Staffordshire and Stoke-on-Trent Integrated Care System

Staffordshire and Stoke-on-Trent Integrated Care System

Data and Intelligence Strategy

March 2024

CONTENTS

Introduction

The Health and Care Act 2022 created a statutory basis for Integrated Care Systems (ICSs) by creating an Integrated Care Partnership (ICP) and an NHS Integrated Care Board (ICB) for each ICS in July 2022.

The purpose of ICSs is to bring partner organisations together to:

- improve outcomes in population health and healthcare
- tackle inequalities in outcomes, experience and access
- enhance productivity and value for money
- help the NHS support broader social and economic development.

The Staffordshire and Stoke-on-Trent ICS brings together a range of partners who are responsible for planning and delivering health and care and for improving the lives of people who live and work in our area. The ICP is made up of partners, including local authorities, the police, the voluntary, community and social enterprise (VCSE) sector, and representatives from the ICB. The ICB is a Statutory Body with the general function of arranging for the provision of services for the purposes of the health service.

For us to start realising the benefits of operating as a system we need to effectively use our combined data to enhance the care of the service user, improve the efficiencies of the system, predict, and create interventions for Population Health Management and research and innovate new ways of improving health and care. Utilising data means effective data-management, appropriate data sharing governance, robust digital infrastructure, digital skills pathways, and a shared operational framework.

This will enable us to meet our ICS Vision of

"making Staffordshire, Stoke-on-Trent the healthiest place to live and work."

Why do we need this strategy and what is our vision?

Decision-making for personalised medicine, predictive population health management and efficient care eco-systems need to be data-driven and evidence-based. We need to be able to provide a deep understanding of our population's current health and predictive health and to be able to seek comparison against other population health and social care systems to drive continual care improvements. This will require a digital 21st century business intelligence infrastructure and capability.

The insight required from Business Intelligence and Analyst teams to support clinicians and decision makers to make informed choices that directly improve care, demonstrates why we need outstanding intelligence and analysis, particularly at the point of health and social care delivery.

Our strategy sets out where we want our data, business intelligence infrastructure and capability to be in order to support delivery of the ambitions set out in our ICP Strategy and Joint Forward Plan, and how we are meeting all national legislative requirements now and in the next 5 years.

The strategy sets out our high-level approach to developing a system-wide approach to data and intelligence. The strategy will be underpinned by a time-phased delivery and transformation plan, setting out more detailed specific initiatives, and projects including proposed timelines, resource allocation, responsibilities, and milestones to track progress.

The Vision is to Provide, Deliver, Enhance and Enable

by 'maximising the value we have from our collective intelligence professionals, supported by a data driven infrastructure accessible and maintained by all system partners. Delivering enhanced health intelligence to improve clinical delivery, care through population health management and research.'

National and Local Drivers for Change

National Drivers

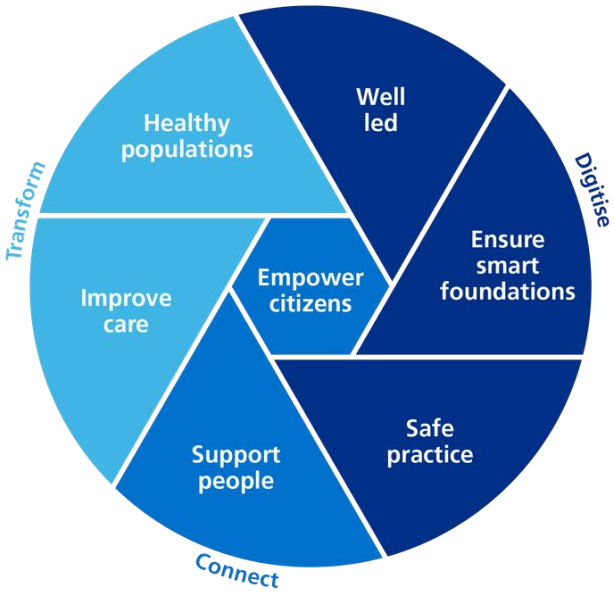
The Hewitt review, published in 2023, proposes greater autonomy to enable Integrated Care Systems (ICSs) to better prevent ill health and improve NHS productivity and care, matched by renewed accountability. In particular

