are developed and used for digital projects.

Previously each speciality would have a long list of benefits for their project. These were useful, but Jonathan was keen to focus on a few KPIs which would allow them to track progress on projects more robustly. The new approach sets out a small number of primary KPIs plus additional secondary KPIs:

Primary KPIs

- driven directly as a result of the project, or with some minor exceptions
- should be tracked on a regular basis (weekly/ monthly)
- have a baseline, actual, plan and target. When these KPIs are at target, the project scope has been delivered.

Secondary KPIs

- can be used for one of two reasons:
    - to test assumptions/ limitations of the primary KPIs
    - to report on metrics which may be of interest, but not necessarily needed to sign off the project as delivered
- may not need to be tracked as frequently as primary KPIs, for example quarterly/ annually
- can be driven by factors internal or external to the project scope
- have an actual value and a tolerance. If the value goes outside the tolerance, the reason should be investigated and primary KPIs may need to be revised.

This approach has been adopted for the skin cancer teledermatology project, which aims to improve capacity and waiting times by using a community diagnostic hub (including AI plus clinical review) as a first step to determine which patients need to be seen in person by a dermatologist.

The primary and secondary KPIs are set out below.

[22] *EQ-5D instruments*

Primary KPIs

ID	KPI	Benefit type(s)
A1	Average system resource per episode	Sustainable use of resources, safe, effective
A2	Completed episodes per week	Sustainable use of resources, safe, effective

Secondary KPIs

ID	KPI	Benefit type(s)
B1	Patient experience on pathway	Experience
B2	Patients per consultant PA across full dermatology two week wait referral pathway	Sustainable use of resources, safe, effective
B3	Wait time % adherence to target for dermatology two week wait referral pathway	Effective, safe
B4	% of patients through new pathway who have a clinical incident	Safe
B5	Spend on waiting list initiatives for dermatology two week wait referral pathway	Sustainable use of resources

Measuring success

Evaluating the effectiveness of the digital investment following implementation is key to ensuring that resources are used wisely in the NHS. Have the benefits set out in the business case been realised? Finance staff have a role in ensuring that those delivering the project are held to account, and understand how successful the investment has been in meeting its objectives.

Evaluating the project will help answer the following questions:

- what expected benefits were realised?
- what expected benefits were not fully realised?
- were there any unplanned benefits?
- were there any unplanned disbenefits[23]?

[23] Disbenefit: a consequence of change perceived as negative by one or more stakeholders

'How do you realise the benefits from digital transformation? You need to get a wide range of people together – including clinicians, patients, operations, IT, change management and finance – to work together to get the change in place. The reality is that it's hard to get the benefits out.'

Dr Rishi Das-Gupta, chief executive
Health Innovation Network South London

Illustration 8: Evaluating the impact of remote monitoring of pacemakers[24]

A finance business partner at Leeds Teaching Hospitals NHS Trust has been working closely with clinical leads to understand the financial and non-financial impact of the accelerated roll-out of remote monitoring of pacemakers during the pandemic.

The most significant benefits are:

- the need to attend face-to-face appointments is reduced. This improves patient experience and releases clinic capacity.
- automatic transmission based on alert and parameter-based monitoring can lead to early detection of device faults or changes in a patient's condition. Intervention at this stage may reduce complications and avoid admissions.

Establishing an evaluation framework

Tracking the benefits of a digital project requires a robust process with proper governance processes in place. It is important to understand what is working well and what is working less well, for example:

- Are there problems with uptake from clinical staff and/or patients?
- Has the organisation managed to stop doing things as a direct consequence of the digital transformation?
- Have the benefits been realised and staff redeployed to do other work or costs been taken out? Without this the organisation may end up with additional costs and duplication of processes.

'Value creation from digital investment is also about what it enables people to stop doing, and the clinical time released.'

Yinka Makinde, director of digital workforce (strategy and professionalisation)
NHS England and NHS Improvement

Illustrations 9 and 10 describe how two trusts have gone about establishing evaluation frameworks.

