Innovation health & wealth

Digital by default

The delivery choice for England's population

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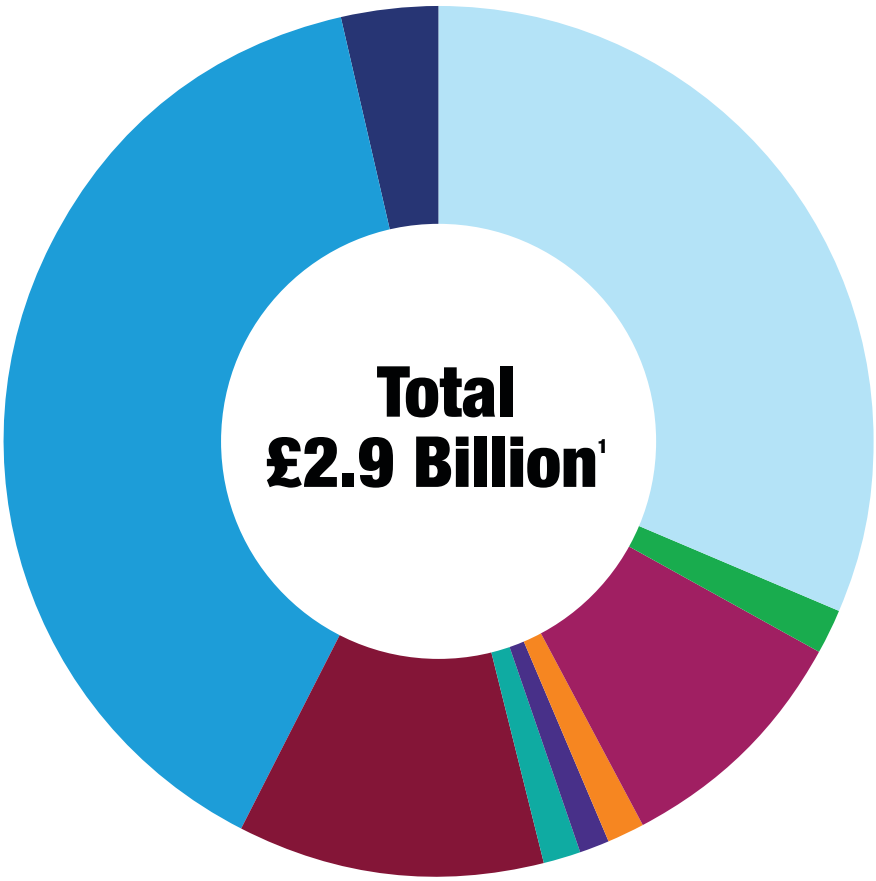
Executive Summary

Ten easy-win initiatives are identified in this report, which the NHS can achieve today; their implementation will result in releasing funding of up to £3 billion that will help to close the £20 billion gap. As well as enhancing how we serve patients by improving quality, widening access through multiple channels and increasing value, these initiatives will help us appreciate longer-term opportunities in digital service delivery whilst contextualising the ambitions of the Information Strategy.



Cost Benefit (£m)

Pre-assessment in Primary Care	903
Minor ailments pre-assessment[2]	154
Online booking of Primary Care appointments	53
Appointment reminders	264
Mobile-enabled community nursing	36
Online Secondary Care pre-operative assessments	34
Remote post-surgical follow-ups in Secondary Care	41
Remote Secondary Care remote follow-up	326
Remote communication of test results	1120
Electronic delivery of Secondary Care patient letters	96

1 These figures represent 70% of the total estimated cost efficiencies from Digital by Default. The additional 30% represents an assumption of how much digital delivery is already occurring in NHS service delivery and where public uptake of digital channels may not be achieved.

2 The savings from this initiative cannot be counted in addition to those from Pre-assessment in Primary Care as the activities overlap and would result in double-counting of benefits

Digital can enhance the majority of admin processes as well as support clinical interactions. There are a clear number of easy-win digital channel improvements we can introduce from today that will help build up momentum on our journey towards creating a digitally-enhanced NHS:

- **Reducing unnecessary GP appointments** – using simple *online* and *telephone* triage we can help serve patients more quickly and improve Primary Care efficiencies

- **Reducing unnecessary Secondary Care appointments** – using *online pre-consultation screening* and *video-based remote consultations* we can improve patient convenience and reduce unnecessary face-to-face consultations for Secondary Care & post-surgical follow ups

- **More efficient appointment booking** – using *online booking systems* we can increase convenience for patients and reduce administration costs

- **Reducing DNAs** – by improving our use of *digital notifications and reminders* we can avoid unnecessary waste of resources caused by DNAs

- **Reducing costs of notifying test results** – using channels such as *SMS* for notification of negative test results we can save the costs of unnecessary face-to-face appointments

- **Reducing cost of letters** – using *email* as a default option we can save significant costs from sending huge quantities of Secondary Care patient letters

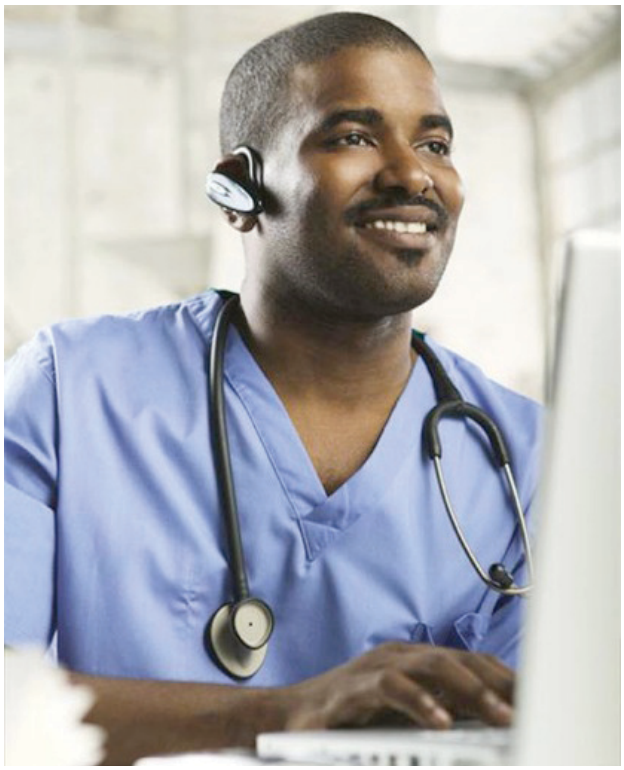
Moving forward, and against the backdrop of the Innovation, Health and Wealth report[3], our digital activity can be expected to become more ambitious, extensive and effective as we develop experience and insights, becoming bolder as a result. It has the potential to set the foundations for a sustainable NHS, built with digital healthcare delivery at its core.

The time to act is now. The evidence to justify taking action is getting stronger and none of us working today in the NHS should feel that healthcare is so significantly different from other areas of contemporary lifestyle that it is immune from benefiting from digital at the cost of patient safety, data security or confidentiality. As employees of a digitally-enabled NHS, we will have an enduring responsibility to listen to the general public and ensure they can always access healthcare services and support through their preferred channels. And in committing to this new responsibility, for which there will be much for us to learn, we should all expect to support one another and be supported along the way.

Digital by Default is thus about making available the digital means (channels, content, services) for the general public to manage their healthcare digitally wherever possible and provide the mechanisms and support that ensure they can migrate to these digital channels as their preferred manner to engage with their health at all but the most necessary levels.

Our task is not only to make these channels available as an effective and compelling alternative, but to lead by example and encourage the general public to use these channels, experience the benefits and remain using them into the future.

In order to make sure these channels are effective, the implementation of initiatives must consider how to support patients to move seamlessly between channels. This includes operating conventional systems to provide back-up when online process fail.



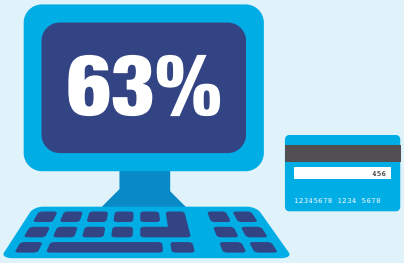
3 DH_131784: Innovation, Health and Wealth, December 2011.

Living in the digitally-enabled 21st Century

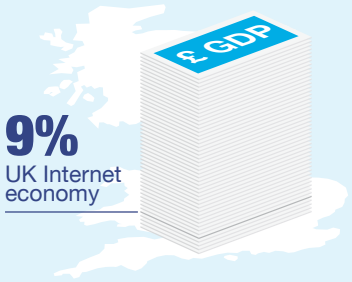
There is a growing dichotomy between how the NHS serves at the patient interface and how the general public lives a life leveraged by digital technology, enabled by extensive digital connectivity where broadband is available in over 80% of homes and where 3G network coverage is extensive in all but the most remote regions.