- effective data-sharing approaches across multiple partners, with linked data sets enabling proactive population health management, significantly improved outcomes for population groups and substantial reductions in demand for emergency and specialist services.
- the rapidly growing use of smart data analytics tools, to provide the 'single version of the truth' that is an essential part of aligning all partners, locally and nationally, around the same purpose and goals.
- the skills needed to deliver data and digital transformation through a professional and highly skilled workforce at the system and provider level.
- the health and care system urgently needs to develop, train and recruit more specialists in fields such as data science, risk management, actuarial modelling, system engineering, general and specialized analytical and intelligence.
- opportunities to use digital technologies for example to move to real time data dashboards.

National planning guidance and priorities specific to the Joint Forward Plan guidance and supporting materials outline the national ambitions around the implementation of a population health management (PHM) approach. This includes

- plans for integrated, person-level linked data across health, care and increasingly wider partners and clear and safe access controls through cross system information governance arrangements.
- plans for the development of a virtual ICS-wide intelligence function underpinned by a single analytical platform which can carry out advanced data and analytical techniques for example, offering data and analytics capability that aligns and docks into the national federated data platform.
- releasing analysts time for insight drive work through use of technology for routine tasks?
- ensuring that ICS and locality based decision-making forums have access to timely population health insight and analytical support.
- support the analytical workforce to develop sophisticated analytical capability including the emergence of national work to establish analytics and Data Science as a professional discipline.

National policy through the 'What Good Looks Like' framework published in 2021 also reinforced the digital and data focus. Clear guidance is provided, along with the impetus for health and care leaders to connect and transform services safely, securely and sustainably through the increased use of digital, data and intelligence for the efficient and effective delivery of health and care services. The diagram below outlines the seven success measures of what good looks like.



The new Federated Data Platform (FDP) will mean that every Hospital Trust and Integrated Care System (ICS) will have their own platform, which can connect and collaborate with other data platforms as a "federation" making it easier for health and care organisations to work together. Although the first stage of implementation is focused on NHS acute trusts, work will begin at the same time to build a close partnership between NHS England, the FDP developers, and appropriate colleagues from ICSs, local government and the provider sector including primary care, community and mental health, adult social care providers and VCFSE providers.

Nationally it is recognised that overall adult social care data as a sector is not as well progressed. While it has come a long way in improving the data collected and used, there is still much more to do. 'Care data matters: a roadmap for better data for adult social care' sets out the government's roadmap for improving how we collect, share and analyse data in adult social care in England.

Local Drivers

The COVID-19 pandemic has demonstrated the importance of the ability to draw upon the right intelligence at the right time. This encompassed a multi-disciplinary approach with analytical teams working seamlessly with digital and information technology, information governance, finance, people/workforce, service redesign, quality improvement, clinical, and public health and other local authority teams. This would not have been possible without intelligence and analytical collaboration between the NHS, local authorities and wider system partners. We are committed to building on existing ways of working and the approach used during the pandemic to better use our analytical resource, data and insights for maximum impact.

Across the ICS, there is significant interest in using data and insight for a range of purposes. While there is a culture that indicates leaders are keen to use data and intelligence to inform decisions, we need to ensure that we collectively have the capacity and capability to meet the growing need for evidence-based decision making. We need to support our teams to articulate data requirements and to be able to interpret data to drive data-informed decisions and shift focus from reactive reporting to forward looking, predictive / proactive reporting.

The ICS has significant digital ambitions, and the supporting infrastructure and intelligence are a crucial element in supporting the delivery of the Digital Strategy.

As a system we are broadly defined as low (2/5) on the national digital maturity assessment scoring for 2022/23. The results are in line with our understanding as to the extent of our system digital maturity to date and reflects that we have particular improvements to be made across key dimensions of the What Good Looks Like Framework (Empowering Citizens and Population Health Analytics & Intelligence).
Digital leads are developing a system plan in partnership with the People function for digital skills development across the wider workforce focused through membership of the Skills Development Network and sharing of training and resource capability across our system.

