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The transition to integrated care

Population health management in England

March 2019

Deloitte Centre *for* Health Solutions

Contents

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The Deloitte Centre for Health Solutions is the research arm of Deloitte LLP's Life Sciences and Health Care practices. Our goal is to identify emerging trends, challenges, opportunities and examples of good practice, based on primary and secondary research and rigorous analysis. The UK Centre's team of researchers seeks to be a trusted source of relevant, timely and reliable insights that encourage collaboration across the health value chain, connecting the public and private sectors, health providers and purchasers, patients and suppliers. Our aim is to bring you unique perspectives to support you in the role you play in driving better health outcomes and sustaining a strong health economy.

Relevant publications related to population health, include Vital Signs: How to deliver better health care across Europe; Primary care today and tomorrow: adapting to survive; Breaking the dependency Cycle: Tackling health inequalities of vulnerable families as well as several reports on technology and innovation in the health space.

Foreword

Ageing populations and rising patient expectations, together with increasing costs in the face of substantial budget constraints for health and social care, call for innovative solutions. In the UK, there is a growing consensus that if health care is to be sustainable it must shift its focus from treatment of ill health to prevention. Moreover, maintaining and improving the population's health requires a greater focus on the wider social determinants of health.

Today, continuing improvements in health outcomes through advances in technology and therapies have led to more people living longer. However, for many this means living with multiple chronic conditions. The NHS Long Term Plan, published in January 2019, reconfirms the need for the NHS to move from reactive care towards a model that embodies proactive population health management (PHM) and expects NHS organisations to do this through the creation of new Integrated Care Systems. While previous policy initiatives in the UK have recognised the need for this shift, PHM is still largely underdeveloped.

PHM is the concept of gathering data and insights about population health and wellbeing across multiple care and service settings, with a view to identifying the main health care needs of the community and adapting services accordingly. Today, major advances in data analytics, machine learning and digital technologies can provide the tools to make PHM a reality, by helping to identify risks and stratify patient populations, improving the speed and accuracy of diagnostics, and designing personalised treatment plans.

If PHM is to be embedded throughout the health service, there are numerous barriers to overcome, not least the challenge of linking previously disparate datasets and developing models of leadership that embrace new, integrated, ways of working and a shared culture and mind-set. The need for health economies to build collaborations, especially engagement with patients, is essential for an effective health and care system. It is also imperative that clinical and care teams should be connected and well organised around the people in need of care.

The NHS Long Term Plan is comprehensive and ambitious; providing numerous commitments to help deliver a sustainable and affordable health and care system and improve the lives of the English population. It clarifies what needs to change and why, and identifies PHM as a key enabler.

Our report findings are based on extensive literature reviews and our experience in working across health economies in the UK and internationally. It focuses on the steps needed to embed PHM in the NHS and highlights the key challenges and potential solutions that, if adopted at scale, will make PHM a reality.

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Executive summary

The UK's health and social care system, like most other western health care systems, is facing growing demand and funding challenges due to people living longer but with one or more chronic conditions, unmet health needs, and the availability of new treatments and therapies. This puts enormous pressure on the system to remain sustainable. While life expectancy continues to improve for the most affluent ten per cent of the population, it has either stalled or fallen for the most deprived ten per cent. At the same time, many NHS provider organisations are facing serious financial challenges, and social care is in crisis.

Population health brings together an understanding of population need (public health) through big data, patient engagement and health and care delivery. Population health management (PHM) embraces the quadruple aims of health care, which are to: improve the health of the population, the experience of care, the health and wellbeing of the workforce, and reduce the overall costs of care. While population health is not a new concept, attempts to tackle it have been fragmented, with health policy still largely focused on treatment rather than actions to address the wider social determinants of health.

PHM is a patient-centric, data-driven approach to optimise the physical and mental health of populations over individual life spans and across generations. PHM requires clinicians to address existing acute and chronic conditions, and to expand their focus beyond the care and treatment of patients with known problems to identify all the individuals in their patient population who may have potential conditions. A proactive approach is needed to enable healthy patients to remain healthy and to monitor continually the status of at-risk patients.

To do this efficiently and cost-effectively, care providers need technology to help aggregate and analyse patient data, facilitate care coordination, and enable patient communication and education. It also requires analysis of health care data across multiple care settings with a view to identifying the most prevalent needs of the community. By using a data-driven approach to identify morbidities and the status and needs of individuals, PHM allows the care needs of citizens to be managed in new ways. The advantages for individuals are better coordination of care between professionals, reduced duplication, and improved outcomes.

The adoption of integrated electronic health records is a critical enabler for managing the health of a patient population effectively. It facilitates the collection, aggregation and storage of patient data to inform a real-time clinical response to changes in need. It also ensures that information is available to the clinician to implement an agreed care plan with the patient and their care team. Giving patients access to their own health record will improve patient activation and empower them to take responsibility for their own care.

A key challenge for most health systems is the need to link previously disparate datasets. Advances in technologies create an opportunity to develop more effective ways of linking data and developing risk driven targeting of health care interventions to those who need it most, and at a time when it will provide most value for patients.

In the UK, the devolved administrations of England, Scotland, Wales and Northern Ireland have adopted different approaches to health and social care, including different approaches to prioritising the role of PHM. While the size of the population in the three smaller countries lends itself to a more unified approach, the NHS in England is operating under the legal framework created by the Health and Social Care Act 2012, which encourages competition between organisations and champions the commissioner/provider split. With the size and diversity of the English population, and the sheer number of provider organisations, a single approach is not feasible. The main focus of this report is therefore developing effective approaches to PHM in England, drawing on examples of good practice in other countries.

The transition to a PHM approach in England

In 2014, NHS England published the NHS Five Year Forward View, aimed at addressing three systemic gaps in: health and wellbeing, care and quality, and finance and efficiency. It recognised the need for system integration and, subsequently, selected 50 NHS 'vanguards' to pilot five new integrated care models. In 2016, NHS England required all health and social care organisations to become one of 44 geographically-based Sustainability and Transformation Partnership (STP) – (there were 42 STPs at the end of 2018). The main aim of STPs is to encourage wider collaboration between organisations, agree system-wide priorities, and plan collectively how to improve health and care.

However, the existing legal framework raises a number of funding, accountability and governance challenges, which have undermined progress towards achieving greater vertical and horizontal service integration within each STP. Even the most advanced partnerships have faced problems in managing demand with the resources available.

The rate of progress in system integration has been dependent largely on the strength of system leadership and in achieving a shared culture. In selected areas, a new form of partnership emerged during 2018, in which some STPs were designated as 'Integrated Care Systems (ICSs)'. These geographically-based models of care bring together primary, secondary, community and other health and care services, working in close collaborative partnerships with local councils and others.

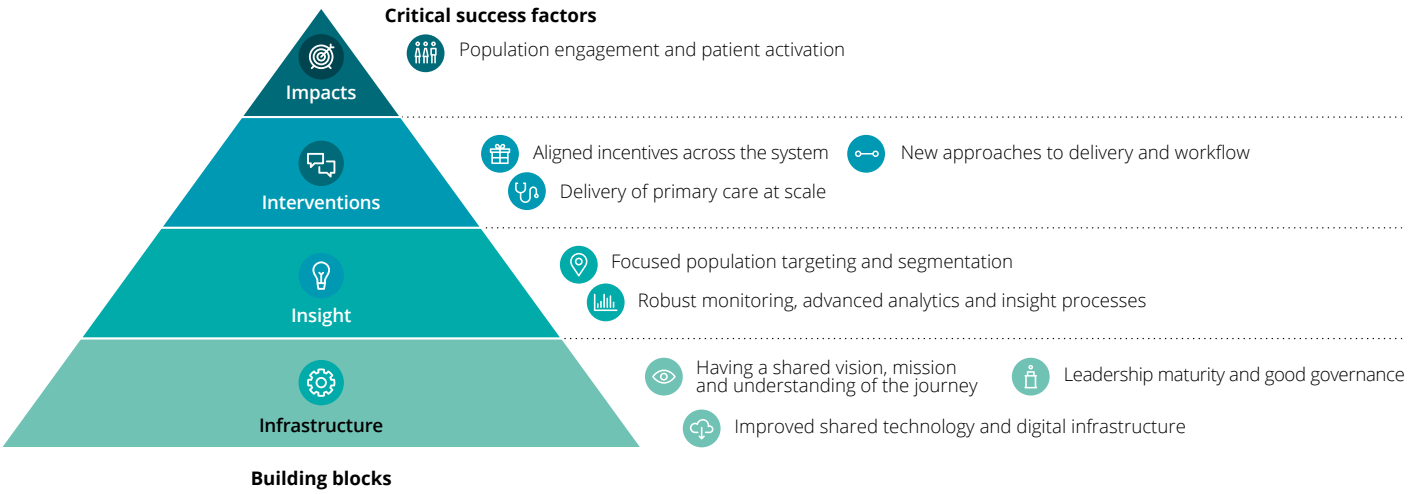
Collectively, they are responsible for managing resources, delivering NHS standards, and improving the health of their populations. For an STP to become an ICS it has to agree to take on a budget for the health provision of a defined population and demonstrate, amongst other things, that it is capable of implementing efficiently an integrated PHM strategy. By the end of 2018, NHS England had established 14 ICSs of varying size and complexity.

The NHS Long Term Plan (LTP) published in January 2019 confirms this policy shift towards integrated care and place-based systems, and gives a strong boost to the PHM model, with ICSs expected to be the main mechanism for achieving this. Indeed, the LTP requires every NHS organisation and their local partners to become part of an ICS by April 2021. The LTP expects ICSs to provide "a pragmatic and practical way of delivering the 'triple integration' of primary and specialist care, physical and mental health services, and health and social care". It also expects streamlined system-level commissioning arrangements, typically involving a single Clinical Commissioning Group (CCG) for each ICS, to make shared decisions on population health, service redesign and LTP implementation. Reforms to the payment system will move funding away from activity-based payments and ensure that a majority of funding is population-based.

The building blocks and critical success factors for PHM

Historically, a lack of robust patient data that provides a holistic and longitudinal view of each patient has hindered the adoption of a more integrated approach to population health. Our report identifies nine critical success factors which form part of four key building blocks for PHM: Infrastructure, Insight, Interventions and Impacts. These are key requirements for achieving PHM (See Figure below).

The four key building blocks – Infrastructure, Insights, Impact and Intervention – and nine critical success factors enabling population health management



Infrastructure

Without a suitable infrastructure, be it governance, leadership, technology and new roles and responsibilities, implementing a PHM approach is unlikely to succeed. There are numerous governance challenges, as local leaders try to work collectively within their STP and ICS while still being held to account as individual organisations under the current legislative framework. System leaders need to work together to develop shared risk and data sharing arrangements, engage with wider stakeholder groups and develop new funding and regulatory requirements. Underpinning these developments is the need for a change in mind-set, and specifically a shift from competition to collaboration.

A connected IT infrastructure, digital technologies and technical support are essential ingredients for the collection, analysis and sharing of data among care providers. A robust Information Governance framework is also a core requirement, including a citizen opt-out standard, and interoperability, data and cyber security standards. Shared health and care records help support both the digitalisation of care and innovation. They also provide transparency and are a key stepping stone to PHM. In 2018, in recognition of the need to promote a change in the availability of shared care records, NHS England established five Local Health and Care Record Exemplars (LHCREs) with the aim of at improving care coordination, providing a foundation for health analytics and PHM, and encouraging patient engagement and activation.

Insight

STPs and ICSs provide an opportunity to accelerate data sharing and the roll-out of new cognitive technologies in support of PHM. However, gaining the necessary trust in the appropriate sharing of patient data requires both clinician and patient engagement. Insight into the health and care needs of a population is a starting point for identifying groups of patients or communities on which to focus a PHM approach. Advanced analytics and actuarial and informatics capabilities are key to designing effective, robust risk stratification methodologies, and for monitoring the health of the population over time. They also support demand management and capacity planning and enable constructive decision-making in response to population need. Machine learning and cognitive analytics to evaluate both structured and unstructured data through natural language processing, together with risk stratification analytics and patient profiling, can provide additional insights and propel the implementation of PHM to new levels.