The degree to which UK citizens use and benefit from digital services is staggering:

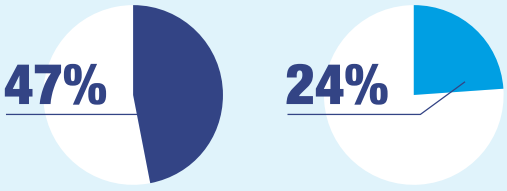
Over **63%** of the UK population use online banking services[4]



The UK internet economy now contributes close to **9%** of GDP (more than education and construction) – the highest in the world[5]



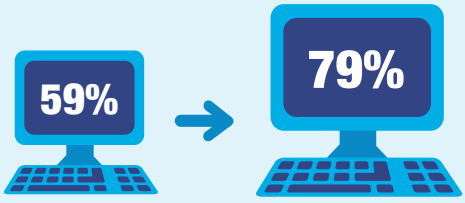
Online Privacy and Safety – Trust is high with only **47%** of people having concerns about entering credit card details online whilst only **24%** read online Terms and Conditions[5]



Concerned with entering credit card details online

Read online terms and conditions

Online access is high with **79%** of the UK population now using the internet anywhere, up from **59%** in 2005[5]



2005 *2012*

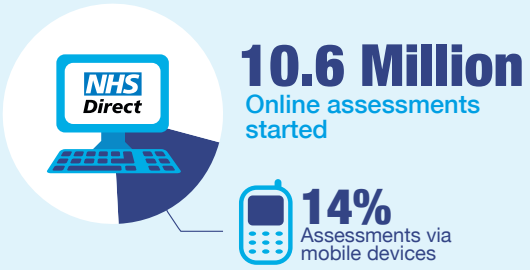
92% of the population (70% for aged 65 or over) have a mobile phone, with **45%** possessing a smartphone[6]

Have a mobile phone *Have a smartphone*

4 *eSociety Social Trends Edition 41, November 2010*
5 *The Economist, 'Digital Shopkeepers', April 16th 2012*
6 *Ofcom, 'Adult media use and attitudes', March 2012*

This enabled audience is also interested in managing personal health and wellbeing needs, becoming empowered and informed via a number of trusted online resources:

Last year, NHS Direct handled over **10 million** online assessment episodes, for which over 14% were carried out on mobile devices[7]



Every month, there are over **25 million** website visits to nearly 500 online health and wellbeing sites by UK citizens, with NHS Choices accounting for over half of all traffic and WebMD handling nearly two million visits[8]

The NHS needs to embrace these insights, understand what is immediately possible in online healthcare delivery and take action now. Given the pressures facing the NHS of an ageing population, increasing chronic illness prevalence and economic and financial constraints, there is a clear opportunity to take advantage of digital service delivery from which the benefits to both the NHS and patients are significant:

NHS

- Reducing waste by stimulating patient behaviour change in appropriate use of services and medicines
- Reducing high cost channel usage by incentivising patients and providers towards lower cost channels of access

Patients

- Access to health services via preferred channels and methods of engagement
- Reduced effort and cost arranging and attending unnecessary face-to-face appointments
- Reduced queues and waiting times for face-to-face care
- Consistency of assessment and/or treatment utilising highest current standards
- Empowerment and quality-of-life, such as supporting care at home rather than through Secondary Care admissions

These benefits will best be realised when the NHS also develops the mind-set towards use of digital technology:

- Motivating staff to embrace Digital by Default in the workplace and not just in patient interactions
- Ensuring that new digital enhancements are delivered with digital in mind and not just through simply translating processes and events onto digital channels. E.g. Ensuring online booking systems provide an accessible manner for collecting feedback or managing patient booking problems in real-time

7 NHS Direct operational figures 2011/12
8 Neilsen, online analytics, 'Health and wellbeing', April 2012

Channels for service delivery

The vast majority of our interactions with the public are based on face to face meetings or consultations.

There are a range of alternative channels we need to consider when dealing with public across the range of touchpoints involved in healthcare delivery. Each of these digital channels have particular attributes and benefits for both patients and NHS staff that will increase patient convenience and internal efficiencies in how we manage our communications with the public:

Online

Online, as a channel, allows us to carry out interactive engagement with customers, whilst at the same time hosting and supporting some of the other channels identified below.

The general public is increasingly comfortable with the online environment, and especially using it transactionally – online retail sales hit £50bn in 2011, an increase of 14%[10]. Users are already used to sharing personal data over with secure services, and this level of comfort is something the health service can build on.

In the US, Kaiser Permanente uses online to great effect, allowing patients to check their lab results, make appointments and renew prescriptions. In 2011, over 29 million lab tests were viewed online, with 2.5 million appointments scheduled.

Mobile

As a channel, mobile offers a range of sub-channels nested within. Ranging from applications (apps) and mobile web browsing, to ebooks and video, mobile is increasingly becoming the channel of choice for the public – in 2011 global sales of smartphones overtook those of PCs[11] for the first time with 45% of the UK now owning one.

Mobile offers the significant benefit of allowing users to research and engage on the go, meaning their interaction is more private, is always nearby and offers an increasingly ubiquitous point of access.

Mobile also does not apply solely to mobile and smartphones, but to tablet devices and laptops – all of which allow you to access services on the go.

Apps themselves offer the potential for users to triage their symptoms, without the reliance on human interaction, and to otherwise direct them to the type of channel they need next. Apps are already making a significant impact in the health market – Kaiser Permanente's recently launched app, that includes some of the same features as its website, has received 99,000 downloads since January 2012. The app allows patients to access their lab results and personal health records, as well as being able to email their doctor, make an appointment or renew a prescription.

10 http://www.guardian.co.uk/money/2012/jan/19/online-retail-sales-hit-50bn
11 http://mashable.com/2012/02/03/smartphone-sales-overtake-pcs/

Webchat

Webchat allows an advisor to deal with multiple 'calls' at once, via an instant messenger type system. This approach is used in healthcare, for instance how NHS Direct provides a webchat facility for some instances of its online triage service. Instances of this technology are becoming increasingly widespread as they help lower the cost of an individual contact.

Partner syndication

This is placing NHS content in digital channels outside the NHS central hub and allowing people to access services wherever they choose, rather than just where we want to provide them. This benefits the user by extending reach and providing them with a high value contact with a specialist organisation that is organised to support them on their issue. The partner also benefits by being able to reach a wider audience and fulfil their mandated aims.

Telephone

Telephone is a ubiquitous medium present throughout almost all of society – 92% of people own a mobile phone, and there is on average one fixed line for every two people in the UK[12]. However, after face-to-face contact, phone-based services can be some of the most expensive and time-consuming channels for support. Using IVR (see below) can help reduce this, but the cost lies in the time needed for a person to interact on the phone, and that they cannot handle more than one call at once.

Telephone is an acknowledged channel for healthcare contacts, with NHS Direct being a proven example.

Online triage

Online triage is currently in use as part of NHS Direct via the Symptom Checker and a scaled tool targeting minor injuries and Long Term Conditions is being trialled by the Hurley Group Practice in South London. This channel, built online, allows the user to navigate a decision tree to a pre-defined recommendation or outcome, based on their answers to set questions.

Online triage reduces the need for face-to-face or telephone contact for initial assessments, pushing high-risk individuals, or those with complex symptoms, to the right channel. It also promotes self-care and enables patient empowerment – a key component of any online triage system.

NHS111 is also currently trialling a prototype online assessment service.

L Assisted Digital

It's easiest to think about this in terms of the people who might need assisted digital. They fall into two groups.

The first are people who can't use digital services at the moment but could in future. These people face barriers to using the internet that can be overcome, for example, by learning to use the web at a UK Online Centre. The other group are people who will never be able to use digital services themselves and will always need help, for example, people who are very ill or have disabilities and are helped by a family member or carer.

Further information available here:
http://www.go-on.co.uk/
http://digital.cabinetoffice.gov.uk/2012/05/30/getting-started-on-assisted-digital/#more-4154

12 http://www.economywatch.com/economic-statistics/United-Kingdom/Telephone_Statistics/

Telephone triage (IVR)

Interactive Voice Response (IVR) systems are widely used across sectors – examples include booking cinema tickets and telephone banking. An IVR presents a caller with a menu of options, responding either to voice commands or button presses.

An IVR system can also be used to insert a message prior to connecting the caller to a queue, advising them that other channels may be better. By including this kind of messaging, IVR can discourage non-urgent calls and ensure that those most at need are dealt with.

Email

Email is a commonly used communications technology that most people use regularly. US health provider Kaiser Permanente offers patients the ability to email their doctors via the website or mobile app, removing the need for a lengthy phone call.

Remote video

Video 'chat' is becoming increasingly accepted, with services such as Skype leading the way. In India, the government has been trialling the use of video chat between specialists and consultants to improve diagnosis.

Social media

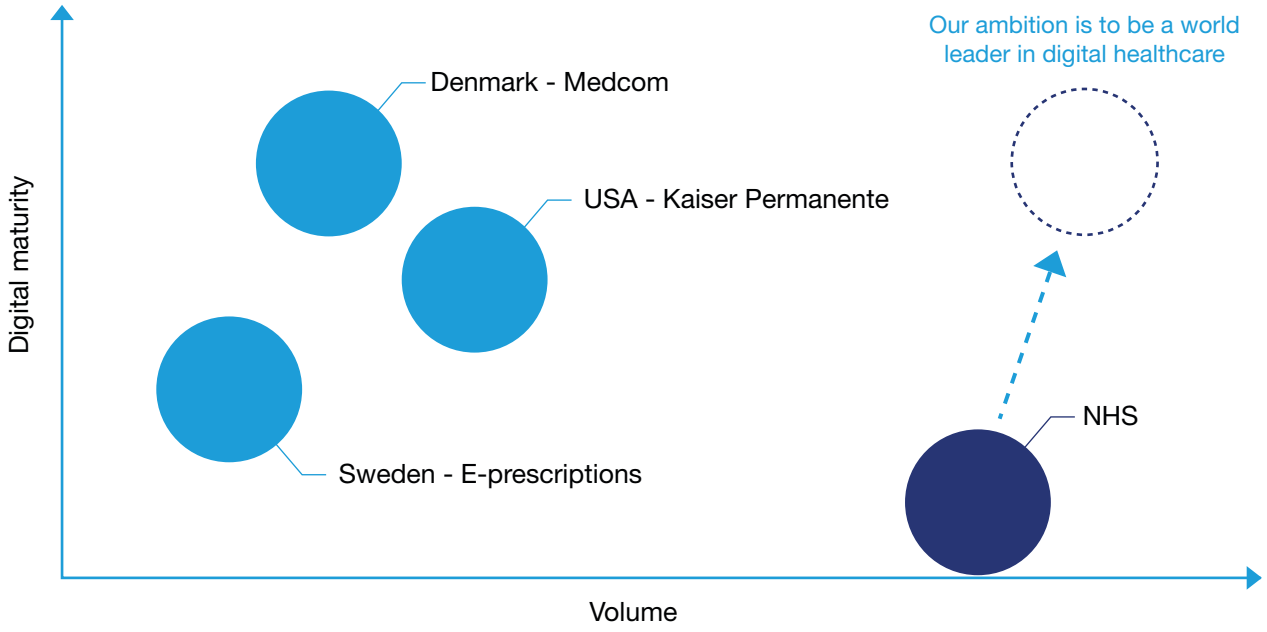
Social media, such as Facebook and Google+ is rapidly becoming one of the main ways that people communicate, with two fifths of people's time on a computer spent doing just that.