There are complexities in data sharing and information governance and Data Services for Commissioners Regional Offices (DSCRO) requirements around handling identifiable personal and confidential information for commissioning purposes. We need to resolve some of these challenges to maximise our insights and access to a range of data but recognising the legal requirements, particularly for the ICB where except for a handful of very specific exceptions commissioners are not able to receive identifiable data. Also, BI teams often do not have a clear and comprehensive view of existing data sharing agreements, which acts as a barrier to expanding inter-organisation data sharing.

There are several BI tools and underlying data warehouse infrastructures across our organisations and a consistent approach is required.

A Data Warehouse is a key component of our capability and is a critical enabler to our success. At present there are separate data sources, infrastructure and reporting systems between the ICB and providers, and these remain largely unlinked to wider system partners (e.g., local authorities, community and voluntary sector organisations). The exception, at the time of writing, being the One Health and Care (OHC) shared care record. OHC is used solely as a capability to support direct care, versus being used for analytics and secondary use.

It is imperative that ICS data and information assets can be freely accessed, leveraged and manipulated by all system partners. There is opportunity to consolidate data warehousing needs across the system. At present each organisation has a data warehouse solution, with the primary purpose of serving the requirements of that organisation.

The ICB has a data warehouse environment provided by NHS Midlands and Lancashire Commissioning Support Unit (MLCSU) supporting the traditional commissioning data sets provided nationally and go some way in providing the performance and assurance measures for the SSOT population . There is very limited access to Primary Care data for secondary use.

OHC receives direct submissions from some Hospitals, Health and Social Care providers and Primary Care data. Access to OHC data is currently limited to direct patient care. A section 251 application is in process for legal basis of secondary usage. Until this time specific use case documentation is drawn to provide the governance of secondary usage.

The ICS has also procured a Population Health Management solution through a third party, OPTUM. This will serve as another repository of data received from Secondary Care, MLCSU, Primary Care, Social Care and beyond, with both data and analytical capability for all system partners. This solution is due to be realised in early 2024/2025.

In time, through partnership working, there are significant opportunities for the ICS to consolidate data warehousing and accessibility, reducing cost financially and environmentally while increasing the system capabilities of Population Health Management at both a clinical and strategic level.

The BI tools through which we utilise to access the data are equally important, particularly given that the most common tool in some BI teams is Microsoft Excel. There are pockets of excellence in reporting and analytics teams adopting visualisation tools such as PowerBI, and analyst communities show a consistent appetite to adopt these and upskill given sufficient opportunity to do so. Self-service reporting in the ICB is also limited and tools such as Aristotle are not widely used, limited by the need for additional login credentials.

Goals and Benefits

The goals and benefits of delivering the strategy are outlined in this section. They will be used to set clear and measurable objectives and targets towards the achievement of our vision. To meet legislative requirements and national and local drivers, these steps are proposed to put data-driven decisions at the centre of the transformation of health and care services.

Goal

a) Develop a standard framework and career development pathway for all analytical staff within the ICS including apprenticeship and graduate pathways aligning with National frameworks.

b) Standardised job descriptions and grades across the ICS organisations.

c) Develop technical skills through a formal development programme (Power BI, SQL, R or Python)

d) Maximise the value we have from our collective intelligence professionals through sharing skills and knowledge.

e) Engagement of academic partners to identify opportunities for graduates as well as wider opportunities to foster talent such as apprenticeships shared data science capability, Data Scientist Development Programme

f) Recognise analytics as a profession through registration with organisations such as the Association of professional healthcare analysts (APHA, BCS, FEDIP)

g) Identify formal and informal learning and development opportunities for data and non-data roles.

h) Use existing resources and training across the system and regionally to support development e.g., MDSN training programmes, regional analytical network, and capacity.

i) Utilise 3rd party supplier training e.g., Microsoft, Multiverse

j) Wider work force focus on digital and data skills and development of specialist and clinical champions.

k) Data literacy training and awareness for the non-analytical workforce, to encourage effective adoption of new tools and availability of insights to make decisions as intelligent customers

Benefits

- Workforce can access and coordinate the data they need for patients and direct patient care.
- Customers can see the reports, via simplifying where they go for the various tools (Power BI, Aristotle).
- Customers can use the data tools with training support to help them find, access and use the tools and products built by the analytical teams.
- Workforce can make decisions as intelligent customers and be enabled to ask structured questions about data to support transforming care and delivering
- More people with data science skills working in our ICS via partnership with universities, apprenticeship and training schemes, support for professional bodies,
- Extended workforce with graduates, apprentices and trainees working in our teams; future proofing the next generation of our NHS workforce.
- Clear progression routes using national career frameworks and professional membership.