Impacts and interventions

Changing workflows to optimise clinical pathways and enable more intervention to take place in a community setting is crucial for the delivery of effective PHM, and is arguably one of the biggest challenges in moving to a PHM approach. It will require proactive clinical involvement in the development of new care models that change patterns of service delivery. It will also require new clinical roles and the adoption of new ways of working. As recognised in the LTP, PHM is contingent on strengthening primary care and delivering primary care at scale.

The way in which patients contribute to decisions about their care also needs to change. PHM places responsibility not only on health and care systems to manage care for their local population, but also on the population to become more self-sufficient in managing their care, through prevention, education, and improved adherence to medication. Enablers include the adoption of digital and remote monitoring technologies and improving the health literacy of patients, including deploying patient activation measures. A PHM approach emphasises prevention, reducing health inequalities and improving the health and wellbeing of the entire population. This requires enhanced evidence-based care management and robust analytics to measure the impact of interventions and outcomes for patients.

Actions to realise the benefits of PHM

Evaluating health economies against the nine critical success factors, and deploying the maturity frameworks identified in this report, can enable health and care systems to monitor their progress towards PHM. It can also help system leaders to understand where they are on their transition to a population health approach and how to progress to the next stage of development.

To deliver the necessary changes, those setting the national policy context for the delivery of the LTP and development of PHM should:

- develop a common NHS language for PHM and provide clarity around data sharing, privacy and interoperability standards
- create an environment that encourages patient activation and empowerment
- provide the funding, infrastructure and leadership support needed for STPs to become ICSs and to enable ICSs to succeed, including reinvigorating the role of primary care.

Leaders of STPs and ICSs should:

- agree appropriate performance metrics for PHM and allocate funding in line with expectations in the LTP
- invest in the leadership, analytical and relationship building skills needed to implement PHM effectively, including maintaining effective clinical engagement across all provider organisations
- prioritise primary care as the asset that is closest to the local community and expedite the headline commitments in the LTP, specifically to establish primary care networks, implement a revised incentive scheme, develop digital services and grow the capacity of multidisciplinary teams
- support patient activation and empowerment through access to patient-held records and by creating an environment in which shared decision-making and self-management are the norm
- establish wider public engagement in prevention and help people maintain physical and mental health and wellbeing through education programmes and investment in evidence-based good practice.

Individual provider and commissioning organisations within each ICS should:

- develop a network of PHM champions throughout the organisation including at board level
- appoint an executive director with responsibility for quality and innovation and a Chief Clinical Information Officer (CCIO) to prioritise the adoption of the technologies needed to support PHM
- keep all board members sufficiently informed to oversee PHM implementation and prioritise the features needed in a roll out process
- design and implement PHM as a change management initiative, including clinician and wider community engagement in identifying and adopting PHM solutions
- monitor and challenge progress against a set of robust metrics underpinned by feedback from business and clinical analysis.

Conclusion

The LTP expects NHS organisations to focus increasingly on population health so that by 2021-22 there will be systems supporting PHM in every ICS. However, implementing a PHM approach and moving the mind-set from reactive care to a model of proactive care for the population's health is a big challenge. It requires a significant change in culture, and the deployment of new financial incentives and performance metrics. It will also require 'smart' investment in technology and new skills and talent. The solutions and enablers discussed in this report provide a framework and a set of tools that STPs and ICSs can utilise in the design and implementation of PHM programmes.

Population health brings together an understanding of population need (public health) through big data, patient engagement and health and care delivery, to embrace the quadruple aims of health care: to improve the health of the population, the experience of care, and the health and wellbeing of the workforce, and to reduce the overall costs of care. While population health is not a new concept, attempts to tackle it have been fragmented, with health policy still largely focused on treatment rather than actions to address the wider social determinants of health.

1. Defining population health

Population health is increasingly relevant for today's health and care systems. First muted in 2003, the term population health was used to describe 'the health outcomes of a group of individuals, including the distribution of such outcomes within the group'.[1] Population health has evolved to include a methodology for identifying people at risk of physical and mental ill health and those whose condition is unstable, and applying appropriate interventions for prevention or for care and rehabilitation.

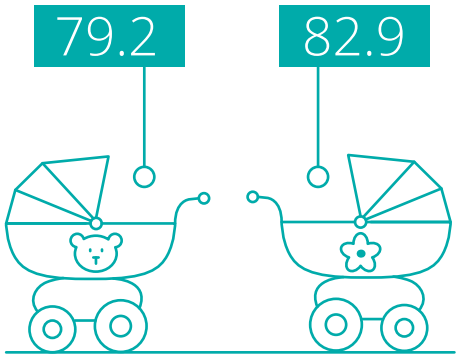
Grouping populations according to their conditions, severity of illness, demographic qualities, or other parameters, to identify risk levels, can help in leveraging resources to improve care and outcomes while reducing health inequalities. The focus of population health is also on strengthening primary care and delivering care closer to home, which is consistent with the current UK policy of integrating care to address growing demand pressures.

Population health balances the intensive management of individuals in greatest need of health care, with preventative and personal health management for those at lower levels of risk. Accountability for a population's physical and mental health is shared across health and care organisations and communities, with interventions targeted at addressing not only the health needs of the population but also the underlying social, economic and environmental determinants of health.

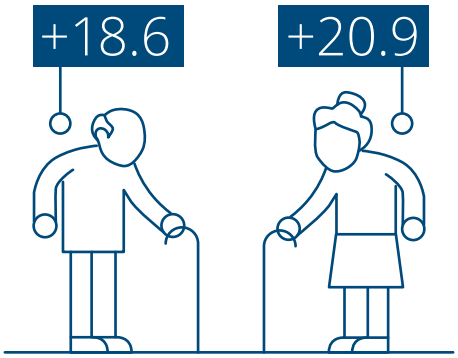
Current health challenges within the UK

Medical advances and improvements in health care have resulted in a significant shift in the patterns of disease among patients. Although average life expectancy has increased, there has been a slowdown in improvements (See Figure 1). Despite having the same health and social care system, some English regions (South West England, East of England, and South East England) now have similar or better levels of health than the best-performing European countries, whereas other regions (North East England and North West England) are losing ground and have worse health outcomes.[2] Moreover, inequalities are often greater within regions than between them, suggesting that deprivation rather than geography is the cause.

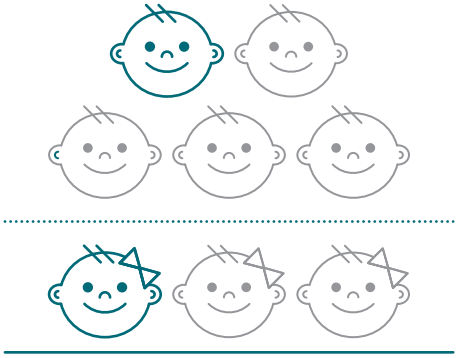
Figure 1. Key facts and figures about life expectancy in the UK



Life expectancy at birth in the UK did not improve in 2015-2017, remaining at **79.2** years for **males** and **82.9** years for **females**.



Life expectancy at age 65 years in the UK did not improve for males and females in 2015-2017, remaining at **18.6** years for **males** and **20.9** years for **females**.



Around **one in five** **new-born males** and **one in three** **new-born females**, born in 2015-2017, could expect to live to at least age **90** years; the chance of living to 90 years has remained virtually unchanged compared to 2012-2014.

Source: Office of National Statistics: National life tables 2015-2017.

While growing numbers of people are living longer, extra life years are not always spent in good health due mainly to an increasing prevalence of long-term chronic conditions, such as coronary heart disease, chronic obstructive pulmonary disorder and diabetes. The Department of Health and Social Care (Department) estimates that over 15 million people in England have at least one long-term condition.[3] In 2018 about 2.9 million people were living with three or more long-term conditions.[4] Data from the Global Burden of Disease Study for England shows that there has been little or no improvement since 1990 in how long people live with illness and disease.[5] While life expectancy continues to improve for the most affluent ten per cent of the population, it has either stalled or fallen for the most deprived ten per cent. Moreover, on average, older men now spend 2.4 years and women spend three years with 'substantial' care needs.[6]

The UK's obesity rates are among the worst in Europe. Rising obesity levels, especially among young people, are increasing the burden of disease caused by preventable conditions, including type 2 diabetes, cancer, heart and liver disease, stroke and related mental health conditions.[7] The 2018 Health Profile for England shows the two largest health burdens are deterioration or injuries to the musculoskeletal system (such as back pain and arthritis) and mental ill health.[8]

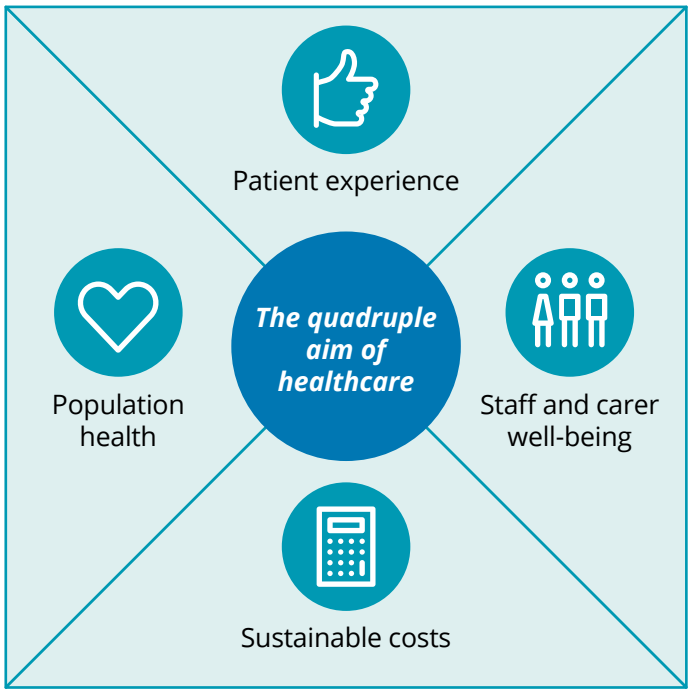
People with chronic conditions are intensive users of health and social care services, and the associated costs of care are much higher. The Department estimates that 70 per cent of total health funding in England is spent on services for the 30 per cent of the population with long-term conditions. This presents a growing imperative to identify these patients, treat them, and keep them healthier and independent for longer.

Public health vs population health

There is a difference between public health and population health. Public health is the responsibility of both central and local government and is aimed at reducing health inequalities across the whole population by promoting health, preventing disease and prolonging life. Examples of public health interventions include measures to end smoking and reduce alcohol consumption, sugar taxes and large scale vaccination programmes. Population health is the responsibility of health and social care payers and providers and targets specific interventions to specific population groups.

In addition to complementing public health efforts, population health is a cornerstone of the 'Quadruple Aim of Health Care' (See Figure 2). In 2002, the US Institute of Health Improvement devised the concept of the 'Triple Aim of Health Care' as a framework for delivering economic, efficient and effective care. The triple aim focused on enhancing the patient experience, improving population health and reducing costs.[9] More recently the 'triple aim' has been extended to a 'quadruple aim', to include a focus on staff and carer wellbeing in recognition of the increasing demands on staff and increasing risk of staff burnout.[10, 11] While the quadruple aim has not yet been fully integrated into many health care organisations, PHM provides a lever to help organisations achieve it.

Figure 2. The quadruple aim of healthcare



Source: From Triple to Quadruple Aim: Care of the Patient Requires Care of the Provider, Annals of Family Medicine, 2014.

As we noted in our 2016 report, *Vital Signs: how to deliver better health care across Europe*, while the term population health is used increasingly, it is still not universally understood or implemented at scale. This is due largely to the historical organisational and professional boundaries that exist in most countries and the lack of aligned incentives. Difficulties in obtaining reliable population demographics and performance data have also hindered the adoption of a more integrated approach. However the report identified a number of international case studies on improved outcomes as a result of applying a PHM approach including:

- The Thrive model of PHM for mental health services in the UK, which is transforming the way mental health services for children and adolescents are conceptualised and has seen nearly 33 per cent of users achieve full recovery by the time the treatment ends.

- Disease management programmes in Germany, which integrate care across the spectrum of disease with the intention of reducing variations in care and improving conformance with evidence based medicine and which improved the outcomes from Germany's diabetes programme reducing the incidence of complications and lowering the overall cost of care by 13 per cent.

- Spain's innovative PHM model, Alzira in Ribera Salud, which has optimised the use of a shared patient record between family doctors and specialists, enabling joint consultations and rigorous compliance with a standardised set of procedures and guidelines and which has seen reductions in hospital admission rates, improved day surgery rates and high patient satisfaction scores.[12]

What drives good population health management?

