North Central London Sustainability and Transformation Plan

North Central London

Local Digital Roadmap


NHS
Barnet Clinical Commissioning Group


BARNET
LONDON BOROUGH


Barnet, Enfield and Haringey NHS
Mental Health NHS Trust


North Middlesex University Hospital NHS
NHS Trust


NHS
Camden
Clinical Commissioning Group


Camden

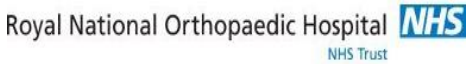

Camden and Islington NHS
NHS Foundation Trust


Royal Free London NHS
NHS Foundation Trust


NHS
Enfield
Clinical Commissioning Group


ENFIELD
Council


Central London Community Healthcare NHS
NHS Trust


Royal National Orthopaedic Hospital NHS
NHS Trust


NHS
Haringey
Clinical Commissioning Group


Haringey
LONDON


Central and North West London NHS
NHS Foundation Trust


The Tavistock and Portman NHS
NHS Foundation Trust


NHS
Islington
Clinical Commissioning Group

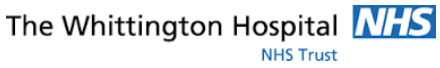

ISLINGTON


Great Ormond Street
Hospital for Children
NHS Trust


University College
London Hospitals
NHS Foundation Trust


NEL
Commissioning
Support Unit


Moorfields Eye Hospital NHS
NHS Foundation Trust


The Whittington Hospital NHS
NHS Trust

1 Executive Summary

Health and care services are facing unprecedented challenges with an ageing population, increasing prevalence of long term and complex conditions and persistent inequalities in health outcomes based on ethnicity, geography and socioeconomic status. There is significant variation in the quality of care delivered and increasing financial pressures maintaining sustainable and high quality clinical services.

North Central London (NCL) is a complex landscape of 5 Clinical Commissioning Groups, 5 Local Authorities and 12 acute, community, mental health and specialist providers who, until recently, have predominantly operated independently with no shared digital strategy. Digital maturity across the health and care system is therefore variable and information exchange across the whole system is limited.

Although individual organisations have collaborated on digital projects, working collectively across all organisations remains a relatively new endeavour and we continue to build the trust required to enable us to do so. This is reflected in a number of local achievements but no current whole system projects.

Through the development of this local digital roadmap the 22 partner organisations and the North East London Commissioning Support Unit (NELCSU) have come together to agree how we can use digital technologies and information to move from our current models of care to deliver proactive, predictive, participatory, person-centred care for the population we serve in NCL.

We are proposing a model that requires NCL to completely transform the way digital services are currently delivered. Our plans are based on developing an NCL Population Health Management Model which includes the technology, data and analytics required to manage the health and wellbeing of the NCL population, underpinned by a move from paper to digital care processes within provider organisations.

Five digital themes underpin our vision and ambition.

1. **Digitally activated population:** We will provide our citizens with the ability to transact with healthcare services digitally, giving them access to their personal health and care information and equipping them with tools which enable them to actively manage their own health and wellbeing

2. **Connected care**: We will create and share care records and plans that can be shared across health and care systems seamlessly to enable integrated care delivery across organisations

3. **Insights driven health system :** We will use data collected at the point of care to identify populations at risk, to monitor the effectiveness of interventions on patients with established disease and deliver whole systems intelligence so the needs of our entire population can be predicted and met

4. **Digitally enabled workforce:** We will support our providers to move away from paper to fully digital care processes and provide infrastructure which enables our care professionals to work and communicate effectively, anywhere at any time

5. **Sustainable Care**: We will improve efficiency and productivity through consolidation of digital services, applications and projects

This supports our STP prevention, service transformation and productivity objectives and will enable us to meet the national mandate of operating paper free at the point of care. Through this model we will move from a landscape of diversity and variation to one of shared principles, consolidation and joint working for the benefit of the population.

This roadmap sets out our baseline position and current state of readiness to achieve our ambitions.

Delivery of our NCL digital roadmap has a number of strategic risks

- The programme requires a significant level of investment
- The future operating model and organisational structure of the STP is undetermined as yet
- We are starting from a position of limited collaboration and readiness to deliver

While we have made good progress defining a digital strategy, and have identified the level of investment likely to be required, there is a dependency of having clarity about the STP operating model and availability of resources before we can finalise our plans.

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2 Introduction

Effective delivery of health and care services is threatened by a changing population demographic and unsustainable affordability of current service delivery models, where the emphasis is on managing illness rather than promoting wellness. The future state must empower citizens to take more control over managing their own health and wellbeing and enable integrated care delivery across organisations. We must address the holistic physical and emotional needs of our population, reduce the ethnic, geographical and socioeconomic inequalities in care that exist today and assure the financial sustainability of our local heath and care services.

There is significant and immediate opportunity for digital to transform our current delivery models and seed completely new, integrated models of health and social care. We recognise the strength of both the clinical and financial case for digital and its potential impact in strengthening productivity, providing ease of access to our services, minimising waste and improving care. Investment in digital technology is recognised to be central to the transformation of services that is needed in North Central London (NCL) to address the gaps in service quality, access and finance, and wholly consistent with the Five Year Forward View and requirement to be paper-free at the point of care by 2020.

Our roadmap describes the current digital landscape across NCL, our plans to enable whole system transformation and to improve digital maturity across our local health and care economy.

3 NCL Context

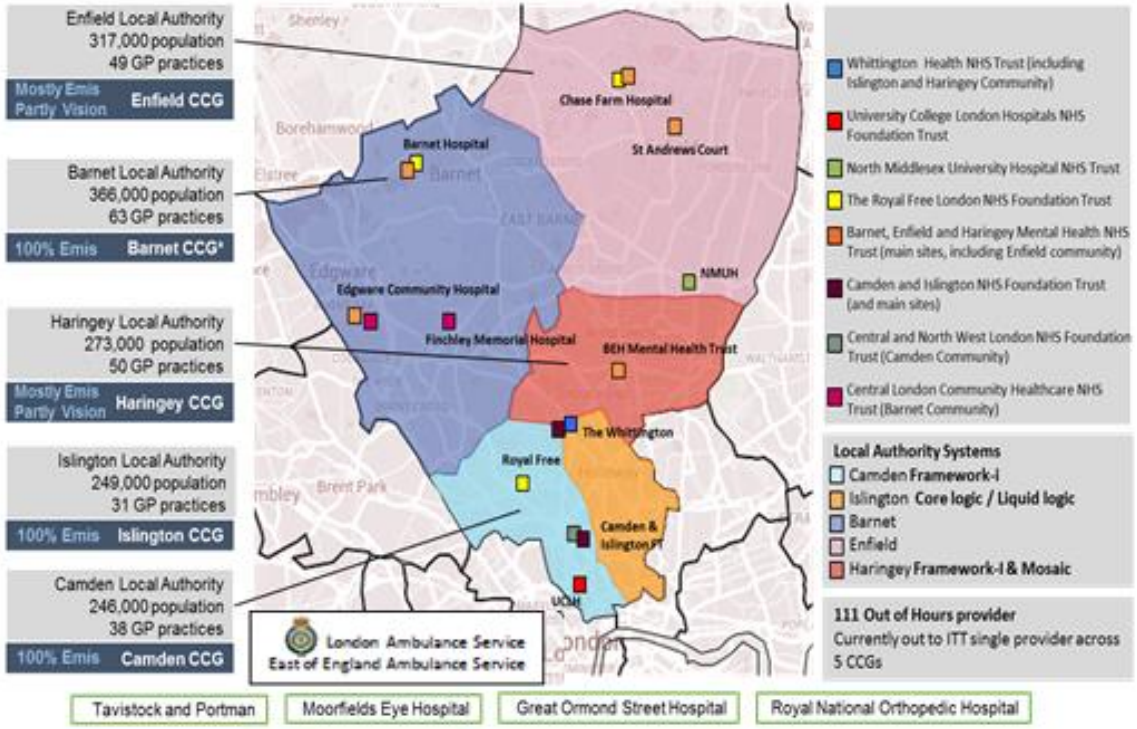


Figure 1: NCL Digital Footprint

North Central London comprises of five Clinical Commissioning Groups (CCGs): Barnet, Camden, Enfield, Haringey and Islington, each is coterminous with the local London Boroughs.
There are approximately 1.44m people living in the five NCL boroughs. We spend around £2.5bn on health and £800m on social care to deliver high quality services for them. The population is diverse and highly mobile, with a large number of people living in deprivation.
There are four acute trusts within NCL: The Royal Free London NHS Foundation Trust (sites include Barnet Hospital, Chase Farm Hospital and the Royal Free Hospital), University College London Hospitals NHS Foundation Trust, North Middlesex University Hospital NHS Trust, and the Whittington Health NHS Trust. There are three single specialist hospitals: Moorfields Eye Hospital NHS Foundation Trust, Great Ormond Street Hospital for Children NHS Foundation Trust and the Royal National Orthopaedic Hospital NHS Trust.
Community services are provided by Central and North West London NHS Foundation Trust, the Whittington Health NHS Trust, and Central London Community Healthcare NHS Trust.

Mental health services are provided by the Tavistock and Portman NHS Foundation Trust, Camden and Islington NHS Foundation Trust and Barnet, Enfield and Haringey Mental Health Trust.

There are 220 GP practices and the out-of-hours services contract was recently awarded to the London Central and West Unscheduled Care Collaborative. There are 497 active social care sites registered across NCL, including 273 registered care homes. In addition, there are 214 registered domiciliary care providers in NCL.

There is a particularly high concentration of specialised services across multiple providers covering a small geographic area. This means many of the patients treated in NCL do not live in NCL and consequently, the ability to exchange information digitally beyond both NCL and London boundaries is essential.
NCL is home to two national vanguards: The Royal Free London NHS Foundation Trust is developing a provider chain model; University College London Hospitals NHS Foundation Trust is improving the end-to-end experience for people with cancer. There are also two devolution pilots: one seeking to optimise the use of health and social care estate in NCL, and another focused on prevention in Haringey. In primary care, GP practices are already working together in a number of GP Federations to provide extended services to our residents.

As individual organisations in NCL, we have a history of working together in different ways to meet the needs of our population, and there are numerous excellent examples of collaboration as a result. However, working collectively across all organisations remains a relatively new endeavour and we continue to build the trust required to enable us to do so.

4 NCL Sustainability and Transformation Plan

We face significant challenges around the health and wellbeing outcomes for our population, the quality of our services and the financial sustainability of the health and care system.

Health and wellbeing gap

- NCL has a diverse and highly mobile population.
- There are large populations of people from a range of Black and Minority Ethnic groups with differing health needs and risks
- There is widespread deprivation and inequality, with high levels of homelessness and households in temporary housing.
- Almost 50% of people in NCL have at least one lifestyle-related clinical problem
- Indicators of health at the start of life are poor, with 30% of children growing up in child poverty and 1 in 3 children classed as obese by the age of 11.
- People in NCL are living longer but are in poorer health for the last 20 years of their lives compared with the rest of the country.
- There are high rates of mental illness amongst both adults and children and three boroughs have the highest rates of child mental health admissions in London

Care and quality gap

- There is too little focus on prevention and addressing the wider determinants of health such as poverty, housing and employment, all of which have a significant impact on individuals' health and wellbeing.
- Disease and illness could be detected much earlier, and managed better in the community
- 20% of deaths in NCL are potentially preventable
- It is estimated there are around 20,000 people in NCL who do not know they have diabetes, while 13% of the population are thought to be living with hypertension
- Many people with long term conditions do not feel supported to manage their condition
- Too many people are admitted to hospital who could be cared for closer to home
- There are challenges in the provision of cancer care, with low levels of cancer screening, low awareness of the symptoms in some minority ethnic groups and late diagnosis.
- Referrals to specialists have doubled in five years but waiting times for specialist review and diagnostics are long
- There are workforce challenges and lack of services in the community especially at weekends
- The current approach to commissioning and providing health and care services across NCL does not support the delivery of a population health approach and integrated care

Financial gap

- There is a substantial financial challenge facing health organisations in NCL resulting from advances in science, an increasingly ageing population with multiple morbidities and rising public expectation and choice for specialised treatment
- Spending on specialised services has increased at much greater a rate than other parts of the NHS, and this is expected to continue
- Funding increases in NCL over the next 5 years will not meet the likely increases in numbers of local people and growth in demand for health services, plus increases in the cost of delivering health care.

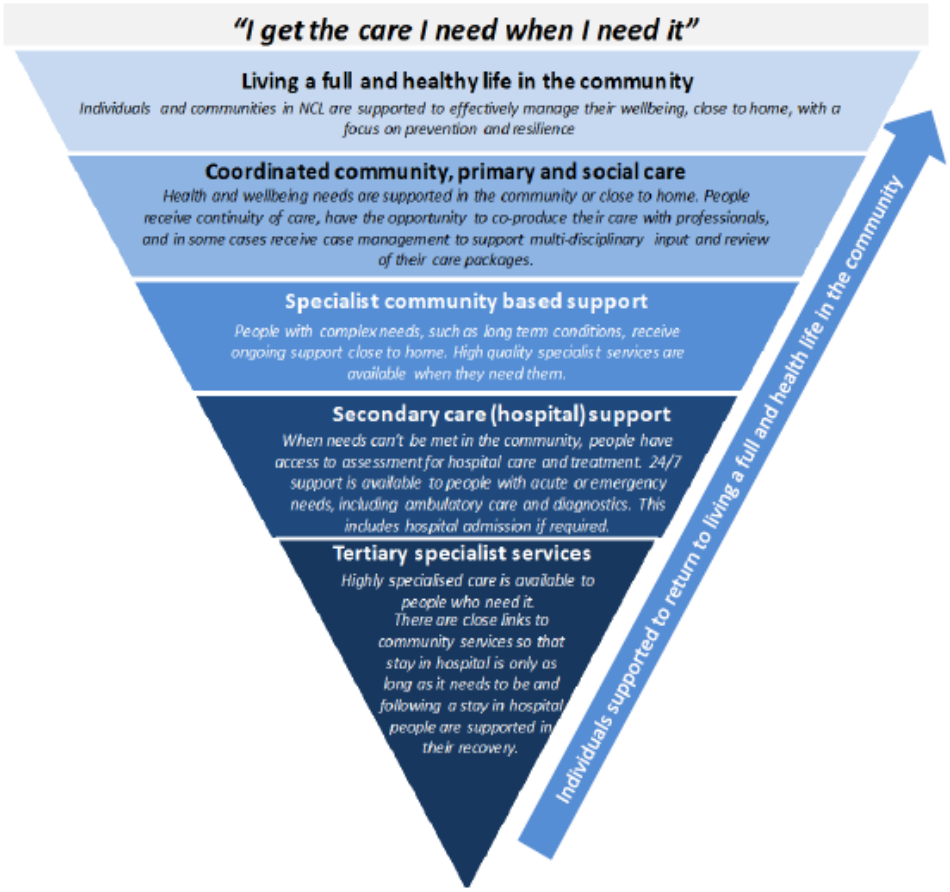


Figure 2: NCL Care Model

Delivering the plans outlined in our STP will result in improved outcomes and experience for our local population, increased quality of services and significant savings.

NCL's vision is to be a place with the best possible health and wellbeing, where no-one gets left behind.

The STP transformation programme has four fundamental aspects:

1. **Prevention:** We will increase our efforts on prevention and early intervention to improve health and wellbeing outcomes for our whole population.
2. **Service transformation:** To meet the changing needs of our population we will transform the way that we deliver services.
3. **Productivity:** We will focus on identifying areas to drive down unit costs, remove unnecessary costs and achieve efficiencies, including working together across organisations to identify opportunities to deliver better productivity at scale.
4. **Enablers:** We will build capacity in digital, workforce, estates and new commissioning and delivery models to enable transformation.

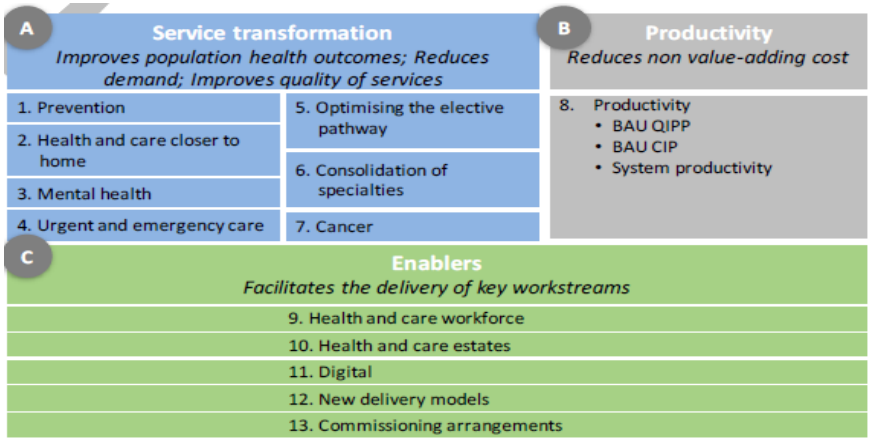


Figure 3: STP workstreams

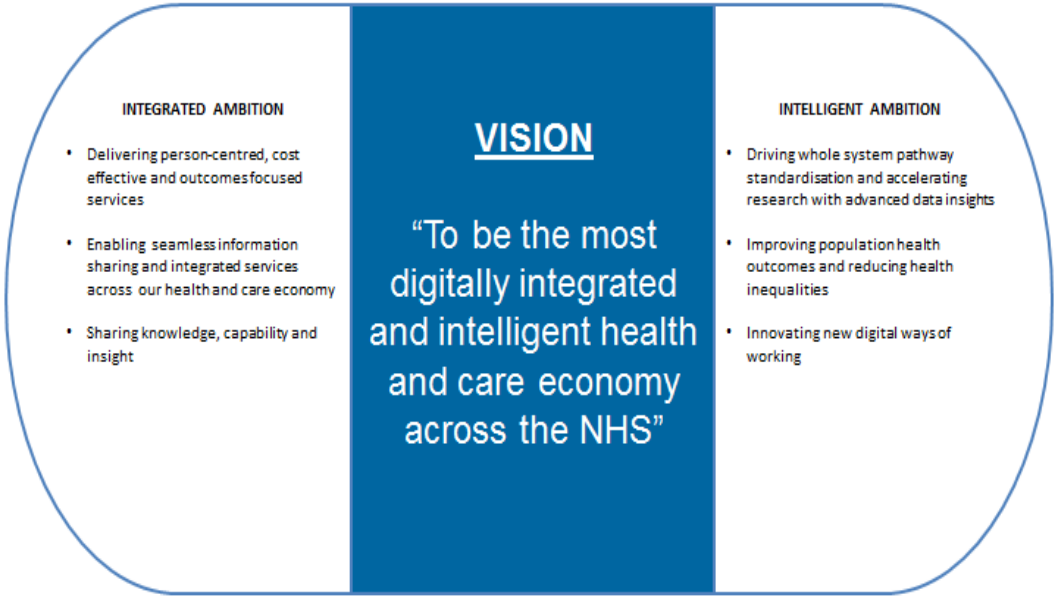
5 The digital vision and ambition for North Central London

NCL has collectively agreed a vision "To be the most digitally integrated and intelligent health and care economy across the NHS."

We will use digital technologies and information to deliver proactive, predictive, participatory, person-centred care for the population we serve

We will prioritise and increase pace of appropriate digital technology adoption within our organisations, realigning the demand on our services by reducing the emphasis on traditional face to face care models

We will deliver person-centred, cost effective and outcome focused services



Five digital themes underpin our vision and ambition.

