Revolutionising the payment for digital solutions for patients

Urgent need for new payment models to realise the significant potential of digital tools

Health Innovation Network South London

About

Once the acute phase of Covid-19 has passed, the NHS will need flexible and innovative approaches to tackle demand and manage the pressures in the health and care services. Many people are looking to digital tools to revolutionise the way health and care is delivered, including facilitating an increased emphasis of supported self-management by patients. Much of the recent focus in NHS innovation has been on the importance of clinical evidence of effectiveness of digital applications. Whilst this is a vital component in demonstrating value, this promising opportunity will be lost if we do not also tackle the financial and practical aspects of how these products are to be purchased and paid for.

The Health Innovation Network and DigitalHealth.London are keen to help the NHS and innovators make the most of this opportunity, through collecting insights and opinions from subject matter experts over the last few months. This paper intends to stimulate the debate whilst setting out the key opportunities and challenges if the NHS is to make the most of the potential for fundamental improvements offered by digital tools.

The opportunity of digital tools for patients

The Covid-19 pandemic has seen a significant increase in waiting times across most clinical areas. Self-management and monitoring digital solutions are a potential part of the solution to meet some of the challenges at different stages of the patient journey. For example, patients will be able to use a digital tool or an application (app) to improve their knowledge and health behaviour whilst they wait for their appointment with a clinician and subsequent treatment. This could not only give the patient information and skills about how they could start tackling their health problem, but also kick-start and aid their treatment. Upon a new diagnosis of a long-term condition, the patient may require more focused support and information at the beginning of their care pathway, then move into a phase of self-monitoring and empowerment – digital tools are well placed to support this, complementing face-to-face care. As a healthcare system, there is an opportunity for us to change the way we utilise and pay for these digital tools for patients in order to embed their benefits into the clinical pathway.

There has been a huge growth in people using their smartphones and tablets to better manage their health and wellbeing. Ofcom research shows that 87 per cent of adults (16+) owned a smartphone in 2020[1], and since then millions of people have relied on digital communication to keep in touch with loved ones during lockdowns. This presents a huge opportunity to empower and engage people with managing their own health through apps. Apps have demonstrated their value by providing behaviour change interventions through improved engagement using personalised goal setting, individualised messaging (including medication reminders) and gamification. For example, research has shown that apps that encourage weight loss and increased physical activity have led to reductions in BMI.[2]

The NHS Long-Term Plan (2019) highlights that digital technology can support the NHS to deliver high quality specialist care more efficiently. The value of apps includes:

- Better understanding and control for individuals in the management of their health condition.
- Empowering individuals to change their health behaviour to prevent ill health.
- Enhancing communication and data sharing with clinicians.
- Potentially decreasing demand on NHS services as individuals can self-care more appropriately rather than seeing their GP or other healthcare professionals.

Evaluation of digital tools is still important in building confidence in their benefits and to demonstrate their value. This will help the solutions improve their outcomes and improve the rate of referral to digital tools by clinicians, as more apps are accredited through assurance processes. Nevertheless, we have seen such a radical transformation of services during the Covid-19 pandemic with NHS organisations referring patients to digital solutions and self-management apps due to unprecedented high demand upon their services[3]. We should ensure we build upon this rapid adoption for a longer term and sustained improvement.

[1] https://www.ofcom.org.uk/__data/assets/pdf_file/0027/196407/online-nation-2020-report.pdf

[2] Flores Mateo Gemma, Granado-Font Esther, Ferré-Grau Carme, Montaña-Carreras Xavier. Mobile Phone Apps to Promote Weight Loss and Increase Physical Activity: A Systematic Review and Meta-Analysis. Journal of Medical Internet Research. 2015;17(11):e253. doi: 10.2196/jmir.4836. [PMC free article] [PubMed] [CrossRef] [Google Scholar]

Payment models for self-management apps

Whilst some may demand patient access to all health and care apps that can demonstrate value, the reality is that both the volume of available funding and the mechanism for purchase and payment are potential barriers. If we are to achieve the levels of access that are potentially desirable, we believe that developing agreement about payment models is urgent, the challenges need to be recognised and solutions found, in order make the most of this opportunity.