Population health management (PHM), while just one of many levers to tackle health outcomes, is viewed increasingly as the key to ensuring the affordability and sustainability of care. PHM is a data-driven approach that guides the planning, resource allocation and delivery of care to optimise population health. It brings together big data, patient engagement and health care delivery and requires a combination of:

- **behavioural change**, from both health care providers and patients, with a greater focus on prevention and patient activation measures delivered in a tailored manner, using an array of analytics, technology and communication tools

- **proactive identification and monitoring of high-risk patients**, and equitable access to evidence-based medicine, focusing on prevention and treatment and on improving function and wellbeing for individuals

- **realignment of funding flows and incentives** to encourage staff to work differently across care settings, underpinned by an appropriate outcomes framework.

The successful improvement of population health outcomes also requires regular monitoring of interventions and frequent reflection and review by all stakeholders to increase impact and outcomes.

Experience across the world shows that there isn't a single approach or 'rule book' for PHM; however there are several distinct building blocks and critical success factors to enable a health and care system to adopt an effective PHM approach.

Population health balances the intensive management of individuals in greatest need of health care, with preventative and personal health management for those at lower levels of risk.

2. England's changing policy landscape

Financial constraints and impact on NHS and social care funding

In 2014, the NHS Five Year Forward View (FYFV) set out a long-term 'Strategy for the NHS'. It highlighted the need for transformational change to address three systemic gaps in: health and wellbeing, care and quality, and finance and efficiency. PHM was seen as a key enabler of this change.[13]

The FYFV was published in the midst of growing financial constraints that have continued to date. Over the past decade, the NHS in England has experienced a significant slowdown in funding growth. (Between 2009-10 and 2018-19 funding growth averaged approximately one per cent a year in real-terms). Meanwhile demand for services, and the cost of delivering those services has grown rapidly. Cuts to public health and social care funding have added further pressure. A December 2018 survey of council leaders highlights a significant £8.7 billion gap between what they thought they should allocate to prevention and what they actually spend.[14] The Health Foundation estimated there has been a real-terms reduction in public health funding of £700 million between 2014-15 and 2019-20.[15]

As a result, NHS and social care performance has declined. Key waiting time targets are consistently missed and the finances of providers have deteriorated. Workforce shortages are widespread, with more than 100,000 whole-time equivalent staff vacancies in NHS trusts across England in the final quarter of 2017; a quarter of them nurse vacancies.[16]

Community health services and general practice have also faced multiple challenges, with insufficient staff and capacity to meet rising demand and increasing complexity. GPs are retiring early and newly-qualified GPs often work part-time. Reform of the GP contract in 2004 improved the quality and income of primary care practitioners, but relative investment in primary care then fell for the rest of the decade before beginning to recover from 2014-15. Use of locum GPs has increased and there is shortage of practice and district nurses. Patient satisfaction with access to primary care has declined, particularly amongst 16-25 year olds.

In June 2018, the Prime Minister announced a new five-year funding settlement for the NHS: a 3.4 per cent average real-terms annual increase in NHS England's budget between 2019-20 and 2023-24 (a £20.5 billion increase over the period). To unlock this funding, national NHS bodies were asked to develop a long-term plan for the service. The resulting document, the NHS Long Term Plan (LTP), was published in January 2019, with a focus on accelerating the shift to integrated care and place-based systems and a clear role for PHM.[17]

Progress since publication of the Five Year Forward View

Following publication of the FYFV, NHS England selected 50 sites to develop five new models of care (initially known as vanguards) focused on integrating care and addressing local needs for more community-based care.[18] Two of the five models focused on bringing specialist care closer to home and closing the gap between community and acute care by redesigning how primary care operates:

- multispecialty community providers (MCPs) – enabling the formation of extended group practices, either as federations, networks or single organisations

- primary and acute care systems (PACs) – a new variant of integrated care, allowing single organisations to provide NHS list-based GP and hospital services, together with mental health and community care services.

Evaluations of performance show that emergency admissions per capita grew between 2014-15 and 2017-18 by only 0.9 per cent in MCPs and by two per cent in PACs, giving a combined increase of only 1.6 per cent compared to 6.9 per cent in the non-vanguard NHS. This demonstrates the benefits of proactively identifying, assessing and supporting patients at higher risk to help them stay independent for longer.[19]

The evolution of Sustainability and Transformation Partnerships

The Health and Social Care Act 2012 encouraged competition between organisations and championed the commissioner/provider split. However, since January 2016 NHS England has required all health and social care organisations to operate as one of 44, geographically-based, Sustainability and Transformation Programme (STP).[20] It required all commissioner and provider organisations in the defined geographical area to work together to drive forward the integrated care agenda, close the gap between health and social care, and improve health and social care services and finances over five years. This represented a radical shift in the way that the NHS was expected to plan its services.

However STPs are not legal entities; and the various organisations that comprise each STP have had differing challenges, with different and non-aligned funding models and accountabilities, restricting progress towards achieving greater vertical and horizontal integration of services.[21]

STPs have also continued to evolve, with the emphasis moving to the performance of the partnerships, rather than the delivery of their plans. (STPs became Sustainability and Transformation Partnerships and, following consolidation, the number of partnerships reduced to 42 in 2018.) During 2018, systemic funding and workforce pressures have affected almost every STP. Some have made considerable progress despite these pressures, but others are struggling with rising day-to-day pressures and financial deficits, with limited scope or attention available for transforming care.[22]

The emergence of Integrated Care Systems

In 2017 a new form of partnerships known as Integrated Care Systems (ICSs), emerged in selected areas. For an STP to become an ICS, it must agree to take on a budget for a defined population's health provision, as opposed to the more episodic and fragmented budgetary planning approach currently implemented via national tariff arrangements. It must also demonstrate that, amongst other things, it is capable of the efficient implementation of an integrated PHM strategy.

By the end of 2018, there were 14 ICSs. While these are starting to make some progress in difficult circumstances, they are still at an early stage of development. There is no national blueprint and ICSs differ widely in size and complexity. As neither STPs nor ICSs are statutory bodies, their success is dependent on the willingness of the various organisations within them system to collaborate.[23]

The launch of the NHS Long Term Plan

The NHS LTP was published in January 2019, with full backing of the Government who expect the LTP to be delivered within the constraints of an additional £20.5 billion NHS funding settlement (2019-20 to 2023-24) that it has committed to help secure the sustainability and transformation of the NHS. The LTP confirms the expectation that health and social care will shift towards integrated care and place-based systems. Indeed, that every STP should become an ICS by April 2021 and adopt PHM as the best way to deliver the quadruple aim of health care. The LTP provides a specific commitment to increase investment in primary and community health services by at least £4.5 billion by 2023-24.

The LTP is based on a three point premise that:

- the NHS can now be future-proofed for the decade ahead because of the new 'secure and improved funding path'
- there is a consensus on the changes needed
- emerging evidence demonstrates the benefits delivered by the new models of care, especially when comparing the performance of vanguards with non-vanguards.

The LTP acknowledges that a range of other policy decisions are still to be made, for example on the NHS capital budget, education and training, and the workforce, which will be considered as part of the Government's Spending Review in 2019. The outcome of reviews on funding of public health and the wider social care budget are also still awaited. A detailed national implementation programme, reflecting all these wider issues, is expected in the autumn.

A key requirement with direct implications for PHM is that by April 2021 every local health and care organisation will be expected to become part of an ICS. The LTP identifies the need for streamlined system level commissioning arrangements, typically involving a single Clinical Commissioning Group (CCG) for each ICS, to make shared decisions on population health, service redesign and LTP implementation. A key ambition in the LTP is for a 'digital first health and care service' and for primary care to be seen as the key enabler of PHM. While NHS England consider that changes set out in the LTP can generally be achieved without changes to primary legislation, it acknowledges that this would speed up integration. Consequently it sets out a list of provisional suggestions for amendments that would accelerate progress on service integration, administrative efficiency, and public accountability.[24]

Next steps in delivering the LTP

The immediate challenge for the NHS and social care is to build on the foundations that have been laid in the LTP and give time and support to ICS leaders to take their work to the next stage of development. In 2019-20, as part of the process of moving towards system rather than provider control totals, STPs and ICSs will be given more flexibility to agree financially neutral changes to control totals for individual organisations within their systems. From 2019-20 onwards, further reforms will give ICSs greater control over their resources, through a process of 'earned financial autonomy', based on financial and operational performance. NHSE expect this earned autonomy to provide a boost to PHM.

As a next step, health systems are now required to develop local plans for implementing the commitments set out in the LTP, based on new five-year indicative financial allocations for 2019-20 to 2023-24.

3. Critical success factors enabling PHM

Key capabilities needed for population health

From our work with health systems both in the UK and internationally, we have identified four building blocks (infrastructure, insight, interventions and impacts) and nine critical success factors for achieving better PHM.

Infrastructure

- **Having a shared vision, mission, and understanding of how to implement PHM**
- **Leadership maturity and good governance**
- **Improved shared technology and infrastructure**

Insight

- **Focused population targeting and segmentation**
- **Robust systems of monitoring, advanced analytics and insight process**

Intervention

- **Aligned financial model and funding incentives across the system**
- **New approaches to delivery and workflow**
- **Delivery of primary care at scale**

Impacts

- **Population engagement and patient activation**

Infrastructure

A shared vision, mission, and understanding of how to implement PHM

A key aspect of infrastructure of an STP or ICS is for its constituent organisations to develop a shared vision and strategy, underpinned by policies and principles that promote collaboration and consistency of purpose. Aligning the leadership of organisations and, importantly obtaining the buy-in of clinical and other key professional staff groups, to a collective vision is crucial. Clinical engagement is particularly important, as is an understanding that any contact with the public is an opportunity to engage in improving population health.

From our work with health systems both in the UK and internationally, we have identified four building blocks (infrastructure, insight, interventions and impacts) and nine critical success factors for achieving better PHM.

Research by the King's Fund shows that system leaders need to develop the capacity and capability to implement a systematised, programmatic approach to population health. It has acknowledged that who the system leaders are will vary from one area to the next with different approaches likely to work for different areas and topics, provided there is a shared vision. These include:

- a combination of clinical and public health leadership
- leadership through STPs and ICSs
- leadership by elected mayors
- leadership by local authorities developing a new relationship with communities (See Case study 1 on the Wigan Council's transformation of its relationship with local people aimed at improving health outcomes by utilising existing assets).[25]

Aligning the leadership of organisations and, importantly obtaining the buy-in of clinical and other key professional staff groups, to a collective vision is crucial. Clinical engagement is particularly important, as is an understanding that any contact with the public is an opportunity to engage in improving population health.

Case study 1: The Wigan story – a shared vision for PHM

In 2010, Wigan council faced severe financial difficulties and needed to reduce running costs by £160 million within 10 years. In response it introduced the Wigan Deal, freezing council taxes in return for improved health and well-being behaviours.[26] Wigan also gave staff permission to innovate. In the intervening years it has seen a seven year improvement in healthy life expectancy.

Accompanying the Wigan Deal was the 'Be Wigan' experience which is a place based organisational development tool, which includes reappraising how citizens are viewed, thinking how they can be helped, and building trust between citizens and health and care provider organisations.

The two largest sources of expenditure are social care and the NHS – the NHS and engagement of clinical staff has been pivotal in wrapping services around citizens and engaging with community and voluntary organisations. Wigan adopted a zero-based budgeting approach and adopted 'best in breed' solutions harnessing the passion and belief of the community (82 per cent of residents support the Wigan Deal).

While Wigan has saved £141 million it still has £19 million of savings to make. It has stopped things that don't work – like expensive day centres – and focused on supporting local groups and local clubs. By 2018 its adoption and implementation of a shared vision between health and social care has helped it had one of best performing hospital systems (5th best on delayed transfers of care), had balanced its budgets for children and adult social services, and had reduced the number of looked after children.[27]

Leadership maturity and good governance

A common factor among successful integrated health systems is strong governance arrangements and system leadership that clarifies where responsibilities and accountabilities lie. System leaders, need to create a transparent structure of governance and accountability to support health and care systems, and deliver results at an appropriate pace (See Case study 2).

Case study 2: The Greater Manchester Health and Social Care Partnership (GMHSCP)

Greater Manchester (GM) has poorer-than-average population health outcomes, with substantial inequality across the region. In 2014 it was estimated that there would be a £2 billion funding gap for the health and care system by 2020, and that the system leadership and stakeholder involvement was overly complex and divided into siloes.