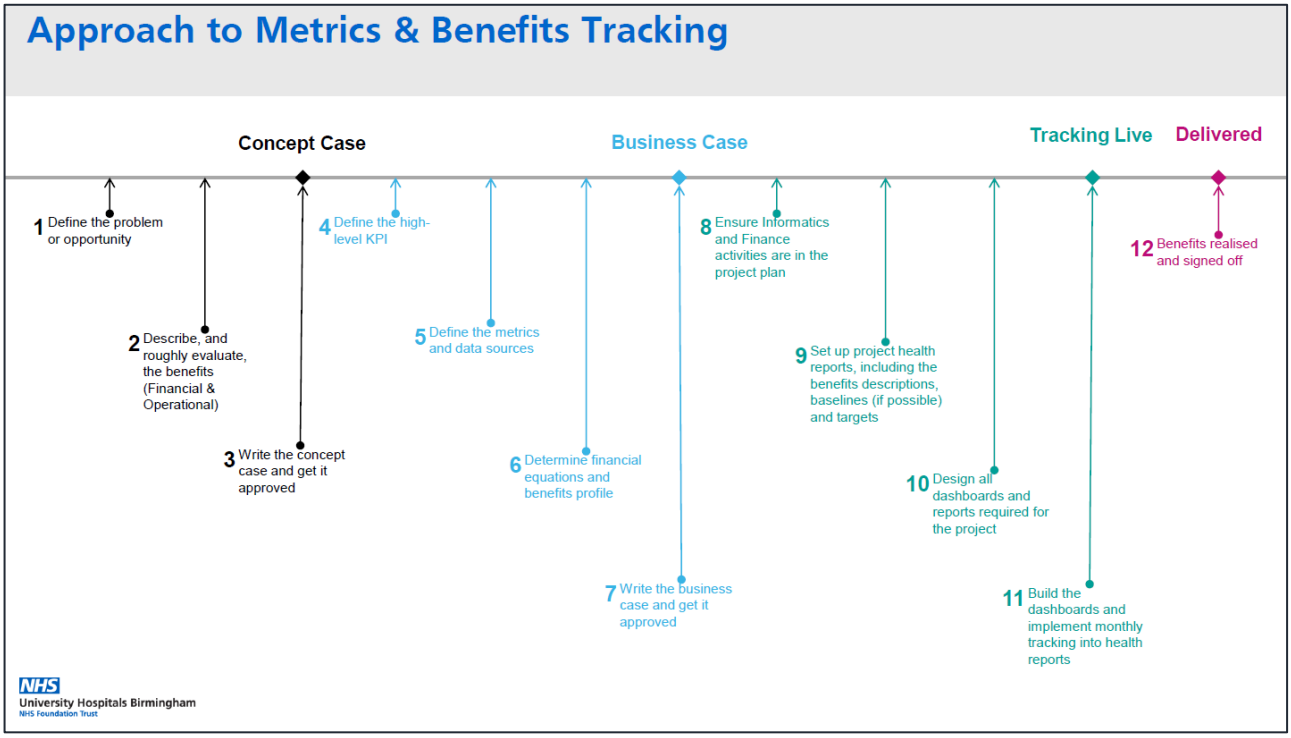
[24] Further details can be found in the HFMA case study Remote monitoring of implantable cardiac devices

Illustration 9: Setting up a benefits-tracking framework for digital transformation

The digital transformation team at University Hospitals Birmingham NHS Foundation Trust has developed a 12-step framework to ensure that project teams think about benefits tracking early on (figure 5).

> *'We have started to use the word 'evaluation' rather than just benefits – digital transformation can have negative as well as positive impacts. We are finding that this is a multi-disciplinary team sport. We started by working with operational and finance teams to identify operational and financial benefits, but the subject has broadened to include a much wider range of people – particularly clinical colleagues – to include a focus on safety, quality and patient experience.'*
>
> Nick Barlow, director of applied digital healthcare, University Hospitals Birmingham NHS Foundation Trust

Figure 5: The 12-step framework for digital benefits



Each digital project is assigned a project lead from the digital transformation team, but it is the specialty team who lead the project, with clinical, operational, finance and informatics input.