Transformation funding

National innovation and transformation funding such as NHS England's Digital Exemplar programme, Innovation and Technology Payment and Service Transformation Funding have helped to test the adoption of self-management apps within clinical pathways. These pockets of discretionary funding have led to localised solutions being developed and deployed, particularly if purchasing constraints would have otherwise prevented implementation.

Arguably the most successful on-going, system-wide transformation has been in Diabetes, where the funding has focused on specific sections of the patient pathway, solutions have been compared nationally, and funding has been made available in a series of waves to support the trial, evaluation and improvement over the last five years. There is a risk that transformation funding can be seen as short-term spot-solutions. Often disconnected from established patient pathways, and with a lack of a focus on on-going sustainability and commissioning properly. This can lead to implementations that are not properly embedded into 'business as usual.'

***Opportunity** – Clinical leaders should consider Covid-19 recovery or transformation funding to embrace digital solutions. Focusing on specific patient pathways, with projects & payments that evolve the system over multiple years. This can lead to the development of better digital solutions, that are rigorously refined and improved, and embedded on a regional scale, as well as leading to a vibrant and competitive market.*

Population commissioning

At the Health Innovation Network, through our discussions with industry partners we often find that companies have assumptions that potential NHS customers will commission self-management apps at a population level to benefit everyone within a geographical level, regardless of their need or approach to managing their health. Some digital self-management apps have been commissioned at a population level, whether a GP practice, borough, or entire country. Whilst this has been a helpful solution both for commissioners and the developers, this is a 'blunt-tool' which has sometimes led to one or both parties feeling that value has not been achieved – due to a mismatch in the expectations of demand, costs, and incentives. This is not unusual at this stage in the development of a market, but it needs to be resolved through better evaluation and transparency of data.

Improved transparency around the data of costs, take-up and outcomes for different types of people, will allow more detailed pricing models to be developed. The provider of the solution can then work with the commissioner to improve outcomes through the use to the data and technology to optimise usage. This should improve the value proposition through better targeting of digital resources at those most in need and likely to achieve improved outcomes, allowing other resources to target those hard-to-reach people who could benefit from more intense and expensive interventions, such as face-to-face. This has been seen in south London with initiatives like Diabetes Book & Learn.

***Opportunity** – Even if apps are commissioned at a population level, it is to the longer-term advantage of both the provider and commissioner to ensure data is collected at a granular and localised level – so a better understanding can be built-up by the system over time about how to improve outcomes as well as the enablers and barriers to adoption.*

Function-based payment by patients ("Freemium")

The term "freemium" is a business model frequently seen for digital products that combines offering customers both "free" functionality and additional "premium" functionality. In healthcare, we are seeing apps being developed that are free to all users, but there is also the option to pay for premium features and additional functionality. This premium functionality might include greater analysis of their data, connectivity, longer duration, more data fields collected, more functionality, more content, additional services, or no advertisements.

We have seen this starting to be used within the NHS in a number of scenarios, for example, a weight loss app could be suggested in primary care which includes calorie counting, weight loss tracking and advice. The premium patient-paid models might include a selection of specialist recipes e.g. vegan, or perhaps additional features like step competitions with other users or sleep tracking. In this type of payment model, all patients could have free access to the app which has been recommended for them by their clinician with the option of the patient purchasing additional extra features if they wanted. This could mean that companies could market directly to patients the 'no cost' element to entice new users, but the app could become sustainable through selling additional functionality for payment on the app.

There is a complex relationship between health outcomes and digital inequalities, with some groups who are already facing poor health outcomes and are also subject to digital exclusion. People living in rural areas have less access to, and slower, internet infrastructure; older people are less likely to own smartphones or connect to the internet; and people with lower incomes are less likely to have access to smartphones in their household and more likely to be on pay-as-you-go mobile phone contracts and data plans which can make it more expensive to access the internet[4]. This needs to be considered with new payment models for digital solutions.

This type of business model has some advantages to the health system, as it would enable more people to access potentially better digital solutions without adding cost pressures on the system. The tools that are utilised are more likely to be sustainable and improved over time, as patient choice and market forces means that the most attractive, user friendly and engaging apps receive more revenue.