In 2015, the Government identified GM as a priority candidate for devolution and the GM Health & Social Care Partnership (GMHSCP) was given the responsibility to oversee the £6 billion health and social care spend in GM.

To achieve cohesive leadership and governance, a Strategic Partnership Board was established, represent health and social care organisations across GM, including local government, the Voluntary, Community and Social Enterprise Sector (VCSE) and other public sector organisations.

By developing a shared strategic direction, this board can tailor their budgets and priorities to suit the GM community and integrate resources across health and social care, and indeed wider public services. The board has set a number of high level goals for improving the health of the overall population, not only through health and social care services but also by focusing on the wider determinants of health.

The GMHSCP has introduced a number of changes for delivering greater quality and equality in health and wellbeing across the region. The partnership has created closer connections between health and social care and other support services such as education and housing.

In 2016 GM released their strategy for delivering primary care at scale and published a digital strategy outlining their approach to adopting transformational technology.[28]

The following year it announced an investment of £134 million in mental health recognising the importance of mental as well as physical wellbeing in a population's health.[29] As a result, GM has improved performance across the national mental health standards – including increasing the access rate for children and young people for mental healthcare.

GM have also committed to reforming their approach to place-based commissioning, achieving greater consistency in care across GM, reducing unwarranted variation, and improving the quality of care.

In May 2018 the NHS confirmed GM as one of the national Local Health and Care Record Exemplars (LHCRE). This secured funding to connect IT systems and share information across all ten GM boroughs. This has enabled the development of effective databases for measuring and tracking patient outcomes.

On primary care, 100 per cent of GM's residents can now get routine or pre-booked appointments with their general practice seven days a week (up from 47 per cent in 2016 when the devolution agreement came into place).

GM have reduced delays in transfers of care (DTOCs) – often used as an indicators for care integration) by 1.7 percentage points since devolution.

GM has recognised the vital connection between health and work. It has supported over 3,200 long-term unemployed people to find work through the local commissioning of Working Well.

The key actions underpinning STP and ICS leadership and good governance include:

- developing a shared vision and purpose
- empowering local leaders with the necessary authority to innovate, including developing compassionate, inclusive leaders who can drive innovative ideas during times of change
- holding an honest and open dialogue with citizens to develop trust
- investing in leadership development and the analytical and relationship building skills needed to implement PHM effectively, including maintaining effective clinical engagement across all providers
- putting data and information collection mechanisms in place to track appropriate performance metrics and allocate funding allocations in line with expectations in the LTP
- holding all stakeholders to account for quality of delivery, financial health, operational performance and outcomes
- identifying risks and an intervention plan
- establishing visibility and clear lines of reporting across sites and organisations
- assigning cross-organisational leadership roles and integrating resources at an operational level.[30]

Case study 3. The East London approach to population health management

East London has a number of initiatives geared towards a PHM approach. One of the programmes submitted to NHS England in 2018 as a core component of the Local Health and Care Record exemplar (LHCRE), is called Discovery east London. The programme is a clinical partnership currently involving GP practices, acute/mental health trusts and CCGs from across the inner north-east London (INEL) Clinical Commissioning Groups of City & Hackney, Newham, Tower Hamlets & Waltham Forest. It is also due to expand to cover the outer boroughs of Barking & Dagenham, Havering and Redbridge, including their associated GPs and acute trust; it will also include Social Care organisations in due course. The initiative was designed to create a complete longitudinal health and care record for each citizen in north east London. This will include sharing patient records seamlessly across their whole pathway, improving the quality of the care experience in an area which experiences a 20 per cent patient turnover each year and has a high rate of secondary care needs.[31] However, the initiative is also crucial for providing insights into wider population health patterns in some of the most deprived areas of the country. The first utility to go live using Discover Data Service is the Frailty Flag used by local 111 call handlers to identify potentially frail patients and so route them through a faster pathway, directly to a clinician.

All GPs in INEL have signed up to the scheme, encompassing a population of 1.2 million.[32] Through the associated east London Patient Record (eLPR) GP records are accessible to mental health services, secondary care providers and acute care trusts, namely Homerton University Hospital NHS Foundation Trust and Barts Health NHS Trust, which have access to coded records of medications, diagnosis, investigations and other information. City & Hackney is piloting data sharing with Community Pharmacists.

The implementation of shared electronic records through the eLPR based on a Health Information Exchange has yielded noticeable benefits. Clinicians report direct benefits in having access to vital clinical information about their patients, reporting that they spend 48 per cent less time on completing paperwork, which has saved time equating to around £940,000 in clinical efficiency and up to 1,233 referrals avoided in 2017. The improved shared technology helped save a further £133,000. Overall, the system has delivered a savings to cost ratio of 121:57 per year.[33]

Clinical performance against chronic disease indicators is now amongst the best in the country thanks in large part to the use of data extracted analysed and fed back to GPs by the Clinical Effectiveness Group (CEG) working in partnership with Queen Mary's University London.[34] CEG will shortly be migrating to use Discovery as their data source for this kind of analytical work and, as a result, will be able to combine the existing primary care data with that from secondary care.

The Discovery dataset will also help provide clarity for population health insights when integrated with other data. For example, Tower Hamlets have combined anonymised health care datasets with socio-economic patterns in order to map deprivation and morbidity outcomes across the borough. This helps them to understand health outcomes better and allocate resources to optimise population health; Discovery will soon become a key data source for this work. Data is also fed into the National Cancer Registry, contributing to applied research on cancer care.

Improved shared technology and infrastructure

In order achieve more integrated care, organisations need to prioritise automation and data sharing. Although data is critical, many people across health and care do not yet see it as an asset. This is largely due to concerns about consent, confidentially and cyber security. What is needed is an integrated IT infrastructure that complies with agreed interoperability standards and allows data sharing; supports cross-functional learning and collaboration; and, ultimately, better decision making.

An important goal of PHM is to gather and analyse clinical data across a patient's multiple care settings to reveal opportunities for improving the patient's health and the provider's financial decision-making and outcomes. By merging clinical care with assessment of health care economics and outcomes, PHM can help providers, patients and payers coordinate care and promote wellbeing through evidence-based decision support in clinical care. An integrated care delivery service requires a linked dataset, sharing data across the patient pathway (See Case study 3). This helps streamline services and reduces operational costs and staff time spent on administrative tasks.

The LTP commits to developing frictionless application programming interfaces (APIs), workflow integration programmes and initiatives and, ultimately, full integration with smart home and wearable devices. These goals should be expedited as a priority.

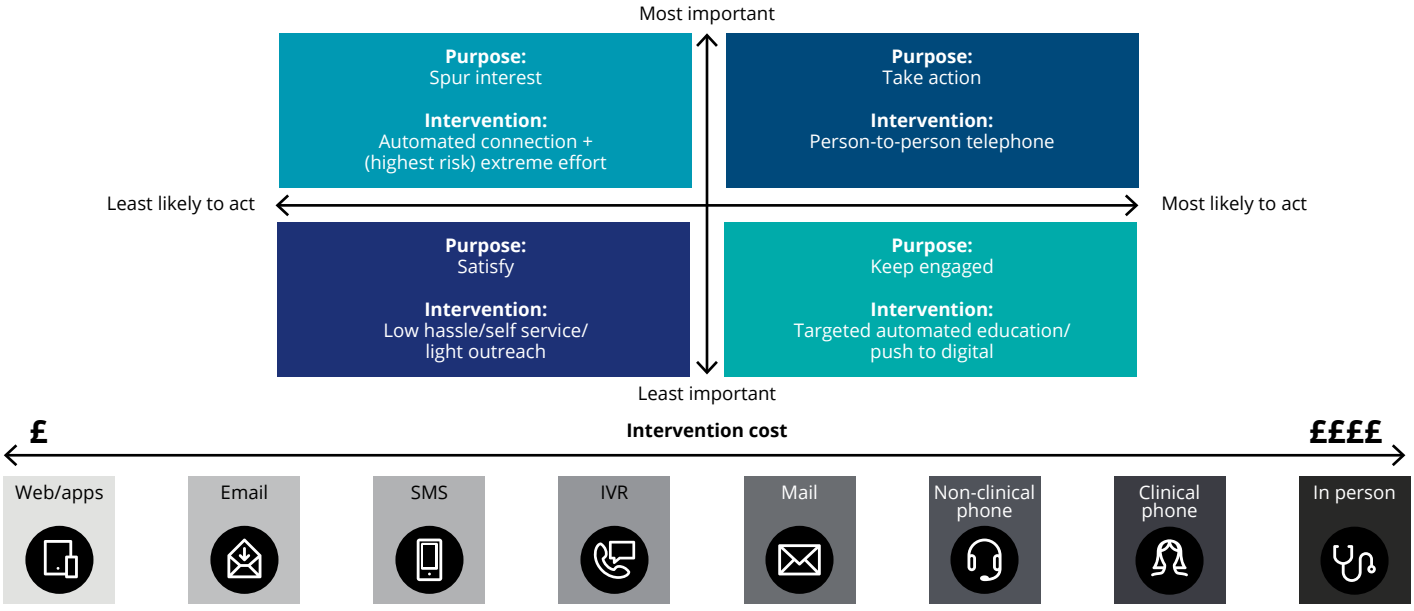
Insight

Focused population targeting and segmentation

Growing numbers of patients have multiple care needs and varying levels of health literacy and engagement in their own care. This calls for a strategy that is attentive to diversity, based on a suite of person-centered action plans; which includes defining discrete population segments and developing an understanding of their requirements and the extent of co-morbidities and related risk factors. There is also a need to identify under-served populations and prioritise initiatives that provide the most value.

This segmentation strategy should be underpinned by timely interventions that focus on the individual. There is a need for complex data linkages and an intervention strategy that seeks to balance the health risk of the population segment and likelihood of impact, with the expense of implementing identified solutions (See Figure 3 and Case study 4).

Figure 3. Intervention strategy framework across different population segments



Source: Deloitte Developmemnt LLP 2018.

Case study 4. Understanding the drivers of a population's health needs: Gesundes Kinzigtal

Gesundes Kinzigtal (GK) has a population of about 33,000 people. Since 2016 it has demonstrated how a people-centred focus on PHM can lead to significant improvements in population health, better experience of care, and reduced per capita costs.[36] Through strong management, a sophisticated data management system, and a trusting relationship between network partners and communities, the GK model has been able to deliver better outcomes for all partners involved. During this time, its approach has resulted in this population being both healthier and less cost-intensive compared to the overall population in the federal state of Baden-Württemberg.[37]

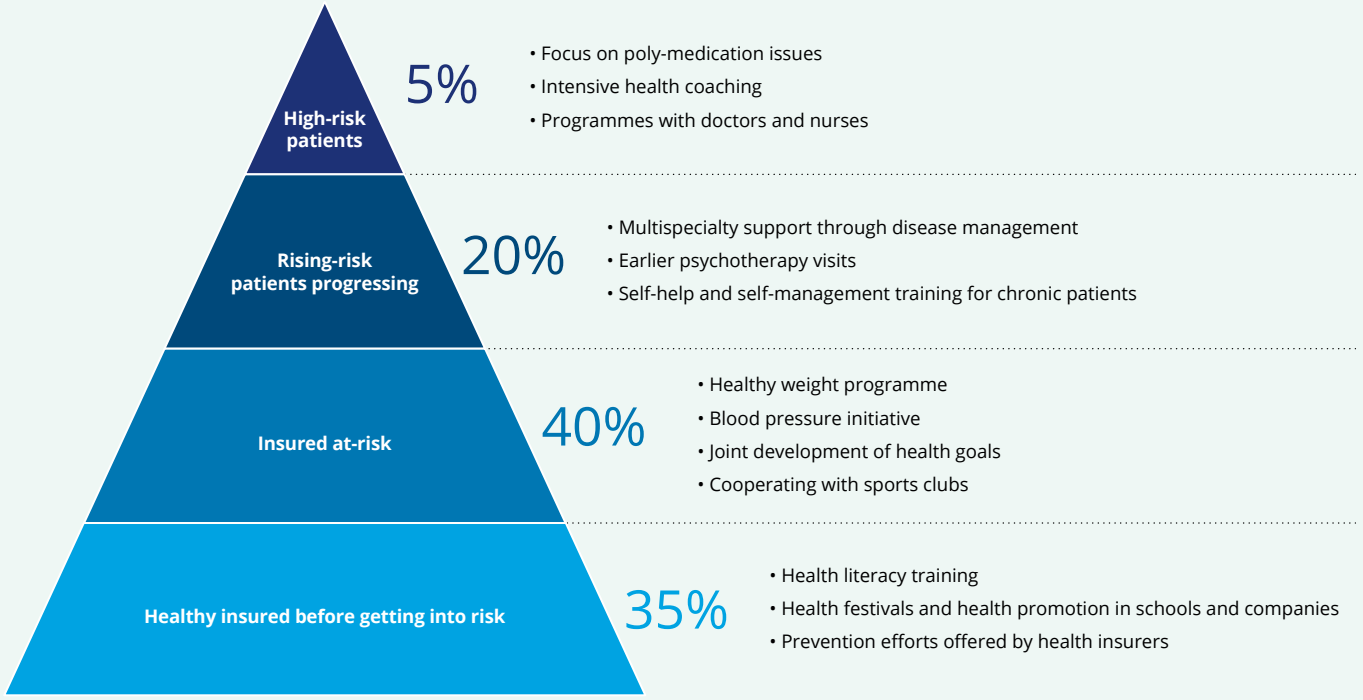
One of the first and largest investments that GK made, and continues to make over time, was in IT infrastructure which gathers insurer, hospital and provider data for analysis, and builds connections between providers to track patients across the system. This helps identify high-risk patients, predict and plan intervention programmes, and track outcomes.