1. **Digitally activated population**
2. **Connected care**
3. **Insights driven health system**
4. **Digitally enabled workforce**
5. **Sustainable care**

We will explore new digital alternatives that will transform our services, with the aim of moving care closer to home, enabling virtual consultations and providing our patients with the information and resources to self-manage effectively, facilitating co-ordinated and effective out of hospital care

We will utilise opportunities for real time, fully interoperable information exchanges to provide new, flexible and responsive digital services that deliver integrated, proactive care that improves outcomes for our patients

Digitally activated population

- Provide our citizens with the ability to transact with healthcare services digitally
- Facilitate remote and virtual consultations and therapies
- Share information which is personalised and relevant to the individual
- Equip our citizens with tools which empower them to stay healthy
- Use technology to empower our patients to take a more active role in managing their own long term conditions in partnership with their health and care professionals
- Ensure patient preferences are respected, shared appropriately and acted upon
- Co-design with our citizens

By 2020 our citizens will:

- Have secure access to health and social care services online
- Book appointments and order repeat prescriptions online
- Be supported to navigate to the services they need
- Have access to a personalised digital care plan within a Person Health Record
- Consult with care professionals using email, Skype or other online tools
- Use their choice of device or app to access information and manage their own conditions
- Have access to information which helps them manage their own long term conditions
- Be supported by a network of digital champions to ensure those who are less comfortable using digital technologies are not disadvantaged
- Know how we are using their information, why we need to share it with others, who has access to it and what safeguards we have put in place to keep it secure
- Control who can see or use their health and care information

Connected Care

- Facilitate care delivery closer to home in the most appropriate facility for a person's needs
- Ensure health and care professionals can access up to date, accurate and complete information
- Share information seamlessly across health and social care
- Create and share care records and plans that enable integrated care delivery across organisations
- Move from paper-based to fully digital care processes within provider organisations
- Track patient pathways across the whole system
- Work with other STP footprints in London to "connect the capital"
- Adopt nationally recommended interoperability standards

By 2020:

- Health and care professionals will have access to the information they need to deliver care safely, wherever they are working, at any time of day or night
- Professionals across all care settings will have access to an integrated digital care record
- Patients will not need to tell their story repeatedly
- Crisis and end of life care plans will be available to the Integrated Urgent Care Service
- Care Closer to Home Integrated Networks will use case management tools to coordinate care for people with long term conditions or complex needs
- Providers will use electronic health records to capture information digitally at the point of care
- Transfer of care summaries will no longer be received on paper
- Medications will be prescribed digitally
- Decision support tools will be available to make care safer
- Documents and images will be available to providers in other STP footprints via a London Health Information Exchange
- Multidisciplinary teams will track cancer patient journeys across the whole system
- We will adopt information and messaging standards that support information sharing and will ensure any applications we procure meet these standards

Insights driven healthcare system

- Promote a data driven culture across NCL and a cultural shift from reactive response to retrospective information to a proactive approach to predictive data
- Diagnose long term conditions earlier
- Proactively manage patients with established disease
- Deliver whole systems intelligence so the needs of our entire population can be predicted and met
- Develop a learning health system for NCL to ensure continual quality improvement and rapid implementation of actionable insights into clinical care
- Harness data from the Internet of Things
- Work with social care colleagues to deploy new and emerging technologies to promote independent living

By 2020 we will:

- Use data to improve population health outcomes and reduce health inequalities
- Identify populations at risk of developing one or more long term conditions
- Establish registries of people with long term conditions, including multiple morbidities, to facilitate proactive management
- Link health and social care data to manage demand across the system and improve outcomes
- Use data better to understand the impact of wider determinants, such as poverty, housing, education and employment, on our citizens' health and wellbeing
- Monitor health outcomes and treatment effectiveness to enable value based commissioning
- Identify and manage variation in care pathways across NCL
- Use predictive modelling to identify needs earlier within our local population and optimise whole system capacity and demand management
- Support the acceleration of precision medicine through collaborations with Higher Education Institutes who have expertise in advanced analytics and bioinformatics
- Establish academic and industry collaborations to drive innovation and keep up to date with international digital trends in healthcare and other industry sectors
- Share knowledge, capability and insights

Digitally enabled workforce

- Ensure health and care professionals can work at any site, have access to the clinical applications they need and can collaborate effectively
- Equip our multidisciplinary workforce with technology so they can operate as a virtual and mobile team delivering care closer to home
- Provide shared online learning resources so that our clinical workforce know how to use clinical applications safely and effectively
- Identify digital champions who will engage, encourage and support colleagues
- Promote attainment of a common set of competences by all clinical informatics staff

By 2020:

- Health and care professionals will be able to connect to a corporate Wi-Fi from all health and social care locations
- Health and care professionals will have access to the clinical applications they need from any PC or mobile device across NCL
- Our workforce will have access to relevant clinical applications from a patient's home or other community setting
- Our workforce will communicate and collaborate using secure email, shared calendars, instant messaging, videoconferencing and shared telephony solutions
- User experience will be enhanced by state of the art end user technology
- Our workforce will have shared online access to training material for clinical and corporate systems
- Each NHS organisation will have appointed a Chief Clinical Information Officer, supported by a wider network of clinical informatics champions and engagement leads
- We will support training and accreditation of our CCIOs through links to the Digital Academy and Faculty of Medical Informatics

Sustainable care

- Reduce unit costs through purchasing and managing services at scale
- Adopt a more innovative approach to delivering digital services for NCL, learning from other industry sectors who have delivered digital transformation at scale
- Develop a unified approach to networks and infrastructure
- Rationalise clinical applications, reducing diversity across the sector
- Reduce duplication of projects and siloed working
- Learn lessons from successes and failures

By 2020:

- We will work in a new way as a whole system, sharing risk, resources and reward
- We will increase efficiency and productivity and will consolidate where appropriate
- We will commit to doing things once and doing them together well, where this benefits our population
- We will implement innovative new ways of delivering digital services across NCL, reducing cost, duplication and variation
- We will create an application strategy which reduces system diversity across care sectors
- All local digital strategies will be aligned to the NCL digital roadmap

6 NCL digital maturity baseline

Digital is recognised to be a key enabling workstream for our STP. However, there are a number of challenges to overcome to progress from our current baseline position of digital maturity to one which enables whole system transformational change.

Health and wellbeing: Prevention

- We do not create NCL population datasets to support prevention and outcome based population health management
- We are not able to understand the needs and demands across the whole system as we do not have linked health and social care datasets across NCL
- We need to better understand the impact of wider determinants, such as poverty, housing, education and employment, on our citizens' health and wellbeing
- There is no systematic monitoring of patients' risk factors and interventions to enable action to be taken across the different health and care providers in NCL
- The skill sets required to create linked, validated datasets and undertake more complex analytics are generally in short supply across NCL but are currently dispersed across Public Health, CSU, CCGs and providers.
- We do not take advantage of the internationally acclaimed informatics academic expertise within our local Higher Educational Institutions and the Farr Institute who could help us achieve our ambitions
- Despite the increasing trend in the consumer market for wearable devices and mobile apps which collect a wealth of data we do not currently have a platform to link these data to health and care data so we can analyse the impact of intervention
- There is differing ability to access and take advantage of technologies due to low health and IT literacy across NCL
- Knowledge sharing across the system to identify which technologies and apps offer the most benefits to our population with one or more long term conditions is limited

Care and quality: Service transformation

- Clinical information remains predominantly siloed in applications within separate organisations
- Primary care data collection is significantly more developed than other parts of our health system but the quality of data and information still varies between practices
- The level of digital maturity of secondary care provider organisations across NCL is variable, with the majority scoring below the national average for digital capabilities in the national digital maturity assessment
- Local authorities mainly have stand-alone systems with limited ability to digitally share information with providers or with other boroughs
- Health and care information sharing across NCL is immature and patchy and there is still a dependence on paper-based processes
- Although progress has been made creating integrated digital care records for Camden and Islington CCG residents there is still no single source of truth for an NCL citizen
- Adoption of national information and messaging standards to facilitate interoperability is below the national average

- There are a multitude of data sharing agreements in existence and no consistent approach across NCL to information sharing or consent
- It is not possible to track patient journeys along whole pathways of care across organisations and ensure interventions are carried out in appropriate timescales
- Uptake of existing national applications, such as Summary Care Record, eReferral System, Child Protection Information System and Patient Online is variable and lower than many other parts of the country
- The number of patients digitally accessing their own GP records remains low
- Digital strategies are organisation rather than person-centric
- Each organisation is independently considering how it can improve its digital transaction offer to NCL citizens without identifying how to do this at scale for the entire population
- Digital innovations remain restricted to individual organisations, with limited shared learning or collaboration
- Our workforce is not enabled to be mobile or to easily access information at the point of care outside of their employing organisation
- There is significant diversity of clinical applications across the provider landscape which is challenging for clinical teams working across number of organisations and who are often offered limited training on those systems with which they are not familiar
- There is limited focus on learning from success stories in other geographies, both national and international, and horizon scanning to identify trends in digital innovation both in healthcare and other industry sectors

Financial gap: Productivity

- Organisations predominantly procure and manage their own infrastructure and applications, with variability in contractual and service level agreements for the same systems
- CCGs have procured separate integrated digital care record solutions, which support integrated care management within their local geography, but lead to duplication of effort across NCL and increased costs to providers who must develop interfaces to share data with each
- Providers have their own separate eRostering systems which do not support efficient resource management across the whole system
- There are multiple point to point interfaces created to meet the data demands of organisational focused projects, resulting in replication of effort and cost
- There is significant diversity in the application and infrastructure landscape
- There is no whole system governance structure to ensure local digital strategies and procurement of technologies align to a common set of agreed principles and standards
- There is no established digital leadership and delivery team who have the delegated authority to take forward the programme of work required to enable digital transformation across NCL for the benefit of the entire population

6.1 Digital maturity assessment

NCL providers completed a self-assessment of their current digital maturity status at the end of 2015. Whittington Health completed two separate assessments for its acute and community services, therefore there are 13 providers represented on the chart. The results are shown in Figures 4.

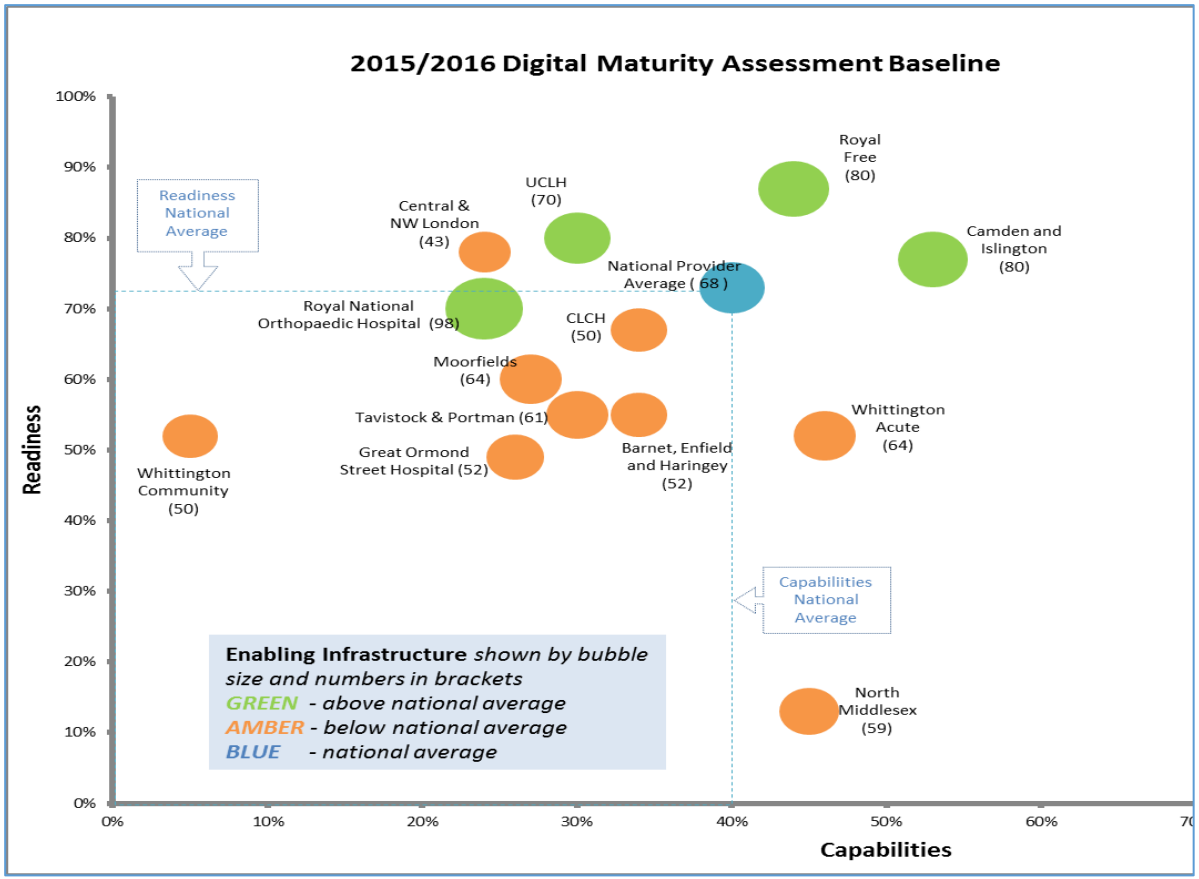


Figure 4: Provider Digital Maturity Assessments

Readiness

Nine providers, including all four specialist providers, scored below the national average with North Middlesex being a particular outlier. North Middlesex will soon align more closely with Royal Free London. Seven providers scored below average for four of the five readiness domains assessed. Many of the providers who scored poorly in the leadership domain did not have a Chief Clinical Information Officer (CCIO) in post at the time the assessment was carried out, however some of these have now appointed clinicians to these roles.

Providers across NCL scored particularly poorly in the domains of resourcing, governance and information governance compared to the national average, suggesting there may be opportunities for shared approaches to address some of these challenges.

Capabilities

Nine providers scored below the national average for digital capabilities, with seven scoring below average for four or more of the seven domains assessed. Electronic health records are more mature in community and mental health providers than acute and specialist providers. The low scores reflect the low prevalence of ordering/results reporting and ePrescribing capabilities in community, mental health and some specialist provider Trusts, even though these capabilities are rarely applicable or are provided by alternative routes.

All acute and specialist providers were below the national average for the records, assessments and plans capability. Maturity in community and mental health providers is better, although still variable.

- Achievement of the transfer of care capability is variable across NCL, with scores ranging from 12% at GOSH to 79% at Camden and Islington NHS Foundation Trust.
- Orders and results management is generally good in the acute sector but poorer in community, mental health and some specialist providers. This reflects the fact that most of these organisations order very few diagnostic tests and diagnostic services are usually provided by one of the acute providers.
- Most of the acute providers are in the process of implementing ePrescribing solutions and are at varying degrees of roll-out, reflecting the variation in scores for this capability. ePrescribing scores are low in community, mental health and some specialist providers as medications and fluids are not routinely prescribed, therefore ePrescribing capability is not required.
- The majority of providers have limited decision support in place and 5 providers do not have any projects relating to remote and assistive care. Asset and resource optimisation is also highly variable across NCL, with scores ranging from 0% to 60%.
- Current compliance with standards is generally low, with eight providers scoring lower than the national average

Enabling infrastructure

Ten providers scored below the national average for enabling infrastructure.

6.2 Key achievements

As NCL organisations have not worked together on any digital programmes there are no key achievements at whole system level. Three of the achievements by individual CCGs or providers are summarised below.

6.2.1 I:HUBs

Islington CCG is one of a small number of national sites piloting extended access to primary care. There are six practices used as hubs, which offer access to primary care from 18:30-20:00 Monday to Friday and 08:00-20:00 Saturday and Sunday. A patient's home GP practice books a hub appointment and gains patient consent for the hub GP to access the patient's record via EMIS Community. Currently there is full read view of the record but write back is undertaken via a note attached to the record with notification to the home practice. Third party applications are not yet supported. Full read and write access is intended the future.

6.2.2 Centre of Global Digital Excellence

The Royal Free has been chosen as one of the wave 1 Centres of Global Digital Excellence and proposes to focus on six main areas of activity during the next two years.

- Completion of Cerner Millennium roll out across all sites
- Working with Intermountain to reduce clinical variability across care pathways and digitise the optimum pathways in Cerner's EHR.
- Procurement of HealtheIntent population health platform to enable analytics
- Development of a number of mobile apps with a third party supplier to identify patients at risk of deterioration and enable early intervention
- Knowledge acquisition and sharing across the wider digital footprint
- Supporting connectivity and information exchange across NCL

6.2.3 CIDR

Camden's Integrated Digital Care Record system (CIDR) currently enables over 1200 care professionals to access to health and care data from across the Camden provider spectrum. This includes mental health data from Camden and Islington NHS Foundation Trust, community health data from Central and North West London NHS Foundation Trust, pathology results and Patient Administration System data from The Royal Free London NHS Foundation Trust and University College London Hospitals NHS Foundation Trust, adult social care data from Camden Social Services and GP data from Camden practices. Single sign-on through EMIS Web enhances accessibility and integration with Cerner Millennium and Servelec RiO is in development.

7 NCL Digital Strategy

Although individual organisations have collaborated on digital projects, working collectively across all organisations remains a relatively new endeavour and we continue to build the trust required to enable us to do so. This is reflected in a number of local achievements but no current whole system projects.

We are proposing a model that requires NCL to completely transform the way digital services are currently delivered.

The system is agnostic of potential future Accountable Care Partnerships but assumes the maximum benefit to the health and care system would be achieved by working together. This is evidenced through the benefits achieved by international leaders in population health management enabled by digital technology and data.

Our plans are based on developing an NCL Population Health Management Model which includes the technology, data and analytics required to manage the health and wellbeing of the NCL population, underpinned by a move from paper to digital care processes within provider organisations.

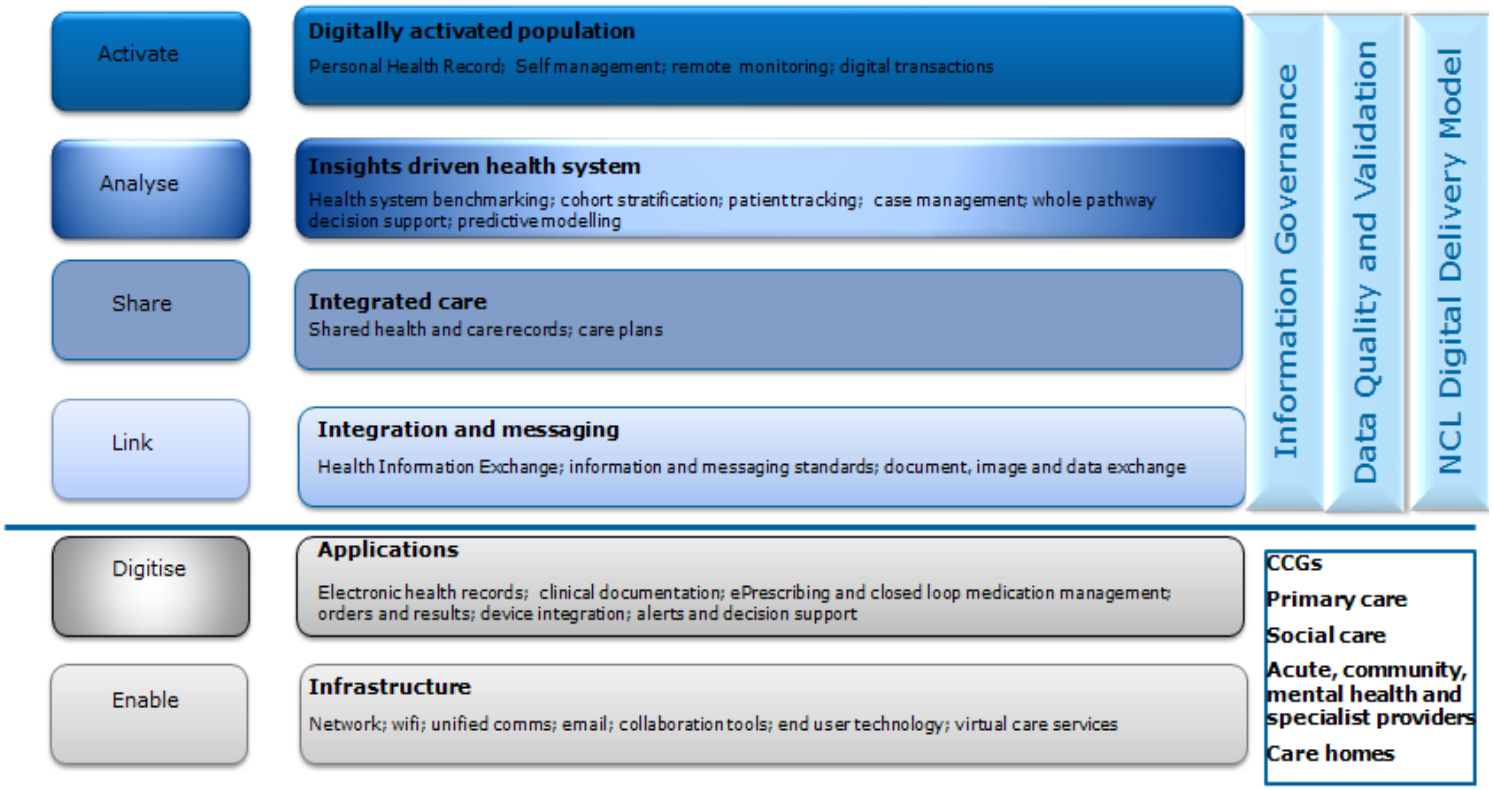


Figure 5: NCL Population Health Management Model

This supports our STP prevention, service transformation and productivity objectives and will enable us to meet the national mandate of operating paper free at the point of care. Through this model we will move from a landscape of diversity and variation to one of shared principles, consolidation and joint working for the benefit of the population.