One in three people are now using social networking sites such as Facebook and Twitter for health-related issues, however they are opting to obtain medical information from community or patient sites instead of those set up by healthcare organisations, but 7 out of 10 people want to receive more assistance from the healthcare providers via social media[13].

13 http://www.pwc.com/us/en/health-industries/publications/health-care-social-media.jhtml

Where is the NHS with digital delivery?

Whilst the NHS manages the care of a large population, the take-up and integration of digital technology to enhance the work of staff and the experience of patients is minimal. Our ambition should be to become a world leader in digital healthcare delivery, surpassing the successes and capabilities of other organisations already delivering digital healthcare



There is a general converging of digital delivery ambitions in developed healthcare systems around the world towards online portals where patients can interact with features and functions that deliver benefits to both patient and clinicians.

The ambition for the NHS should be comparable by replicating its worldwide reputation for high quality healthcare and becoming a world leader in digital healthcare delivery.

That journey has begun, although is currently at a nascent stage where digital enhancements reflect a modest appetite for digital channel diversification coupled with a developing mind-set for innovation in digital service delivery.

Both need to be leveraged in the short term if the NHS is to catch up and overtake other digitised national and commercial healthcare service providers.

The potential benefits are immense, as the section on **Ten digital initiatives worth implementing** will set out; by introducing this collection of proven digital service improvements at a local level across the NHS, cost efficiencies of nearly £3bn are possible.

It should be noted that the NHS is already credited with achieving modest patient benefits from leveraging digital technology, although these are not extensive: 9% of all NHS patients can communicate with their doctor over email to resolve medical questions, whilst 25% are able to arrange an appointment digitally either by email or using an online booking system - second only to Germany at 60%[14].

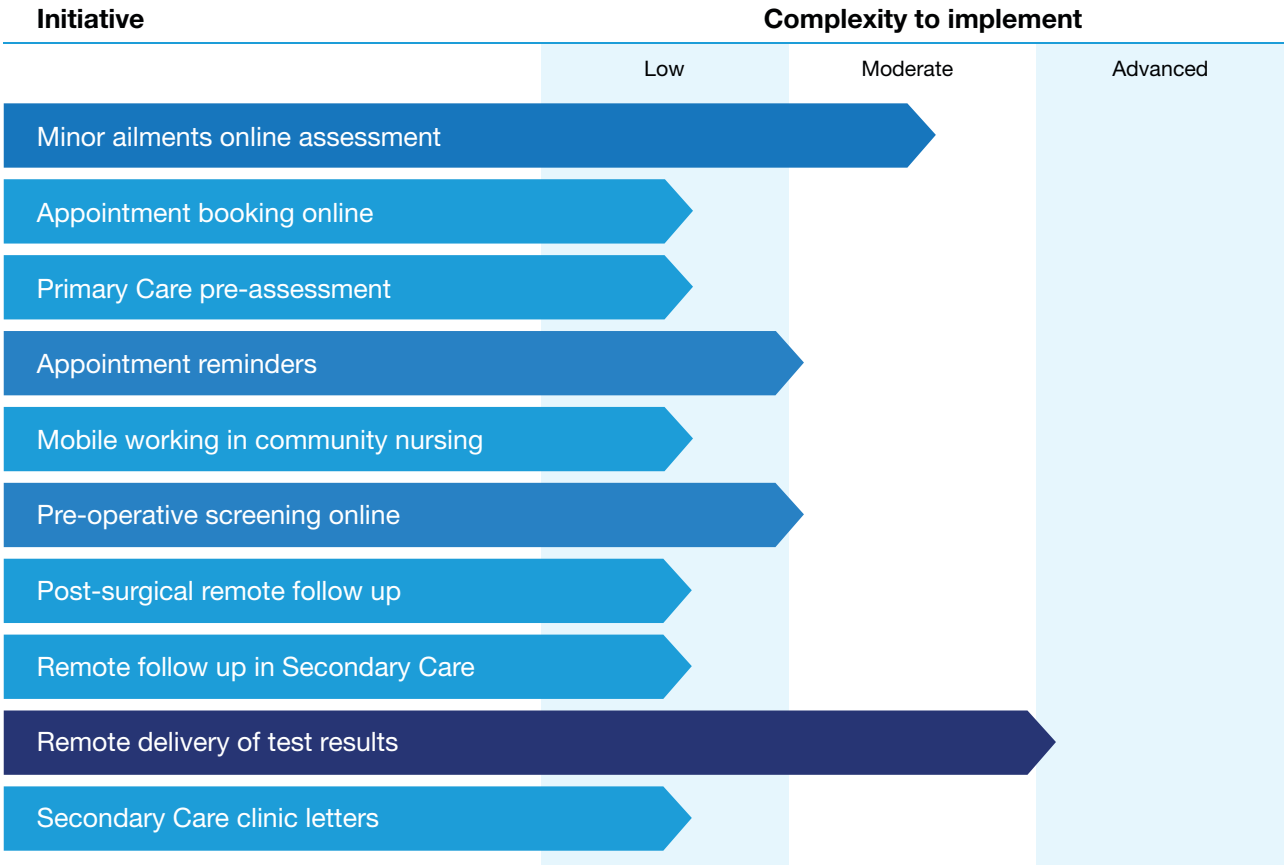
14 The Commonwealth Fund 2010 International Health Policy Survey

Ten digital initiatives worth implementing

There are many digital-enabled initiatives in operation across the NHS delivering improvements to access, quality and value. Ten of these have been identified, which combined will result in releasing funding of up to £3 billion that could be used to close the £20 billion gap.

These initiatives have been chosen because they meet four key principles: The cost of implementation should be low since the technology is either free to source or is already widely used across the NHS. In addition, it will be possible to introduce these using existing technical expertise. Some initiatives focus on administrative activities, others on clinical appointments. With pragmatic governance, these initiatives can all be introduced without compromising patient safety. Finally, factors of information governance are unlikely to impact on implementation as they require little or no integration with existing systems.

With the introduction of all these initiatives it will be necessary to assess the changes required to operational processes to optimise implementation.



Initiatives

Online assessment for minor ailments in Primary Care

By directing patients with minor ailments and Long Term Conditions to an online interactive triage service, augmented with video consultation functionality, an estimated 1 appointment per day per 1,000 patients can be conservatively saved. For a borough of 300,000 patients the estimated saving would be £1.26 million. Scaled up to a national level serving a population of 52.2 million, this would equate to a cost efficiency of £219.4 million, which with a success factor of 0.7 equals £154 million.

Complexity
Moderate

Background

The Hurley Group in South London is a large multi-site practice with over 150 doctors. The practice wanted to reduce the number of patients who were attending the surgery for minor ailments and LTC issues. The practice felt that they could manage this load using a combination of different channels to both reduce the number of unnecessary surgery & non-urgent hospital visits. To manage this they developed a system based on a four-stage approach that spans online, video, webcams and internal networks.

Insights

- The potential benefits from managing Long Term Conditions using online triage are significant, given that these patients represent 30% of the population and account for approximately 70% of the total NHS budget spend. Thus the cost efficiencies cited here could be significantly greater.
- *Online content*: The practice created a set of online information leaflets and videos offering advice across a range of common complaints and symptoms
- *Online consultations*: Patients are requested to complete an online form that captures their symptoms. Once submitted, the patient receives an automatic response telling them when they can expect to receive an online consultation. Consultations times vary from within minutes if the form is submitted during surgery hours, or the next day if out-of-hours
- *Video consultations*: Using webcams, the surgery also offers virtual appointments with a Primary Care team and/or consultant. The solution is not limited to any specific technology enabling patients to receive a consultation from a desktop PC or laptop and at a time that suits them
- *Internal virtual networks*: By creating an internal virtual community encompassing all of the practice's 200+ GPs and nurses, an individual doctor can involve any or all of their colleagues in diagnosing a patient. This has been found to help reduce the time needed for diagnosis and to reduce hospital attendance

Outcomes

- Reduction in the number of unnecessary visits
- Reduction in travel requirements for patients
- Fewer face-to-face appointments reduces cost
- Reduction in the carbon footprint
- Patients get seen quicker, with more availability of face-to-face appointments for serious complaints

Online assessment for minor ailments in Primary Care - continued

Next steps

The web service developed by the Hurley Practice has been shown to deliver cost efficiencies and positive outcomes for patients and is currently due to undergo further piloting to assess the full impact.

Currently in the NHS, the only other available online tools for triage are the NHS Direct Health & Symptom Checkers (H&SC). H&SC functionality on the NHS Direct service will direct patients to suitable outcomes where self-care advice is administered, advice to access other NHS resources is provided or nurse call-back is offered.

NHS Direct H&SCs can be syndicated for local use. This means that when assessment outcomes would normally suggest contacting a particular type of healthcare provider (e.g. GP, A&E), these will be customised to or integrated with local services.