Using its data, GK segmented the population into risk groups, developed targeted strategies for each group, and used data analysis to understand what interventions were needed for each group, creating tailored programmes to improve management and reduce costs (See Figure 4).

GK also put in place incentives to prevent symptom exacerbation or rapid progression of disease, such as additional provider payments for longer appointments, provision of care that is either not covered by the health funds or involving a long wait time, training of ancillary staff, hiring health coaches, introducing public health initiatives, and paying for more effective medicines and treatments. They were able to make these investments in a targeted and cost-effective manner.

As a result, they achieved annual savings of €5.5 million in 2013, and savings were expected to increase in subsequent years as several interventions paid off. Comparison with a matched control group suggests that GK has achieved a higher average life expectancy for its population of 1.4 years (78.9 years compared to 77.5 years).

Figure 4. Population health segments and sample interventions



Source: Gesundes Kinzigtal GmbH, 2016

Robust systems of monitoring, advanced analytics and insight processes

The volume of health care data is growing by at least 48 per cent annually.[39] With such vast quantities of potentially valuable data, crucial information may get lost and unused. Hence, appropriate governance and robust monitoring is required to ensure that 'insight' and not just data is being generated by the system.

Insight-driven organisations use data analysis and strategic reasoning in their decision-making processes, asking questions and continually striving to make better decisions. There are five maturity stages in the use of data analytics, with a greater focus on insight at each subsequent stage:

1. analytically impaired – little to no infrastructure, poorly defined strategy
2. localised analytics – adopting analytics in some areas
3. analytical aspirations – expanding ad hoc capabilities into the mainstream business function
4. analytical companies – industrialising analytics
5. insight-driven organisations – transforming analytics to streamline decision making across all business functions.[40]

Becoming an insight-driven organisation requires change around strategy, people, processes, data and technology. Consideration should be given to the alignment of these issues with new capabilities and the operations of the organisation.

In the US, the introduction of the Health Information Technology for Economic and Clinical Health Act (HITECH) in 2015[41] mandating the use of electronic health records (EHR), was a major step forward in creating data-driven organisations and insights to optimise clinical and financial outcomes. However, the drive towards using valuable data requires an alignment of technological aspects with the business model (See Case study 5).

Case study 5. Kaiser Permanente US – aligning data analytics to the data strategy

Kaiser Permanente (KP) is showing "the power of data analytics when business strategy and data strategy are aligned". KP has invested $6 billion in their EHR system that holds patients' HealthConnect Records.[42] They also have a dedicated in-house research department for producing cutting-edge insights and self-service visual analytics that can be used to good effect by all health care professionals. These unified records and targeted analytics have provided unprecedented levels of data transparency for the clinical team, and by 2013 had achieved $1 billion in savings since implementation.[43]

Interventions

Aligned financial model and funding incentives across the system

Current activity-based payment models encourage a revenue optimising behaviour by acute trusts. Conversely, the prevailing payment model for community and mental health services is a historical block contract, which restricts activity levels. This set-up is inconsistent with the need to deliver more care in the community and manage a population's health closer to home, keeping people healthier and out of hospital for longer. Case study 6 illustrates how one health system in the US pioneered pay-for-performance arrangements with national and regional insurers.

Case study 6: Northwell Health US

Northwell Health is a $12 billion health system based in New York, caring for more than two million people annually, pioneering pay-for-performance arrangements with national and regional insurers. Payments are dependent on a series of clinically relevant metrics, devised to measure the value of clinical outcomes at an individual and practice level. In the Medicare shared savings programme designed to test home-based primary care versus usual care for frail elderly beneficiaries, Independence at Home, Northwell's House Calls programme, reduced costs by $8,784 per beneficiary per year. Two years after inception the scheme reduced costs by over $6,800 per patient per year, resulting in savings of $2,447,838 to Medicare.[44] Other innovative schemes delivering measurable benefits include:

CMS Comprehensive Care for Joint Replacement Model (CJR): the Federal programme commencing on 1 April 2016 with 12 Northwell Health hospitals specifically participating in CJR. The programme engages patients during their hospital stay and following them throughout their 90 day episode of care with home visits and follow-up phone calls. Extending services into the community has led to improvements in 90-day readmission rates (reduced from 8.6 per cent in 2016 to 6.3 per cent in 2018) and home discharge rates (improved from 44 per cent in the first quarter of 2016 to 67 per cent in 2018) since the start of the CJR model. This improvement in clinical outcomes has also resulted in $4.8 million savings for the first six quarters of the programme's performance.[45]

Follow Your Heart™: the Follow Your Heart™ programme is an 'Advanced Care, Provider-driven, Care Management' programme that aims to lower avoidable emergency care utilisation and improve patient access to care. Beginning in 2017 with roll-out across three hospital sites expanding to a fourth site in 2018. After consistent 30-day readmission rates at 17.3 per cent for cardiac surgery patients in 2016 and 2017, rates dropped to 15.5 per cent in 2018 for patients supported by care navigation, reducing avoidable readmissions and improving quality of life.

Gaps in Care Programme: the Gaps in Care programme uses analytics to pro-actively identify and engage patients missing wellness services to empower them to get the necessary care to prevent or maintain chronic conditions. Since 2017 the Gaps in Care programme has coordinated patient outreach and engagement efforts helping to achieve a $1.4 million dollar incentive payment in the Healthfirst Quality Incentive Programme (HQIP), up from $500,000 in 2016.[46, 47]

NHS England is now focused on delivering a 'wholesale shift' in approaches to payment within the NHS, moving away from activity-based funding to a capitated (per capita) value-based, approach.[48] ICSs are exploring population-centred, outcome-based funding models, replacing the traditional 'payment by results' model, and encouraging health care organisations to tackle the wider determinants of health. New payment models linked to quality and outcomes for the patient such as value-based risk contracting are also being considered.[49] The LTP sets out proposals to move funding away from activity-based payments and ensure that a majority of funding is population-based. This is aimed at redesigning care across providers, supporting the move to more preventive and anticipatory care models and reducing transaction costs. While volume related payments will be retained for now, for elective care, there will be new incentives for improvements in quality (including patient experience).[50]

Moreover, alongside publication of the LTP, the NHS issued full operational planning and contracting guidance for 2019-20, detailing short-term deliverables and the financial framework for providers. It was published in conjunction with the indicative five-year CCG allocations and introduces a single planning process for commissioners and providers, with an expectation of clear accountabilities at all levels. All STPs and ICSs have to produce a plan aggregating local data to provide a system overview, including agreed collective priorities. The plan should also include an aggregation of system data across finance, activity, contracting and workforce, to demonstrate system alignment with realistic assumptions around capacity and activity, providing a framework for organisational plans.[51]

New approaches to delivery and workflow

Figures from NHS Digital show that demands on hospital accident and emergency departments in England has reached record levels with nearly 24 million attendances in 2017-18. This represents an increase of 22 per cent since 2008-09 and two per cent compared to 2016-17, yet the population rose by only one per cent. The percentage of people seen within four hours was only 88 per cent, well below the national target of 95 per cent. Over this time, hospital bed occupancy hovered around 95 per cent. These and other related factors are putting a strain on traditional health care models and increasing the imperative to identify new operating models.

These new approaches must address several issues to optimise financial and clinical outcomes, for example by integrating the siloed primary and specialist care providers, and developing multi-disciplinary teams to manage round-the-clock care transitions and chronic care services, on-site in patients' homes or in their workplace (See Figure 5).

Figure 5. An integrated care delivery model

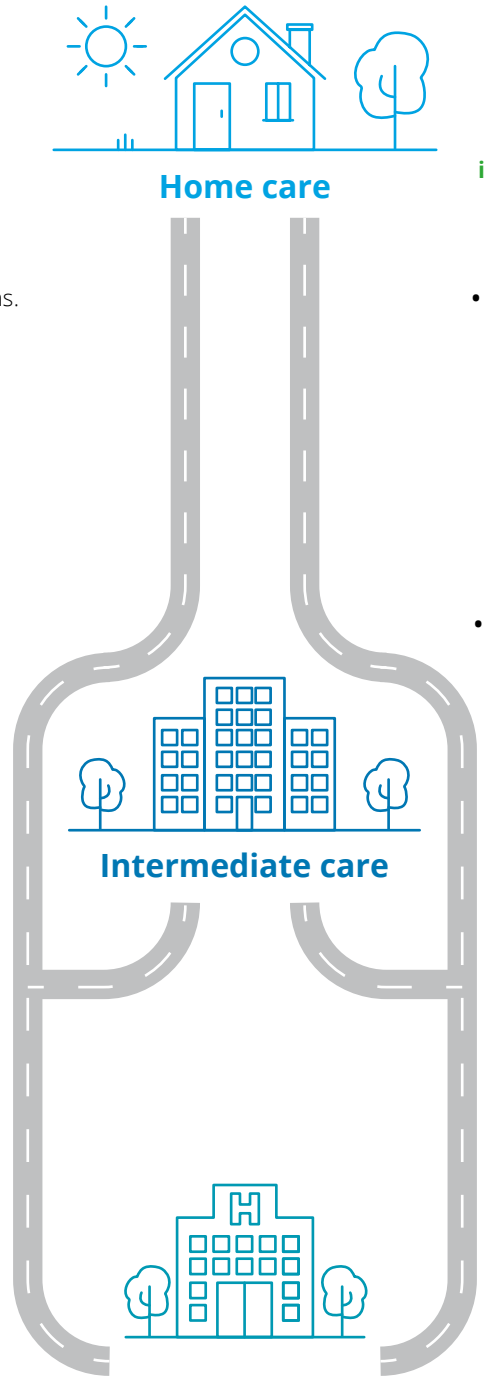
Avoiding escalation of care

Manage risk
- Identify, register & stratify the population according to health risks including risk of hospitalisation
- Develop electronic alert systems.

Promote self management
- Provide guidance, education materials, care navigation and advice services aimed at patient activation
- Deploy technology assisted support.

Early intervention
- Promote prevention and early intervention strategies targeted at those with greatest need
- Use annual health checks for over 40s
- Deploy multi-disciplinary teams (MDTs), primary care and consultant led services.

Admit only when needed
- Referral gateways
- Priority access to diagnostics.



Promoting return to home care post escalation

Provide hospital care via intermediate and primary care
- Hospital input to primary care and care homes via digital technology
- Deliver hospital at home or other re-ablement services
- Upskill community and primary care workers, current and new types of staff.

Better enable patients to return home
- Develop patient pathway protocols
- Assign dedicated care navigators to high need patients
- Agree discharge plan with patient and carer.

Enhance efficacy of acute treatment
- Provide access to patient records from multiple settings via interoperable digital platforms
- Implement clinical pathways for targeted patient populations.

Plan for discharge on admission
- Assign patient alert on admission
- Engage social care and adopt coordinated discharge plans.