The 6 workstreams that make up our digital strategy are:

Activate: We will provide our citizens with the ability to transact with healthcare services digitally, giving them access to their personal health and care information and equipping them with tools which enable them to actively manage their own health and wellbeing.

Analyse: We will use data collected at the point of care to identify populations at risk, to monitor the effectiveness of interventions on patients with established disease and deliver whole systems intelligence so the needs of our entire population can be predicted and met

Link: We will enable information to be shared across health and care systems seamlessly

Share: We will create and share care records and plans that enable integrated care delivery across organisations

Digitise: We will support our providers to move away from paper to fully digital care processes, including documentation, ordering, prescribing and to implement decision support tools that help to make care safer.

Enable: We will provide infrastructure which enables our care professionals to work and communicate effectively, anywhere at any time, and facilitate new and enhanced models of care closer to home

The Population Health Management Model consists of six individual building blocks. The bottom two blocks provide the foundations and are predominantly within the control of local organisations. However, opportunities for consolidation or collective delivery across NCL should be considered.
It is proposed that projects in the top four blocks are undertaken collectively for the benefit of the NCL population

These focus on:

- enabling document, image and data exchange across NCL and beyond
- roll out of an integrated digital care record to support cross-sector care pathway management
- implementation of a population health informatics platform
- creating a personal health record and enabling citizens to use a range of digital technologies

Achievement of this NCL Population Health Management Model is predicated on having an NCL digital leadership team to lead and deliver this large and complex whole-system transformation programme. Resources to support information governance, business transformation, data quality assurance, data validation and analysis will be required.

7.1 Activate: Digitally activated population

Current Initiatives	Planned Initiatives
London wide • London Digital Programme to create a citizen portal where citizens can view local digital records using a single log-in and trusted identity; can register their information sharing preferences allowing these preferences to be viewed and used by health and care professionals to enable/disable different types of data processing; can access an extended range of digital services via a trusted community of connected apps **Individual organisations** • Increase utilisation rates of Patient Online across NCL so that patients can access their GP record, book GP appointments on line and order repeat prescriptions • Person Health Record is being developed as part of Islington CCG's Care My Way programme which will enable citizens to access information in Islington's Integrated Digital Care Record (IDCR) • Patient portal proposed by Camden CCG as part of Camden Integrated Digital Care(CIDR) programme • Patient portals being explored separately by several Trusts • Various self-care / remote monitoring pilots across the STP but these are not co-ordinated	• Hold "show and tell" workshops to identify all current separate patient portal and person health record plans

Strategic Overview

There are currently no coordinated digital patient initiatives being carried out across NCL. Citizens are potentially faced with having to access multiple systems to view different aspects of their own health and care information. There are a number of solutions being implemented, including Patient Online services to enable access to the GP held record, Person Health Records, provider patient portals, specialty-specific digital records and a London citizen portal. There have been recent initial discussions between Camden and Islington CCG to explore how a common solution for a Person Health Record might be achieved. Similarly there is a need to bring together all providers considering implementation of separate patient portals to identify whether there are opportunities to consolidate approach.

During the next few months we will be undertaking work to agree a collective approach which is in the best interest of our citizens.

We will also engage with key stakeholders on how we scale up and collaborate on the various self-care / remote monitoring initiatives. Whilst there are a few local initiatives in progress to try and deliver services through remote monitoring, or telecare, these are small pilots with short term funding therefore it is hard to scale up and resource appropriately.

There are currently no collective projects in progress to drive the channel shift required for new and sustainable ways of working. This must change and opportunities to address this will be considered during the next phase of scoping and planning.

7.2 Analyse: Insights driven healthcare system

Current Initiatives	Planned Initiatives
Individual organisations • NEL CSU supports data analysis for four of the five CCGs • Camden CCG has an in-house analytics team delivering insights about the local population using Tableau • Camden and Islington's Public Health Intelligence Team is supporting the population health segmentation for the Wellbeing Programme in Haringey and Islington • Providers have their own Information Services Teams to manage reporting and business intelligence	**NCL** • Joint digital/Public Health proposal to create strategic partnership with commercial partner to develop interactive dashboards that support population health management • Establish Advisory Board **Individual organisations** • Royal Free plan to implement Cerner's HealtheIntent population health informatics platform to support analytics for their Trust and acute provider chain vanguard • Islington CCG plan to work with Medeanalytics to produce commissioning insights

Strategic Overview

It is not currently possible to monitor variation across whole patient pathways, to identify patients at risk of developing a long term condition or to track and monitor cohorts of patients with similar conditions across NCL. Informatics expertise is dispersed across several organisations. There is significant duplication of effort requesting, linking and analysing data for similar purposes across NCL and limited sharing of insights.

Our NCL Population Heath Management Model proposes a fundamental change to the current approach. We are proposing procurement and implementation of a cloud hosted, vendor agnostic big data platform with integration of data captured at the point of care to create a normalised, semantically mapped health and social care dataset for NCL citizens which can be analysed for whole system insights, to create population registries and to monitor entire patient pathways, as well as providing data for strategic planning, needs assessment and evaluations. This approach supports the ambitions of a number of our STP workstreams, specifically earlier diagnosis and proactive case management of people with long term conditions, including hypertension, diabetes and atrial fibrillation in Primary Care. It will also ensure the Care Closer to Home Integrated Networks are focused on managing populations who will benefit the most and help to manage the increasing demand on adult social care.

This approach also has the advantage of being able to support research and innovation through syndication of anonymised datasets to our local academic

institutions. It will enable us to create an ecosystem of academic and commercial partners who can help to develop new algorithms and create data insights, supporting our ambition to become a learning health system and a national leader in population health management. Through this approach we would hope to attract inward investment through grants and innovation awards.

This model has been demonstrated to deliver significant whole system benefits and cash savings across similar sized populations internationally. Adopting a similar model to the Centres of Global Digital Excellence, who are partnered with international centres who have achieved benefits through implementation of electronic health record systems, we would also hope to learn lessons from international sites who have implemented a population health informatics platform through a strategic partnership arrangement with a global leader in population health management.

While we recognise that we are less mature in terms of current collaborative digital working relationships than many other STPs we think we have a unique opportunity to demonstrate how we can advance rapidly through embracing a data driven, population-based approach which we deliver collectively.

This will be a joint Digital and Public Health led initiative, so that data insights from linked health and social care data can be gained from the start. We have ambitions to form a strategic partnership with a software supplier to co-develop a set of interactive dashboards for a wide range of users across the health and care system. We propose to establish an Advisory Board to help drive our plans forward. We have spoken with the Director of Data Science at NHS Digital and the Director of Farr Scotland who have offered their support.

7.3 Share: Integrated and connected care

Current Initiatives	Planned Initiatives

London wide
• Integrated Urgent Care programme to share care plans with NHS 111, Out of Hours, London Ambulance Service and providers working in urgent and emergency care settings
 	
Individual organisations
• Camden and Islington CCGs have both invested in technologies to deliver integrated digital health and care records. Camden's IDCR currently enables over 1200 care professionals to access health and care data via a single sign on capability through EMIS across the Camden provider spectrum including:
  ○ GP Data from Camden GPs
  ○ Mental health data from Camden & Islington NHS Foundation Trust
  ○ Acute Data –admissions, discharges, transfers and Pathology results from Royal Free and UCLH
  ○ Community health data from CNWL
  ○ Adult social care data from London Borough of Camden
• The CIDR development roadmap includes incorporation of additional datasets from Out of Hours Service, Radiology reports from Royal Free and UCLH, clinical documents from providers, child health data, creation of a patient portal, shared care plans and medicines reconciliation tools
• Islington's IDCR is currently in the final stages of development with roll out planned from the end of November 2016.Once launched health and care professionals across the Islington Provider spectrum will have access to:
  ○ GP Data from Islington GPs
	NCL
	• Establish an NCL IDCR programme board, which brings together stakeholders involved in both Camden and Islington's programmes, to ensure alignment going forward and to identify how data can be shared between the two IDCRs

○ Mental health data from Camden & Islington NHS Foundation Trust ○ Social care data from London Borough of Islington ○ Acute and community datasets from The Whittington • Islington's IDCR development roadmap includes incorporation of acute datasets (ADTs, Pathology results, Radiology reports, prescribing, child health and maternity data from Royal Free and UCLH) • Barnet Enfield and Haringey Mental Health Trust is piloting access to GP information via the Medical Interoperability Gateway • Discharge summaries and some other clinical documents are shared with some CCGs via Docman but there is not a consistent approach across NCL • Camden and Islington NHS Foundation Trust is currently working on bi-directional document sharing with GP practices	

Strategic Overview

Camden and Islington CCG have established separate IDCR programmes. One of the challenges with this approach for some NCL providers has been the need to engage in both projects with inconsistent dataset requirements, patient consent models and data sharing agreements. This has resulted in duplication of effort and cost. Although both projects will have single sign on through GP IT systems and some provider EHR systems it will not be possible for all providers to access both these IDCRs through single sign on and clinical users will have to access via separate log ins. In addition North West London is also developing an IDCR and some providers have also been asked to participate in this IDCR project, which will result in a third IDCR log in.

Through discussions during the development of this LDR Camden and Islington CCGs have agreed to come together and create a collaborative NCL IDCR programme and will explore how data can be shared between the two existing systems so that providers can develop interfaces to one or other system, rather than to both separately. The two projects have a very different approach to delivering an integrated care record. With this in mind, the aim is to ensure that with the gradual rollout across Barnet, Enfield and Haringey CCGs and the remaining providers, the two IDCR systems complement each other effectively.

It is important to maximise return on current investments therefore work will be undertaken to explore the best approach to interoperability and integration between the current systems, to identify how information from the local IDCR systems can best be shared with the London Health and Care Information Exchange and also more widely with patients across NCL in the near future.

The alignment of these two important projects demonstrates NCL's commitment to working together to deliver a person-centred approach to information sharing and also supports one of the STP ambitions of improving provider productivity by reducing duplication of effort and cost. Shared learning from both projects will enable NCL to adopt a more standardised approach to delivery and to progress at pace.

There is also a need to understand how the information included in IDCRs being created in NCL can be shared with organisations across London either via the London Health and Care Information Exchange or through STP information exchanges.

The London Health and Care Information Exchange (HCIE) will support exchange of end of life care plans as one of its first use cases. Similarly the Integrated Urgent Care programme is focusing on sharing crisis care and end of life care plans across urgent and emergency care settings and with NHS 111, Out of Hours and London Ambulance Service. Within NCL this process currently requires manual extraction and exchange of Special Patient Notes from GP systems and information is not available to providers in urgent and emergency care settings. There are plans to increase adoption and usage of Coordinate My Care across GP practices in NCL to facilitate exchange of end of life care plans through the London HCIE. Exchange of information with providers is dependent of EHR system interoperability, which is challenging.

7.4 Link: Integration and messaging to connect care

Current Initiatives	Planned Initiatives
London wide • A London Health and Care Information Exchange is being developed to facilitate document exchange between providers in London, based on a hub and spoke model using XDS standards **Individual organisations** • The Whittington has invested in a local Health Information Exchange (HIE) to enable them to create an integrated acute and community record for their clinical staff • CNWL is a pilot site for EMIS and SystmOne interoperability work stream, which will enable seamless exchange of clinical information between GPs and community/mental health providers • UCLH has partnered with an SME to develop an open source messaging platform that links to Spine mini services and will support exchange of ITK CDA clinical documents via Docman or MESH. If the initial proof of concept is successful there are opportunities to scale to other organisations and to continue development to meet other integration needs for NCL	**NCL** • Ask all partner organisations to agree to set of interoperability principles and standards • Develop enterprise architecture plan for NCL

Strategic Overview

Unlike other neighbouring STPs and digital footprints NCL does not have an agreed integration strategy or an integration platform that enables real time sharing of documents, images or data across NCL. The assumption has been that the IDCRs will address this gap, however, while the IDCRs provide a very useful summary of clinical information from different organisations they will not necessarily meet the needs of more specialist provider care. There is a particular challenge where patients are transferred between providers, such as for cancer care, as the majority of clinical information is currently transferred on paper or via email and is not within scope for the IDCRs. The London Health and Care Information Exchange will eventually offer a solution, but will focus

initially only on document exchange for a limited number of use cases and therefore an alternative solution is required in the short to medium term to facilitate data exchange across NCL and to neighbouring STP footprints.

The current lack of interoperability between existing systems across providers and with social care has constrained the efficiency of new care models to date. The inability of systems to share care plans electronically - between clinicians and with patients and their carers - has limited their usefulness as a tool to manage integrated care.

7.4.1 Interoperability principles

We are proposing that all NCL organisations commit to adopting a common set of principles and standards that facilitate interoperability and which are aligned to national guidelines.

- Adoption of NHS Number as the primary identifier across all the systems and used as key identifier when information is exchanged. Systems will be integrated with Patient Demographic Services to retrieve and verify the demographics including the NHS Number associated with each record, or organisations will have plans to implement solutions which can be integrated with Patient Demographic Services
- The proposed National Record Locator (NRL) service would be used to locate and retrieve records where possible Engagement with the London Digital Programme will facilitate location and retrieval of records across the region via the London Record Locator Service
- Adoption of standards recommended by the national interoperability programme and London Digital Programme, including ITK for Transfer of Care, EPACCS for end of life care
- SNOMED will be used as the main clinical terminology
- DM+D will be used as the clinical vocabulary when exchanging medication messaging between systems
- Information exchange will be structured according to ITK standards, and contains coded information
- Using regional integration and information sharing platforms, such as the London Health and Care Information Exchange and their associated standards, to share information where national platforms are not available
- Adopting a common approach to delivering local integrated digital care record, eliminating duplication and enabling common information sharing structures and mechanisms

- Providing wider access to IDCRs and integrating IDCRs with each other through open APIs
- Access and integration of Summary Care Record with local care records should be extended across all care settings
- Explore open API development to enable information exchange with social care IT systems

7.4.2 Integration architecture

The architecture for sharing information between different care settings is dependent on interoperability solutions, either built locally or provided at regional and national level. The sharing of information across health provider has been through proprietary tools such as Docman or MIG. These tools would be replaced primarily by the following infrastructure:

1. Spine overseen by Digital Delivery Centre (DDC) at NHS Digital.
    - Extend or refine current systems to meet national interface standards
    - NCL has systems across different care settings which have interfaces with national systems such as e-referral services and spine (e.g. SCR, PDS, EPS2)
    - Adoption and usage of the national systems needs to be increased and the integration of the SCR with local care record extended
    - NHS e-Referral Service (some sites will not need to use this service as will have direct EMIS to SystmOne connectivity)

2. Interoperability Hub to enable information exchange between different care settings and IDCR implementations should be achievable through an intermediate system, such as the London HCIE or through spine provided infrastructure for transfer of care summaries

3. Infrastructure hosted by individual organisations or through local IDCR initiatives, which link health and social care

4. Sharing between health and social care will based on the London Adaptor project which allows the secure exchange of discharge summaries and notifications, or through the London HCIE

The selection of integration infrastructure would depend on each individual use case. A combination of different integration patterns / approaches would be used as follows:

- A messaging pattern (or Enterprise Service Bus) where information needs to be exchanged, which the majority of the existing providers already use for local integration or integration with other providers
- API pattern where information for each provider is provided for easier access and consumption by partners and other providers

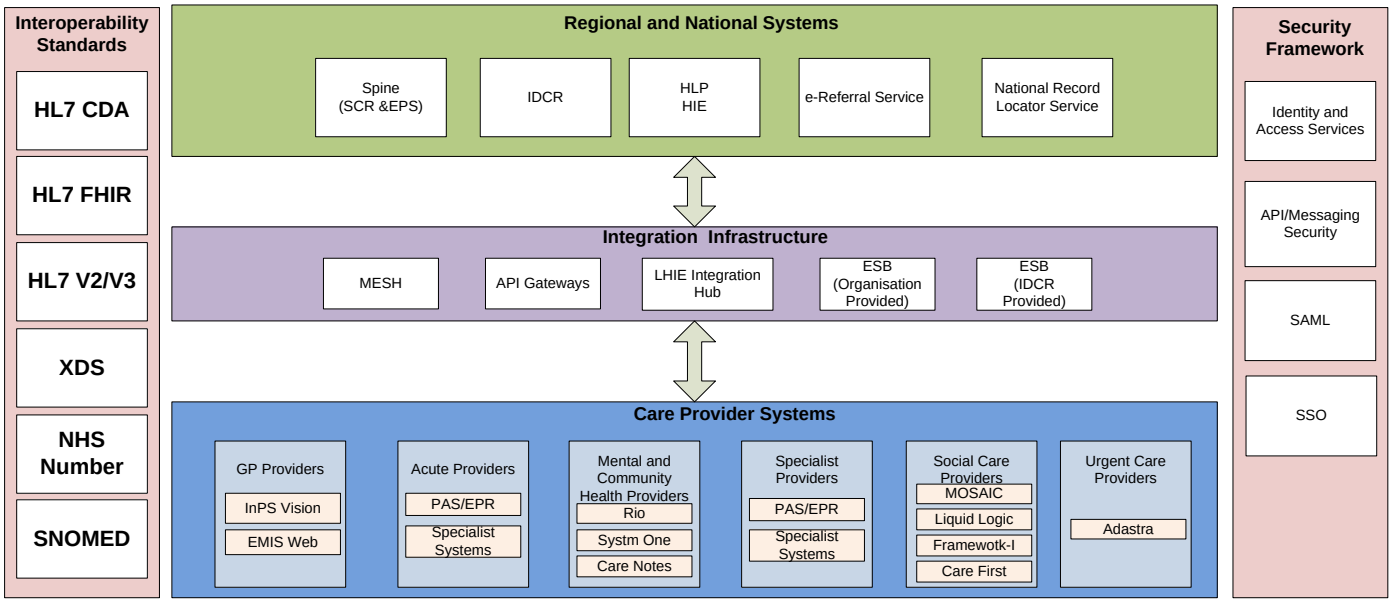


Figure 6: Integration architecture diagram

7.4.3 Standards

7.4.3.1 NHS Number adoption

NHS Number adoption is critical for information sharing to uniquely identify a patient. The level of NHS number adoption is outlined in Table 1 below with any provider gaps highlighted.

Provider Group	Adoption Levels	Gaps
Primary Care	High	None
Social Care	High	None
Mental Health	High	None
Community Care Providers	High	None
Specialist	High	None
Acute	High with gaps	UCLH and North Middlesex

Table 1: NHS number adoption levels

EMIS Web which is used by majority of the GP providers in the CCGs and uses the NHS number for all patient identification and information exchange. The NHS number is also used as the primary patient identifier for the two local integrated patient records in Camden and Islington.

The adoption of the NHS number for patient identification is at 96-100% levels across mental health, community care and specialist providers. Adoption of the NHS number is 96-100% for adult social care, but slightly lower for children's social care services. Most of the Local Authority systems are fully integrated with the national Patient Demographic Service.

NHS number adoption is lower in some acute providers. There are gaps in the following instances:

- ULCH does not currently operate a spine compliant PAS which prevents use of the Patient Demographic service but undertakes batch tracing. An EHR procurement has recently concluded and assuming the full business case is approved the EHR will be implemented Q4 2018, which will address this challenge

- North Middlesex was running a manual tracing exercise on the NHS number 4 times a week for their A&E system. Direct integration of System C with the Patient Demographic Service has recently commenced.

7.4.3.2 Clinical Coding Standards Adoption

The level of coding standards adoption is outlined in Table 2 below with any provider gaps highlighted.