Resources

To investigate the opportunity of syndicating NHS Direct, contact details are:
owain.davis@nhsdirect.nhs.uk

NHS Direct Partnerships:
www.nhsdirect.nhs.uk/partnerships

For more information about the Hurley Practice, contact details are:
murrayellender@nhs.net
http://www.hurleygroup.co.uk/

QIPP Technology Essentials Guide:
http://www.networks.nhs.uk/nhs-networks/qipp-digital-technology-and-vision/documents/QIPP_DT_Technology_Essentials_Guide.pdf/view

Video consultations:
http://www.networks.nhs.uk/nhs-networks/qipp-digital-technology-and-vision/documents/Factsheet-20for-20Online-20Meeting-20Services-1.pdf/view

Skype factsheet:
http://www.networks.nhs.uk/nhs-networks/qipp-digital-technology-and-vision/documents/QIPP%20DT%20Skype%20Factsheet%20v1.pdf/view

Online appointment booking in Primary Care

By allowing patients to book their appointments online, time on the part of GP practice administration is saved at an estimated 2 minutes per booking, Nationally, it is estimated that 25% of appointments are currently booked online. If all appointments for 16-69 year olds were booked online, an estimated 175.2 million appointments would be made. The unit transaction of 43.3p per booking would release cost efficiencies of £75.9 million, which with a success factor of 0.7 equals £53.1 million.

Complexity

Low (Although to simplify the validation process noted below under Insights, implementation could become more complex).

Background

More than 231,500 patients, of all ages, are actively using Patient Access – the new name for the EMIS patient online GP appointment booking service.

Using a unique user ID Patient Access enables patients to log in online anytime from any location to view, book or cancel appointments, request repeat prescriptions, view their medical record and send secure messages.

Insights

To access Patient Access when made available by a GP practice, EMIS requires a patient to attend the practice in person to validate their identity. Whilst this is a counter-intuitive step for delivering digital services and one which anecdotally means that young people are less inclined to see their GPs, this is the currently accepted level of safety for providing access.

A future evolution of EMIS Patient Access should consider other means available through online government services for validating identity to improve means of access.

Outcomes

- Reduced costs for managing GP appointment bookings
- Improved patient experience
- Reduction in DNAs

Next steps

The online booking system, Patient Access, can be enabled with the current EMIS software and only requires enabling by your supplier.

If you are using an alternative system, first confirm whether online booking is possible and then have it enabled.

If your current system does not allow for online appointment booking, you should consider sourcing a reliable system that does.

In both instances patient communications will be required to advertise and ensure patients have access to the system – this may require a face-to-face visit to the surgery in order to validate patient access to the system. Patients could also be asked at the end of appointments if they are registered for accessing online booking and advice then provided on how to do this prior to leaving the surgery.

Resources

QIPP Digital Essentials Guide (June 2012 edition):
http://www.networks.nhs.uk/nhs-networks/qipp-digital-technology-and-vision/documents/QIPP_DT_Technology_Essentials_Guide.pdf/view

EMIS portal:
https://www.emisaccess.co.uk/

Patient Access FAQ:
http://www.patient.co.uk/emisaccess.asp

EMIS contact details:
http://www.emis-online.com/about-us/contact-us

Primary Care pre-assessment (Doctor First)

By using telephone consultations with a senior clinician for all doctor-related, Primary Care patient enquiries, appropriate help can be offered swiftly and the patient signposted to the most suitable resource, freeing-up time for patients who subsequently want or need a face-to-face consultation.

If all appointments were triaged in GP practices, the scaled up cost efficiencies released using the figures below would be £1.29 billion, which with a success factor of 0.7 equals £903 million.

Complexity
Low

Background
Improving patient access to primary care is of utmost importance, alongside meeting patient expectations and NHS targets.

In order to free up GP time to see those patients in need, a telephone consulting and booking system has been shown to be incredibly efficient.

Telephone consulting prior to arranging appointments is led by clinicians and relies on effective modelling of service use. A robust audit and modelling process, known as Doctor First, has been developed by Productive Primary Care Ltd to help NHS Primary Care organisations become more efficient, improve the patient experience and deliver better clinical outcomes.

Working to QIPP principles and in line with national policy, Doctor First programmes provide suitable productivity tools to help practices identify areas for improvement in their appointment booking systems. These tools collect data across four key areas of appointment management: activity, backlog, capacity and demand. Audits are carried out by staff locally and the data generated fed into an analysis tool, which then presents an optimal solution (based on financial savings and patients seen per session) for managing appointments.

The output comprises guidance on how to manage the appointment system by evenly matching capacity with demand, setting out the necessary staffing levels required on a day-by-day basis. The analysis tool is sufficiently sophisticated to include advice on effectively managing chronic disease clinics to ensure maximum QoF returns.

Insights
With a patient lists growing and demand for services increasing, general practices are facing an increasingly busy schedule with extra surgeries squeezed in wherever possible.

31% of patients attending GP appointments do not actually need to attend (13% Worried Well, 13% minor ailments, 5% A&E) .

By surgeries choosing to release clinician time to consult patients first by telephone, the doctors or nurse can ensure that those most in need of an appointment are seen first and offer an individual service tailored to patients, improving their experience, whilst redirecting those to appropriate services (e.g. OTC, A&E). The service also reduced the number of DNAs significantly.

Outcomes
- Reduction in time needed to help a patient from 10 to 3 minutes
- Time saved per surgery session of between 30 and 60 minutes
- Equivalent to a saving of 5-10 hours per week per GP at a saving of £600
- Reduction in stress for clinical staff
- Improved patient experience
- 50% increase in patients helped in a given period of time

Primary Care pre-assessment (Doctor First) - continued

Next steps

The process identified by Doctor First from Productive Primary Care requires initially local monitoring of practice processes and capacity and demand assessments. The output of this helps to identify patient volumes and financial savings available.

This tool then informs Doctor First on how to establish an optimal pre-assessment service, including resourcing, taking into account key habits of patients such as their likelihood of when during the day and week appointments will be requested, how to plan for expected events such as holidays and mapping appointment duration times for handling different types of health scenarios.

The cost of analysis for implementing Doctor First is approximately £2,000 ranging up to £8,000 for fully project-managed implementation and support. Further information is available from *dillon.sykes@productiveprimarycare.co.uk*

Alternatively, well-developed resources and advice are available from NHS Institute and NHS Improvements, both of whom have experience of working with NHS organisations to understand and model capacity and demand flows in order to improve efficiency and create better outcomes. Whilst these have been developed in a variety of different areas of healthcare provision, the principles of evaluating capacity and demand trends is largely the same.

Resources

Doctor First:
http://www.productiveprimarycare.co.uk/gp-efficiency-access-and-responsiveness.aspx

NHS Practice Managers Network:
http://www.practicemanagement.org.uk

NHS Institute:
Capacity and Demand - basic concepts:
http://www.institute.nhs.uk/quality_and_service_improvement_tools/quality_and_service_improvement_tools/demand_and_capacity_-_basic_concepts.html

NHS Improvements:
http://www.improvement.nhs.uk/heart/sustainability/further_resources/techniques/demand.html

Digital appointment reminders

Reminder messages sent to patients prior to an appointment has been shown to have an effect on reducing DNAs in both Primary and Secondary Care settings.

SMS appointment reminders can significantly reduce DNA rates very quickly: by nearly halving DNAs in Primary Care of 4% and in Secondary Care of 9% potential cost efficiencies of £378 million are achievable, which with a success factor of 0.7 would release £264 million.

Complexity
Low to Moderate

Background
NHSmail is the secure email and directory service available to all NHS staff providing a range of services including email, calendar and SMS messaging. It is a highly secure & resilient service available 24x7 and is free to use for NHS organisations.

The NHSmail SMS service provides functionality enabling clinicians and clinical organisations to send appointment reminders via SMS to help reduce the volume of did not attends (DNAs).

Insights
The Portsmouth Hospital Trust provides 600,000 outpatient appointments per year but were experiencing 40,000 DNAs costing £4m in both lost capacity and lost or delay income. To address this they implemented an SMS appointment reminder service and in 2010 achieved a reduction in DNAs of 38.3%.

In a further benefit they were able to reallocate 1,776 of their annual 600,000 appointments providing an additional cost saving of £55k

Outcomes
- DNAs reduced from 13% to 8%
- Annual savings of £1.6m
- Reduced cost of processing clinical correspondence
- Decommissioning of local email services
- Improved patient experience
- Patients are able to provide information about their condition

Next steps
NHSmail has the functionality to send out reminders to patients at no additional cost to clinical services.

If you are using EMIS, you can install EMIS partner programme services, such as MJOG; although this will result in licencing costs, there is no cost for the actual reminders sent.

If you are using an alternative supplier, you should check with them if this functionality is available and if so, request it is configured for use.

If your system does not allow for SMS appointment reminders, your IT lead will need to investigate how NHSmail can be integrated into the appointment booking's system. Ashford and St Peter's integrated NHSmail with MS Outlook and an Access database fed with patient details from PAS. This required a single day's programming resource to build and test an automated reminder script. (See configuring NHSmail for SMS below.)

You'll also need to introduce a process for capturing patient mobile phone details and ensuring system records have the available fields for storing these.

Resources
QIPP overview on SMS reminders:
http://www.networks.nhs.uk/nhs-networks/qipp-digital-technology-and-vision/documents/QIPP_DT_Technology_Essentials_Guide.pdf/view

CfH overview on SMS reminder cost savings:
http://www.connectingforhealth.nhs.uk/systemsandservices/nhsmail/about/benefits

EMIS Partner programme:
http://www.networks.nhs.uk/nhs-networks/qipp-digital-technology-and-vision/documents/QIPP_DT_Technology_Essentials_Guide.pdf/view

Configuring NHSmail for SMS (Ashford & St Peters):
http://www.isug.co.uk/etorus/NHSMail-GR8.htm

Mobile-enabled Community Nursing

By using remote mobile working practices that improve community clinician activity and reduce onward referrals and unplanned elective care, it is possible to release cost efficiencies of up to £36 million.