Goal

A data warehouse capability that will:

a) Hold national, local and reference datasets which is accessible to all partners and stakeholders. (ICB, UHNM, MPFT, NSCHC, SCC, SOTCC – future Adult Social Care, Fire, Police, Voluntary)
b) Present real-time, consistent population-centric data in an accessible format.
c) Have health and social care data pseudonymised by a common key and linked. Wider determinants data, such as fuel poverty expands this view.
d) Store retrospective reports to be used by leads on a self-service basis through web, desktop, and mobile platforms.
e) Provide a singular version of activities recognised by all Partners to drive system transformation and decision making.
f) Utilise the FDP as it is commissioned, with all parts of the health and care system involved in its development.
g) Have accessible, understandable, and up to date data catalogues giving partners sight of system data assets.
h) Be built around an agreed approach to the role of the DSCRO.
i) Have role-based access, multi-factor authentication and other privacy enhancing technologies ensuring data is shared securely.
j) Have the capability to store and process Internet of Things (IoT), deliver Artificial Intelligence (AI) and Machine Learning (ML)
k) Be configured for a storage and consumption model to enable downsizing and upsizing depending on the future development of National Data Platforms.
l) Enhance transfer of data and interoperability of systems through National standards i.e., FHIR, DICOM
m) Gradually be developed to contain data encompassing all parts of health and social care delivery from clinical data at startup to include Finance, Estates, Patient Feedback etc. (See Appendix 1.)

Benefits

- Providers maintain controllers of their patient data within a Unified Data Warehouse
- Only the appropriate data is stored within the Unified DW reducing Information Governance overhead.
- A shared place where GP, Acute, and other clinical data is linked, with some linkage to social care and other provider data supporting ICS goals.
- Decreased administration for data sharing with a shared data service, data infrastructure and reporting tools in place between partners.
- Customers can find and access the data reporting environment on a self service basis.
- Reduced the burden of assurance reporting across the system, both internally and externally i.e., NHSE
- Links in place with the national FDP.
- Potential to develop real-time / near time dashboards e.g., system wide bed management.
- Reduce the risk of return in investment by being flexible and scalable using a Cloud Data Warehouse environment.
- Take advantage of developing data tools within a Cloud Data Warehouse environment e.g., AI, ML, IoT processing

Goal

a) We maintain and build on the Public Trust as custodians of their data. We will be transparent in the use and that use is ethical and for the public good.
b) We will comply with all Government mandatory or recommend Information Governance principles.
c) Apply FAIR principles to Data usage; Findable, Accessible, Interoperable, Reusable
d) Ensure we continue to respect patients' privacy, while creating a safe space for addressing the questions needed for non-patient care questions.
e) Submitting and sharing provider-based datasets into the ICS Data Warehouse
f) Establish information governance processes and documentation which will support data sharing for use of data for research and innovation, direct care, population health management, care planning and secondary use, including GP clinical system data.
g) An information governance work programme to include the broadening of linked datasets available including those outside of health and care such as education and housing.
h) A collaborative and integrated approach to data sharing through clear data policies and data sharing agreements.
i) Data sharing documentation which supports direct care and secondary usage, particularly GP data

Benefits

- Appropriate data governance and processes for different uses of data
- Providers maintain controllers of their data simplifying the Information Governance process within the ICS Data Warehouse.
- Data is readily available to identify the challenge of increasing demand including wider data such as education and housing.
- We can work across partners to promote healthy lifestyles and identify patients at risk earlier.
- Top-down strategic commitments on data sharing across all key stakeholders.
- Data is used lawfully and with respect so that the public can be reassured on how their data is used and Caldicott Principles
- Partnership networks with IG Teams who are proactive and able to jointly solve IG obstacles while shaping data sharing initiatives.