MDTs of primary, community and social care staff working together across the traditional boundaries

Source: Deloitte LLP, 2019.

Emerging models will also need to focus on re-structuring internal systems and integrating the use of new technology with other components of their work to provide the most efficient service (See Case study 7).

Case study 7. The Symphony Programme, Somerset

The South Somerset NHS Vanguard site – The Symphony Programme – created a new model of care with an emphasis on patient-focused, coordinated prevention. Health coaches and key workers collaborate with primary and secondary care providers to deliver relevant and focused support for clinicians and patients.

This system establishes a more appropriate skill mix to the practices around Somerset, as previously there was a pattern of ten-minute appointments with clinical staff in primary care, irrespective of the patient's needs. Non-registered staff are trained in coaching techniques and support patients in finding the most appropriate health services for their needs. Patients are discussed in daily team meetings. In terms of management, hospital data is made available via an app which shows admissions and attendances at the local district hospital. This information is used to facilitate meetings and improve overall operations for both staff and patients.

Changes introduced by the Symphony Programme include: the introduction of new staff types, technologies and communication channels; the implementation of effective team structures; and a 'hot on boarding' process to identify high risk patients. This system has had over 3,500 patients receive support from health coaches and more than 330 patients who have consented to being cared for by complex care teams.[52] Somerset CCG have made estimated annual savings of £2.1m from the acute sector with their new model of care, and are able to provide 20 per cent of social care to patients at home.[53]

Providing primary care at scale

Primary care has been widely acknowledged as central to a high-quality and cost-effective health system for many years. However, the provision of effective primary care at scale, requires choices to be made around the scope of the care to be provided, and the degree of care coordination (See Figure 6).[54]

Figure 6. Primary care and, in particular, general practice has a key care-coordination role in implementing a PHM approach

Source: Deloitte Centre for Health Solutions, 2016.

Since 2012 nearly three-quarters of general practices in England have worked as part of a federation or other form of collaboration (See Figure 7).[55] This recognises that larger-scale general practices have the potential to achieve operational efficiency, standardise processes, maximise income, strengthen the workforce and deploy health technology more effectively. This in turn enables more effective integration of care. However, a study by the Nuffield Trust on large-scale general practice also cautions against unrealistic expectations regarding the pace of service transformation through these new organisations.[56]

Figure 7. New organisational forms of primary care collaboration at scale

Source: Is bigger better? Lessons for large scale general practice, Nuffield Trust, 2016.

Case study 8 provides an example of how a group of GPs expanded their primary care team and adopted the Primary Care Home (PCH) model to provide primary care at scale.

Primary care has been widely acknowledged as central to a high-quality and cost-effective health system for many years. However, the provision of effective primary care at scale, requires choices to be made around the scope of the care to be provided, and the degree of care coordination.

Case study 8. Beacon Medical Group

The Beacon Medical Group's 24 GPs were frustrated with the fragmentation of local services and increasingly distant relationships with other health and care providers. There was high demand for appointments which didn't need GP expertise, staff were overworked, and there was an increase in unmet needs in the local community.

The Group expanded its urgent care team to include GPs, a paramedic, nurse practitioners and pharmacists. They screen all patients seeking on-the-day appointments via the phone and call in those who need to be seen. There is an enhanced service for the six largest care homes in their area. A pharmacist and GP carry out weekly 'ward rounds', visiting patients most at risk of hospital admission. The primary care home (PCH) holds monthly MDT meetings to discuss patients of particular concern, and create treatment plans for them. A psychiatrist is based in surgeries two days a week to see patients with mental health needs and offer advice to GPs. There are many armed forces veterans in the area who are vulnerable to mental health and other medical problems. By running an awareness campaign, the PCH now knows of around 90 veterans locally, compared with 27 previously, and is offering them greater support. The Group also works with community pharmacists on marketing campaigns for flu jabs. The practice also provides in-house services for dermatology patients and those with musculoskeletal problems.

The urgent care teams have enabled the Group to cut the average waiting time for GP appointments by six days. There has been a substantial reduction both in GP referrals to hospital and in the length of stay for care home residents admitted to hospital. For patients over 60, the growth rate in admissions fell from 10 per cent to zero. There has been a 13 per cent rise in the number of flu jabs for patients with chronic obstructive pulmonary disease, £39,000 savings from 284 medication reviews, and a rise in staff satisfaction, with 87 per cent enjoying their job in 2016 compared with just 61 per cent in 2015.[57]

Lessons learnt include a willingness to take risks and begin new initiatives without waiting for full funding, to drive visible change. However, continuation of funding is key to the future success of the PCH.

The LTP acknowledges the importance of primary and community care and commits to increase investment in these services, as a share of the total national NHS revenue spend, across the five years 2019-20 to 2023-24 – increasing the overall budget by at least £4.5 billion. This new investment is intended to fund an expansion in community MDTs aligned with new primary care networks (PCNs) typically covering 30-50,000 people. All individual practices will be expected to enter into a network contract, as an extension of their current contract, and there will be a designated single fund through which all network resources will flow. From 2019, NHS 111 will start direct booking into GP practices, as well as making referrals to community pharmacies. CCGs will also develop pharmacy connection schemes.

In addition, the LTP expects that:

- over the next five years, every patient will have the right to online 'digital' GP consultations
- there will be technology-enabled hospital support aimed at avoiding up to a third of outpatient appointments – this is expected to save some 30 million trips to hospital and over £1 billion a year in expenditure
- the new PCNs will provide flexible options for GPs and wider primary care teams
- new expanded community health teams will provide fast support to people in their own homes as an alternative to hospitalisation, and to ramp up NHS support for people living in care homes
- within five years over 2.5 million more people will benefit from social prescribing.[58]

Impacts

Population engagement and patient activation

The aim of population engagement and proactive health is to help people stay as healthy as possible, and to live independently in the community for as long as possible. It involves engagement by health and social care staff, working together in new ways to coordinate the care needed. Patient groups that could benefit by targeted engagement include:

- frail or older people with long term health problems, where care is often too fragmented and difficult to manage
- young or new parents, who often bring in their newborns or young children on a 'just-in-case' basis
- those with long term chronic conditions, such as diabetes and chronic obstructive pulmonary disease (COPD).

While PHM places responsibility on health and care systems to manage care for their local population, it places even greater responsibility on the population itself to become more self-sufficient and engage in self-managing their care, through prevention, education and adherence to medication. Indeed, patient activation holds the key to improved health outcomes through gains in self-management and individual behaviour change.

Shared decision-making, asset-based approaches and signposting to self-care education resources are some of the more commonly-used and effective methods. The Patient Activation Measure (PAM) is also used increasingly to measure a person's underlying self-management ability or activation, identify patients at risk, and tailor measures for optimising health improvement. Compared to control groups, patient groups supported through activation and engagement demonstrate better outcomes, with 18 per cent higher medication adherence, 18 per cent lower emergency department visits and up to 98 per cent fewer hospital admissions.[59]

Other examples include use by GPs of the Electronic Frailty Index for routine identification of individuals living with severe frailty and moderate frailty, and to detect and intervene sooner to treat undiagnosed disorders, such as heart failure. Effective approaches to patient engagement can deliver significant benefits to the health economy and patient outcomes (See Case study 9).

Case study 9. West Dorset frail elderly 'virtual ward' Bridport Integrated Hub

Hundreds of older people living with frailty in West Dorset are being monitored through a 'virtual ward' which helps keep them out of hospital. Doctors, nurses, social care staff, physios and others in West Dorset are put on a rolling 'virtual' list each week if they are thought to be at risk of hospital admission.

West Dorset estimated in 2016 that a do-nothing approach would create an annual financial gap in the local health economy of almost £230m by 2020/21. In response it established the Bridport Integrated Hub.

The overall aim of the Bridport Integrated Hub is to work as one community team supporting GPs and primary care colleagues. Where NHS and social care staff in Weymouth and Bridport work more closely together to improve services for frail elderly patients, covering wider issues from family problems and social care packages, to equipment needed and lifestyle issues. It also operates with a 'virtual ward'.

Using a risk stratification process they identify the older and frail in the population and their individual needs, designing pro-active care planning to keep them safely out of hospital. Staff in the Hub provide specialist advice by telephone to GPs and care homes, undertake virtual ward reviews, provide a coordinated rapid response to patients in crisis, undertake proactive planning to avoid admissions, and work through proactive case management for frail, high risk patients. The local inpatient community hospital also has a medical team that oversees beds and the virtual ward, as well as working in the community and reducing the numbers of people involved in a person's care.

The virtual ward approach has resulted in a reduction in unplanned admissions to Dorset County Hospital, the lowest rate among the three acute Trusts in the county.[61]

The LTP acknowledges the importance of self-care, patient activation and patient empowerment and the need for the NHS to ramp up support for people to manage their own health – starting with diabetes prevention and management, asthma and respiratory conditions, maternity and parenting support, and online therapies for common mental health problems.

The NHS Comprehensive Model of Personalised Care, developed in partnership with over 50 stakeholder groups, includes patient groups and the voluntary sector. By September 2018, over 200,000 people had joined the personalised care programme and over 32,000 people had Personal Health Budgets (PHBs) – nearly a quarter of which were jointly funded with social care. The LTP intends that the NHS Personalised Care model will be rolled out across the country, reaching 2.5 million people by 2023-24 and then aiming to double that number within a decade. As part of this work, the range of support available to people through social prescribing is to be widened, with over 1,000 trained social prescribing link workers within primary care networks by the end of 2020-21.[60]

The aim of population engagement and proactive health is to help people stay as healthy as possible, and to live independently in the community for as long as possible. It involves engagement by health and social care staff, working together in new ways to coordinate the care needed.

4. The steps to a mature PHM system

PHM is an iterative process, with the extent of improvement in overall population health outcomes dependent on how quickly the critical success factors discussed in Part 3 are addressed. Most examples of PHM that are delivering measurable outcomes have been operating for many years. In England, while there have been localised examples of attempts to adopt a PHM approach, these have generally been aimed at a specific population, with limited adoption at scale. This has now started to change, with the creation of the vanguards and the ICSs, as well as the Devolution agenda.

The LTP acknowledges that delivering the plan will depend on local health systems having the capability and capacity to implement changes effectively. It also highlights the need for a roll-out of PHM tools. This will enable ICSs to identify groups at risk of adverse health outcomes and inequalities, and to plan services accordingly. ICSs will also require changes to funding flows and performance frameworks, and a new ICS accountability and performance framework will be introduced to consolidate local performance measures alongside a new integration index for measuring patient and public views about local service integration.[62]

Implementing a PHM approach

Deloitte has developed two maturity frameworks to assist in understanding the steps needed to implement an effective PHM approach. By evaluating the existing situation against the component parts of a mature PHM system, organisations can assess where they are currently strong, what further work skills are needed to help drive further progress, and identify those areas that require improvement

Applying the population health maturity assessment framework

The PHM framework (See Figure 8) addresses overall system maturity and enabling factors such as system leadership and governance, culture and engagement, data and analytics, technology, and financial and organisational models. Applying the PHM maturity framework helps provide health and care systems with an understanding of progress. It can be used by system leaders to agree a pathway towards achieving a sustainable model, whilst also working towards increased levels of risk sharing by aligning financial risk with incentives, driving better performance and improving quality.

The population health IT and data analytics framework

Technology underpins all nine critical success factors. It is therefore important that the correct IT and digital infrastructure is in place to enable PHM to operate effectively across different healthcare systems and organisations and become part of an integral approach. The use of technology improves the efficiency and effectiveness of performance monitoring and financial planning, the application of financial incentives, the re-design and management of clinical workflows, and the implementation of services at scale (See Figure 9).