	SNOMED		DM+D	
Provider Group	**Adoption**	**Gaps**	**Adoption**	**Gaps**
Primary Care	Low	GPs	Low	GPs
Mental Health	Not Applicable	N/A	Low	BEHMT
Community Care Providers	Low	CLCH and CNWL	Low	All
Specialist	Low	RNOH, Moorfields	Low	All
Acute	Low	All	Low	All

Table 2: Clinical coding standards adoption

The main reason for poor adoption is the absence of native support for these standards or lack of mapping tables in the core clinical systems implemented.

SNOMED

- EMIS Web and INPS Vision 365 are the two EHR systems used by GP providers in NCL. Full support for SNOMED implementation has been confirmed by both system suppliers and is expected to be in place by 2018
- SystmOne is used by CNWL and CLCH. TPP have committed to implementing SNOMED as part of their product roadmap during 2017
- Cerner Millennium EHR, implemented by The Royal Free, uses SNOMED as its main clinical terminology. It was initially used at the Royal Free to code clinical procedures but has proved to be challenging to adopt and staff have reverted to coding with ICD-10 and OPCS-4 at present
- The Open Eyes system at Moorfields uses SNOMED as its clinical terminology
- Other acute and specialist providers do not yet have definitive dates by which they will begin to use SNOMED-CT. UCLH and GOSH plan to implement as part of their EHR implementation plans in 2018
- Mapping tables can be implemented to match SNOMED codes to ICD-10 and OPCS. There are opportunities for NCL to consider doing this collectively

- NCL recognises that adoption of SNOMED-CT requires a significant change programme which needs to be undertaken across the whole health economy once IT systems have been enabled. Funding for a transformation team who would support this change programme across the local health system has been included in the Estates and Technology Transformation bid

DM+D

The Dictionary of Medicines and Devices must be used for as the clinical terminology for medicines and devices. RNOH is 100% compliant with dm+d.

- Most of the currently implemented provider EPMA systems use their own proprietary data dictionaries.
- Implementation of a mapping table between Multum and First Databank data dictionaries to dm+d is required.

7.4.3.3 GS1 Adoption

The uptake of GS1 across NCL providers is low.

- Moorfields, Royal Free and UCLH have active projects in place
- UCLH has implemented GS1 compliant patient wristbands across the Trust

Through future work programmes providers need to identify how they will improve the current rate of adoption of this standard and identify opportunities for joint collaboratives.

7.5 Digitise: Applications to enable paper free working at the point of care

Information sharing across NCL is dependent on each organisation having applications in place to collect information digitally at the point of care. The next section of the roadmap focuses predominantly on digital maturity across NCL providers aligned to the seven digital capability domains included in the national digital maturity assessment and the current state of adoption of standards.

7.5.1 Records, assessments and plans

Current Initiatives	Planned Initiatives

Individual organisations
• Digitisation of paper records
  ○ An NCL wide bid was submitted to ETTF to digitise large numbers of GP paper records enabling better use of estates
  ○ RNOH - Electronic document records management system implemented with scanning of paper case note
• Social Care services are digitised and Case Management systems are used to capture data in forms and to manage workflow. All forms can be outputted by PDF/Word if required.
• Implementation of electronic health records
  ○ BEHMT recently migrated from the national version of RiO so the Trust is now able to merge community and mental health services on the same system
  ○ Camden and Islington -Digitisation of clinical records using Carenotes and iAppsys
  ○ CLCH – continued roll out SystmOne
  ○ CNWL -SystmOne is being rolled out across all community and mental health services in central London
	NCL
	• There are no joint initiatives
	
	Individual organisations
	• Digitisation of paper records
	  ○ UCLH and Royal Free have plans to scan paper case notes
	  ○ GOSH – electronic document records management system
	  ○ Moorfields – electronic document records management system implementation 2017
	  ○ North Middlesex- Electronic document management system project with scanning of active patient records
	• Implementation of electronic health records
	  ○ GOSH is currently procuring an integrated electronic health record and clinical research platform, with an estimated implementation date of Q4 2018
	  ○ UCLH has recently undertaken a procurement exercise for a new integrated electronic health record and has identified Epic as preferred bidder, with an estimated implementation date of Q4 2018

○ Moorfields are currently procuring an Ophthalmic EMR ○ Royal Free – roll out of clinical documentation on Cerner Millenium • Digital data capture ○ GOSH – electronic clinical outcome forms ○ North Middlesex -Forms on iPads being rolled out to support Hospital at Home • Ease of access to clinical information ○ UCLH, GOSH have single sign on projects ○ RNOH - Clinical portal implemented; iPad apps developed to enable clinicians to access EDRM notes and PACS images; Digital bed board • Digital clinical observations ○ GOSH - Implementation of Nerve Centre • Sharing information outside organisation ○ The Whittington has implemented Graphnet to facilitate sharing of acute, community, GP and social care information and to create an integrated acute and community digital care record.	○ Moorfields is currently procuring an Ophthalmic EHR system

Strategic Overview

There are several providers who are progressing with plans to scan and digitise paper case notes and implement an electronic document management system so that current paper based records can be made accessible to care professionals both within their own organisations and beyond. For some this is a short term solution, prior to implementation of a full electronic health record. The majority of providers plan to use their EHRs for clinical assessments and documentations and a smaller number are implementing eForms as the method of capturing data at the point of care.

All GP practices use electronic health records, with the vast majority using the EMIS Web system and a small number of GP practices in Enfield and Haringey CCGs choosing to use Vision 365. Community and Mental Health Trusts have already implemented electronic health records, although there is diversity with Barnet Enfield and Haringey NHS Trust (BEHMHT) and The Whittington Community NHS Trust having implemented Servelec RiO. Central London Community Healthcare NHS Trust (CLCH) and Central North West London NHS Foundation Trust (CNWL) have implemented SystmOne. Camden and Islington NHS Foundation Trust (CIFT) and Tavistock and Portman NHS Foundation Trust have implemented Micromedex Carenotes. There is similar diversity across acute

and specialist providers. The Royal Free London NHS Foundation Trust (RFL) has implemented Cerner Millennium. Whittington Hospital NHS Trust (Acute) and North Middlesex University Hospital NHS Trust (NMUH) use System C Medway. University College Hospitals London NHS Foundation Trust (UCLH) currently uses CGI eCare Logic but has recently undertaken a procurement exercise for a new integrated EHR megasuite. Moorfields Eye Hospital NHS Foundation Trust (Moorfields) has been developing on open source Ophthalmology EHR, Open Eyes. The Royal National Orthopaedic Hospital NHS Trust (RNOH) has a best of breed approach to delivering its EHR, complemented by a clinical portal. Great Ormond Street Hospital for Children NHS Foundation Trust (GOSH) does not currently have an electronic health record but is currently in procurement for one.

Some providers, such as Tavistock and Portman, operate in a predominantly paper-free environment whereas acute providers, such as UCLH, still have a large dependency on paper-based processes. It is recognised there is a dependency on all providers implementing their own electronic health record systems before structured information can be seamlessly exchanged across NCL, therefore any delays to existing plans for UCLH to implement a new EHR are likely to have a significant influence on the wider health economy. There is less dependency on GOSH's EHR implementation plans as the hospital is a tertiary centre for specialist paediatric care.

Social Care use Case Management tools for digital data capture. Liquid Logic is used in Barnet and Islington and for Enfield children's services. Enfield use Care First to manage adult social care cases. Camden and Haringey Local Authorities use Framework-I and MOSAIC respectively.

7.5.2 Transfers of Care

Current Initiatives	Planned Initiatives
Individual organisations • Royal Free – web based referral portal • Royal Free - proof of concept to share transfer of care summaries with GP practices using EMIS using the CDA standard • UCLH has partnered with an SME to develop an open source messaging platform that links to Spine mini services and will support exchange of ITK CDA clinical documents via Docman or MESH • Islington Council uses London Adapter for hospital discharges from The Whittington	**NCL** • There are currently no joint initiatives **Individual organisations** • Increase adoption of national eReferral System

Strategic Overview

Referrals

There is currently variable use of the national eReferral system across NCL. All organisations are putting plans in place to meet the new national targets for eReferrals. It has also been fed back to the NHS Digital e Referral research team that the eReferral System does not support some of the current new referral pathways that have been implemented through local service transformation programmes, such as straight to diagnostics or MSK pathways.

Many providers still receive the majority of new referrals via email, phone or on paper as there are a large number of provider to provider referrals for specialist services. Tavistock and Portman can access some referrals via EMIS web, although the majority are received by email or on paper. The interoperability pilot being undertaken by CNWL and CLCH will enable referrals made by GPs using EMIS to be seamlessly viewed in the SystmOne EHR and managed digitally without the need to use a third party eReferral system.

Transfer of Care Summaries

There is no current consistent approach to management of discharge summaries across NCL. Some providers use NHS mail (BEHMHT, North Middlesex, CIFT) and others send discharge summaries to local CCGs via Docman (Royal Free, Moorfields, UCLH, Whittington). CNWL and CLCH will share discharge summaries directly from SystmOne to EMIS in the near future. There are still a large number of discharge summaries created on paper and sent by post from NCL providers, especially from those Trusts who manage a large number of patients from outside NCL. Although GOSH has a bespoke system to create electronic

discharge summaries it does not have a mechanism to send these digitally. The mechanism of sharing discharge summaries locally has been dependent on CCG preference. As not all CCGs across the country have implemented Docman it is not possible to use this as the sole mechanism for those providers who need to send discharge summaries outside NCL.

North Middlesex and GOSH have implemented the Academy of Medical Royal discharge summary headings, however feedback both from clinicians completing the templates, and GPs receiving the discharge summaries, has been mixed as it is time consuming to populate all the headings and GPs have provided feedback that they would prefer a shorter, more focused discharge summary which contains content relevant to them. No other providers have currently implementing the recommended headings, although most are exploring how to do this in the next 12 months.

No organisation is currently able to produce a discharge summary in CDA format which conforms to NHS Digital's Transfer of Care requirements, although the Royal Free has been piloting a solution. UCLH has undertaken a pilot project with NHS Digital to identify how to develop an ITK compliant open source solution which can be used to transform discharge summaries into the recommended headings and CDA structure so they can be exchanged with any GP across the country.

Several providers have implemented, or plan to implement, Vendor Neutral Archives to store documents and images in CDA and XDS format so that these can be more easily exchanged across the local health and care economy.

7.5.3 Orders and Results Management

Current Initiatives	Planned Initiatives
Individual organisations • NMUH - Implementation of System C order comms; Pathology system upgrade • Royal Free -extend diagnostic ordering to Primary Care • RNOH - Radiology Information System and PACS replacement • UCLH - Pathology order comms implementation in progress; PACS replacement; VNA	**NCL** • Review approach being taken to sharing diagnostic test results in other geographies across the country, such as diagnostic cloud (which could be achieved through a population health data platform), shared PACS, VNA to VNA document and image exchange

Strategic Overview

The majority of GPs across NCL are enabled to digitally order diagnostic tests, however the methods and systems used to support this vary.
The majority of acute providers are able to order laboratory and radiology tests digitally. Royal Free, North Middlesex and Whittington have implemented an order communication system. UCLH is currently implementing a Pathology order entry system as an interim solution pending full EHR implementation. This interim solution will not support paperless working as a paper request form will still be printed. Radiology tests are requested digitally on eCare Logic. GOSH clinicians can use their Pathology system to place an order and print a request form. Implementation of paperless requesting for both GOSH and UCLH is dependent on implementation of an EHR in 2018.
Those providers who have implemented an order comms system are also beginning to rollout digital ordering of a variety of other diagnostic tests.
Mental Health and community providers do not order enough Pathology or Radiology tests to justify implementation of their own order comms systems. Camden and Islington and CLCH have an agreement to order any necessary tests via Whittington.

Pathology and Radiology results are available to view digitally in all acute and specialist provider organisations, either via an order comms system, Pathology system, PACS or clinical portal. There is no consistent method of GPs across NCL accessing results and a large number of results are received via Docman or by post. Some laboratory results are also available to Camden GPs via the IDCR.

Images are currently exchanged between providers via the Image Exchange Portal. Several providers have plans to implement vendor neutral archives which will facilitate document and image exchange in CDA and XDS format, which will support information exchange across London via the London Health Information Exchange.

Diagnostic test results will be shared more widely across NCL via the IDCR programmes of work. There are also future plans to learn how other footprints are sharing diagnostic test results, such as NW London, who have implemented a diagnostic cloud.

7.5.4 Medicines Management and Optimisation

Current Initiatives	Planned Initiatives
Individual organisations • Chemotherapy prescribing • UCLH – Electronic Prescribing and Medicines Administration (EPMA) roll out • BEHMHT – piloting Servelec EPMA	**Individual organisations** • CNWL -pharmacy system upgrade • RFL – implement EPMA this year • Whittington -upgrade JAC EPMA system

Strategic Overview

The capability to prescribe digitally in Primary Care already exists but usage is variable.

Whittington, UCLH and GOSH have implemented electronic prescribing and medicines administration systems. UCLH has recently completed implementation of CSC's Medchart solution across all inpatient areas. The Royal Free has plans to implement Cerner's EPMA solution in ICU later this year with subsequent roll out across all inpatient areas. BEHMHT are undertaking a pilot project to implement RiO EPMA. RNOH started to pilot TPP's EPMA solution but identified a challenge as it was not able to be used on the Trust's mobile devices and the project has therefore been put on hold. Moorfields has basic ePrescribing in place but does not digitally record medicines administration. North Middlesex and CNWL are currently exploring options.
Tavistock and Portman, Camden and Islington and CLCH cannot justify implementation of an EPMA system as there are very few medicines prescribed by these organisations.

All acute and specialist Trusts managing cancer patients are prescribing and administering chemotherapy digitally using Chemocare.

7.5.5 Decision Support

Current Initiatives	Planned Initiatives
Individual organisations • Royal Free - Developing device independent mobile apps e.g acute kidney injury • GP website	**Individual organisations** • Royal Free -planning to digitise best practice clinical pathways within Cerner EHR system

Strategic Overview

Camden has recently launched a new GP Website to support clinicians that includes decision making, standardising pathways and referring patients to services throughout 2016/17. The aim is to roll this out to all GPs within NCL.
Basic decision support has been activated as part of order comms and EPMA system deployments by individual providers e.g. duplicate test alerts, drug- drug interaction warnings. Flags have been implemented in provider EHRs to alert users that a patient has an end of life care plan in Coordinate My Care or to notify of a learning disability. The Royal Free has been working with a third party to develop apps which analyse data from multiple sources and alert clinicians about patients at risk e.g. acute kidney injury. They are also working with Intermountain to standardise clinical pathways of care with providers who are part of the vanguard chain, and then plan to digitise these in the relevant electronic health record systems to reduce variation.

NCL CCGs and providers have committed to working as part of the London Digital Programme and use the London HCIE to facilitate message exchange across a wider geography. There are no current applications in place to support near real time messaging across NCL.

7.5.6 Remote and Assistive Care

Current Initiatives	Planned Initiatives
Individual organisations • CIFT, Moorfields, NMUH, Royal Free, Tavistock and Portman, UCLH are all piloting , or planning to pilot, remote consultations via skype clinics • CLCH - delivery of a mobile working programme which includes video conferencing	**NCL** • Workshops to share learning from multiple pilot projects **Individual organisations** • Remote consultations via Skype or secure email • Videoconferencing solutions to support MDT meetings

Strategic Overview

The majority of providers plan to use NHS mail 2, Office 365 and Skype for business to offer remote consultations with patients. There are several pilot projects in progress across acute, mental health, community and specialist services. The learning from these will be shared to enable rapid implementation of successful initiatives.
GOSH and Royal Free currently use high resolution videoconferencing for multidisciplinary team meetings and morbidity and mortality meetings across a number of different organisations and geographical sites.

Telephone triage for NCL GPs will be rolled out during 2017/18.

7.5.7 Asset and Resource Management

Current Initiatives	Planned Initiatives
Individual organisations • UCLH procuring eRostering system • UCLH has recently selected preferred bidder to undertake real time tracking of assets and resources to support implementation of a coordination centre for the Trust	**Individual organisations** • Royal Free and Moorfields are planning on implementing RFID asset and resource tracking

Strategic Overview

All providers except CNWL and Tavistock and Portman have implemented an eRostering solution. With the exception of UCLH all providers currently use the same system, Allocate. UCLH is planning to replace its existing solution therefore there is an opportunity for all providers in NCL to adopt the same eRostering system, which would support plans to explore how workforce rostering might be undertaken across the cluster.

UCLH has recently selected preferred bidder to undertake real time tracking of assets and resources to support implementation of a coordination centre for the Trust. A business case is currently being written for Board approval. The learning from this process will be shared with others across NCL.

7.5.8 Capability trajectory

The capability deployment trajectory for secondary care is shown in Figure7 below. This includes the current self-assessed digital maturity average baseline scores across the seven Paper-free at the Point of Care groups for the 12 providers and forecasts the aggregate outlook for maturity based on current plans.

	Average scores across providers			
Capability group	**Baseline score (Feb 16)**	**Target (end 16/17)**	**Target (end 17/18)**	**Target (end 18/19)**
Records, assessments and plans	39.3	56.3	70.2	84.8
Transfers of care	45.4	56.3	71.3	88.8
Orders and results management	45.8	53.8	61.2	73.3
Medicines management and optimisation	25.8	36.1	47.4	60.0
Decision support	30.3	34.2	44.8	63.5
Remote care	19.2	28.2	41.7	54.0
Asset and resource optimisation	33.8	41.3	51.3	62.1

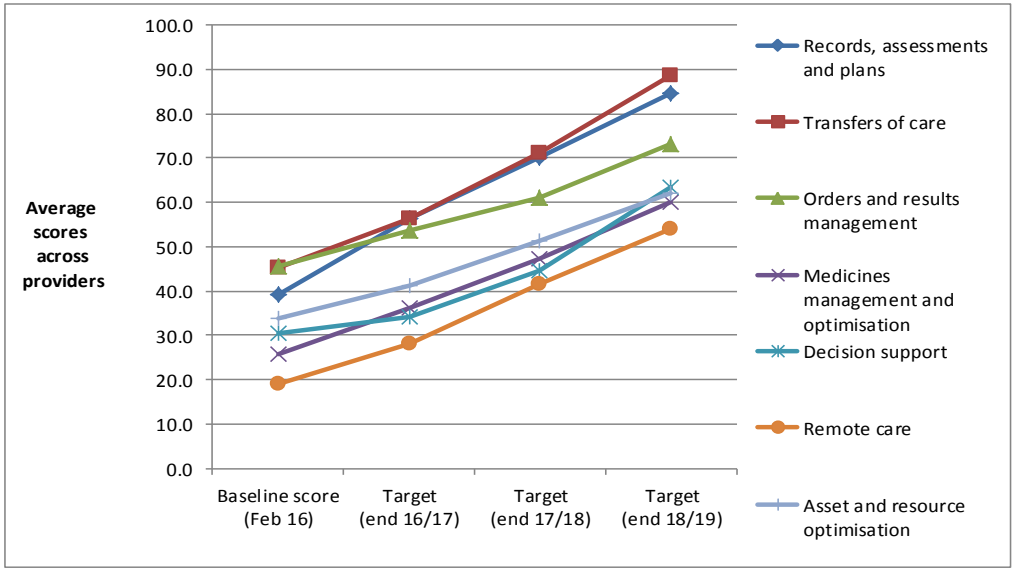


Figure 7: Provider Capability Trajectory

7.6 Enable: Infrastructure to digitally enable new models of care

Current Initiatives	Planned Initiatives
Individual organisations • Roll out of Wi-Fi across CCGs and Local Authorities • Camden, Islington and Haringey Local Authority Shared Service are moving to Office 365 which will enable secure information sharing and document collaboration. There is a current pilot between Camden Local Authority and Royal Free • BEHMT - installation of a unified comms system and migration to NHS mail 2 planned • CIFT – pilot of Skype clinics • CLCH -delivery of a mobile working programme, including video conferencing • Moorfields - pilot of Skype clinics • North Mid- pilot of Skype consultations • Royal Free - Office 365 with Skype • RNOH – implemented Wi-Fi access for patients and staff • Tavistock and Portman - pilot of Skype clinics; migration to cloud based email solution planned; network refresh planned; significant recent investment in infrastructure, including Wi-Fi and mobile devices • UCLH - migration to NHS mail 2; piloting Skype consultations • Whittington - migration to NHS mail 2	**NCL** • Establish NCL shared infrastructure group to develop strategy relating to Community of Interest Network, unified network architecture, linked Active Directories, integrated telecomms infrastructure, video and voice conferencing and mobile working **Individual organisations** • Multiple separate projects to support mobile working and collaboration • Barnet council looking to establish N3 connection

Strategic Overview

Digital transformation must be underpinned by a robust ICT infrastructure which will require ongoing investment. In particular, new models of care where care is delivered closer to home impose new requirements, such as mobile data and wireless networking, overcoming the capacity limitations of the NHS N3

network used in primary care, and extending the reach of clinical systems to new locations such as care homes. We know from the national Digital Maturity Assessment that over half of the NCL Trusts scored lower than the national average for enabling infrastructure, therefore there is significant work to do to address the infrastructure across NCL if we are to support the new models of care set out in the STP prevention and service transformation plans.