Goal

a) Maximisation of the automation potential of Power BI particularly for routine reporting

b) To agree and adopt greater utilisation of visualisation tools such as Microsoft Power BI and further develop skills such as SQL, R or Python

c) Supporting Operational Planning and Monitoring, and the ICB governance to demonstrate delivery.

d) Development of a locally maintained population health management tool accessible to all partners which will enable a data driven system decision making environment, tackling patient inequalities, drive prioritisation, exploring scenario and forecast modelling and root cause analysis.

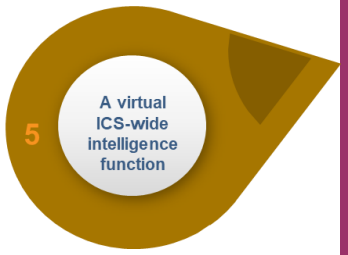
e) Develop local understanding of Artificial Intelligence (AI) and Machine Learning (ML) toolsets and the benefits that can be employed to aid patient outcomes.

f) Data Quality process improvements and tools shared across the ICS providers to progress ICS wide data quality improvements.

g) Support providers in the ongoing addition and implementation of SNOMED and ICD-10 coding

Benefits

- Improved productivity capability for Analysts to develop predictive / proactive reporting.
- Analysts have clear direction on the tools and methods to use – using open, code first approaches, making improvements in use of data science practice i.e., R & python for reproducible analytics.
- Data is used effectively both in direct patient care for coordination and supporting clinicians in near real-time analysis, in performance, flow, inequalities and outcomes for patients.
- Live data can be made available to patients, their care givers, and the ICS population through tools like SharePoint.
- Aligns with and maintains industry standards and developments combined with the Data Warehouse.



Goal

a) A virtual ICS-wide intelligence function
b) ICS Analytical capacity is increased using automation of reports and dashboards via BI Tooling i.e., Power Bi
c) Analytical capacity, skills and capability reviewed annually, ensuring upskilling, analytics/insight focused intelligence teams supporting recruitment and retention.
d) System agreement on how the virtual team should work together and what their remit is e.g., providing bespoke expertise or training and leading on particular data requirements for system wide projects.
e) Reduce regional reporting activity at provider level thereby enabling productivity opportunities for providers to support ICS analytics.
f) Provider analysts continue to be embedded within the provider infrastructure to maintain tacit system knowledge.
g) Provider analytical capacity led and guided by the provider requirements.
h) ICS analytical capacity led and guided by ICB requirements.
i) Work at regional level to realise benefits on generating insight led, coordinated requests – particularly for finding variation, inequalities (with MDSN, and NHS England).

Benefits

- A collaborative and multi-organisational team comprising of analysts and other insight specialists from all constituent parts of the ICS, serving the strategic goals and projects of the ICP as required.
- A clear understanding of capacity, capability, and contractual obligations of ICB and provider analysts across the system.
- Recognition of the existing skills, knowledge and talent of analysts within our partner organisations,
- Analysts can support the development of key questions and have the data and tools they need to provide insight at regional, system, place and neighbourhood level.
- Collaborating with regional partners, MDSN, NHS England Region and National teams, universities, and other partners, to best develop data and insight to support cross region problems and support insight at scale.

Engagement

We have followed an iterative development process to continuously collate feedback and refine the output to ensure the strategy represents and is accepted by leaders across the ICS. The ICB has co-ordinated engagement with the wider NHS Intelligence Community throughout development of this strategy. We have undertaken direct engagement with stakeholders across key sectors of the ICS and NHS England Regional Leads. As the strategy is implemented, ongoing engagement will continue with all identified stakeholders.

Conclusion

To deliver our strategy successfully, we will need to change our ways of working to realise the benefits of being unified as a system, by exploiting and building upon existing best practice approaches and work.