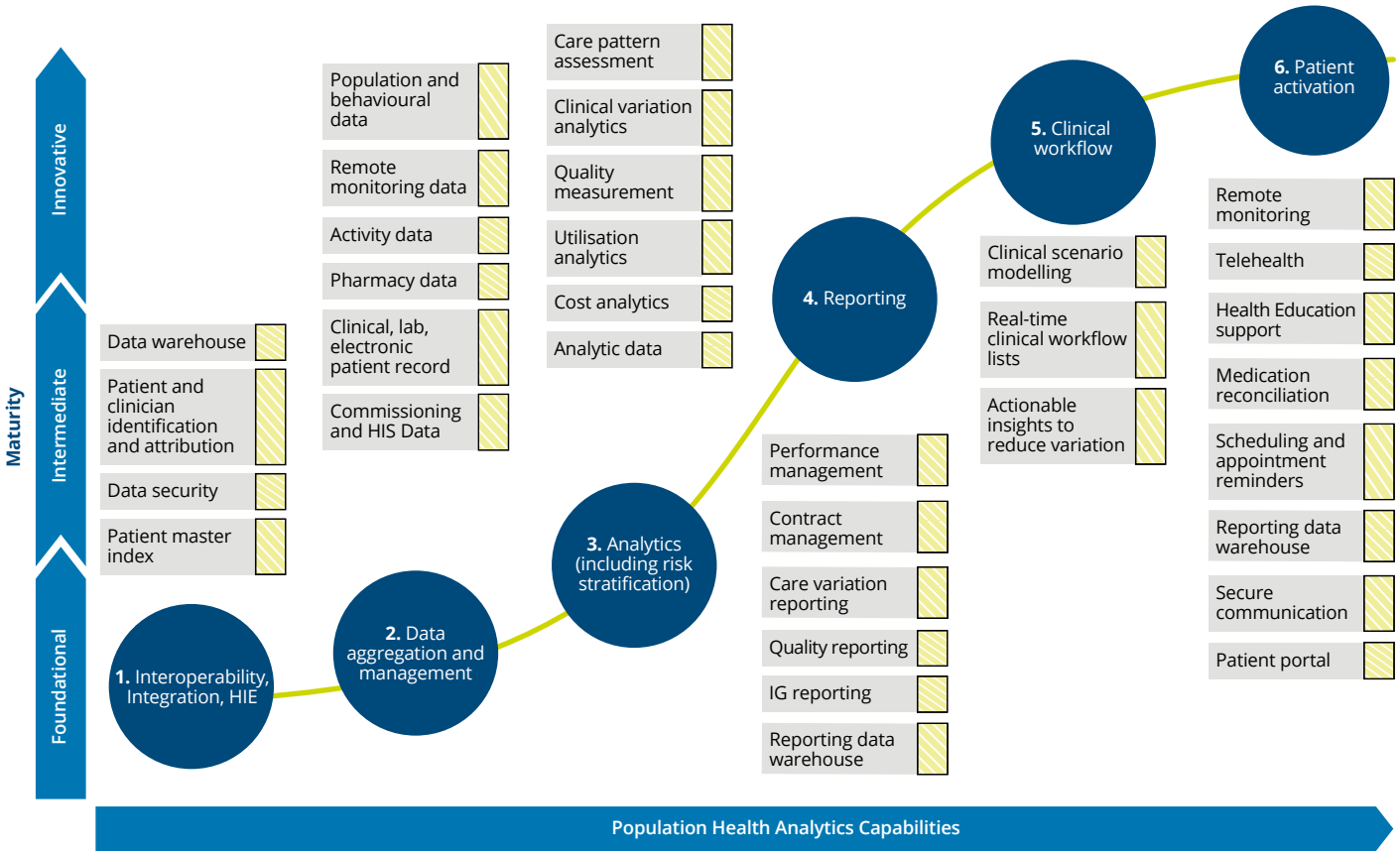
PHM is an iterative process, with the extent of improvement in overall population health outcomes dependent on how quickly the critical success factors discussed in Part 3 are addressed. Most examples of PHM that are delivering measurable outcomes have been operating for many years

Figure 8. The discrete areas within Deloitte's Population Health Maturity Framework

		Basic (1)	Developing (2)	Average (3)	Mature (4)	Leading (5)
Organisation	Leadership and Governance	• Unwilling to commit to population health until local market adoption	• Tepid desire to drive system-wide change • Some efforts to align leadership on population health strategy	• Clear desire to adopt population health into core strategy	• Seeing results, driving change, and aligning clinical leadership around a shared population health vision	• Experience and success with multiple risk models; managing risk is business as usual
	Clinician and Social Care	• Minimal established care professional networks • No care professional buy-in or leadership	• Efforts to educate care professionals, secure strategic buy-in, drive alignment • Basic primary care footprint	• Standardising care protocols • Defined clinical performance metrics	• Strong care professional leadership and buy-in through incentive models • Clinical practice metrics being used to enhance behaviour	• Clinically integrated and/or fully employed care profession network • Real time visibility into clinical practice metrics
Patient and Care	Patient Experience and Engagement	• Minimal patient engagement beyond patient driven interaction • Statutory\mandatory patient experience measures	• Acknowledgement of need for proactive patient engagement • Patient experience measures reviewed • Limited patient education plans in place	• Patient experience and feedback routinely collected and acted upon • Formal proactive patient engagement and educations plans emerging	• Citizens have the tools to self-manage • Patient experience used as a core KPI and input into strategy • Proactive engagement and education embedded • Patient cohort management	• Crowdsourcing used as a technique to engage citizens • Multi platform, omni channel engagement tools in place • Patient experience drives organisational culture • Lifestyle analytics
	Care Coordination and Management	• Limited care coordination and no care management in place • Care coordination and management not viewed as a priority	• Small scale care management pilot in place • Multi organisation discussions taking place regarding care management • Aligning on care protocols	• Care coordination and management in place for a subset of chronic conditions • Multi organisation agreement on place-based care models for specific patient cohorts	• Increased use of analytics and data to influence care coordination and management plans • True team based care models emerge • Defined care transition processes in place • Utilization management	• Chronic condition and complex case management • Prevention and wellness programs • Quality and clinical practice improvement initiatives • Team-based care model embedded
Enablement	Organisational model	• No collaboration agreement across partner organisations • Ineffective governance arrangements and decision making authority is unclear	• Partners start to break down organisational barriers through clear governance arrangements • Collaboration agreements are followed	• Partners explore options for new organisational arrangements	• Providers work together collaboratively under a contractual arrangement to provide care to a defined population • Collective accountability for delivery • Joint commissioning arrangements are established	• Provider collaboration is formalised through consolidation / M&A activity • Providers integrate into one legal entity to provide care for a defined locality
	Financial Model and Risk Management	• Basic reporting and quality improvement programmes • Volume based pricing / tariff models	• Pre-determined reimbursement for defined episodes • Payment for deploying care coordination	• Arrangement with upside/downside risk and pre-determined risk parameters	• Specific segments of the population under capitated arrangements • Patients are attributed to a provider (typically the GP)	• Full-risk arrangements with system bearing all upside and downside impact • Compensation and incentives
	IT Infrastructure and Interoperability	• Inpatient and ambulatory network platforms are disparate and not interoperable	• Plans to move towards a centralised IT platform and sync data sharing	• Most platforms are centralised and interoperable across the region • A scalable data repository exists	• Strong, dynamic IT governance programmes • Retrieving and connecting data from all service users and providers across the care continuum	• Self-actualising trends, analysis of transactional data, creating enriched information for predictive analytics
	Data and Analytics	• Limited internal data analytics capabilities • Exclusively reliant on CSU's for analytic reports and trends	• Developing internal infrastructure; primarily tracking disease frequency for gaps in care • Siloed collection and reporting efforts	• Collecting clinical and financial data in registries • Basic ability to operationalise data and use it to inform performance	• Data collection protocols in place to identify, benchmark and stratify service users, track financial performance	• A functional data repository is being used to engage in predictive analytics and inform clinical/ financial risk platforms

Source: Deloitte LLP, 2019

Figure 9. Deloitte's Population Health IT and Data Analytics Maturity Framework



Source: Deloitte LLP, 2019.

Note: Critical data integration, analytics and technology capabilities are essential to support the development of effective ACSs, to enhance the insight driven by analytics. Enabling capabilities are outlined above. Each capability should be assessed and the level of maturity determined (for example, whether nascent, developing or mature).

Technology underpins all nine critical success factors. It is therefore important that the correct IT and digital infrastructure is in place to enable PHM to operate effectively across different healthcare systems and organisations and become part of an integral approach.

The Local Health and Care Record Exemplar (LHCRE) programme, established in 2018, is aimed at raising the bar and improving direct care of patients through technology. LHCREs build on local solutions already in place to create a more joined-up regional health and care information capability. The objective of LHCRE is to support direct patient care, then extend to integrating health with care, improving care coordination, providing a foundation for future health analytics and PHM, and enabling patient engagement and activation. Core requirements include a robust Information Governance framework and a citizen opt-out standard, adoption of technical and data interoperability standards, compliance with data and cyber security standards, and conforming with national services, particularly record locators.[63]

For example, in 2016, Greater Manchester's publication of their digital strategy committing not only to improving the systems infrastructure but also to investing in talent and skills development, in order to aid the rapid digitalisation of health and social care. The strategy acknowledged that an integrated digital patient record would provide a single version of 'truth' across health and care providers and is key to delivering greater insight.[64]

Moreover, the creation of digitally-linked trusts through NHS England's LHCRE scheme has enabled a structure to emerge that provides the technical backbone for population health initiatives. Population stratification requires the coordination of health and social care in complex areas, where data sharing and linking must be handled with due care and consideration. Tools for delivering population health are evolving quickly but are still somewhat silo-based. Funding for the tools across geographies and boundaries is also complex as is agreeing ownership of the analysis. The key requirements for implementing the appropriate technologies include:

- prioritising the features needed in a roll-out process
- designing the solution, through a clear understanding of what needs to change, why and how
- implementing the solution with clinician support and recognition that this is a change management project
- monitoring progress against metrics, requiring extensive business and clinical analysis and feedback throughout
- 'rinse and repeat' to reflect the fact that PHM is an agile process, including learning about the clinical, social, emotional and logistical needs of each population, and tailoring solutions to fit the needs of the community.

Options for the optimal solution

There are four options to consider:

- integrate PHM as part of the EHR solution. Given that it is often easier to work with an existing system, even if it isn't as efficient as it could be, many providers have opted either to use their existing EHR modules or to customise their EHR to meet the needs of the PHM solution. This often requires not only a large capital expenditure but also investment in continuing operating expenses to keep the system running
- use a parallel system and solution. There is a plethora of off-the-shelf PHM solutions in the market, from analytics to care management and reporting solutions. Many providers opt to integrate the data from their EHR solutions into an off-the-shelf PHM solution, placing responsibility for software maintenance on the vendor
- build it yourself. Some providers prefer to build their own system of analytics, care management, and overall PHM. Although this option is becoming less common, it has merits, as it provides full control over the iterative R&D process and solutions are tailored to the needs of the population
- create a hybrid. This is probably the most common approach where a combination of homegrown and vendor-led solutions is developed.

Further considerations

As all health and care organisations become an integral part of an ICS and work collaboratively to adopt a PHM approach there are several other considerations to keep front of mind. Start with a clear vision of what is needed. Not all aspects of PHM need be done by providers. Decide what can be outsourced. The vendor landscape is constantly changing, so re-evaluate the approach continually and change it if and when needed.

Define what success looks like. It is easy to get lost among too many disparate goals. Create a manageable number of key performance metrics that define success, such as cost of care per episode, per bundle, or per patient. Create a clinical dashboard targeted towards the specialties that are relevant to providers and patients. By bearing these points in mind and giving due to consideration to each discrete area within the two frameworks described above, the rate of progress to achieving a fully integrated and mature PHM approach can be accelerated.