This does, however, also highlight the risk in that those improvements in user experience and engagement do not come at the detriment of clinician efficacy, safety, and access. This is the vital role of assurance processes, such as those utilised by the NHS App Library; procurement frameworks, such as London Procurement Partnership[5]; and formulary services such as ORCHA[6]; to ensure that both the free and the premium aspects of the app meet the high standards required for a product that is recommended to people by clinicians and the NHS. This should also ensure against adverse incidents such as inappropriate advertising or harmful guidance.

***Opportunity** – There is significant opportunity for more clinicians to take advantage of the freemium payment model and recommend self-management apps that have been through an assurance process to improve health outcomes within the spirit of accessible NHS services for all UK residents.*

The NICE Evidence Standard Framework for digital health technologies and NHSx's Digital Technology Assessment Criteria, should also be used on both parts of the product to ensure outcomes and efficacy are supported by evidence for both the free and premium parts of the app. It is important to understand if the free part of the app has sufficient functionality to improve health and deliver the value required for NHS commissioning. Likewise, ensuring that the additional functionality that people who can afford or choose to pay offers personal choice or non-clinical benefits, rather than significant clinical benefit that has a risk of increasing health inequalities. For this reason, we recommend that the relevant commissioners or evaluators of apps, monitor the premium aspects of apps alongside the free ones, and collect usage information over time, to assess whether any changes in the evidence supports the commissioning of the premium functionality aspects of the app.

[4] https://www.goodthingsfoundation.org/sites/default/files/research-publications/digital_inclusion_in_health_and_care-_lessons_learned_from_the_nhs_widening_digital_participation_programme_2017-2020__0.pdf
[5] https://healthappsdps.orcha.co.uk/
[6] https://orchahealth.com/

Function-based payment by the NHS

Some self-management apps have developed a business model that allows a basic functionality to be free for the patient with a long-term condition or on a specific patient pathway, whilst receiving revenue from the NHS through premium services that add value to the health system. These services could include interoperability with patient health records, the sharing of patient generated monitoring or outcome information, and the delivery of personalised messages or test results to patients.

This sort of model has the advantage that it allows many patients to benefit from the application with minimal barriers to uptake. This should reduce regional inequalities and allow for areas of patient-led demand to be highlighted.

Commissioners and providers do need to re-design clinical pathways to include the use of digital self-management tools at certain points if value is to be delivered to the health system. If they replace administrative steps or enhance clinicians' interventions it is likely a return on investment through reduction in demand, better clinical outcomes, and increased patient empowerment.

Encouragingly during the Covid-19 pandemic, it was reported anecdotally from our roundtable discussions that clinicians saw an increased uptake in apps for managing long term conditions like Chronic Obstructive Pulmonary Disease or Irritable Bowel Disease, and cancer as patients were eager to find ways to manage their conditions whilst staying away from outpatient clinics and hospitals. This suggests there is demand, but additional value could be delivered by considering the full patient pathway.

Opportunity – *Patient demand for self-management support could be utilised to bring improved efficiency to services through redesigned hybrid pathways using integrated apps - Providers need to invest in these solutions if they are to gain the benefit of both managing increasing demand and empower patients to self-manage their conditions.*

Prescription-type payment

Studies have shown that applications recommended by clinicians have a higher level of uptake and utilisation than those found without clinical support. However, there can be a reluctance to recommend new tools that have the potential to be a cost pressure on the health system. Despite the NHS priding itself as being free at-the-point-of-entry based on need rather than ability to pay, areas such as primary care prescriptions, dentistry and opticians all have an element of means-tested co-payment. A public debate could be beneficial to open the possibility of a fixed prescription-type payment by patients to access digital tools and apps.

This payment model could replicate primary care prescriptions, embedding the use of patient-held digital tools into clinical care; whereby clinicians prescribe for their patients an evidence-based digital tool in the same way they would prescribe medication. For those patients who are exempt from paying for their prescriptions they could also be exempt from paying for their app or even device (for example, blood pressure monitor or digital scales) and thereby reducing the financial barriers for these patients (and closing the existing digital divide). The NHS Prescription Charge is currently £9.15, although it is worth noting the King's Fund has said that currently about 90 per cent of prescriptions are dispensed free of charge[7].