Wi-Fi access

This will help improve the experience patients and clinicians receive when moving around NCL. Wi-Fi coverage in secondary care providers is good with free Wi-Fi for patients and staff offered at most sites. Barnet, Enfield and Haringey Mental Health Trust is not currently able to offer Wi-Fi for staff and patients, but plans are in place to deploy this across St Anne's and Chase Farm sites by Q4 2016. Additionally there are gaps in Wi-Fi coverage at some satellite sites in the Tavistock and Portman estate where there is a dependency on another organisation to deliver the infrastructure. Local Authorities have opened up networks to enable health staff to be able to work out of LA buildings and the use of guest Wi-Fi. New build sites as part of provider's estates programmes are Wi-Fi enabled by design. An NCL wide remote access solution for CCGs and Local Authorities will be completed during 2016/17.

Mobile working

Mobile working infrastructure is important to enable the paper free at the point of care aims and allow professionals to work outside their normal place of work, providing the ability to work in other care settings. Currently there are several local initiatives underway to support mobile and remote working across NCL, using a combination of mobile devices technology (light laptops with dongles and tablets), and web enablement of end user systems.

Mobile Access to Clinical Applications

Healthcare professionals are being equipped with mobile devices to access clinical applications and information at the point of care. Primary care providers can access EMIS Web through mobile laptops and pilots are currently underway in Barnet and Enfield CCG for EMIS web. Some providers are using e-forms to collect information when users are in community. Access to OpenRio offline on iPads is available in Whittington and CNWL and CLCH users have remote and mobile access to Trust applications (SystmOne) and files and folders on the shared drives. Mobile working solutions for social care workers across NCL are being improved with the further roll out of mobile telephony, tablets and portal solutions that provide remote access to their case management systems.

Mobile Devices and Accessories

Through the use of mobile device management solutions (and those expected to be available in NHS mail2) providers are increasingly supporting a Bring Your Own Device (BYOD) policy for staff who wish to, for example UCLH is extending their support to 1,000 devices in 2018. N3 dongles, 4G connections, laptops and tablets are also being rolled out for mobile clinical staff and GPs across the cluster which will support remote access to clinical systems.

Collaboration

Collaboration between health and care professionals currently happens primarily through traditional mechanisms such as telephone and e-mail, and organisations have started adopting emerging mechanisms that include instant messaging, video- and web-conferencing, presence solutions and enterprise collaboration tools.

A significant amount of work is underway across all sectors to improve the collaboration tools available to staff to support decision making and help overcome organisational barriers. The general trend across NCL is for the majority of providers, CCGs and Local Authorities within NCL to adopt cloud-based SaaS collaboration platforms, this includes NHS mail2, Microsoft's Office 365 and Skype for business, which will facilitate collaboration and remote consultations with patients.

There are several pilot projects currently in progress across acute, mental health, community and specialist services. The learning from these will be shared to enable rapid implementation of successful initiatives but as an example GOSH and Royal Free currently use high resolution videoconferencing for multidisciplinary team meetings and morbidity and mortality meetings across a number of different organisations and geographical sites.
Alternate solutions have been selected for smaller requirements such as the BEHMHT adoption of Vodafone's cloud based VOIP and Unified Comms solution. Where cloud offerings are not being implemented then local VOIP telephony and collaboration tool solutions are being implemented, for example NMUH is currently rolling out Unified Comms for their own staff.

Advanced technologies such as unified communications (videoconferencing and e-consultations between clinicians and with patients; integration of calls with clinical ICT systems to apply Customer Relationship Management tools) will be implemented as part of the Primary Care Transformation programme. Baseline information gathered to date on provider activities to support mobile working and collaboration are show in the table below.

Provider	Mobile Working	Collaboration
BEHMHT	Wi-Fi for patients or staff at St Ann's and Chase Farm hospitals. Laptops with 4G for mobile workers and "Store and Forward" function for OpenRio	Cloud VOIP and Unified Comms NHS mail 2
Camden and Islington		Exploring Skype clinics
CLCH	Good Wi-Fi, roll out of Windows mobile devices in progress.	
CNWL	Laptops for mobile workers, 4G Wi-Fi	Skype fore Business (Lync) and Sharepoint
GOSH	Full Wi-Fi coverage (patients and staff); extensive iPad use, Trust issued smart phones	High resolution videoconferencing,
Moorfields	Good Wi-Fi	Has some virtual clinics
North Middlesex	80% Wi-Fi coverage for staff and patients; iPad apps; BYOD	Business case for unified comms
RNOH	Full Wi-Fi coverage for patients and staff; iPads issued to all clinicians	
Royal Free	Good Wi-Fi and MDM for BYOD	Unified comms, Office 365, Sharepoint, High resolution videoconferencing
Tavistock and Portman	Full Wi-Fi coverage for staff and patients Wi-Fi at main sites, less in satellites. 200 mobile devices and 4G tokens.	Evaluation between NHS mail2 and Office 365
UCLH	Full Wi-Fi coverage for patients and staff; supports BYOD; iPad apps	NHS mail 2
Whittington Health	Full Wi-Fi coverage for staff and patients; BYOD for any Apple product; 1800 iPads issued	NHS mail 2

Table 3: Provider infrastructure

7.6.1 Collaborative working

Historically there has never been an NCL-wide infrastructure or even joint programme of work. There is no way to coordinate infrastructure investment at present. Without having a unified approach it will not be possible to address the STP service transformation requirements.

We are proposing that a new NCL shared infrastructure group is established to develop a strategy for the following:

- Community of Interest Network to enable health and care professionals to log on to the network at ant site across NCL
- Unified network architecture
- Linked Active Directories between organisations, including Single Sign On Services
- Integrated telecommunications
- Video and voice conferencing to support remote consultations and multi-disciplinary meetings
- Remote working and real time access to clinical and corporate systems
- Shared email and calendars across health and social care providers

This group will liaise with the London Digital Programme team to identify where there are opportunities to procure and implement solutions once for London. A pan London proposal to implement the Health and Social Care Network is planned.

8 Universal capability deployment plans

NHS England has asked all digital footprints to set out their plans for how they will ensure the ten universal capabilities are delivered by 2017/18.
A summary of deployment plans are included in the table below.

A	Professionals across care settings can access GP-held information on GP-prescribed medications, patient allergies and adverse reactions	Information can currently be accessed via three different routes - Summary Care Record, MIG or in Camden's Integrated Digital Care Record (IDCR) with inconsistent approaches by CCG and provider. Both Camden and Islington CCG currently have separate IDCR solutions but have committed to implementing a solution which enables them to interoperate. The longer term solution is for care professionals across NCL to use an IDCR to access GP information.
B	Clinicians in urgent and emergency care settings can access key GP-held information for those patients previously identified by GPs as most likely to present (in U&EC)	
C	Patients can access their GP record	Although the majority of GP practices are enabled only 14% of the 1.5 million patients have registered to use Patient Online services. A campaign for patients to be able to access their GP Records will support the introduction of a NCL wide person health record. Funding for digital champions for each CCG, who will support activation processes with GPs and will develop marketing information to promote patient uptake, is expected to come from a pan London funding bid.
J	Patients can book appointments and order repeat prescriptions from their GP practice	
D	GPs can refer electronically to secondary care	Utilisation of the eReferral System by GPs is low with uptake across the 5 CCGs ranging from 25-38%. Adoption rates by providers are similarly low, with limited slot availability and out of date Directory of Services. There is significant variation in the management of referrals between CCGs and within provider organisations. An NCL working group will be established, to engage with NHS Digital's ERS team, to ensure wider adoption of the system across NCL and a greater degree of standardisation of processes across the sector.
E	GPs receive timely electronic discharge summaries from secondary care	Secondary care providers produce discharge summaries in differing formats, with limited compliance with Academy of Medical Royal College headings or ITK standards. Discharge summaries are sent to two CCGs via Docman, some by NHS mail and a large number by post. There are a variety of local solutions being developed to address these requirements, including planned development of an open source emessaging platform.

F	Social care receive timely electronic Assessment, Discharge and Withdrawal Notices from acute care	There is an inconsistent approach to sharing ADW notices with social care across the footprint. In the short term notices will be sent digitally to secure social care email addresses. The longer term plan is to share data between systems via the London ITK Adaptor, or an eMessaging solution, following completion of a pilot project by The Whittington.
G	Clinicians in unscheduled care settings can access child protection information with social care professionals notified accordingly	One Borough is launching a Child Protection-Information System (CP-IS) pilot before the end of the year and two providers are able to access CP-IS notifications already. Following a successful pilot CP-IS will be implemented across the other Boroughs and other providers will join the programme.
H	Professionals across care settings made aware of end-of-life preference information	An end of life dataset is recorded in GP systems and Camden data are currently available through their IDCR. Adoption of Coordinate My Care across NCL is limited. Our plan is to implement CMC in all GP practices and to share end of life preferences between primary care and providers via IDCRs. Access to CMC care plans will be achieved via the London Health and Care Information Exchange.
I	GPs and community pharmacists can utilise electronic prescriptions	All practices are enabled. The percentage of enabled practices utilising electronic prescriptions across the 5 CCGs ranges from 34-56%. NEL CSU and Patient Online teams are supporting CCGs through a promotion campaign and training programme for GP practices and pharmacies.

Table 4: Universal Capability Deployment Plan Summary

9 Information sharing

Across NCL there are multiple information sharing agreements with varying terms and conditions, which have been created to meet the needs of individual projects where information is exchanged between various organisations. These local information sharing agreements may also differ from nationally recommended templates.

The two largest NCL information sharing projects (Camden and Islington Integrated Digital Care Records) do not have a common information sharing agreement and there are differences between Role Based Access Models to view data and the consent model to access information. This general variation in approach currently leads to an undue burden of work for IG leads across NCL.

9.1 Plans for establishing a common information sharing agreement

There are currently plans and a work stream in place to establish an NCL-wide standard information sharing agreement. IG leads from UCLH, Tavistock and Portman and Camden CCG, along with the Caldicott Guardian from BEHMHT have offered to lead the development of a common data sharing agreement for NCL. Further, we will explore working with the London IG group, the IG Alliance and learning lessons from work undertaken by other digital footprints and for the North Thames Genomic Medicine Centre to ensure we are aligned and do not duplicate work unnecessarily.

The aim is to have a single NCL data sharing agreement, where due consideration will be given to the lawful basis for information sharing to take place, approved by the end of Q1 2017, with all providers in the health and care system signed up to this agreement short after.

The following roadmap, shown in Figure 8 below, outlines the key steps define the sharing agreement, to consider the basis for sharing, and for all providers to sign this agreement.

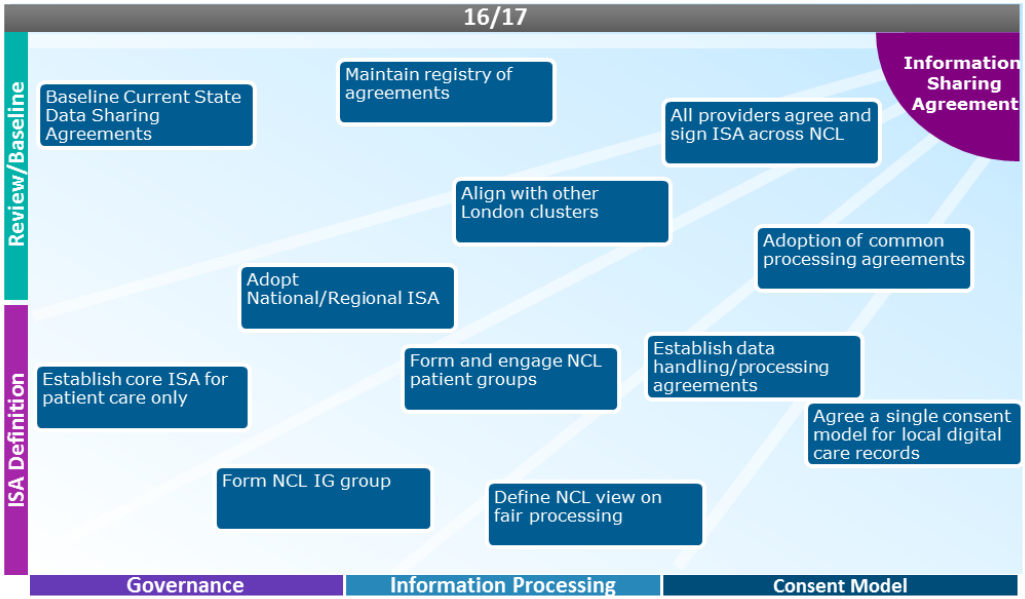


Figure 8: Roadmap to establish and NCL wide information sharing agreement

10 Capability Deployment Plan

We have created a capability deployment plan, shown in Figure 9, which sets out timescales to achieve specific objectives related to our digital strategy. Full details are shown in Appendix A.

This is based on three different sets of factors:

- universal capability deployment plans
- provider plans to operate paper free at the point of care
- establishment of an NCL digital programme to deliver the NCL Population Health Management Model described in detail above

Timescales are dependent on having the necessary delivery team, governance model and funding in place by April 2017 at the latest. Any delays will impact on achieving this capability deployment plan.

Figure 9: Capability Deployment Plan

11 Sustainable Care

NCL does not have a history of collaborative working to deliver digital projects and each organisation had developed and implemented its own digital strategy in isolation. Progress has already been made in primary care and local authorities towards creation of shared service models and rationalisation of applications. The STP has now been asked to improve productivity through management of digital services at scale across the provider landscape.

11.1.1 Local Authorities

When the NCL digital footprint first came together to develop a digital roadmap the five local authorities worked independently and five stand-alone IT systems existed. Camden and Islington Local Authorities were engaged with the local integrated digital care record programmes that existed within their respective CCGs, with plans to both share and access information via this route. Recently Camden, Haringey and Islington Councils have decided to come together and will implement a shared digital service. The decision to share a digital and ICT service will enhance the service to residents and save costs. The shared service will lead to a more ambitious programme of change, saving over £6 million a year across the three boroughs.

11.1.2 CCGs

All CCGs use shared GP IT support services and infrastructure managed by the CSU. Across our landscape there has been a planned rationalisation approach to reduce diversity in GP IT systems across CCGs, with the vast majority of the 237 GP practices using hosted versions of EMIS. There are a small number of GP practices in Enfield and Haringey CCGs choosing to use Vision 365. This level of standardisation makes interoperability with systems used by other care providers across sectors easier to manage.

11.1.3 Providers

Each provider currently manages its own digital services delivery. There are different models of delivery, particularly for foundation IT services, across NCL with some providers managing most of their services through an in-house team, some through a predominantly outsourced model and others through a hybrid approach. NHS Improvement has requested NCL's STP leadership team to produce a plan for how these services could be consolidated across the local health economy.

UCLH has recently completed a procurement process for a new Digital Transformation Partner (DTP). The range of services that can be provided through the DTP contract is wide and includes a full range of Foundation Services (data centres, end user computing, infrastructure, security, networks, service desk, integration and management services) as well as technology and related advice and support to digital and business transformation projects. A services catalogue is currently being developed. The DTP contract can provide a vehicle for other NCL or its partner organisations to source IT/digital services and solutions. Options for the DTP to provide some services to Moorfields and The Whittington are currently being explored.
In addition consultancy support will shortly be commissioned to identify what opportunities exist to consolidate digital services across NCL and a report produced for the STP Transformation Board.

There is no agreed application strategy across providers to support a similar rationalisation and standardisation approach to that which has been, or is being, progressed by CCGs and Local Authorities or by other local digital footprints across the country. If there is agreement to continue to allow diversity there must be a clearly defined strategy for how standardisation of care pathways for locally delivered services can be implemented digitally through a number of different EHR systems.

It is proposed that a more detailed assessment is undertaken to determine:

1. Options appraisal for consolidation of digital services and service delivery across NCL, including costs, benefits, timescales and barriers

2. Options appraisal to consolidate core clinical applications across NCL, including costs, benefits, timescales and barriers

3. Gaps in provider digital maturity to meet the paper free at the point of care mandate, cost to address these gaps and opportunities to address collectively

4. Opportunities to take cost out of the system by stopping current separate digital projects and working together at scale

12 Readiness to deliver

NCL remains relatively immature in its readiness to digitally transform the health and care system, but progress has been made during the last few months. Resourcing, governance and delivery models to enable whole system transformation are currently being determined.

Traditionally there has not been a general culture of collaborative digital working across NCL, reflected in the absence of any whole system digital programmes that have been delivered together to date. However, in the same way as the Local Authorities are developing shared service models the majority of providers recognise that work planned to identify opportunities to consolidate digital service delivery is timely and likely to act as a catalyst for wider change and collaborative working.

The formation of the STP, and the need to develop a collective digital roadmap, has brought organisations together with a common purpose. The governance model to enable decision making at pace and collective prioritisation of investment does not yet exist but a proposal has been developed which will be taken to Boards for approval. A Digital Leadership Summit is planned with STP leaders, Chief Information Officers, Chief Clinical Information Officers and NHS England representatives to discuss NCL's requirements to become ready to delivery this ambitious programme of work.

12.1 Leadership

Leadership for the NCL digital roadmap was transferred from Camden CCG to UCLH at the end of May 2016. The Deputy Chief Executive at UCLH is the STP Executive sponsor and Senior Responsible Officer for the STP digital programme and Local Digital Roadmap. UCLH's Chief Clinical Information Officer currently acts as the digital lead, supported until recently by a digital engagement lead.

Chief Information Officers and Chief Clinical Information Officers from provider Trusts have been engaged in discussions. As there is no CIO for the five CCGs they have been represented by a combination of GP IT leads, Commissioners, Directors of Performance, Primary Care Managers and IM&T Programme and Project managers. Clinical representation has been provided through Islington CCG's CCIO and GP commissioner input from Camden CCG. The interim Chief Information Officer from Camden Council is a member of the NCL Digital Steering Group. Additional Local Authority input has been provided through the Deputy Director of Public Health, Social Care Senior Business Analyst, Care Fund Act Implementation Manager, Head of Performance and Improvement and Head of Information Services.

12.2 Clinical Leadership

There are a small number of clinical leaders involved with the NCL digital roadmap. Three CCIOs sit on the NCL Digital Steering Group and there is additional clinical representation on the wider NCL Digital Working Group. As we revise our governance model we aim to establish a wider clinical stakeholder group who will determine the requirements and priorities for the LDR programme.

We also recognise that several of our partner organisations do not have CCIOs in post. We therefore need to build on recommendations made by Robert Wachter in his recently published report *Making IT Work: Harnessing the Power of Health Information Technology to Improve Care in England* and support the creation of a network of clinician informaticians across NCL, ensuring their roles are recognised and they are able to access the training and support required to take on these leadership roles.

12.3 Governance

As NCL did not have any existing governance structure in place a Digital Steering Group and Digital Working Group were established six months ago.

The NCL Digital Steering Group, chaired by the SRO, has representation from all sectors and has responsibility for endorsing local digital roadmap submissions and plans on behalf of the wider working group. The NCL Digital Working Group was established to drive LDR planning and has wider IT, clinical and social care representation.

The SRO is the main point of contact with the STP governance structure, as shown in Figure 10, and is a member of the STP Transformation Group and Transformation Board.