A digital transformation finance and performance group, chaired by the deputy chief executive, meets monthly to check the milestones in each project's plan, and sign off the approach and benefits for each project.

Illustration 10: Tracking value creation for a digital control centre

Introduction
The Northern Care Alliance NHS Group is developing and implementing a digital control centre as part of a 10-year partnership with technology company Hitachi. The control centre will provide clinicians and managers with real-time information on patient-level pathways to support effective flow management and care planning. It will also deliver real-time operational insights to support decision-making to manage risk and improve access across the breadth of the trust's services. This will include scenario planning capabilities, using innovative machine learning functionality.

The control centre will link with existing trust systems to help with capacity and demand planning. It will also support a better understanding of variation at a clinical pathway level to inform clinical decision-making and drive improved outcomes.

Measuring value
The trust has developed a value impact assessment (VIA) process. The tool identifies the areas of measurable improvement generated from the introduction of defined process changes. The process relies on the identification of anticipated outcomes (key process output variables) and an understanding of the activities or changes that will need to be introduced to deliver those outputs (key process input variables).

Value creation can result from the introduction of new ways of working and embedding the use of new technology products developed through the digital control centre programme into daily routines (the inputs).

Identifying the benefits
There are a relatively small number of output measures that can be used to determine value creation across the whole organisation, but they could aggregate up to big opportunities:

Capacity – measured through bed days consumed
Productivity – measured through length of stay reductions
Efficiency – measured through delivery costs reduced
Experience – measured primarily by surveys.

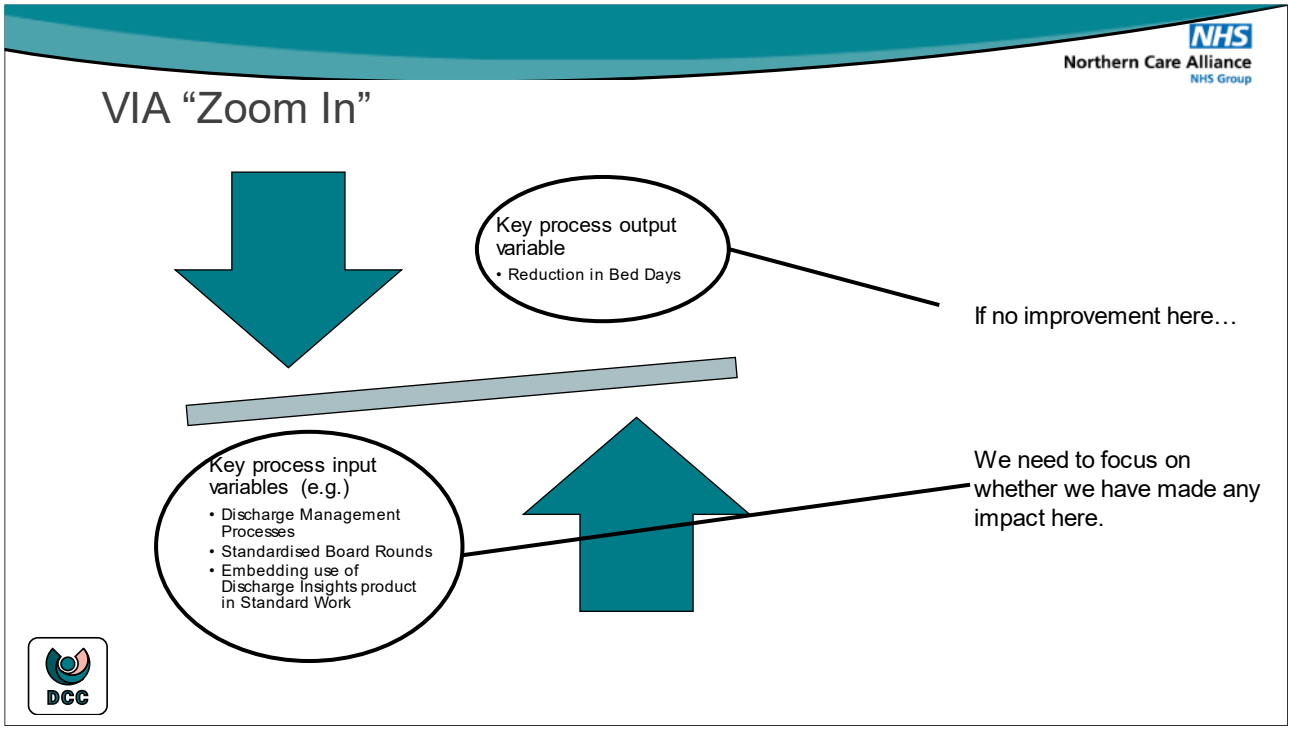
These opportunities have been captured in a benefits catalogue (figure 6).