Complexity

Low

Background

In the majority of community nursing settings the scheduling of patient visits and the updating of nursing records is a paper-based exercise. This brings great inefficiencies as community nurses are typically required to travel to their main office at least once a day to collect new schedule information and file updated nursing records. In PCTs, which cover large rural territories, these inefficiencies are magnified.

The basic cost reduction centres around reducing time spent travelling to a central office, reducing the duplication of effort in record keeping and avoiding unnecessary onward referrals and non-elective admissions.

Based on calculated savings made by a community nurse of £3K[15], per annum, the introduction of mobile working practice should release cost savings of £36 million for the estimated 12,000 community and district nurses in England.

Insights

NHS Calderdale introduced mobile worker services for community-based nursing staff in July 2008. The system supported remote scheduling and included community nursing templates for recording and sharing nursing records to support improved case management.

Working with local nursing and clinical teams this solution has been further customised to reflect local working practices and workflow/reporting considerations

The system is being rolled out across NHS Calderdale, which supports 600 staff and around 200K local citizens in a 50:50 split between urban and rural settings

Outcomes

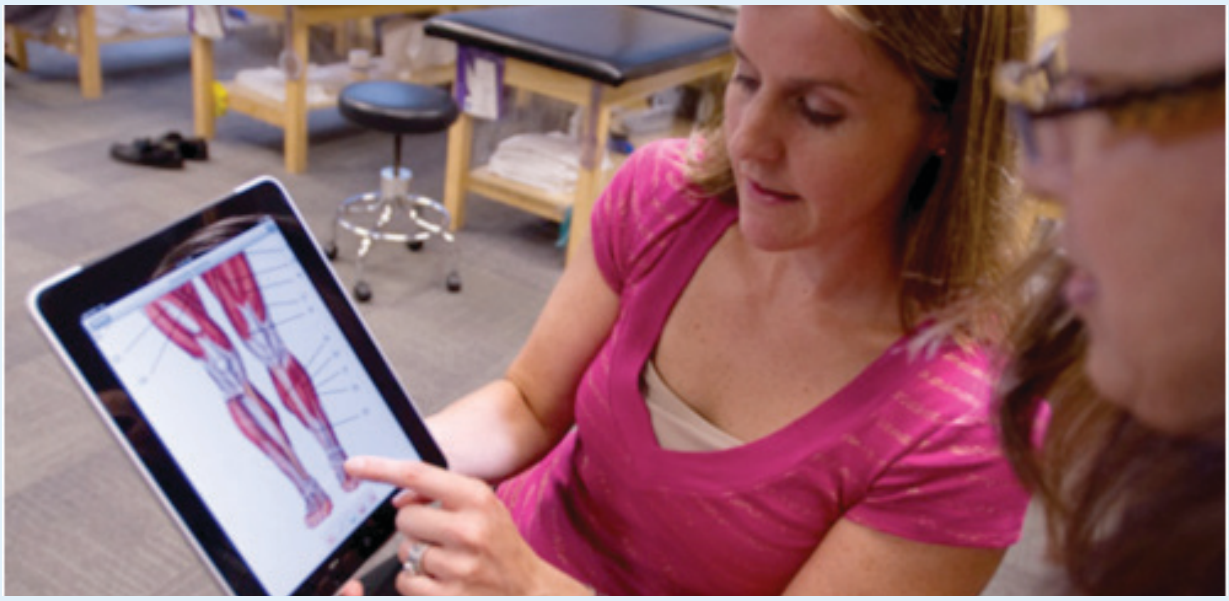
A number of significant patient and NHS provider benefits:

- Increased clinician productivity:
  - Increased number of patient visits per day by 17%
  - Increased amount of time spent with a patient by 14%
  - Reduced the volume of admissions by patients being treated by over 21%
- Reduction in unnecessary travel to the central nursing offices
- Secure communication of confidential information
- Specialist nursing saw a drop of over 68% in data duplication
- Patients reported increase in piece of mind and reduced anxieties

This example illustrates the opportunity for more efficient ways of mobile working common to the private sector that can be brought into the community care setting. The rapid growth in smartphone and tablet computing provide a scalable and lower cost opportunity to exploit these benefits from mobile digital working.

15 Mobile Health Worker Project progress report, 2011

Mobile-enabled Community Nursing - continued



Next steps

The essential components of a wireless enabled device and NHSmail means that community staff will become immediately empowered and more effective in their role. However, it will be necessary to install software to delete device storage if devices are lost.

It will be necessary for all devices to be upgraded with software that allows their storage media to be deleted if lost.

Whilst the purchase of suitable tablets, such as iPads, will incur costs, anecdotal insights by Tower Hamlets PCT indicates that efficiencies in working practice from introducing enabling technologies outstrips the outlay costs within two weeks. Thus, this should also negate concerns over the cost of replacement for lost devices, which is probable.

Enhanced activity can be achieved by integrating device functionality with existing systems, however, no costs are available for this.

Whilst this project was focused on community nursing, it is applicable to a many other areas where care and support is provided in a community setting including a range of speciality areas, although the savings will not be so significant.

Resources

CfH Mobile resources:
http://www.connectingforhealth.nhs.uk/systemsandservices/icd/assessment/mobile/general

QIPP mobile working factsheet:
http://www.networks.nhs.uk/nhs-networks/qipp-digital-technology-and-vision/documents/Factsheet-20on-20Mobile-20Working-1.pdf/view

Mobile Health Worker report:
http://ahp.dh.gov.uk/2011/10/30/mobile-health-worker-project-progress-report/

Pre-operative screening

40% of all pre-operative screenings in Secondary Care could be carried out remotely, amounting to 1.2 million appointments avoided. This would release cost efficiencies to the value of £48 million, which with a success factor of 0.7 equals £34 million.

Complexity
Low to Moderate

Background

Anaesthetic preoperative assessments help to improve the safety of surgery. By moving this online, Sheffield Teaching Hospital aimed to reduce the burden on patients and surgery teams.

Sheffield Teaching Hospitals (STH) are using an ePAQ (electronic Personal Assessment Questionnaire) system where pre-operative patients complete a confidential online assessment. The system was introduced in June 2012 and will be rolled out to other trusts later this year.

The ePAQ screening can be delivered via kiosk or online, and has the potential to be used earlier in the patient pathway at the point of GP referral or when a patient appointment letter is issued.

Insights

Prior to a first appointment, STH patients receive a letter explaining the benefits of using ePAQ and how to access it. Patients are then able to log in online and complete a questionnaire which than securely transmits information to the hospital system for staff to review.

STH also use ePAQ for post-surgery to produce reports on the patient's improvement – specifically focussing on pain, symptoms, capacity and quality of life.

The ePAQ system is estimated to cost around £1 per questionnaire (and it is estimated that this cost will reduce as wider rollout follows) and is now also being used in a number of additional specialist areas including gynaecology, alcohol & substance misuse and orthopaedics.

Electronic Patient Assessment Questionnaires were originally trialled and proven at Sheffield Teaching Hospitals in the urogynaecology department for taking clinical histories in pelvic floor medicine. Previously, clinics were used to assess patients, which not only consumed valuable clinic time but also indicated that the information provided was inaccurate and that patients were more likely to provide accurate data when allowed to complete the assessment in private. In addition, assessments supported by electronic assessment could be completed in half the time a normal face-to-face assessment was conducted.

The success of ePAQ-PF led to it being developed for and tested in pre-operative anaesthetic screening assessments ePAQ-PO). Phased rollout of the pre-operative screening tool will begin this year.

Outcomes:

- Patients are able to provide information about their condition at a time and place that suits them, without embarrassment
- Avoidance of unnecessary face-to-face consultations for fit and healthy patients when a telephone consultation is more appropriate
- A reduction in the time before treatment
- An inclusive approach, improving patient experience
- Reduction in the number of unnecessary appointments
- Reduction in unnecessary use of clinician time in patient pre-assessment
- Better treatment for more complex patients
- A 10 minute reduction in consultation times
- Increase in clinic efficiency

Pre-operative screening - continued

Next steps

Review the QIPP Factsheet detailed below.

Although ePAQ-PO is a product created as a commercial spinout from the early trials, it builds on the standard assessments carried out across the NHS. With the correct sequencing of questions set out, a Trust would have access to the required expertise to implement a secure assessment form for capturing relevant patient information. This would require relevant design, validation and clinical governance assurance before being launched.

This may require providing each patient carrying out an assessment with a Unique Reference Number that effectively annonymises their data in order to meet with local information Governance requirements on data confidentiality.

Resources

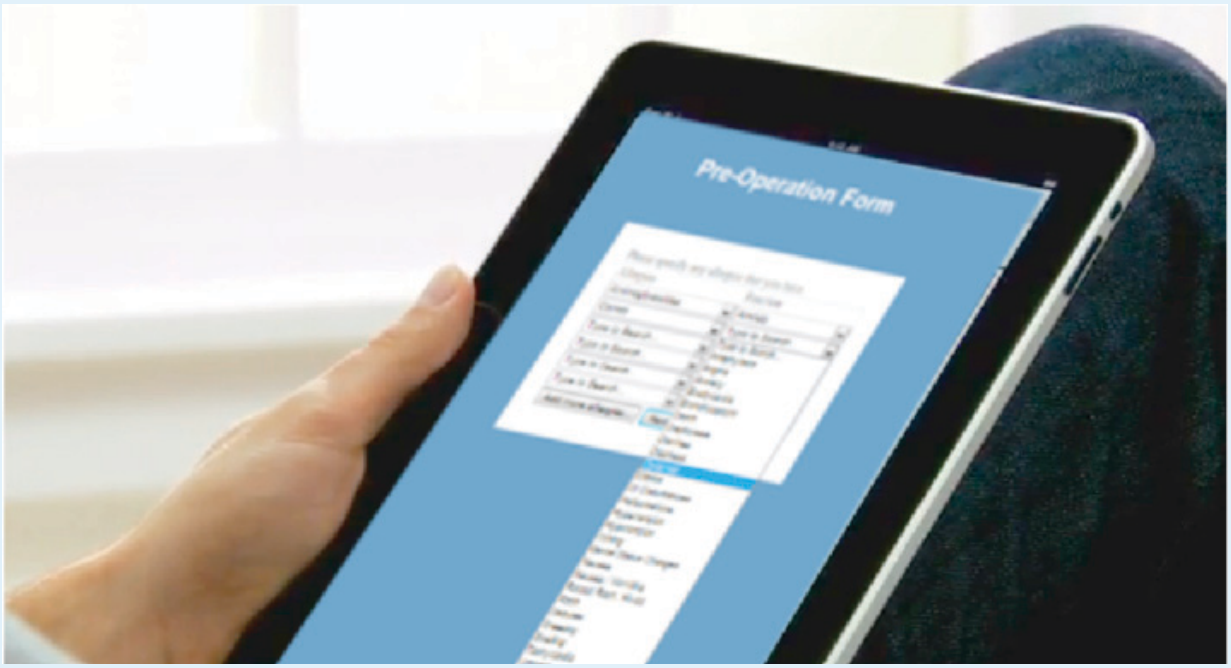
QIPP Pre-Operative Screening Solutions Factsheet:
http://www.networks.nhs.uk/nhs-networks/qipp-digital-technology-and-vision/documents/Factsheet-20on-20Preoperative-20Screening-1.pdf/view