This type of model would still require applications to demonstrate value both to the health system and the user, with uptake of the prescriptions being a helpful proxy of value. The digital tools or app would need to demonstrate evidence of use and uptake by the user / patient within the period the licence or 'prescription' is reimbused (eg. one-three months). This is similar for medicine prescriptions which are only reimbursed when medicines are dispensed. An evidence-based formulary of apps would be a seal of approval for clinicians and patients, whilst being a requirement to enable payment as part of the prescription process. This assurance could be provided through NICE guidance Digital Technology Assessment Criteria, or with a customised formulary, such as those provided by ORCHA. It is the linkage to a nationally scalable payment model like prescriptions which will support the market development of evidence-based digital tools.

[7] https://www.kingsfund.org.uk/blog/2019/09/scrapping-prescription-charges

Payment for outcomes

In recent years, we have seen evolution on the payment models used for purchasing apps as the market has developed. Previously there have been occasions when apps have been purchased for specific patients, but perverse incentives have meant that licences have not been fully allocated to patients, and in others the patient cohort only engaged with the app once or twice thereby reducing the impact. Consequently, the buyer did not get the required outcome from purchasing the licences.

Payment through data access

In some scenarios, the ability to use the data generated by apps may be of sufficient value to compensate the provider of the app for its use. This monetising of the benefits of the data generated through apps, needs to be explicit and aligned with the best practice set out in the Code of Conduct for Data Driven Health and Care Technology[8]. This will allay concerns and potentially negative messages about the NHS 'selling' patient data, through clarity around the value proposition and respective risks and benefits for all parties.

The data generated from digital tools and apps could provide new insights to help clinicians understanding their patients' health behaviour, through digital phenotyping. This is the emerging multidisciplinary field of science that looks at active and passive data from personal digital devices, potentially leading to new ways of diagnosing and treating conditions and providing a more personalised care plan. For example, a mental health team uses the data generated to understand their patients' triggers in their mental health deterioration and can then provide better, tailored crisis interventions in a timely way.

Data generation at either the individual, condition or cohort level can provide important insights for the clinician or commissioner, which could help to improve the personalised care for the individual or improve the clinical pathways for different health conditions. This usage is generally accepted by patients[9] who would add to the value proposition of a digital tool, but it does not help the development of the market as this can occur independently of the payment model.

Payment models and transparency become more important when data is to be used by third parties such as in research by academics or industry. For industry partners such as pharmaceutical companies, the data inputted into self-management or monitoring apps (such as those for long term conditions) could be valuable to the company, clinicians, and the system for understanding and predicting the impact of high-cost medicine for specific diseases. Individual NHS Trusts can enter different arrangements when working in partnership with companies and charge on a cost recovery basis of processing and delivering the anonymised data to a partner[10]. The recently established NHSx Centre for Improving Data Collaboration[11] is looking at supporting the health and social care sector to enter into data-sharing partnerships that benefit the NHS, patients, and the public. Clear communication with patients and clinicians would be imperative to following this funding route, but there is significant potential for more disease related partnerships to be developed, for example improving self-management tools for people with long-term conditions in return for the use of the data for research and the development of better treatments.

Opportunity - *If the NHS providers and commissioners put in safeguards to protect privacy and gain consent from the patient, this could be a high-potential payment model to fund access to apps within patient pathways.*

[8] https://www.gov.uk/government/publications/code-of-conduct-for-data-driven-health-and-care-technology/initial-code-of-conduct-for-data-driven-health-and-care-technology