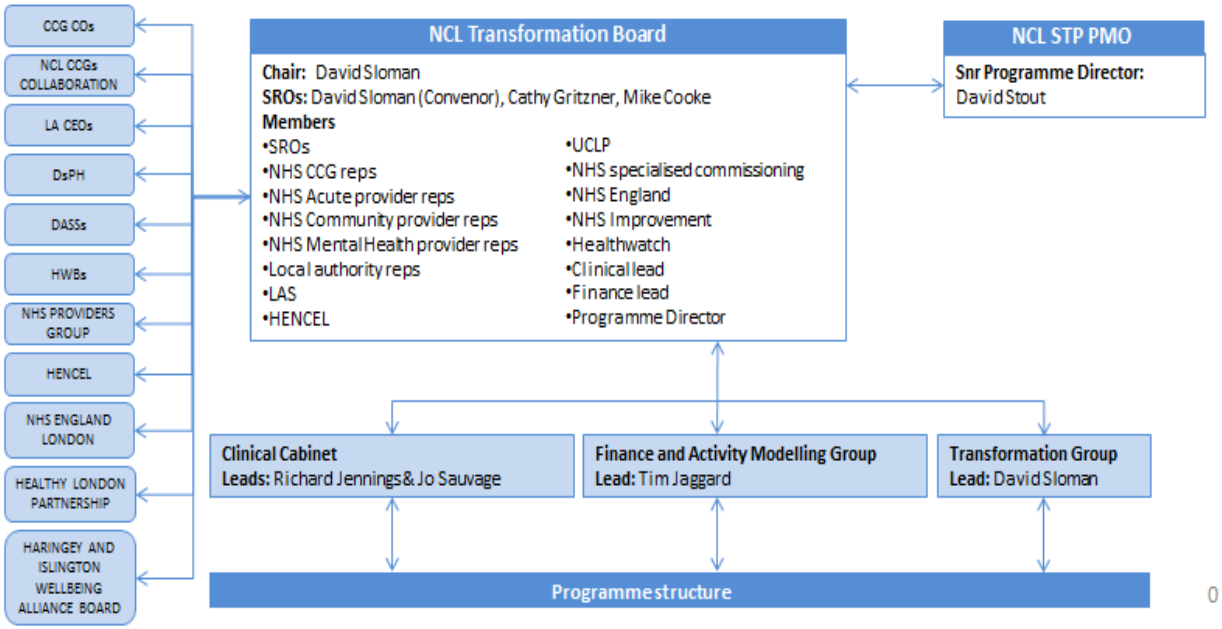


Figure 10: STP Governance Model

We recognise that, as we have now submitted our LDR to NHS England, the time is right to review and revise our existing governance model. We are proposing that a new NCL Digital Steering Group is established, with representation from all partner organisations, which would replace the existing governance groups. NHS England London representatives will be invited to attend the NCL Digital Steering Group to enhance local knowledge about work being undertaken by the London Digital Programme.

It is proposed the NCL Digital Steering Group has delegated decision making authority to help progress our digital plans at pace. The NCL Digital Steering Group will be modelled on similar governance structures in other digital footprints and will be complemented by working groups and project boards created to oversee delivery of specific programmes of work. Membership of the Digital Steering Group will include CIOs and CCIOs from provider Trusts, CIOs and social care representatives from Local Authorities, the Accountable Officer for CCGs, GP Federation representation, lay members and NHSE London. As our plans mature the NCL Digital Steering Group will be expanded with broader representation, including academic partners and third sector representatives.

A new Clinical Informatics Advisory Group (CIAG) will be created. The CIAG will be clinically led and will act in an advisory capacity and steer the direction of the overall LDR Programme. The group will represent the interests of stakeholders throughout the local health and social care economy and is anticipated to include representation from Chief Clinical Information Officers, clinical digital and informatics leads, Public Health and adult and children's social care services. The CIAG will be co-chaired by CCIO members of the NCL Digital Steering Group.

The Digital Steering Group will report to the new STP Delivery Board through the SRO and will send regular progress reports to NHSE London.

The proposal for the revised governance model was approved by the STP Transformation Group in December 2016 and will be taken to partner organisation Boards for formal approval in January 2017.

12.4 Delivery Model

Delivery of the LDR requires access to a wide range of capabilities, skills and services over the period to 2020/21. As NCL has not delivered any digital projects together the delivery model and vehicle to achieve this are not currently in place.

Delivery options were discussed by the NCL Digital Working Group and Steering Group.

Option 1: An individual organisation delivers NCL LDR plans. One organisation takes on responsibility for delivering digital services on behalf of NCL. This would place a significant burden of additional work on an individual organisation and it is unlikely one partner organisations have the in-house capacity to take on additional delivery for NCL digital services.

Option 2: Create a new NCL delivery team. The delivery team could be created by pooling resources with the relevant skills and expertise from different organisations across NCL. It is unclear how this model would work in practice and how this team would function effectively without being co-located and working as part of the same organisational structure.

Option 3: NCL contracts with UCLH outsourced digital provider. UCLH has recently selected Atos as their strategic Digital Transformation Partner (DTP). There are a number of services that could be provided through UCLH's DTP contract, including a full range of Foundation Services (data centres, end user computing, infrastructure, security, networks, service desk, integration and management services) as well as support for digital and business transformation projects (programme and project management, change management, information governance, business case development, benefits realisation). The contract, which is in place for 10 years, includes direct provision of all services as well as sourcing and management of services and solutions from the wider supplier marketplace for any NCL organisation.

NCL digital stakeholders considered Option 3 to be the best potential option for delivery of new NCL digital services which require implementation across a number of organisations.

The potential benefits to NCL of using the DTP contract include better value for money, shorter procurement and implementation timelines and greater access to a range of value add services, for example access to innovation labs, leading edge research/ industry knowledge and expertise.

Key areas that need to be explored fully to determine the initial and on-going viability of the DTP contract mechanism to deliver the NCL LDR programme are:

- Legality, including Contracting Entity: NCL is not an organisational entity and so is not able to contract itself. Assuming NCL members were not to establish a legal entity, a lead contracting organisation would need to be identified. It is proposed that the organisation leading the LDR plans acts as the contracting authority

- Value for Money: NCL members are going to need to be able to demonstrate to their organisations that the DTP contract will provide value for money. Initially, this will be through the development of a business case which explores other options alongside the DTP option

- A scheme of delegation of authority to support timely decision making and effective operations in respect of:
    - The approval and sign off of NCL documents and plans
    - The approval of budgets and funding commitments
    - The award of "contracts" through the DTP contractual framework

- On-going Governance and Management: There would be a need to establish an NCL Intelligent Client Function to work alongside and in partnership with UCLH's Intelligent Client Function to provide the necessary governance and mechanisms for NCL decision making and management of the delivery of DTP services

This proposal will continue to be developed and a final proposal taken to the NCL Digital Steering Group and STP Delivery Board for consideration.

12.5 Change and benefits realisation

12.5.1Change approach

NCL is adopting the NHS Change Model Framework. The NHS Change Model is made up of eight components that need to be managed or considered to deliver effective change.

Under each component questions have been developed to help change managers when implementing change to help understand or inform the thinking around the planned change.

The framework provides the flexibility for each change initiative to use the best and most appropriate tools and techniques to support the change and encourages consideration of all eight components to help transform and embed change.

The Change approach sets the overall strategy at programme level to ensure consistency of messaging and outcomes, but is tailored for individual projects to reflect the particular situation of each user community and aligned to agile methodology/delivery. The approach is highly participative and iterative, with change led from within organisations and through communities and stakeholder groups.

Figure11: NHS Change Model

12.5.2 Benefits Management and Measurement

The approach to benefits realisation management will be key in ensuring that the required benefits from the digital transformation are delivered. The approach incorporates tools and techniques that will enable NCL to define and implement a benefits management strategy which will identify, map, profile and review benefits (both financial and non-financial).

The benefits management strategy is the fundamental lynchpin of our approach. It provides an overall framework to identifying outcomes and defining benefits profiles and processes to measure and realise benefits.

The approach includes:

- Benefits Realisation Plan – stating the owners of the benefits and how and when they will be realised and how owners will be incentivised to ensure they are delivered, e.g. through linking to performance appraisals. Assigning owners with real accountability for delivering those benefits, increasing the chances of achieving and sustaining those benefits.

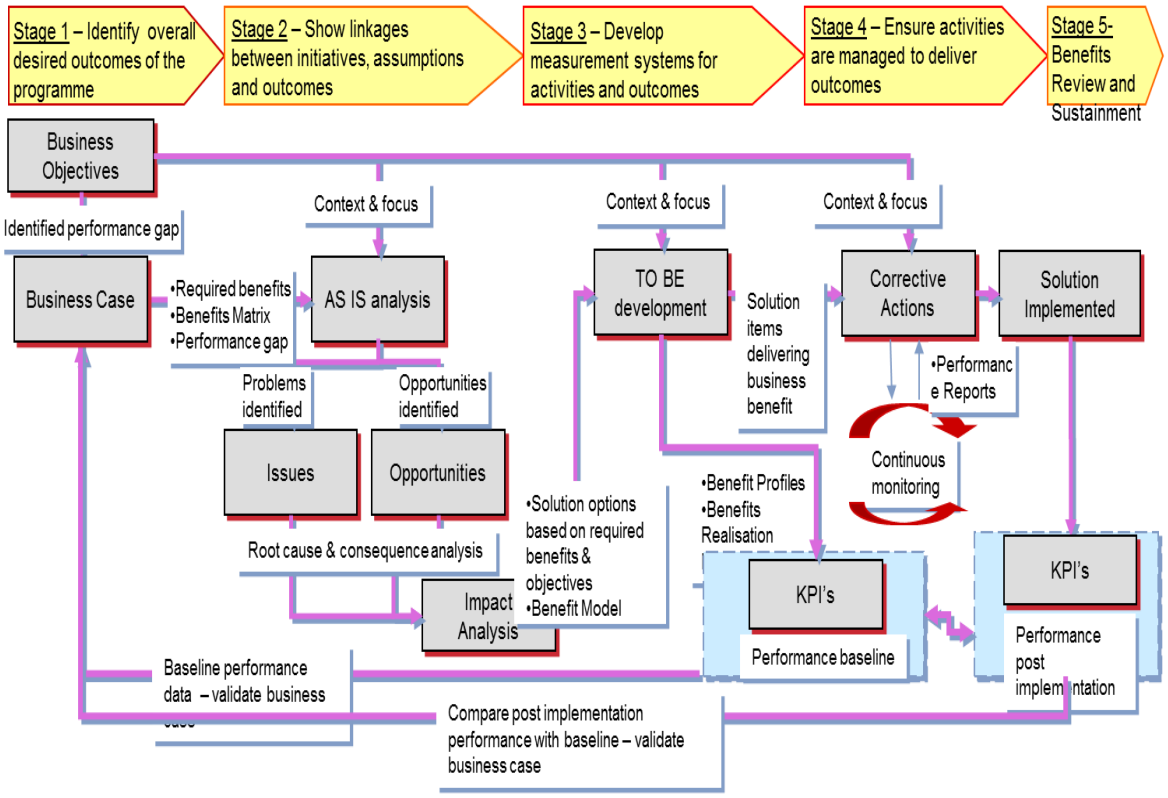


Figure 12: Benefits realisation plan

- Benefit Reviews – held to determine if the benefit profiles are valid and to identify additional benefits.
- Benefits Maps and Realisation Profiles – following the identification and quantification of the benefits, the map will consider outcomes that directly benefit NCL as well as benefits that indirectly benefit NCL through providing benefits to its citizens and external stakeholders. It will also show the outcome relationships and interdependencies with other benefits.

The Benefits Profiles and Benefits Realisation Plan are used as inputs to the Business Case, and along with the vision, are used to define the Case for Change. As well as validating the benefits, we will work with business owners within NCL to ensure that business owners understand the benefits being targeted, and are clear how they track them to determine whether they are being realised. Where business stakeholders are unclear about how the programme can benefit them individually or their team we shall work with them to build scenarios that illustrate how the programme outcomes will drive value for the business context in which they work.

Planning for benefits realisation is an iterative process - this will involve planning for the transition to new ways of working, the delivery of benefits and the establishment and execution of robust measures. Our approach puts significant emphasis on embedding a benefits mind-set within the delivery team and stakeholders and we will also use the identification and implementation of quick wins as a further means of accelerating ownership.

12.5.3 Sources of funding

We recognise the significant indicative investment costs required to digitally transform the health and care landscape. We are starting from a position where the majority of providers are less digitally mature than the national average, there is significant diversity in approach and the governance models have not existed to explore collaborative infrastructure projects.

There are a number of potential sources of funding:

- ETTF funding (2016-2018) – based on prioritised London bids funding is only likely to be available for IDCR roll out to the three remaining CCGs and for support to increase adoption of Patient Online services
- Pan London ETTF funding to develop London Health and Care Information Exchange, record locator service, data controller console and citizen portal
- Local IT budgets - some of the infrastructure and application costs to improve provider digital maturity have committed capital
- NHS England Digital Transformation Funds
- Centre of Global Digital Excellence - £10m for Royal Free to enhance digital maturity with £800k allocated towards NCL data interfaces
- BAU consolidation to release funds and resources
- Innovation grants e.g. SBRI

Without significant effort to consolidate digital services it is unlikely the funding required to transform our health and care landscape will be available. Once there is greater clarity about actual costs and likely budget we will work with the STP to prioritise activities and will re-profile the investment required accordingly.

12.6 Risk Management

Delivery of our NCL digital roadmap has a number of strategic risks.

1. The programme requires a significant level of investment
2. The future operating model and organisational structure of the STP is undetermined
3. Our provider community is generally digitally immature
4. We are starting from a position of limited collaboration and readiness to deliver

The main current programme risks and issues are highlighted in the table below.

Risk/Issue	Implication	Potential Mitigation
Funding not available	• Unable to delivery programme with impact on achievement of other STP prevention and service transformation ambitions • Providers unable to operate paper free at the point of care by 2020	• Identify multiple potential sources of funding • Identify opportunities to redistribute funding for new transformation projects through consolidation of services and projects
Limited commitment to collaborate	NCL partner organisations do not commit to LDR plans and continue to operate independently resulting in limited information exchange, duplication of effort, additional costs and limited alignment to national strategy	• Share digital roadmap with large stakeholder group and communicate benefits of working together • LDR sign off by STP and organisation Boards • Memorandum of Understanding between organisations • Alignment of local digital strategies to NCL digital roadmap
Lack of robust governance structure	Unable to agree requirements, prioritise activities, bid for national sources of funding or deliver programme effectively	Establish an new NCL Steering Group/ Design Authority ,with delegated decision making powers, which reports through STP governance structure

Risk/Issue	Implication	Potential mitigation
Insufficient clinical leadership & engagement	Programme does not align to clinical priorities leading to lack of engagement or adoption of technologies	• Digital programme is led by Chief Clinical Information Officer • Establish Clinical Informatics Advisory Group • Establish CCIO network across the sector • Maintain links with STP Clinical Cabinet
Delivery model not yet agreed	Delays progress with planning, business case development and procurement	• Proposal to deliver new NCL transformation projects through UCLH's Digital Transformation Partner is being developed and will be taken to NCL Digital Steering Group and STP Delivery Board
Resources to deliver not in place	Programme not sustainable beyond planning phase	• Explore funding sources for resources required to deliver programme • Consider redistribution of existing resources within individual organisations through secondment or creation of a distributed NCL delivery team
STP structure and target operating model not confirmed	• Programme plans, including delivery model, enterprise architecture and integration approach may no longer be appropriate and may need to be changed • Two or more separate roadmaps for the STP likely to be required • Programme costs likely to need to be re-calculated • Delays establishing digital governance model , prioritising plans and moving to delivery phase	Impact of current lack of clarity about future organisation structures highlighted to NHS England London and to STP leadership team

Risk/Issue	Implication	Potential Mitigation
Lack of interoperability and integration standards compliance	• Information sharing will remain limited and more costly • It will be difficult to achieve the benefits related to STP service transformation • Clinical care may be compromised by lack of up to date, timely and complete information	• Define an enterprise architecture and integration strategy • Partner organisations asked to commit to set of principles and standards that support interoperability

Table 5: Programme risks and issues

13 Next steps

During the next 6 months we will concentrate on gathering the information required to confirm investment costs and benefits, establish a governance and delivery model and progress an NCL information sharing agreement.

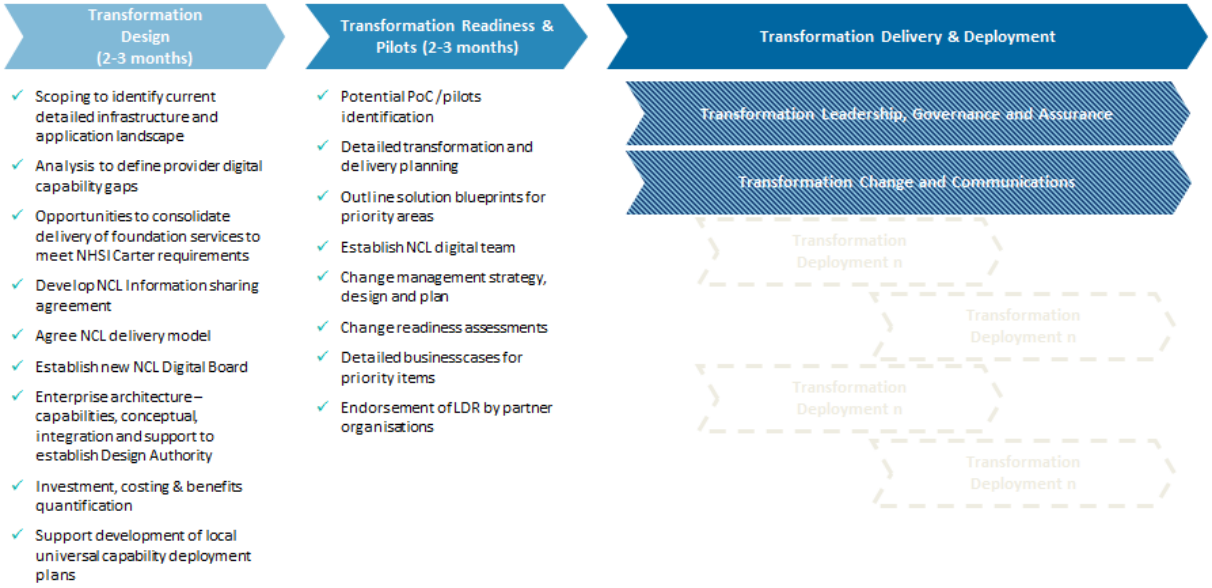


Figure 14: Programme plan for next 6 months

The timescales with which all these activities can be completed are dependent on additional support being provided to the current interim NCL team of 2.0 WTEs and identifying people with the appropriate skills and expertise to develop the enterprise architecture plan and integration strategy.

Before plans and costs can be finalised and priorities agreed the STP operating model and organisational structures need to be confirmed. At the present time the roadmap has been developed with the assumption that all organisations in the NCL STP will adopt a shared digital plan and a common delivery approach. While the principles of the proposed strategy are agnostic of any future operating model the delivery vehicles, application strategies and solutions implemented are likely to differ if separate accountable care partnerships are established within the STP geography and separate digital plans will need to be agreed and costed.

The Local Digital Roadmap therefore remains a work in progress and has been reviewed and endorsed by the NCL Digital Steering Group but has not yet been formally signed off by any of Boards within the STP. Once the next phase of scoping work has been completed and there is greater clarity about the STP operating model the roadmap will be revised to include updated investment costs, priorities, governance and delivery models. At this stage the LDR will be taken to NHS provider boards, CCG governing bodies, Local Authorities and Health and Wellbeing Boards for their endorsement and support.

14 Local Digital Roadmap development

The Local Digital Roadmap has been developed with input from a variety of stakeholders from across the local health and care economy through the NCL Digital Steering Group and Working Group.

Organisations represented at meetings and workshops include the 5 NCL Clinical Commissioning Groups (Barnet, Camden, Enfield Haringey and Islington) and the equivalent London Boroughs; 12 providers geographically situated in NCL and NEL Commissioning Support Unit.

Details of stakeholders who have been involved are included in the attached spreadsheet.

NCL stakeholders.xlsx

Additional input has been sought from NHS England London (London Digital Programme and Integrated Urgent Care teams) and STP programme leads/programme managers for the following workstreams : Cancer; Care Closer to Home; Mental Health; Prevention; Urgent and Emergency Care.