Figure 6: Extract from benefits catalogue

Benefit theme	*Benefit type*	*Primary benefit*
Reduction in length of stay	Reduced bed days	Reduced unnecessary admissions
Operational efficiency	Staff savings	Improved communication across A&E to emergency admissions unit
Staff satisfaction/ morale	Nursing admin task reduction	Time saving/ resource releasing
Care delivery	Reduced readmissions	Improved patient experience

Monitoring and tracking benefits
Key inputs from the digital control centre programme are mapped to anticipated improved outputs to allow effective monitoring and tracking of benefits. If the results show that outputs have not improved, this may be because the inputs were the wrong ones, or the input changes have not been properly implemented (figure 7).

Figure 7: The value impact assessment (VIA) tool focuses on the inputs to understand the outputs



'*This approach shifts the focus of management time away from counting the outputs to driving improvements in the inputs. It requires a real shift in leadership behaviours. We believe this is the way to deliver sustainable change.'*

Dan Grimes, programme director, Delivering Connected Care, Northern Care Alliance

Measuring for improvement

Statistical process control (SPC) is an analytical technique that plots data over time, and is widely used in the NHS to understand whether change results in improvement. The NHS Making data count website provides a series of practical guides. Additional information on using SPC for measuring improvement in digital technologies is available from the Innovation Collaborative[25], and the Making Data Count workspace on FutureNHS is a useful place to raise questions.[26]

Common challenges

Extracting the benefits from any transformation project can be challenging. Some of the challenges raised during our research are described below.

Evaluating the benefits

- The evaluation of projects is often not seen as a priority. It can be a challenge to embed a systemised approach within an organisation.
- There can be a shortage of staff with the right skills for evaluation.
- Linking cause and effect can be difficult.
- The evaluation methodology may be biased towards specific cohorts of patients.
- There may be a lack of good data.

[25] Innovation Collaborative, Measuring for Improvement in Digital Health
[26] Making Data Count - FutureNHS Collaboration Platform

Illustration 10: Assessing the financial impact of video consultations – the challenges

Since 2016 the Scottish Government has funded a secure video calling service that allows patients and service users to attend consultations remotely, called Near Me. Prior to the Covid-19 pandemic, Near Me was used primarily to provide specialist healthcare to patients in remote areas. When Covid-19 arrived, the use of Near Me was rapidly scaled up.

The HFMA briefing *Near me: assessing the financial impact of Scotland's video consultation platform*[27] considers the different ways that the financial impact of Near Me could be assessed. Challenges include:

- **coding**: outpatient appointments are coded as either face to face or remote/ virtual/ telemedicine. The latter includes telephone calls as well as video conferencing and will not identify the Near Me platform separately to other video platforms.
- **identifying savings**: most outpatient clinics are a mixture of face-to-face, telephone and video calls. The costs of clinics that include a mixture of delivery methods are unlikely to be much different to a solely face-to-face clinic – they could even cost more. However, it is likely that a full costing exercise would show that the cost of a video consultation is less than the cost of a face-to-face appointment even when both are delivered as part of the same clinic. However, until the cash cost of the clinic as a whole is reduced, there is no overall saving or financial impact.