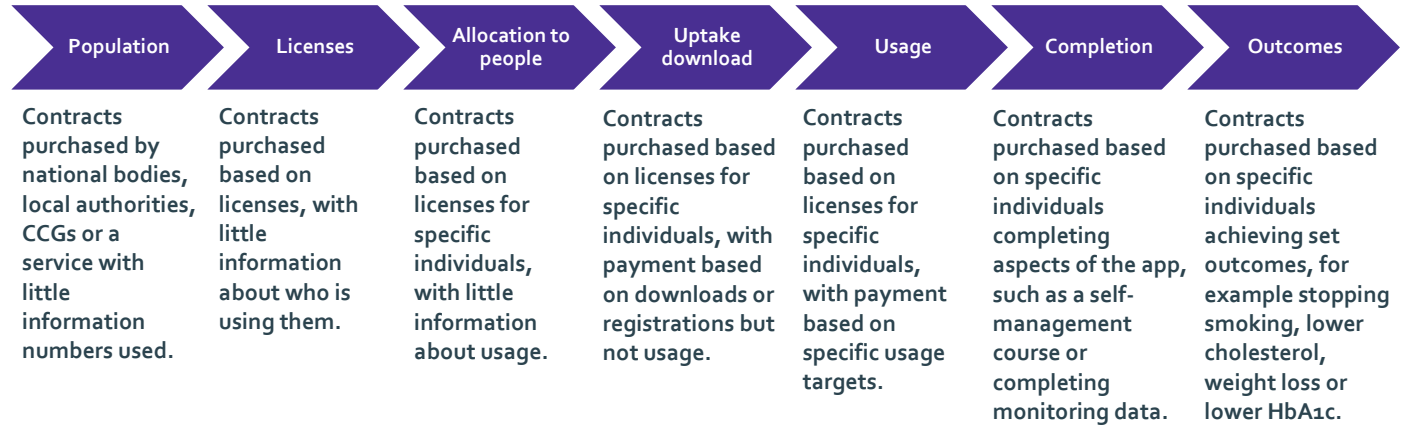
[9] https://www.onelondon.online/wp-content/uploads/2020/07/Public-deliberation-in-the-use-of-health-and-care-data.pdf

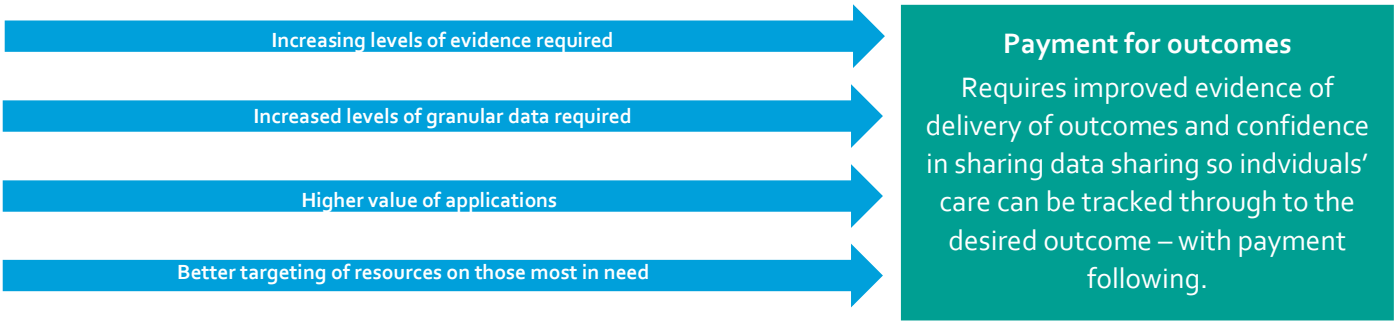
[10] https://understandingpatientdata.org.uk/companies

[11] https://www.nhsx.nhs.uk/key-tools-and-info/centre-improving-data-collaboration/

Evolution of payment models for patients apps

Increasing market maturity will shift payment models to the right, although current limitations in evidence and data sharing will require sub-optimal payment models to signal demand and encourage the market development.





***Opportunity** - Recent initiatives to encourage the development of evidence for digital health solutions and improving data collaboration should allow payment models focused on patient outcomes.*

To achieve a return on investment, the payment system for the self-management app is dependent upon usage and improving health behaviours and clinical outcomes. As with all health services that are commissioned, the buyer will want to achieve value for money through measuring the usage and engagement by patients of self-management apps. Evidence will help commissioners understand the strengths and weaknesses of different solutions, at different price points, in order to make value for money purchasing decisions. Data needs to be shared, so both the provider of the digital app and the payer, can be confident that usage is optimal to deliver the desired outcome, and the product can be iterated for improvements. In turn, data sharing can allow responsibility for user engagement to become the app provider's responsibility rather than the clinician, thus reducing the burden of clinicians managing and monitoring digital tools, but also focusing on specific outcomes. By updating and improving their tool they should increase their user engagement utilising behavioural insight. For example, using recognition, points or prizes related to health goals to encourage patients to keep trying and keep recording their results. This functionality could entice patients to log back in again to check their results and achievements.