The LDR has been discussed at the STP Clinical Cabinet and with the STP Finance and Activity Modelling Group. A summary of the LDR plans have been presented to Camden CCG Governing Body and to UCLH Governors.

Appendix A: Capability Deployment Schedule

Footprint:	**North Central London**				
Capability				**Locally defined attributes ->**	
Who	**What**	**Year**	**Capability group**	**Mechanism**	**Status**
Operational managers	Can manage capacity and demand across NCL in near real time	2020/21	Asset and resource optimisation	Analytics and visualisation tools	
Acute and community nurses	Can roster staff by location and skill mix	2016/17	Asset and resource optimisation	e-Rostering system	
Acute providers	Are able to track patient flow and bed capacity in real time	2020/21	Asset and resource optimisation	GS1 barcodes and RFID tracking technology	
GPs	Can access a decision support website	2016/17	Decision support	GP Website	
Professionals across care settings	Can identify LTC patients at risk of acute deterioration	2018/19	Decision support	Risk stratification tools, population health informatics platform	
Clinicians in unscheduled care settings	Can access child protection information with social care professionals notified accordingly	2018/19	Decision support	CP-IS	Universal Capability

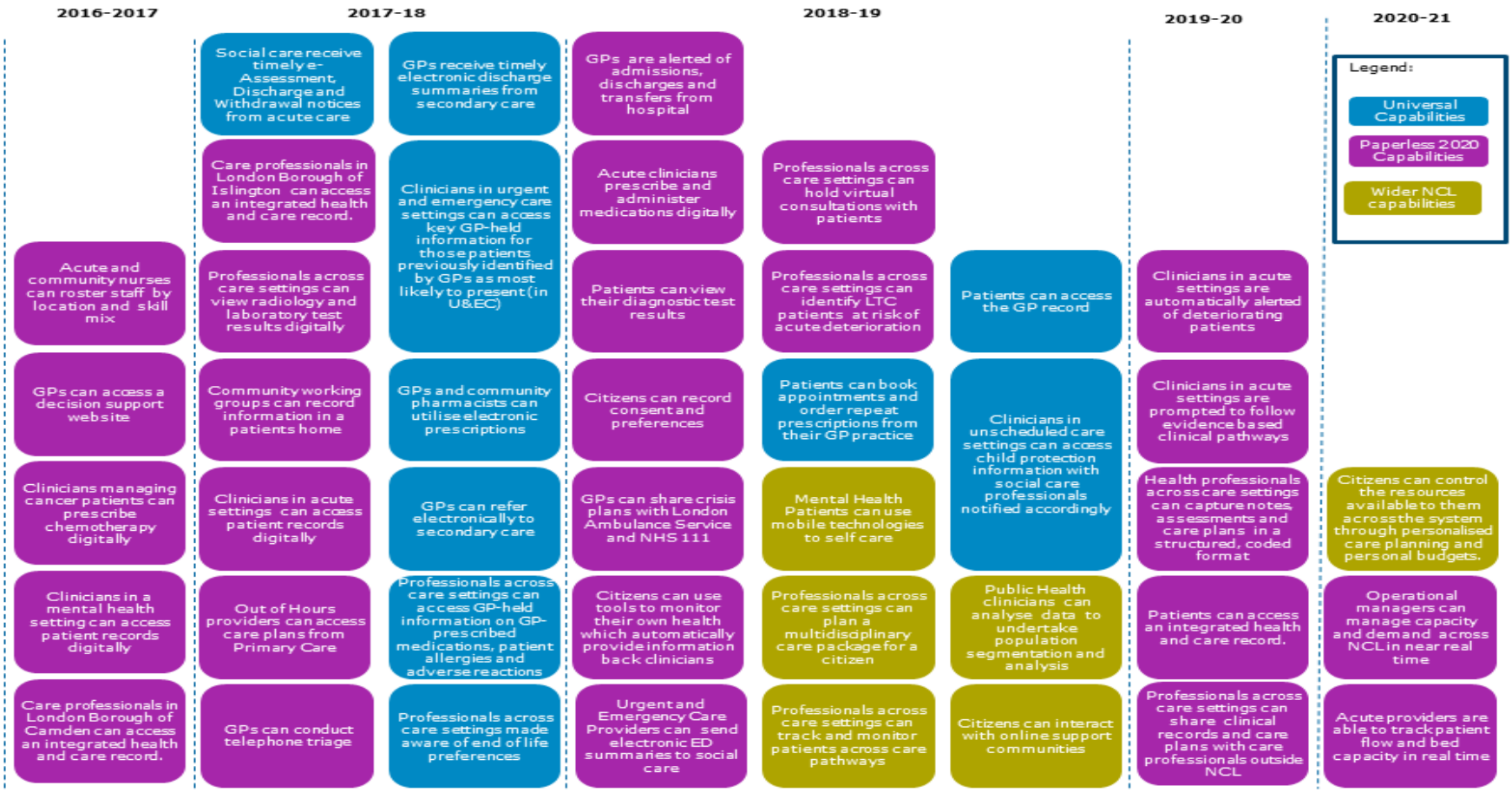
Capability				Locally defined attributes ->	
Who	**What**	**Year**	**Capability group**	**Mechanism**	**Status**
Professionals across care settings	Are made aware of end of life preferences	2017/18	Decision support	Coordinate My Care roll out across primary care, flags in local systems, IDCRs, London Health Information Exchange	Universal Capability
Clinicians in acute settings	Are automatically alerted of deteriorating patients	2019/20	Decision support	EHR, device integration, digital obs	
GPs	Are alerted of admissions, discharges and transfers from hospital	2018/19	Decision support	HIE and IDCRs	
Acute clinicians	Prescribe and administer medications digitally	2018/19	Medicines management and optimisation	Deployment of e-prescribing and EHR systems	
Clinicians managing cancer patients	Can prescribe chemotherapy	2016/17	Medicines management and optimisation	Use of Chemocare system	
GPs and community pharmacists	Can utilise electronic prescriptions	2017/18	Medicines management and optimisation	Electronic Prescription Service	Universal Capability
Professionals across care settings	Can view radiology and laboratory test results digitally	2017/18	Orders and results management	Order comms , PACS system, VNA and IDCRs	
Patients	Can view their diagnostic test results	2018/19	Orders and results management	Patient Online Service, NCL Patient Health Record	
Mental Health Patients	Can use mobile technologies to self- care	2018/19	Other	Mobile app development and deployment	

Capability				Locally defined attributes ->	
Who	**What**	**Year**	**Capability group**	**Mechanism**	**Status**
Professionals across care settings	Can plan a multidisciplinary care package for a citizen	2018/19	Other	Collaboration tools , London HIE, IDCRs,	
Public Health clinicians	Can analyse data to undertake population segmentation and analysis	2018/19	Other	Population health informatics platform, analytics and visualisation tools	
Professionals across care settings	Can track and monitor patients across care pathways	2018/19	Other	Analytics and visualisation tools, London Health Information Exchange	
Citizens	Can interact with online support communities	2018/19	Other	Social media and collaboration tools	
Citizens	Can control the resources available to them across the system through personalised care planning and personal budgets	2020/21	Other	Person Health Record, London citizen portal	
Clinicians in acute settings	Are prompted to follow evidence based clinical pathways	2019/20	Decision support	EHRS and decision support	
Community Working Groups	Can record information in a patients home	2017/18	Remote care	Mobile devices, COIN network, wifi, web based clinical applications	

Capability				Locally defined attributes ->	
Who	**What**	**Year**	**Capability group**	**Mechanism**	**Status**
Professionals across care settings	Can access GP-held information on GP-prescribed medications, patient allergies and adverse reactions	2017/18	Records, assessments and plans	Summary Care Record and Integrated Digital Care Record	Universal Capability
Clinicians in Urgent and Emergency Care settings	Can access key GP-held information for those patients previously identified by GPs as most likely to present in U&EC	2017/18	Records, assessments and plans	Summary Care Record, Integrated Digital Care Record, Integrated Urgent Care programme	Universal Capability
Patients	Can access their GP record	2018/19	Records, assessments and plans	Patient Online Services, NCL person health record	Universal Capability
Clinicians in a Mental Health setting	Can access patient records digitally	2016/17	Records, assessments and plans	Implementation and rollout of EHRs	
Clinicians in acute settings	Can access patient records digitally	2017/18	Records, assessments and plans	Implementation and rollout of EHRs, EDRM implementation, IDCRs	
Health professionals across care settings	Can capture notes, assessments and care plans in a structured, coded format	2019/20	Records, assessments and plans	Procurement, implementation and rollout of EHR	
Citizens	Can record consent and preferences	2018/19	Records, assessments and plans	London Citizen Portal	

Capability				Locally defined attributes ->	
Who	**What**	**Year**	**Capability group**	**Mechanism**	**Status**
GPs	Can share crisis plans with London Ambulance Service and NHS 111	2018/19	Records, assessments and plans	IUC Patient Relationship Manager, London Health Information Exchange	
Patients	Can access an integrated health and care record	2019/20	Records, assessments and plans	Person Health Record	
Out of Hours Providers	Can access care plans from Primary Care	2017/18	Records, assessments and plans	Integrated Urgent Care Programme Patient Relationship Manager and London HIE, NCL IDCRs	
Citizens	Can use tools to monitor their own health which automatically provide information back clinicians	2018/19	Remote care	Mobile app development and deployment	
Professionals across care settings	Can hold virtual consultations with patients	2018/19	Remote care	Skype, unified comms, videoconferencing	
Patients	Can book appointments and order repeat prescriptions from their GP practice	2018/19	Remote care	Patient Online Services, NCL integrated patient health record	Universal Capability
GPs	Can refer electronically to secondary care	2017/18	Transfers of care	National e-referral system and vendor system to system integration	Universal Capability
GPs	Receive structured electronic discharge summaries from secondary care	2017/18	Transfers of care	Docman, open source ITK compliant software solution via MESH	Universal Capability

Capability				Locally defined attributes ->	
Who	**What**	**Year**	**Capability group**	**Mechanism**	**Status**
Urgent and Emergency Care Providers	Can send electronic ED summaries to social care	2018/19	Transfers of care	Upgrades to provider clinical systems and social care system upgrades, IDCRS, London HIE	
Professionals across care settings	Can share clinical records and care plans with care professionals outside NCL	2019/20	Records, assessments and plans	London Health Information Exchange	
Social care	Receive timely electronic Assessment, Discharge and Withdrawal Notices from acute care	2017/18	Transfers of care	National Adapter service, open source ITK compliant messaging service	Universal Capability
Care professionals in London Borough of Camden	Can access an integrated health and care record	2016/17	Records, assessments and plans	Camden IDCR	
Care professionals in London Borough of Islington	Can access an integrated health and care record	2017/18	Records, assessments and plans	Islington IDCR	
GPs	Can conduct telephone triage	2017/18	Remote care	eConsult	

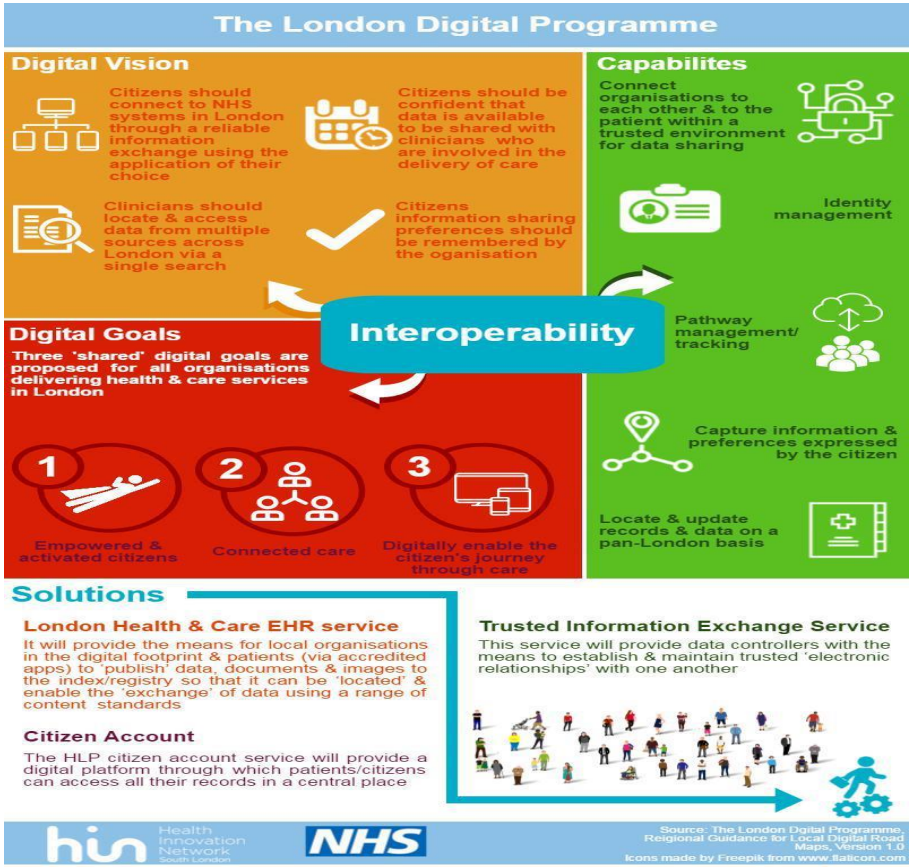


Capability Deployment Plan

Appendix B: Regional Initiatives

London Digital Programme

The nine million people living within the 5 STP and 7 LDR footprints in London move between footprints but expect care to be delivered consistently. This makes the need for collaboration at scale essential. Historically London local health economies have recognised the need for information exchanges to support integrated care. There are, however, approximately 30 local information exchanges under development. At a regional or national level however, information and record exchange services remain disconnected.



This proves to be a significant barrier to integrated care when a citizen moves across geographies, which is particularly common following redesign of specialist services to fewer sites. The development of information exchanges have further been hampered by diverging approaches to common requirements such as consent and identity management.

Services provided at a regional or national level, such as London Ambulance Service or NHS 111, also face significant barriers to accessing citizen information. Citizens are also potentially faced with having to access multiple systems to view different aspects of their own health and care information.

The London Digital Programme was established following the publication of Better Health for London, the London Health Commission report to the Mayor of London on how to improve the health and wellbeing of Londoners. It as a vehicle for strategic collaboration between the 32 CCGs, providers, local authorities, the three London Academic Health Science Networks (AHSNs)and NHS England (London). It aims to connect existing locally developed integration services through a standards based approach to enable citizen centric information exchange between existing integration service.

The focus of the collaboration is:

- Citizen empowerment aimed at enabling citizens to interact fully with health and care services and access, manage and share personal care record information.
- Digital service provision for care professionals, enabling health and care providers to improve responsiveness and coordinate care delivery through the use of electronic notification, workflow and decision support capabilities.
- Primary Care Transformation
- Interoperability, with a particular emphasis on trusted information exchange to support integrated urgent care, end of life care, homelessness and cancer services.

In addition Digital Health. London is a collaboration between MedCity and London's three AHSNs (Imperial College Health Partners, UCL Partners and the Health Innovation Network). It is supported by the Mayor of London and the Academic Health Science Centres (AHSCs) and seeks to make London a global centre for the adoption and commercialisation of digital health technology innovations.

NCL will look to exploit the capabilities that will be provided at the London level and will commit to adopt all interoperability standards required to facilitate information exchange.

London priority	Capability	Enabled by:	Deliverables	Timescales
To have empowered and activated citizens	An ability to capture information and preferences expressed by the citizen (once); to trust and act upon requests for data made by the citizen. Identity Management	Citizen portal	By 2020, citizens are 'transacting' with health and care providers and viewing local records using a single log-in and trusted identity.	Target availability for this capability: Q1 2017
			By 2020, citizens are registering their care and information sharing preferences (once) allowing these preferences to be viewed and used by health and care professionals to enable/disable different types of data processing.	Target availability for this capability Q1 2017
			By 2020, citizens are accessing and using an extended range of digital services via a trusted community of connected apps	

London priority	Capability	Enabled by:	Deliverables	Timescales
To digitally enable the citizen's journey through care	Pathway management/ tracking An ability to locate and update records and data on a pan-London basis including support for: Documents (including care plans), Data exchange, Alerts/notifications, Images, Workflow support		By 2020 to be supporting information exchange between care professionals and citizens at each step in the citizen journey through care and in so doing make their journey more integrated, accessible, proactive, faster and personalised.	
To have connected care	An ability to connect organisations to each other and to the patient within a trusted environment for data sharing	London Health and Care Information Exchange architecture	By 2020, to have created an environment for trusted Information Exchange between the 10,000 organisations that deliver health and care services to the people of London. In particular, to have provided 'services' that allow data controllers in these organisations to connect and share trusted requests for data from third party organisations and the patient.	Target availability for this capability: Q1 2017/18
			By 2020, to have provided the means for these 'services' to support the creation and updating in real time of a single 'virtual' Electronic Health Record Service using standard content definitions, to support real time patient care and /treatment planning throughout the citizen journey.	Target date for this capability Q4 2016/17 for End of Life Care. Additional care/treatment contexts for Integrated Care and the management of cancer to be delivered during 2017.
			By 2020, to have worked with strategic systems suppliers in London to provide 'native' support for the use of these 'services', thereby avoiding the need to manually search for data in multiple local databases.	By 2020
			By Q4 2017/18 (unless superseded by equivalent national services) to be using these services pan-London to achieve London-wide information exchange for urgent and emergency care triage and end of life.	By Q4 2017/18
			By 2020 to have supported local digital roadmap development through the provision of services to support at-scale document and image exchange to support MDT working.	By 2020

Integrated Urgent Care

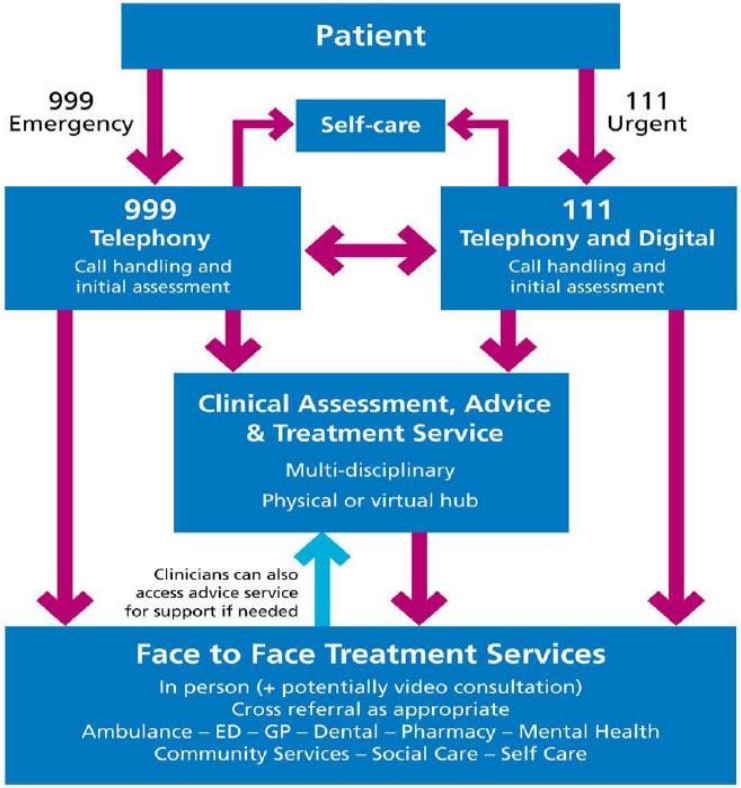
New Integrated Urgent Care (IUC) commissioning standards were published in October 2015, outlining the requirements for a 24/7 access, treatment and clinical advice service working together with 'all hours' GP services. The intent is to deliver a functionally integrated 24/7 urgent care service that is the 'front door' of the NHS and which provides the public with access to both treatment and clinical advice. This will include NHS 111 providers and GP Out-of-hours services, community services, ambulance services, emergency departments and social care.

The offer for the public will be a single entry point - NHS 111 - to fully integrated urgent care services in which organisations collaborate to deliver high quality, clinical assessment, advice and treatment. Central to this will be the development of a 'Clinical Hub' offering patients who require it access to a wide range of clinicians, both experienced generalists and specialists.
This requires safe transfer of 999 calls to 111 for clinical triage so callers are referred to the most appropriate resource to manage their needs, as shown in **Error! Reference source not found.** below.