ePAQ:
http://www.epaq.co.uk/

Technical Pre-op guidance and links to further resources:
http://www.patient.co.uk/doctor/Pre-Operative-Assessment-Examination-and-Tests.htm

QIPP Technology Essentials Guide:
http://www.networks.nhs.uk/nhs-networks/qipp-digital-technology-and-vision/documents/QIPP_DT_Technology_Essentials_Guide.pdf/view

For further information, contact:
Stephen.Radley@sth.nhs.uk



Remote follow-up (inc. post-surgical) in Secondary Care

Of the 22 million follow-up appointments held every year, up to 75% could be held remotely by telephone or Skype. This would release cost efficiencies of £466 million, with a success factor of 0.7 reducing this figure to £326 million.

Post-surgical follow-up

Including all successful post-surgical follow-ups – assuming 2.8 million in quantity, would potentially realise a further £58.4 million in cost efficiencies. With a success rate of 0.7 this would be £40.7 million.

Complexity

Remote follow-up: Low
Post-surgical follow-up: Low

Background

Virtual clinics held with patients during follow-up and post-surgical discharge enable patients to avoid travelling to hospital and incurring the associated inconvenience and cost whilst also reducing the appointment duration.

Insights

The Urogynaecology Unit of Sheffield Teaching Hospitals has implemented a Virtual Clinic whereby clinic attendance can occur remotely by telephone, supported by electronic pre-assessment. Clinics continue to assist in the traditional fashion of ongoing diagnosis, management and monitoring pelvic floor conditions.

Patients were asked about their willingness to engage with a remote clinic, of which 75% agreed, with it being considered, 'an excellent way to save time' as the patient 'didn't have to worry about childcare', and that a remote consultation was '…excellent, relaxed and stress-free'.

Outcomes

- Telephone consultations allow triage to the most appropriate service, investigation, treatment or discharge, for the patient
- Reduction in the number of hospital appointments, associated travel & time commitments for patients
- Cost savings of £28 per patient
- Total annual saving per trust of £11,130 (based on 75% of patients choosing a virtual clinic out of 530 procedures per trust per year)
- Potential savings of £1.68m annually across the NHS*
- Time for an additional 200 patients per trust per year, equivalent to 30,000 across the NHS*

Next steps

A process for confirming patient interest and for capturing contact details is required. This can be completed at the first appointment in Secondary Care.

Either telephone or Skype video software can be used for consultations and with Skype being promoted widely in the NHS, both should be offered to patients.

All consultations should be initiated by the hospital and not the patient. This has a technological implication as inbound traffic to the N3 spine may have its bandwidth throttled which would adversely affect both audiovisual quality and fidelity.

Skype can further assist in the consultation by its ability to file-share such that patient information, advice and such resources can be shared directly with the patient.

NHS Trusts should not experience any difficulty implementing Skype software and there are no known technological barriers to using it.

Resources

Video consultations:
http://www.networks.nhs.uk/nhs-networks/qipp-digital-technology-and-vision/documents/Factsheet-20for-20Online-20Meeting-20Services-1.pdf/view

Skype factsheet:
http://www.networks.nhs.uk/nhs-networks/qipp-digital-technology-and-vision/documents/QIPP%20DT%20Skype%20Factsheet%20v1.pdf/view

QIPP Technology Essentials Guide:
http://www.networks.nhs.uk/nhs-networks/qipp-digital-technology-and-vision/documents/QIPP_DT_Technology_Essentials_Guide.pdf/view

For further information, contact:
Stephen.Radley@sth.nhs.uk

** For Urogynaecology*

Using SMS to report negative test results

Using SMS messaging, such as is available on NHSmail or via an existing dedicated messaging system, patients can be advised on negative test outcomes. Applying a conservative assumption that 10% of all test results are negative but which traditionally result in clinic appointments in Primary or Secondary Care, the NHS could hold 50 million fewer appointments annually. The resulting cost efficiency is estimated at £1.6 billion, however a success factor of 0.7 sets this figure at £1.12 billion

Complexity
Moderate to Advanced

Background

SMS is a low cost, widely used form of everyday communications with over 129 billion text messages sent within the UK during 2010. 92% of people in the UK now have a mobile phone making SMS one the most ubiquitous mediums for personal communications.

Insights

Since 2004 the Isle of White NHS Trust (formerly Isle of Wight NHS PCT) has been using SMS to inform patients of negative test results from the Sexual Health Service (SHS). Initially the majority of patients using this service were under 25 making it a demographic well suited to the use of mobile. In 2006 this was extended to include appointment reminders.

The case for making SMS the default means of communication was strengthened by evidence indicating that use of letters and landline telephones proved to more likely to compromise patient confidentiality. SMS is now seen as a more secure direct-to-patient channel although is not routinely offered to patients under 16 years of age.

In order to maintain confidentiality pro forma messages on the messaging system include: "*Test results are negative*".

Patients are asked for their verbal consent for using SMS as the test results default channel both when registering at the clinic and re-confirmed when undertaking a test. Patients for whom SMS is not appropriate are offered alternative communication channel options such as email, letters or clinic appointments. Negative NCSP screening results are sent a simple message saying they have tested negative. Positive test result messages sent by SMS contain a unique patient identifier, which can be shown to authorised IOW pharmacists to initiate treatment and partner notification.

Public travel on the IOW is expensive and with STIs disproportionately affecting those from marginalised and disadvantaged groups, affordable communication methods improves access to equitable healthcare.

Outcomes

- Reduction in DNAs from 22.5% to 14.1% per annum resulting in a total cost efficiency gain of £46,410
- From 5,000 annual appointments, approximately 75% required screening, of which 90% were negative. Of the 10% reported positive, 50% were given pre-emptive treatment, avoiding the need for a face-to-face follow-up
- In total, only 188 appointments were required for positive results, a reduction in clinic appointments of over 3,000, equal to a cost efficiency of £281K or 94.7%
- 4,000 test result letters avoided at a saving of £40K

Using SMS to report negative test results - continued

Next steps

Your appointment booking system may also have functionality for sending SMS messages. Check to confirm if this is available (there may be a cost incurred) and if so, request it is configured for use.

Otherwise your IT lead will need to investigate the cost and ease of upgrading your current system or assessing how SMS appointment reminder software can be purchased and integrated.

You'll also need to introduce a process for capturing patient mobile phone details, ensuring system records have the available fields for storing these and defining the messages that will be used when reporting test results.

A patient engagement process will be necessary to promote 'Digital by Default' test results reporting.

If your system does not allow for SMS appointment reminders, your IT lead will need to investigate how NHSmail can be integrated into the appointment booking's system. Ashford and St Peter's integrated NHSmail with MS Outlook and an Access database fed with patient details from PAS. This required a single day's programming resource to build and test an automated reminder script. (See configuring NHSmail for SMS below.)

Resources

QIPP overview on SMS reminders:
http://www.networks.nhs.uk/nhs-networks/qipp-digital-technology-and-vision/documents/QIPP_DT_Technology_Essentials_Guide.pdf/view

CfH overview on SMS reminder cost savings:
http://www.connectingforhealth.nhs.uk/systemsandservices/nhsmail/about/benefits

Sending Secondary Care clinic letters to GPs

By sending Secondary Care clinic and discharge communications electronically by NHSmail, there is the potential to reduce resourcing and fixed costs by £137 million. A realistic possibility, based on a success factor of 0.7, would result in cost efficiencies of £96.4 million being realised.

Complexity

Low

Background

Sending letters in the NHS by post costs just over £2. If letters, comprising discharge summaries and clinic reports, were sent to GP practices electronically by NHSmail or alternative sophisticated document sharing systems instead, the unit cost would remove the cost of paper, envelope, franking, address labels and support services staff resource. Delivery would also be prompt, reducing risks to patient safety and improving efficiency through a smoother transition and continuity of care.

The basic cost reduction centres around reducing printing, processing and distribution of letters and replacing this with distributing each letter using NHSmail to the required GP practice.

The cost benefits of implementing eDD has not been assessed nor the impact on staff utilisation, but the following calculation is driven out from understanding the overheads associated with delivering printed letters.

Assuming there were 79.6 million Secondary Care inpatient and outpatient events resulting in the production of a clinic letter and that unit cost reduction from printing to electronic is from £2.23 to £0.50, cost efficiencies of £137 million can be achieved. Applying a success factor of 0.7, reduces this to £96.4 million. This saving does not include the reduced effort on the part of GP practices scanning in printed letters (estimated in the region of £34 million) nor can it accurately account for where letters are currently distributed either by existing NHS transport services or the Royal Mail.