***Opportunity** – Increased focus on outcomes through evidence and data will support innovators to develop apps with a great value proposition – warranting higher prices, whilst at the same time benefiting the system through more efficient targeting of resources.*

Whilst outcomes-based payment models may be long-term objectives of purchasers there are data sharing and evidence gathering requirements that could be included in most contract payment schedules with app providers. This will improve transparency between the parties on outcome indicators, both clinical and technological, such as user engagement and improved health behaviour. Over time this will support value for money in purchasing decisions, encourage market development and quicken the iteration of products to improve outcomes.

Payment for services

Whilst this paper is about payment models for digital solutions, it is important to remember they do not exist in isolation. Payment models need to acknowledge that to achieve the desired outcomes from digital tools, human services may need to be incorporated within them (for example telephone or text-based coaching) or wrap around them.

***Opportunity** – Commissioners and providers of any digital application should consider the wrap-around services that are required to achieve the required outcome. Ideally these should be provided by the provider of the app so the responsibility for delivering the outcome is aligned with the payment.*

In the implementation of patient facing apps within a clinical pathway, it is essential to provide information and guidance on using the app (as is the case with traditional medicine) to strengthen patient and clinician usage. This is for both patients and clinicians to increase user engagement and ensure the correct use of the full functionality. A hybrid model could be taken for all purchased licenses with in-built support to help set-up subscriptions, and guidance on how to use the app. This could even be extended to broader digital literacy support or access to resources like devices, Wi-Fi or data if there is concern about digital inclusion.

Conclusion

The recommendation of digital tools and apps by clinicians to patients until recently has been led by a handful of digital champions with specific interests. However, the Covid-19 pandemic has seen a rapid acceleration towards using digital solutions that keep patients out of clinical settings wherever possible. This rapid adoption of technology will slow down, and perhaps even reverse, if we do not tackle the practical and financial issues in relation to purchasing and payment of these tools.

There are many complexities to paying for digital solutions that are evidence-based, affordable and demonstrate a change in patients' health behaviours. This paper hopes to stimulate this debate, challenging current models and exploring new payment models. Evaluation and data are key to evolve the market, and over time we see a movement towards outcome based payments. This evolution will not only help the providers and purchasers of the digital tools demonstrate the value needed for their solutions to become a permanent part of the patient pathways. It will also allow the NHS system to target resources at clinical or geographical areas and specific outcomes, allowing scarce face-to-face clinical time to be spend on those most in need.

Postscript

This paper was developed following a discovery research stage and a roundtable event hosted by the Health Innovation Network (HIN) in Autumn 2020. We had participation from a wide variety of national and regional stakeholders and policy makers, and we are grateful for their contributions. The participants represented the following organisations: NHSx, NHS England, Greater London Authority, King's College Hospital, Oxleas NHS Foundation Trust, Sussex NHS Foundation Trust, Care City, Orcha, London Procurement Partnerships, South West London Health and Care Partnership and Sweatcoin.

This is the start of the debate on payment models for digital solutions and a journey for all those involved in digital health. We are interested in the views of all the stakeholders involved in the development market both in the UK and internationally. If you feel there are other payment models we should consider or learning from other countries or markets, please get in touch.

About the Health Innovation Network and DigitalHealth.London

The Health Innovation Network (HIN) is the Academic Health Science Network (AHSN) for south London, one of 15 AHSNs across England. As the only bodies that connect NHS and academic organisations, local authorities, the third sector and industry, we are catalysts that create the right conditions to facilitate change across whole health and social care economies, with a clear focus on improving outcomes for patients. This means we are uniquely placed to identify and spread health innovation at pace and scale; driving the adoption and spread of innovative ideas and technologies across large populations. We are also a founding partner of DigitalHealth.London - *building the global digital health capital, together.*

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