Endnotes

1. Kinding D, Stoddart G, What is population health? Am J Public Health, National Center for Biotechnology Information (NCBI), March 2003. See also: www.ncbi.nlm.nih.gov/pubmed/12604476
2. National life tables, UK 2015-2017, Office for National Statistics, September 2018. See also: https://www.ons.gov.uk/peoplepopulationandcommunity/birthsdeathsandmarriages/lifeexpectancies/bulletins/nationallifetablesunitedkingdom/2015to2017#main-points
3. Long Term Conditions Compendium of Information: Third Edition, Department of Health and Social Care, May 2012. See also: http://www.dh.gov.uk/en/Publicationsandstatistics/Publications/PublicationsPolicyAndGuidance/DH_134487
4. Long-term conditions and multi-morbidity, The King's Fund, 2018. See also: https://www.kingsfund.org.uk/projects/time-think-differently/trends-disease-and-disability-long-term-conditions-multi-morbidity
5. Burden of Disease Study for England, Public Health England, October 2016. See also: https://www.gov.uk/government/publications/burden-of-disease-study-for-england
6. Kingston A, Wohland P, Wittenberg R, Robinson L, Brayne C, Matthews F, Jagger, C, et al, Is late life dependency increasing or not? A comparison of the Cognitive Function and Ageing Studies (CFAS), The Lancet, October 2017. See also: https://doi.org/10.1016/S0140-6736(17)31575-1
7. The Costs of Obesity, Obesity Health Alliance (OHA), 2017. See also: http://obesityhealthalliance.org.uk/wp-content/uploads/2017/10/OHA-briefing-paper-Costs-of-Obesity-.pdf
8. Health Profile for England: 2018, Public Health England, September 2018. See also: https://www.gov.uk/government/publications/health-profile-for-england-2018
9. The IHI Triple Aim, Institute for Healthcare Improvement. See also: http://www.ihi.org/Engage/Initiatives/TripleAim/Pages/default.aspx
10. Working for health and growth: investing in the health workforce, World Health organization, 2016. See also: http://www.who.int/hrh/com-heeg/reports/en/
11. Bodenheimer T, Sinsky C, From Triple to Quadruple Aim: Care of the Patient Requires Care of the Provider, Ann Fam Med , National Center for Biotechnology Information(NCBI), November 2014. See also: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4226781/
12. Vital Signs: How to deliver better healthcare across Europe, Deloitte, 2016. See also: https://www2.deloitte.com/content/dam/Deloitte/global/Documents/Life-Sciences-Health-Care/gx-lshc-vital-signs-uk-healthcare-across-europe.pdf
13. Five Year Forward View, NHS England, 2014. See also: https://www.england.nhs.uk/wp-content/uploads/2014/10/5yfv-web.pdf
14. NLGN Leadership Index, Cuts force councils to neglect preventative services despite Government aspirations, New Local Government Network (NLGN), January 2019. See also: http://www.nlgn.org.uk/public/2019/new-survey-cuts-forcing-councils-to-significantly-neglect-preventative-services-despite-government-aspirations/
15. Plugging the public health grant funding gap, The Health Foundation, 2017. See also: http://healthfoundation2lwauernoew.devcloud.acquia-sites.com/sites/default/files/Taking%20our%20health%20for%20granted_for%20web.pdf
16. The NHS long-term plan explained, The King's Fund, January 2019. See also: https://www.kingsfund.org.uk/publications/health-care-workforce-england
17. The NHS Long Term Plan, NHS England, January 2019. See also: https://www.longtermplan.nhs.uk/wp-content/uploads/2019/01/nhs-long-term-plan.pdf
18. NEW CARE MODELS: Vanguards - developing a blueprint for the future of NHS and care services, NHS England, September 2016. See also: https://www.england.nhs.uk/wpcontent/uploads/2015/11/new_care_models.pdf
19. The NHS Long Term Plan, NHS England, January 2019.See also: https://www.longtermplan.nhs.uk/wp-content/uploads/2019/01/nhs-long-term-plan.pdf
20. Sustainability and transformation partnerships, NHS England, 2016, See also: https://www.england.nhs.uk/integratedcare/stps/
21. Sustainability and transformation plans and partnerships, House of Commons, September 2017. See also: http://researchbriefings.files.parliament.uk/documents/CBP-8093/CBP-8093.pdf
22. Integrated care: organisations, partnerships and systems (Seventh Report of Session 2017–19), House of Commons Health and Social Care Committee, May 2018. See also: https://publications.parliament.uk/pa/cm201719/cmselect/cmhealth/650/650.pdf
23. NHS financial sustainability (HC 1867 SESSION 2017–2019), National Audit Office, January 2019. See also: https://www.nao.org.uk/wp-content/uploads/2019/01/NHS-financial-sustainability_.pdf
24. The NHS Long Term Plan, NHS England, January 2019. See also: https://www.longtermplan.nhs.uk/wp-content/uploads/2019/01/nhs-long-term-plan.pdf
25. A vision for population health: Towards a healthier future, The King's Fund, November 2018. See also: https://www.kingsfund.org.uk/publications/vision-population-health
26. The Deal for Health and Wellness, Wigan Council. See also:https://www.wigan.gov.uk/Council/The-Deal/Our-Deals/The-Deal-for-Health-and-Wellness.aspx
27. The King's Fund discussion with Donna Hall, Chief Executive of Wigan Council, about what happened in Wigan November 2018. See also: https://www.kingsfund.org.uk/audio-video/donna-hall-wigan-story
28. The Greater Manchester Digital Strategy 2018-2020, Greater Manchester Combined Authority, 2018. See also: https://www.greatermanchester-ca.gov.uk/media/1090/digital-strategy-2018-2020.pdf
29. £134M INVESTMENT IN MENTAL HEALTH ACROSS GREATER MANCHESTER, Greater Manchester Health and Social Care Partnership, July 2017. See also: http://www.gmhsc.org.uk/134m-investment-in-mental-health-across-greater-manchester/
30. Developing People - Improving Care, NHS Improvement. See also: https://improvement.nhs.uk/resources/developing-people-improving-care/
31. Discovery East London – Linking data to improve health care, UCLPartners Academic Health Science Partnership, June 2018. See also: https://uclpartners.com/discovery-east-london-linking-data-improve-health-care/
32. Ibid
33. Readman L, Wallis M, Muthuswamy R, and Dr. Khan A, EAST LONDON PATIENT RECORD: BENEFITS STUDY EVALUATION, East London Health & Care Partnership, 2018. See also: http://eastlondonhcp.nhs.uk/wp-content/uploads/2018/03/East-London-Patient-Record-2.pdf

34. Fisher R, Collaborating for care: harnessing the power of data sharing across GP practices, The Health Foundation, September 2017. See also: https://www.health.org.uk/blog/collaborating-care-harnessing-power-data-sharingacross-gp-practices
35. The NHS Long Term Plan, NHS England, January 2019. See also: https://www.longtermplan.nhs.uk/wp-content/uploads/2019/01/nhs-long-term-plan.pdf
36. The Business of Population Health Management, Gesundes Kinzigtal GmbH, 2016. See also: https://www.gesundes-kinzigtal.de/wp-content/uploads/2017/01/Global-Forum_Gesundes-Kinzigtal_Case_study_2016.pdf
37. Meyer I, Schmitt G, Maier M, Horn L, Hynek S, Kardel U, et al, Gesundes Kinzigtal 4.0 - A new financial model and performance metrics for the delivery of population-based integrated care, International Journal of Integrated Care, 2017. See also: https://www.ijic.org/articles/abstract/10.5334/ijic.3604/
38. Groene O, Hildebrandt H, Ferrer L, Stein KV, People-centred population health management in Germany, Eurohealth 22 (2): 7-10, 2016. See also: http://www.euro.who.int/__data/assets/pdf_file/0019/312319/Eurohealth-volume22-number2-2016.pdf?ua=1
39. Harnessing the Power of Data in Health, Stanford Medicine, June 2017. See also: https://med.stanford.edu/content/dam/sm/sm-news/documents/StanfordMedicineHealthTrendsWhitePaper2017.pdf
40. Insight Driven Organisation (IDO) Survey, Deloitte, 2017. See also: https://www2.deloitte.com/uk/en/pages/technology/articles/insight-driven-organisation-survey.html
41. Watcher H, Kaiser Permanente: showing us the power of data anaytics when your business strategy and data strategy are aligned, Harvard Business School, November 2015. See also: https://digit.hbs.org/submission/kaiser-permanente-showing-us-the-power-of-data-anaytics-when-your-business-strategy-and-data-strategy-are-aligned/
42. Kaiser Permanente Northwest Engages Medial EarlySign for AI-Based, Patient-Specific Treatment Prioritization, The Journal of mHealth, May 2018. See also: https://thejournalofmhealth.com/kaiser-permanente-northwest-engages-medial-earlysign-for-ai-based-patient-specific-treatment-prioritization/
43. Schaeffer C, Haque A, Booton L, Halleck J, Coustasse A, "Big Data Management in United States Hospitals: Benefits and Barriers", In J. Sanchez (Ed.), Proceedings of the Business and Health Administration Association Annual Conference, Chicago, IL, April 2016. See also: https://mds.marshall.edu/cgi/viewcontent.cgi?referer=https://www.google.com/&httpsredir=1&article=1154&context=mgmt_faculty
44. Independence at Home Demonstration Performance Year 3 Results, Centers for Medicare & Medicaid Services, 2019. See also: https://innovation.cms.gov/Files/fact-sheet/iah-yr3-fs.pdf
45. Deloitte Correspondence with Northwell Health, 2019
46. Independence at Home Demonstration Performance Year 3 Results, Centers for Medicare & Medicaid Services, 2019. See also: https://innovation.cms.gov/Files/fact-sheet/iah-yr3-fs.pdf
47. Deloitte Correspondence with Northwell Health, 2019
48. West D, Stevens promises 'wholesale shift' in funding rules, HSJ, July 2018. See also: https://www.hsj.co.uk/policy-and-regulation/stevens-promises-wholesale-shift-in-funding-rules/7022939.article
49. Whole population models of provision: Establishing integrated budgets, NHS England, 2017. See also: https://www.england.nhs.uk/publication/whole-population-models-of-provision-establishing-integrated-budgets-document-7b/
50. The NHS Long Term Plan, NHS England, January 2019. See also: https://www.longtermplan.nhs.uk/wp-content/uploads/2019/01/nhs-long-term-plan.pdf
51. A summary of NHS operational planning and contracting guidance 2019/20 (Updated January 2019), Healthcare Financial Management Association (HFMA), January 2019. See also: https://www.hfma.org.uk/docs/default-source/default-document-library/summary-of-nhs-operational-planning-and-contracting-guidance-2019-20.pdf?sfvrsn=0
52. New Models of Care – The Symphony Programme, South, NHS England. See also: https://www.england.nhs.uk/gp/case-studies/symphony-new-modelof-care/ and www.symphonyintegratedhealthcare.com
53. Work Package 2 Report: United Kingdom, SELFIE 2020, October 2016. See also: https://www.selfie2020.eu/wp-content/uploads/2016/12/SELFIE_WP2_UK_Final-thick-descriptions.pdf
54. Primary care today and tomorrow: Adapting to survive, Deloitte, 2016. See also: https://www2.deloitte.com/uk/en/pages/life-sciences-and-healthcare/articles/primary-care-today-and-tomorrow.html
55. Primary care today and tomorrow: Adapting to survive, Deloitte, 2016. See also: https://www2.deloitte.com/uk/en/pages/life-sciences-and-healthcare/articles/primary-care-today-and-tomorrow.html
56. Dr Rosen R, et al, Is bigger better? Lessons for large scale general practice, Nuffield trust, July 2016. See also: https://www.nuffieldtrust.org.uk/research/is-bigger-better-lessons-for-large-scale-general-practice
57. Robinson S, Beacon Medical Group Primary Care Home: A view from the front line, The National Association of Primary Care (NAPC), 2017. See also: http://napc.co.uk/wp-content/uploads/2017/11/19-Oct-Beacon-Medical-Group-PCH-a-view-from-the-frontline-Simon-Robinson-1.pdf
58. The NHS Long Term Plan, NHS England, January 2019. See also: https://www.longtermplan.nhs.uk/wp-content/uploads/2019/01/nhs-long-term-plan.pdf
59. Reistroffer C, Hearld L, Szychowski J, An Examination of the Relationship Between Care Management With Coaching for Activation and Patient Outcomes, THE AMERICAN JOURNAL OF MANAGED CARE (VOL. 23, NO. 2), 2017. See also: https://pdfs.semanticscholar.org/b027/e2af86b85a26565da52eb5a88ad16e4ed82a.pdf
60. Older people living with frailty on 'virtual ward' keeps them well at home and out of hospital, NHS England. See also: https://www.england.nhs.uk/integratedcare/case-studies/older-people-living-with-frailty-on-virtual-ward-keeps-them-well-at-home-and-out-of-hospital/
61. The NHS Long Term Plan, NHS England, January 2019. See also: https://www.longtermplan.nhs.uk/wp-content/uploads/2019/01/nhs-long-term-plan.pdf
62. Ibid
63. Local Health and Care Record Exemplars, NHS England, March 2018. See also: https://www.england.nhs.uk/wp-content/uploads/2018/05/localhealth-and-care-record-exemplars-summary.pdf
64. The Greater Manchester Digital Strategy 2018-2020, Greater Manchester Combined Authority, 2018. See also: https://www.greatermanchester-ca.gov.uk/media/1090/digital-strategy-2018-2020.pdf

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