There are three components to the IUC service requirement:

- A **Patient Relationship Manager (PRM)** cloud-based tool which provides 111 callers with a more coordinated experience of NHS 111 and Urgent Care, greater personalised care by retrieving patient's crisis or care planning information and sharing with 111 clinicians in real-time (live since early December). There is a need for an increased volume of care plans to become available so these can be integrated with PRM to support clinical decision making and reduce emergency admissions.

- **Integrated Care Exchange** to centralise and connect data from community services, GP systems and care/crisis plan providers using a standardise format in line with PRSB recommendations. For London this Health and Care Information Exchange (HCIE) is being delivered as part of the London Digital Programme.



- **Interoperability standards.** PRM and London HIE are expected to complement localised digital innovations and facilitate information exchange between local information exchanges so that complex patients who require urgent care services receive the right care tailored for their needs. This is dependent on providers and local information exchanges connecting to the London HIE and PRM in a consistent way and ensuring data meets standard format requirements. The London Digital Programme has defined a set of interoperability standards which NCL will adopt.

Priority	Ambition	Work in progress	NCL Capabilities Model mapping
Patient Relationship Manager to support Urgent and Emergency Care (covering) –Access to crisis information **- Repeat Callers -Demand management Real time dashboards**	The Healthy London Partnership (HLP) Urgent and Emergency Care programme is live with a pilot Patient Relationship Manager. Providing real time data exchange from local systems to support improved triage. This entails the automated capture of local data (special patient notes and care plan data) that is held in source systems. Provide real time data that enables commissioners improve decision making	PRM live across London since November 2015. Ongoing agile development led by HLP Urgent and Emergency Care Team. London PRM is national pilot site with independent Evaluation partner. March 2017 develop inter-relationships with new Clinical Triage platform. 2018 national PRM production version. 2019 National PRM System Live.	Islington CCG has worked closely with NHS111 to develop a crisis plan that can be shared in real time across the whole of London and with London Ambulance Service. Integration between the pan-London Patient Relationship Manager and Camden CIDR & Islington IDCR is planned to retrieve patient data in NCL and share with clinicians in the IUC Clinical Hub as part of the IUC service mobilisation (aim: November 2016).
Information exchange to support Urgent and Emergency Care	The ambition of the HLP urgent and emergency care programme is to provide real time data exchange to support improved triage. This entails the automated capture of data (special patient notes and care plan data) that is held in source systems (GP, Community, Hospital and mental health systems) with systems supporting triage care.	Two data standards are under development and will be available for use in 2016/17. Discussions are ongoing with GP systems suppliers locally and at a national level, but it is expected that GP systems will be capable of supporting CDA based data exchange during 2017 and possibly earlier.	NCL will continue discussions with the IUC team to determine the preferred integration approach with CIDR and Islington IDCRs as these will become hubs for integrated primary, community, acute and mental health data and care plans. Availability of the relevant datasets will be dependent on structured data being collected at source and able to be shared in CDA format. There is a dependency on all providers having electronic health record systems in place and acute provider EHR procurement and implementation timescales will impact on the ability to provide real time data exchange across the whole of NCL.

Priority	Ambition	Work in progress	NCL Capabilities Model mapping
Interoperability to support Urgent and Emergency Care	Enhanced Interoperability Toolkit (ITK) messaging within UEC for clinical content sets outside of NHS Pathways and providing interoperability between community, nursing & Mental Health Services.	April 2016 - Developing standards with local areas April 2016 – September 2016 Interoperability and System Enhancements designed and published September 2016 – December 2016 Vendor System Development will commence and complete as part of local procurements April 2018 – Widespread adoption	NCL has committed to adopt national and locally recommended interoperability standards and will work with GP, mental health and community system vendors to encourage adoption of these standards.
Access to Service Information to support Urgent and Emergency Care	Nurses, Paramedics, GP's, Pharmacists and other specialists like NHS IUC Clinical Hubs will have both direct and mobile access to real-time service and capacity information enabling them to connect patients to the right service for their needs. Enhancements to the existing Directory of Services (DoS) System will include new approaches to improving data accuracy, connections to capacity and demand information and enabling referral.	Oct 16 New database architecture, open APIs to support local innovation and increased data access capabilities into clinical hubs Electronic booking and referral rollout June 17 – Commissioner service dashboards available – Connections with capacity and demand information delivered	Following the recent award of an Out of Hours provider contract an NCL mobilisation group has been established to take forward the specific requirements for integration between both Camden and Islington's IDCR, the London PRM and Adastra. This would improve the flow of NCL patients through 111 and clinicians having access to patient information to aid outcomes within IUC. Detailed work needs to be undertaken to determine how integration with NHS 111, out of hours systems, IDCRs, London record locator service and HIE will be achieved, to develop the necessary data sharing agreements and to identify how services will be implemented through primary care, GP hubs and out of our hours clinical services across NCL.
Clinical Triage Platform to support Urgent and Emergency Care	An enhanced set of clinical triage algorithms to improve accuracy of triage across 111, 999, front end of A&E and Social Care. Phase 1 enhancement – focused on the addition of data to configure the existing algorithms. Triage questions automatically configured to reflect patient records and information such as crisis plans. Advanced analytics and machine learning to enable continuous improvement of algorithms.	16/17 Phase 1 (data addition) December 16 Business case approved 17/18 First phase live testing of Phase 2 (logic structure) changes 18/19 enhanced triage implemented across all integrated urgent care services, 999 and A&E (where locally adopted)	Following the recent award of an Out of Hours provider contract an NCL mobilisation group has been established to take forward the specific requirements for integration between both Camden and Islington's IDCR, the London PRM and Adastra. This would improve the flow of NCL patients through 111 and clinicians having access to patient information to aid outcomes within IUC.

Priority	Ambition	Work in progress	NCL Capabilities Model mapping
NHS 111 Online	The public will be able to access a self-service clinical triage online via NHS.uk. This will enable a direct link into NHS services if that is what the patient needs. When people are connected to their local integrated urgent care service or clinical hub they will not have to repeat their story as the service will be fully integrated with the digital interface. In time connections with general practice will be enabled	16/17 Phase 1 (data addition) December 16 – February 17 – Version 1 available to London (early adopter) March 17 – Dec 17 Iterate and Extend nationally January 18 Iterate and widespread rollout	Detailed work needs to be undertaken to determine how integration with NHS 111, out of hours systems, IDCRs, London record locator service and HIE will be achieved, to develop the necessary data sharing agreements and to identify how services will be implemented with primary care, GP hubs, out of our hours teams, emergency departments, urgent care centres and other relevant clinical services across NCL.
Clinical Hub Requirements	Clinicians in urgent and emergency care settings can access key GP-held information for those patients previously identified by GPs as most likely to present (in U&EC)	Access for IUC go live 2016/17	There are three potential ways of accessing GP held information 1. Summary Care Record (SCR) 2. Medical Interoperability Gateway (MIG) 3. Integrated Digital Care Records (IDCRs). GP data across the sector is uploaded to populate the SCR, however, provider access is very variable across the sector. The SCR has variable uptake by clinicians in U&EC settings, and is more frequently used by nurses than medical staff. This is due to lack of integration into clinical workflows with the need to log in separately to the SCR using a Smart Card. The MIG offers a potential richer primary care dataset than SCR and some provider EHRs are enabled to present MIG data from within the EHR via single sign on. Camden and Islington CCGs are both leading work to develop their own integrated digital care records. The IDCRs will contain a rich GP dataset. Camden's IDCR is already live and the Islington IDCR is scheduled to go live in Q4 2016 / 2017. The

			challenge for providers who manage patients from both CCGs is that the two IDCRs are currently completely separate, requiring separate log ins to access data. It is likely the other three NCL CCGs will share data with one or other IDCR. Camden and Islington have now committed to working together to bring about interoperability between their IDCRs and to ensure complete coverage and ease of access for NCL care professionals and patients. Single sign on to provider EHR systems is also being explored at present. The London Health and Care Information Exchange (HCIE) is currently being prototyped by the Healthier London Partnership (HLP). This is an interoperable platform which will enable London-wide information sharing and access to GP held patient information and anticipatory care plans. At present, there is commitment from EMIS that they will be able to link to the London HIE from the latter part of 2016 / 2017, which would benefit NCL as the majority of GP practices use EMIS. It is anticipated NCL IDCRs will be interoperable with the London HCIE. NCL will proactively aim to adopt this solution when available, especially if the London HCIE also provided a seamless link to SCR data for out of area patients.

London Ambulance Service

The London Ambulance Service NHS Trust (LAS) has a large mobile workforce dispersed operationally across London and covers multiple digital footprints. The LAS currently operate paper based systems for the capture of patient care information and transfer of information to Emergency Departments and other care pathways. Patient data, which is largely collected and recorded by crews on paper, is retrospectively scanned and is then stored and linked to the Computer Aided Dispatch call record in the data warehouse. The protocols, pathway and other useful information used by paramedics to assess, refer and treat patients are also largely paper based.

In order to improve patient care and use of the most appropriate care pathway for patients, paramedics should have access to up-to-date digital patient and supporting information, and a real time awareness of other NHS services available to them. The requirement for the mobile workforce to access, link and share information with other care agencies and to contribute patient data back into urgent and emergency care records needs additional technology in the form of “patient” based information systems and mobile applications.

The name, date of birth, and sex are usually not received until after the ambulance is on the road. Over 50% of emergency calls are made by third parties that may not have access to those details. A greater emphasis has been made to identify those in need of urgent and emergency care in order to communicate their end of life preferences.

LAS are in the process of implementing mobile electronic patient record forms to verify patient identity, record treatment and improve decision making on conveying, referring or treating patients. LAS plans to link to the London Health Information Exchange to access information and care plans from different organisations and to share LAS digital information with GPs and providers.

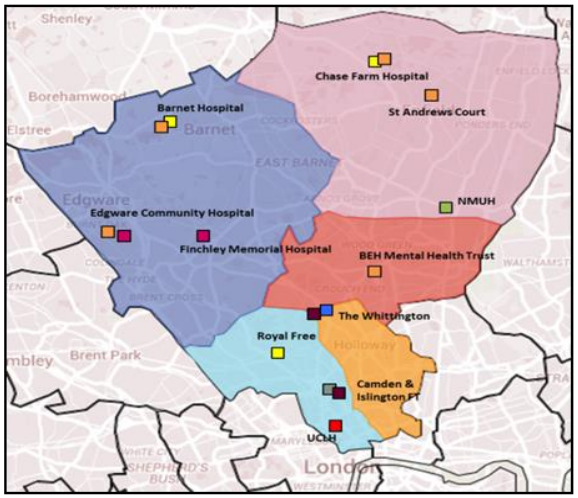
It will be challenging for the LAS to invest Capital and absorb increased initial Revenue costs associated with the introduction of these additional services, in the desired timescales. An application will be made to central funds, with the support of local Digital Roadmap partners, to assist the LAS to deliver their part of the digital London Urgent and Emergency Care journey.

Through engagement with the London Digital Programme and Integrated Urgent Care programme NCL will facilitate information exchange with LAS.

Appendix C: Baseline system landscape

Consolidated NCL CCG's IT systems landscape

Barnet CCG	
GP System	**EMIS Web**
Document Exchange	**Docman**
Decision Support	DXS
Risk Stratification	United Health HealthNumerics-RISC / Under Tender
IDCR /Portal	Under Procurement
Order Comms (including GP Order Comms)	**tQuest**
GP Data Viewing	**Medical Interoperability Gateway**
Appointment Reminder Service	**iPlato**
EPS (Electronic Prescription Service)	**EPS 2/EMIS Web**
Spine Compliance	**SCR/PDS/GP2GP/EPS2**
e-Referrals	**Enabled**
Analytics	NEL CSU
Social Care Integration	None



Enfield CCG	
GP System	**EMIS Web** , Vision 360
Document Exchange	**Docman**
Decision Support	
Risk Stratification	Health Intelligence
IDCR /Portal	Under Procurement
Order Comms (including GP Order Comms)	**tQuest**
GP Data Viewing	**Medical Interoperability Gateway**
Appointment Reminder Service	**iPlato**
EPS (Electronic Prescription Service)	**EPS 2/EMIS Web**
Spine Compliance	**SCR/PDS/GP2GP/EPS2**
e-Referrals	**Enabled**
Analytics	NEL CSU + Enfield CCG
Social Care Integration	None

Camden CCG	
GP System	**EMIS Web**
Document Exchange	**Docman**
Decision Support	DAWN
Risk Stratification	QAdmissions
IDCR /Portal	CIDR
Order Comms (including GP Order Comms)	**tQuest**
GP Data Viewing	**Medical Interoperability Gateway**
Appointment Reminder Service	**iPlato**
EPS (Electronic Prescription Service)	**EPS 2/EMIS Web**
Spine Compliance	**SCR/PDS/GP2GP/EPS2**
e-Referrals	**Enabled**
Analytics	NEL CSU + CIDR + Camden CCH
Social Care Integration	CIDR

Islington CCG	
GP System	**EMIS Web**
Document Exchange	**Docman**
Decision Support	Map of Medicine , Script Switch
Risk Stratification	NELIE
IDCR /Portal	IDCR/PHR
Order Comms (including GP Order Comms)	**tQuest**
GP Data Viewing	**Medical Interoperability Gateway**
Appointment Reminder Service	**iPlato**
EPS (Electronic Prescription Service)	**EPS 2/EMIS Web**
Spine Compliance	**SCR/PDS/GP2GP/EPS2**
e-Referrals	**Enabled**
Analytics	NEL CSU + Islington CCG + IDCR/PHR
Social Care Integration	Adapter Project , IDCR/PHR

Harringey CCG	
GP System	**EMIS Web** , Vision 360
Document Exchange	**Docman**
Decision Support	N/A
Risk Stratification	Health Intelligence /NELIE-Business Intellience platform
IDCR /Portal	Under Procurement
Order Comms (including GP Order Comms)	**tQuest**
GP Data Viewing	**Medical Interoperability Gateway**
Appointment Reminder Service	**iPlato**
EPS (Electronic Prescription Service)	**EPS 2/EMIS Web**
Spine Compliance	**SCR/PDS/GP2GP/EPS2**
e-Referrals	**Enabled**
Analytics	NEL CSU
Social Care Integration	None

Consolidated NCL Providers IT systems landscape

GOSH	
Order Comms (including GP Order Comms)	CSC PiMS
e-Prescribing	JAC Prescribing
Spine Compliance	None
e-Referrals	None
PAS	PiMS
EPR	CareView
Feed to CCG's IDCR	None
PACS	GE Centricity
Pathology	Omnitech
Radiology	GE Centricity RIS
Document Management	Kainos
Analytics	QlikView

Royal Free	
Document Exchange	Docman
Order Comms (including GP Order Comms)	Cerner Millennium / tQuest
e-Prescribing	None
Spine Compliance	Spine Compliance through Cerner Millennium
e-Referrals	Enabled (Cerner Millennium)
PAS	Cerner Millenium
EPR	Cerner Millenium
Integration Engine	Ensemble
PACS	SECTRA
Pathology	Cerner PathNet
Radiology	Cerner RadNet
Document Management	OpenText

University College London Hospitals NHS Foundation Trust	
Document Exchange	Docman
Order Comms (including GP Order Comms)	e-CareLogic /GP Portal
e-Prescribing	MedChart
Spine Compliance	None
PAS	CareCast
EPR	e-CareLogic
Feed to CCG's IDCR	Feed to CIDR and Islington
PACS	Agfa PACS
Pathology	Clinisys WinPath
Radiology	HSS RIS
Document Management	eCare Logic

Camden and Islington NHS Foundation Trust	
Document Exchange	Docman
e-Prescribing	None
Spine Compliance	Partial Compliance
PAS	Carenotes
EPR	Carenotes
Analytics	QlikView

Tavistock and Portman	
PAS	Careotes
EPR	Carenotes

North Middlesex University Hospital	
Document Exchange	Docman
IDCR /Portal	Internal Portal using .NET framework
Order Comms (including GP Order Comms)	Medway/tQuest
GP Data Viewing	Medical Interoperability Gateway
e-Prescribing	None
Spine Compliance	Compliance through Medway
e-Referrals	Enabled through Medway
PAS	Medway
EPR	Medway
Feed to CCG's IDCR	None
Integration Engine	Ensemble
PACS	SECTRA
Document Management	Fortrus Unity
Analytics	QlikView

Royal National Orthopedic Hospital NHS Trust	
Document Exchange	None
IDCR /Portal	Clinician , External and Patient Portals using Caradigm
Order Comms (including GP Order Comms)	SunQuest ICE
e-Prescribing	None
EPS (Electronic Prescription Service)	None
Spine Compliance	None
e-Referrals	Enabled through Silverlink(less than 5%)
PAS	Silverlink
EPR	Best of Breed (
Integration Engine	Orion Rhapsody
Pathology	Clinisys WinPath
Radiology	CSC RADCentre
Document Management	Kainos
Analytics	QlikView

Central and North West London NHS Foundation Trust	
GP Data Viewing	Medical Interoperability Gateway
Pharmacy	Ascribe Pharmacy
e-Prescribing	None
e-Referrals	Enabled
PAS	TPP SystmOne
EPR	TPP SystmOne
Feed to CCG's IDCR	Feed to CIDR

CLCH	
PAS	TPP SystmOne
EPR	TPP SystmOne

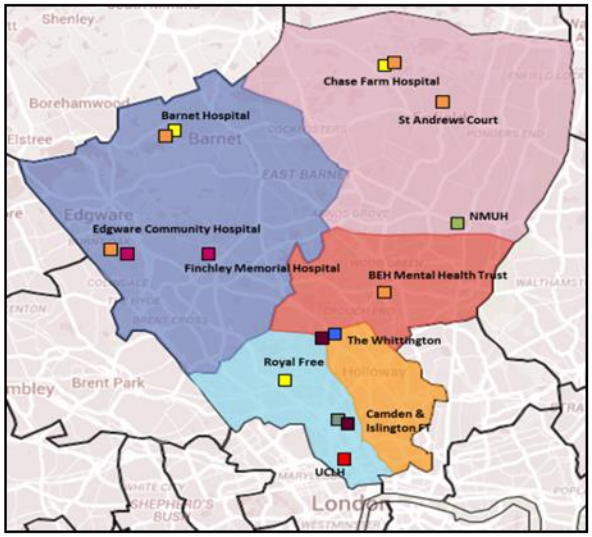
Barnet, Enfield and Haringey Mental Health Trust	
GP System	N/A
Document Exchange	None (only e-mail /fax)
GP Data Viewing	Medical Interoperability Gateway (Trial)
Pharmacy	JAC Pharmacy
e-Prescribing	JAC Prescribing
Spine Compliance	Yes
e-Referrals	None
PAS	OpenRio
EPR	OpenRio
Feed to CCG's IDCR	No Feed Yet

The Whittington Hospital NHS Trust	
GP System	N/A
Document Exchange	Docman
IDCR /Portal	Clinician , GP and Patient Portal Using Graphnet
Order Comms (including GP Order Comms)	SunQuest ICE
GP Data Viewing	Medical Interoperability Gateway
e-Prescribing	JAC Prescribing
Spine Compliance	No Medway Spine Compliance
e-Referrals	Enabled (Medway)
PAS	McKesson Medway EPR /OpenRio
EPR	McKesson Medway EPR
Integration Engine	Orion Raphsody
PACS	SECTRA
Pathology	Clinisys WinPath
Radiology	SECTRA RIS
Document Management	EMC Documentum
Analytics	Business Objects + QlikView

Moorfields Eye Hospital NHS Foundation Trust	
Document Exchange	Docman (In-Flight)
Order Comms (including GP Order Comms)	None
e-Prescribing	None
e-Referrals	Enabled
PAS	Silverlink
EPR	OpenEye / Medisoft Ophthalmology
Integration Engine	Orion Rhapsody
PACS	SECTRA
Pathology	N/A
Radiology	CSC RADCentre

Consolidated NCL Local Authorities IT systems landscape

Barnet	
Social Care	Liquid Logic
Integration with Healthcare	None



Enfield	
Social Care	Care First (Adults) and Liquid Logic (Children)
Integration with Healthcare	None

Haringey	
Social Care	MOSAIC
Integration with Healthcare	None

Camden	
Social Care	Framework-I
Integration with Healthcare	CIDR

Islington	
Social Care	Liquid Logic
Integration with Healthcare	Adapter Live (Graphnet) and IDCR/PHR