Insights

United Lincolnshire Hospitals NHS Trust introduced a system for electronically distributing discharge information to Lincolnshire GPs, known as eDD. eDD works by combining the traditional discharge summary with the discharge letter, which is then sent via NHSmail to ensure secure delivery.

eDD is bespoke software developed by the Trust to integrate with PAS to ensure access to accurate demographic and GP information and allows discharge information to be collected in real-time during a patient's stay. This relies on setting up dedicated NHSmail accounts for both the trust and the GP practice which can be used for distributing all discharge letters. eDD can also be used to support prescribing and pre-admission medication assessment.

The software is in use across 50 wards in the Trust, delivering over 5,000 communications per month.

Outcomes

Although this is a dedicated piece of software, for which development costs are not available, at its core it demonstrates how digital letter transfer between hospital settings and GP practices can deliver patient and operational benefits:

- Improved timely communication between Secondary and Primary Care reducing risks to patient health
- Improved legibility of communications resulting in errors in prescribing or follow-on care
- Reduction in lost letters
- Secure communication of confidential information
- Discharge information readily available in the event of re-admittance
- Reduced effort on some GP practices having to scan in letters

Sending Secondary Care clinic letters to GPs - continued

Next steps

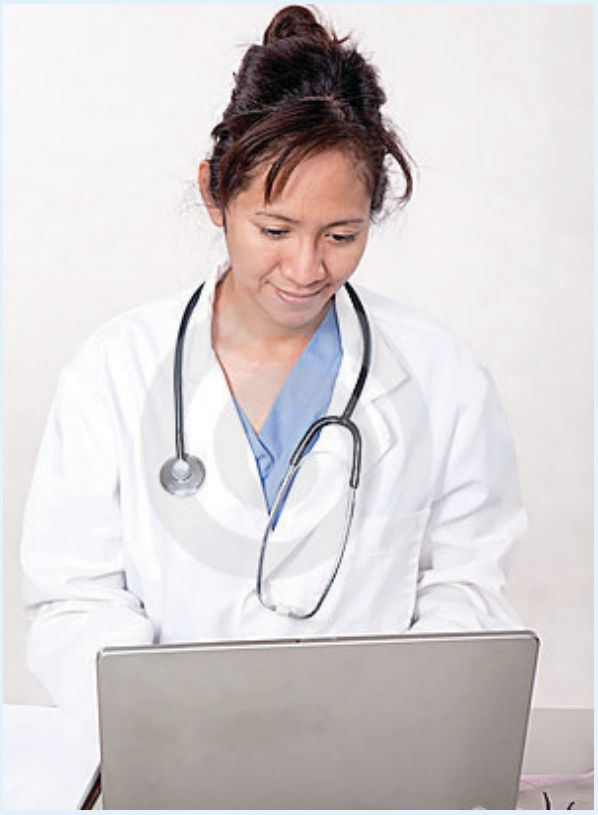
NHSmail is available to all NHS staff for managing secure communications between organisations.

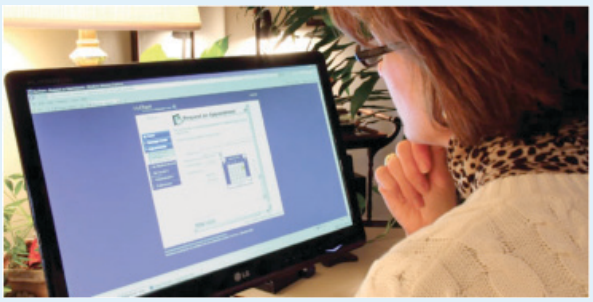
The appropriate software for producing and distributing electronic letters is readily available.

Digital signatures may not be needed, although these can be easily added using macros. eDD can handle both prescriptions and letters simultaneously and uses a combination of smartcard and PIN to generate digital signatures, which although more complex, is required for prescription communications.

A minimum level of service redesign will be required to establish the process for clearing letters for distribution and not printing them.

Consider developing a central store of up-to-date GP practice email addresses for sending correspondence from hospitals across the country'.





Resources

Discharge Summaries:
http://www.tin.nhs.uk/event-calendars/inspiring-success-2006/finalists/discharge-summaries/?locale=en

The eDD project manager at United Lincolnshire Hospitals is glen.howard@ulh.nhs.uk

Demonstrating waste in the report printing process: Pathology Service Improvement, Portsmouth Hospitals NHS Trust

Unit costs of distributing pro forma letters:
http://www.connectingforhealth.nhs.uk/systemsandservices/nhsmail/about/benefits/sms_benefits.pdf

Taking action

1 **Publish Digital by Default as a resource for NHS organisations**: Share the evidence detailed in the report alongside PCT-level benchmarked data to help the NHS understand what improvements are needed and why, and how the improvements can be introduced. This will be of particular value to new CCGs as they receive authorisation and plan budgets and service requirements for 2012/13.

2 **Integrate with the Information Strategy**: The initiatives in this report are easy-wins that the NHS can achieve today. They have a very close fit with the ambitions of the Information Strategy to improve how patients and the NHS communicate and share information. Although they are not intended to set out the future roadmap for the information Strategy, they will help the NHS appreciate the longer-term opportunities as they arise.

3 **Develop local delivery programmes:** We have before us a tremendous opportunity to deliver improvements that will benefit patients and staff alike. Not only that, these improvements will influence the way we work going forward and prepare the ground for setting digital at the core of how the NHS serves.

The ten digital initiatives detailed in this report all came from within the NHS, where staff saw an opportunity to make a difference and took the steps to turn that idea into reality. The future of our NHS will rely on such an entrepreneurial mindset in order to continue to live up to its principles, nowadays enshrined in the NHS constitution.

And we believe successful implementation will rely on local action; whilst we will make available the necessary resources to support you, local leadership and collaboration will be crucial when introducing these initiatives to ensure a real impact is made.

We believe that everyone who reads this report will be inspired and understand the potential for digital in healthcare delivery. From the work taken to introduce these initiatives, awareness of the digital agenda will be raised and we can expect to see more novel digital innovations being developed as a result.

The NHS is world class and yet whilst the challenges we face are considerable, they should not be perceived as barriers to continuing to deliver high quality care. They are a challenge to think digitally so we can extend our long-standing pedigree to become leaders in high-class digital healthcare.

The NHS Change Model has been created to assist the NHS in leading change and the implementation of innovation as part of transformation. The NHS Change Model website can be found here - *http://www.changemodel.nhs.uk/pg/dashboard*

Appendices

Indicative cost efficiencies reference table

Key Initiative	Cost Efficiency	Calculation
Minor ailments online assessment	**£154 million** (£219.4 million)	From the case study, 1000 appts results in 1 appt released/day. For a population of 300K, this would approximate to 110K appointments released Scaled up to the population of England (52.2m), gives a scaling factor of 174, which would release the equivalent of 19.1 million appointments Unit cost-saving per appointment released identified at £11.51, which equates to £219.24 million, with a success rate of 70%, this equates to £154 million
Appointment booking online	**£53.1 million** (£75.9 million)	Estimating the adult population of England at 70%, or 36.3 million, which approximates to 175 million appointments in Primary Care / year The cost of booking in person is estimated at 2.5 minutes duration, which for an A&C role at £8/hr equates to £0.43/transaction This provides a cost efficiency of £75.9 million, which with a 70% success factor is £53.1 million
Primary Care pre-assessment	**£903 million** (£1.29 billion)	Estimated to save a GP 5 hours per week, equal to £600 (as identified in the case study) For all GPs in England (41,349) this indicates a cost efficiency of £1.29 billion. A success factor of 70% reduces this to £903 million
Appointment reminders	**£264 million** (£378 million)	Assuming that DNA's can be reduced by 38%, with DNA rates in Primary Care of 3.45%, Secondary Care 1st appointments of 8.4% and Secondary Care follow-up of 10% Primary Care: 3.3 million at £32 each equates to £106 million; Secondary Care 0.4 million and 2.2 million at £105 each equates to £42 million and £230 million Applying a success factor of 70% reduces the total to £264 million
Mobile-enabled community nursing	**£36 million**	Based on an estimated annual saving of £3,000 for a community nurse. Assuming there are currently 12,000 community and district nurses registered and working in England, this implies a cost efficiency of £36 million.

Key Initiative	Cost Efficiency	Calculation
Pre-operative screening online	**£34 million** (£48 million)	3 million screening appointments per year. If 40% qualify as appropriate for online assessment, this releases 1.2 million from full face-to-face appointments For each online assessment to reduce a clinic session at a unit cost saving of £40 this would equate to a cost efficiency of £48 million Applying a 70% success rate results in a cost efficiency of £33.6 million
Post-surgical remote follow-up	**£40.9 million** (£58 million)	Estimated 4.63 million events identified per year and that 60% of these are successful outcomes resulting in discharge A 75% conversion from face-to-face to remote (sourced from the case study) will qualify 2.1 million appointments annually The unit cost saving per appointment is estimated at £28, providing a cost efficiency of £58 million with a success factor of 70% reducing this to £41 million
Remote follow-up in Secondary Care	**£326.3 million** (£466 million)	22.2 million follow-up appointments annually If 75% qualify for remote follow-up at a unit cost saving of £28, this results in a cost efficiency of £466 million Applying a success rate of 70% results in a cost efficiency of £326.3 million
Remote communication of test results	**£1.2 billion** (£1.6 billion)	An estimated 500 million tests carried out annually, of which an assumption that 10% qualify for remote reporting to patients Avoiding a GP appointment for reporting each of these negative test results would result in a cost efficiency of £1.6 billion Applying a success factor of 70% results in a cost efficiency of £1.2 billion
Secondary Care patient letters	**£96.4 million** (£137 million)	Assuming there are 80 million letters sent annually from Secondary Care for all inpatient and outpatient episodes (including 1st appointments). At a unit cost reduction per letter from £2.23 to £0.5 to distribute each letter, this implies a cost of £137 million. Applying a success factor of 0.7 reduces this to £96.4 million.