Realising the benefits

- The benefit can be accrued in a different department or organisation to the one that has incurred the costs. This is a particular challenge for digital technology investment supporting pathway redesign.
- Realising the benefits may take several years which does not sit well with the need for investment in a new product or service to be self-financing within 12 months.
- Changes in external or internal factors can mean that even if a change is delivered, the benefit isn't realised.
- How easy is it to recoup the saved clinical time or translate the saved time into real time? For example, if digital technology means that a few minutes on writing up patient notes is saved, does that translate into patient care hours?

> *'It feels similar to the conversations about population health management, where the outcomes are not immediate. The traditional way of creating business cases won't always work for digital where the time frames for accruing the benefits can be longer than one year. How can we ensure that the multiple non-financial benefits of digital transformation are as high up on the agenda as cash-releasing benefits?'*
>
> Nicci Briggs, executive director of finance, contracting and corporate governance
> Leicester, Leicestershire and Rutland CCGs

> *'The challenge with using QALYs is that impacts are often measured over a three to five period or longer, and HM Treasury and chief finance officers often want to see a return on investment demonstrated in a far quicker timeframe.'*
>
> Mike Emery, director of digital health and infrastructure
> NHS Herefordshire and Worcestershire CCG

[27] HFMA, *Near me: assessing the financial impact of Scotland's video consultation service*, March 2022

Conclusion

Covid-19 has had a massive impact on the NHS. The service recovery challenges that it now faces are unique in its history. The strategies required to deal with the care backlog are substantial and indicate significant changes to what 'business as usual' will look like for the NHS in the future.

Digital technologies have a role to play in supporting recovery, but it is important that organisations and systems properly scope the problems, before considering how or whether digital technologies are part of the solution. If this is not done, there is a danger that poor investment decisions will be made, and the benefits of digital technologies not realised.

Business cases need to set out a compelling case for digital investment, clearly spelling out how the proposed solution will deliver value for the NHS and patients. The anticipated financial and non-financial benefits need to be well understood and capable of measurement, so that the effectiveness of the digital investment can be evaluated following implementation.

The challenges of identifying and evaluating the benefits from investment should not be underestimated, but clarity about how successful digital investment has been in meeting its objectives can support future decision-making.

If you have examples to share on this topic, please email policy@hfma.org.uk.

This briefing is part of the *Delivering value with digital technologies* programme that the HFMA is undertaking, supported by Health Education England. The programme aims to increase awareness amongst NHS finance staff about digital healthcare technologies, and enable finance to take an active role in supporting the use of digital technology to transform services and drive value and efficiency. For more information click here.

About Health Education England

Health Education England (HEE) is part of the NHS, and we work with partners to plan, recruit, educate and train the health workforce. HEE exists for one reason only: to support the delivery of excellent healthcare and health improvement to the patients and public of England by ensuring that the workforce of today and tomorrow has the right numbers, skills, values and behaviours, at the right time and in the right place.

HEE's Digital Readiness Programme aims to uplift digital skills, knowledge, understanding and awareness for all our health and care workforce. This includes:

- supporting the right culture and environment, for example by ensuring digital is understood, embedded and championed at trust and ICS board level
- professionalising the digital workforce through support for professional bodies, regional Informatics Skills Development Networks, and collaborative community networks.
- establishing learning and development through the NHS Digital Academy and specific learning and development initiatives, for example the Florence Nightingale Digital Nurse Scholarship, and through access to tailored, appropriate online learning for all
- building our future digital workforce by undertaking workforce analysis and demand forecasting, and sustainable models to recruit talent, for example through graduate schemes, as well as opportunities for nurturing existing talent, for example through the Topol Digital Health Fellowships.

For more information visit the Digital Readiness Programme website or follow the programme on Twitter @HEE_DigiReady.

About the HFMA

The Healthcare Financial Management Association (HFMA) is the professional body for finance staff in healthcare. For over 70 years, it has provided independent and objective advice to its members and the wider healthcare community. It is a charitable organisation that promotes best practice and innovation in financial management and governance across the UK health economy through its local and national networks.

The association also analyses and responds to national policy and aims to exert influence in shaping the wider healthcare agenda. It has particular interest in promoting the highest professional standards in financial management and governance and is keen to work with other organisations to promote approaches that really are 'fit for purpose' and effective.

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