What might the future NHS look like?

The following selection of digitally-integrated health services provides a context of digital maturity against which the NHS can set its ambitions in order to become a world leader in digital healthcare delivery.

eRecept

eRecept, the Swedish ePrescribing system was launched in Stockholm County in 2003 and within five years was generating a net benefit of €95m against a total investment cost from 2001 to 2008 of €4m. Providers are recognised as receiving 80% of the services benefits through effort saved and reduction in errors, with the patient benefits centred on time saved in not having to carry prescriptions to chemists for processing and safety of more accurate prescriptions. Currently, 13 million prescriptions are handled by the system every year, with a unit handling cost reduction from €3 per paper prescription to €1 for electronic editions. 55% of Stockholm's population use eRecept, reporting a 93% satisfaction rate with its service.

Kaiser Permanente

Kaiser Permanente provides a private health portal, which provides members with access to personal health records, clinician search, decision aids, prescriptions, health information & guidance and electronic referrals. Over 8 million records are accessible to patients and their clinicians through the portal, where over 29 million lab results are viewed every year, 2.5 million appointments scheduled and 12 million electronic communications made with clinicians by patients.

A case study on integrated digital healthcare delivery

Danish Medcom

Background

The Danish healthcare system is publicly funded and founded on the principles of universal coverage and free and equal access to healthcare for Denmark's 5.5m citizens. The healthcare system is structured around 5 regional authorities responsible for healthcare provision and 98 local municipalities with responsibilities for locally provided community care and public health initiatives.

The Danish Department of Health recognised early on that the use of digital channels and the digitisation of information exchanged at the hand off points between patients and healthcare professionals as well as within the healthcare system itself would bring significant benefits for both the quality and efficiency of healthcare delivery.

To help drive this vision forward Medcom was established in 1994 with the purpose of creating a nationwide communications standards across the all organisations involved in the delivery of healthcare in Denmark. Medcom has focused on providing a common digital infrastructure to support the delivery of common messaging, notifications and information exchange across the healthcare system.

Digital by Default

Medcom has overseen a coordinated national plan to drive the adoption of digital for a range of primary & secondary care processes helping to establish a digital first culture into everyday healthcare provision. In replacing time-consuming telephone and paper based processes with common digital alternatives Medcom have helped to transform the Danish healthcare system into one of the world's leaders in the use of eHealth.

Medcom's strategy to drive digital by default for patient interaction is part of a wider eGovernment strategy to remove all paper based forms and correspondence between citizens and the state by 2015 with a target to realise annual digital savings of 3billion DKK by 2020.

There is now widescale use of online GP appointment booking and use of SMS for appointment reminders in Denmark. 1.8 million (5.4%) of GP consultations were conducted by email in 2010, a rise of over 500% since 2006. In 2011 60 million digital messages were sent across the Danish healthcare system with many common processes now almost exclusively digital:

Type of message	% digital
Discharge letters from hospitals to GPs	99
Referrals from GPs to hospitals	81
Lab results from laboratories to GPs	99
Lab test orders from GPs to laboratories	99
e-Prescriptions from GPs to pharmacies	85
Reimbursement from GPs to public health insurance	99
Notifications of admission / Notifications of discharge from hospitals to municipalities	98
Rehabilitation plans from hospitals to municipalities	80

Medcom have used a practical approach to the delivery of an overall digital by default strategy. By engaging with regional authority representative and clinical experts they have collaborated to design common standards and approaches to the digitisation of common transactions thereby minimising barriers and accelerating rates of adoption. These easy wins have helped to drive acceptance and recognition of the value digital channels to both healthcare employees as well as the wider public.

From Digital transactions to Electronic Medical Records

Medcom recognised that more efficient transactions represented the starting point on a much bigger journey. Building on the use of digital data derived from digital channels and integrating it into patient medical data into a common electronic record they saw there were additional benefits to be realised. By ensuring that all those involved in the patient's care journey have access to the relevant patient medical information there is an opportunity to increase the efficiency of care pathways and maximise the quality of care provided.

The approach Medcom took was not to impose a central Electronic Medical Record (EMR) standard. Instead they collaborated with other stakeholders to develop a common e-Journalen (e-record) format that sits one level above local hospital and GP EMR implementations. This e-Journalen holds all data about a patient is supported by a set of tightly specified interoperability standards that integrates the different local EMR systems enabling local providers to access complete patient records either directly through their own EMR system or through the Sundsud.dk healthcare portal.

To ensure that all healthcare providers are able to accurately identify what medications a patient is taking or has recently taken Medcom have developed a Shared Medication Record system. This system integrates the prescription and medication data from across the Danish healthcare system to enable any healthcare provider immediate access to all current and previously taken medication for the preceding 2 years.

Bringing it all together

Sundhed.dk (meaning "health" in Danish) is the official Danish healthcare portal providing a single point of access to healthcare information and service for citizens, patients as well as for healthcare professionals. Sundhed.dk provides the following services to patients and citizens:

- Access to online services for booking GP appointments, online consultations and prescription renewals
- Secure access to personal health data, current treatments & historical health records from previous GP and hospital episodes
- Access to Sundhed.dk's health information & treatment guides
- Access to patient support networks based around disease type
- Access to waiting times and patient ratings for all Danish hospital services

For healthcare professionals Sundhed.dk has been extended to provide the following additional services:

- Access to patient data not already accessible from the local EMR including the patient's e-Journalen and Shared Medication Record
- Access to professional multi media archive of guidelines, best practice clinical database and training materials

Looking to the future

Medcom are now looking to build upon their digital platform to drive further improvements in the efficiency of care delivery and patient experience. It is Medcom's belief that a common data platform will foster new innovation in care pathway development and a more agile and responsive healthcare system. This includes a vision of more personalised healthcare delivery that is more tightly integrated into personal smartphones as well as emerging telehealth and health management solutions. Central access to patient and treatment data is expected to enable significant R&D opportunities to track & monitor both the performance of particular functions but also to identify new insights into treatment effectiveness, co-morbidities and longitudinal health trends.

To drive further value from their investment in a national EMR strategy Medcom are working on 2 related projects. One is the creation of a National Patient Index to enable existing data from a broader range of data sources to be indexed and searchable such as laboratory tests, medication records, PACs systems etc. The second project is the creation of an expanded National Health Record that expands on the current e-Journalen system.

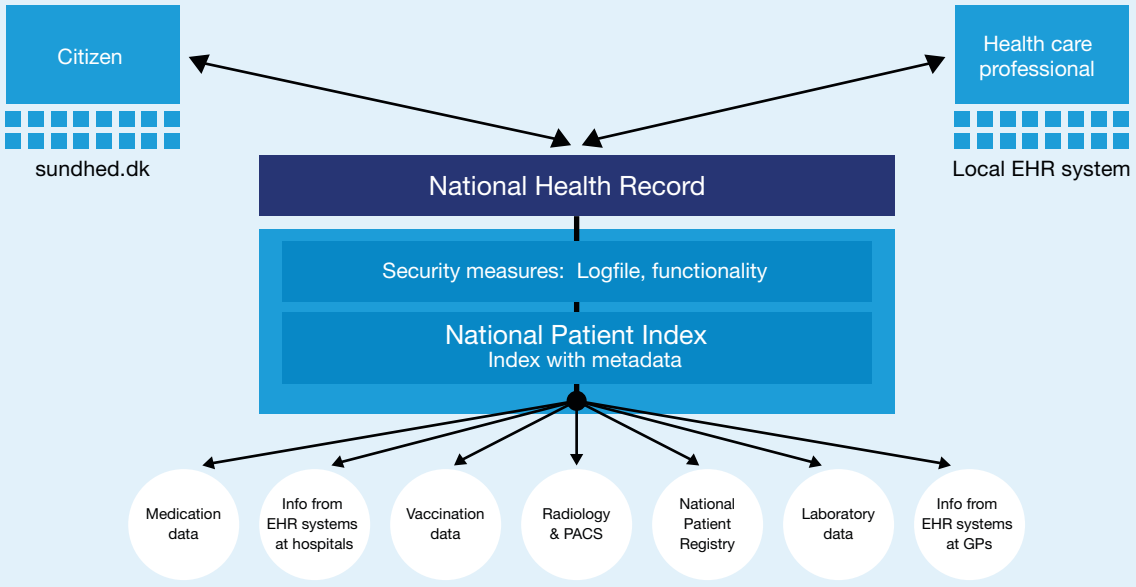
The expanded National Health Record is anticipated to bring the following benefits:

- A clinical tool that enables digital sharing of a broader range of clinically valuable data across borders and sectors of the Danish health system
- A tool for enabling patients to obtain more complete access to their entire medical data wherever they have received treatment across the health system (via the Sundhed.dk portal)
- Shared decision support for patient referrals and treatment options
- A patient engagement tool to provide a foundation for richer patient dialogue, insight & active involvement in their own treatment and prevention activities

Medicom have ambitions to deliver more effective chronic disease, elderly care as well as prevention services to Danish citizens out in the community. A number of telemedicine trials are now underway to determine how telemedicine can be more effectively scaled into national programmes These trials are based around the 3 main themes of long distance monitoring, remote video and digital exchange of photos. These services are intended to leverage recent advances in monitoring technology and smartphone adoption to enable care to be provided out to people's homes. This is anticipated to deliver better heath management, reduce demands on the healthcare system and deliver better patient outcomes.

It is anticipated that data from these applications will over time integrate into the National Healthcare Record further enhancing the value to all parties and enabling a further step towards a dynamic, smarter and more effective personalised healthcare system.

The National Patient Index and the National Health Record



Source: National Board of eHealth and sundhed.dk

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