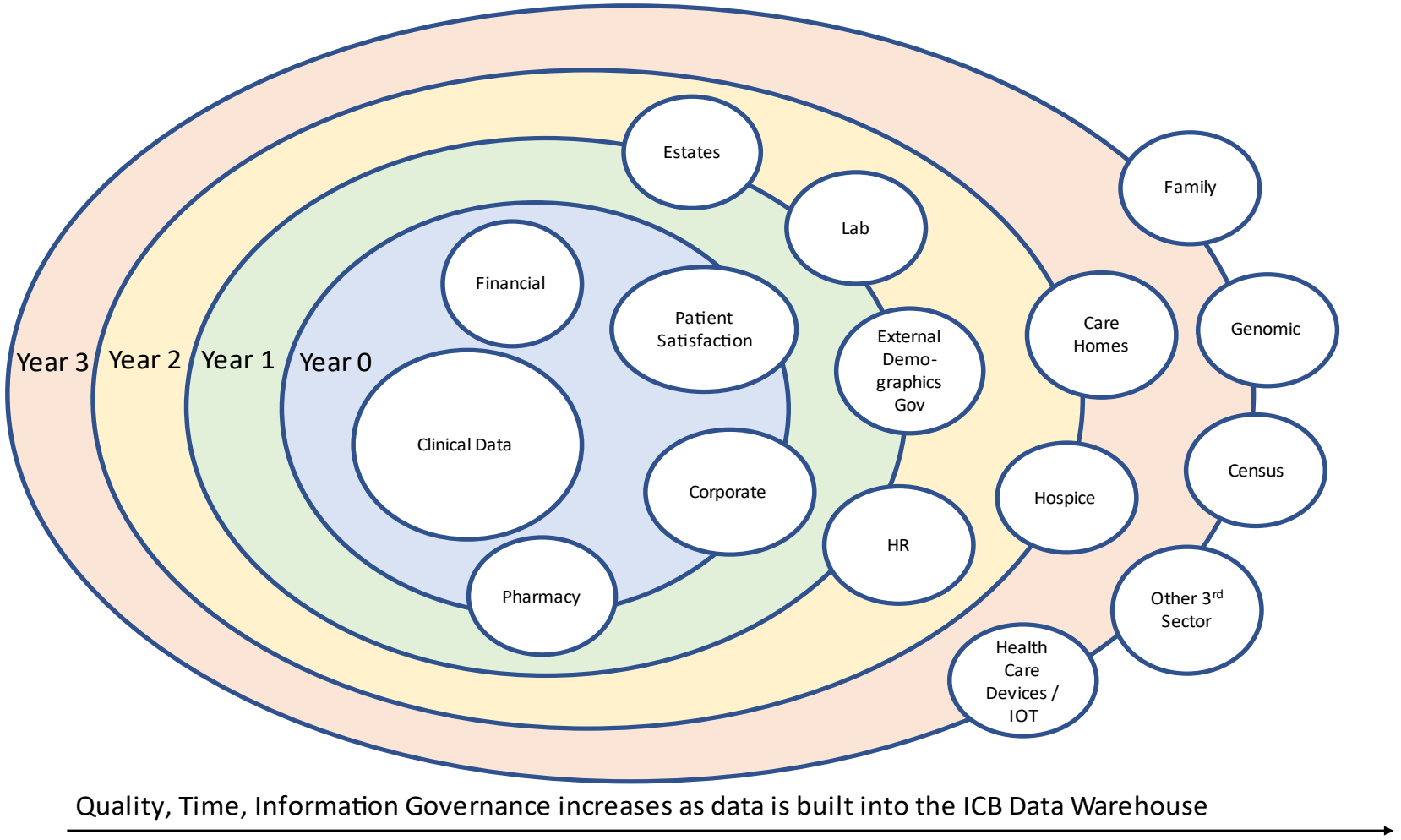
The strategy will be supported by a range of discussion papers to ensure that work across the digital and intelligence work programmes of the ICS do not sit in isolation of each other. Proposals around Data Warehousing (DW) to deliver reporting, analytics, Population Health Management (PHM) and Research and how this would align with the One Health and Care Shared Care Record and the national Federated Data Platform initiative.

We are not recommending a ‘big bang’ approach, as there is simply too much to do for that to work. Instead, a pragmatic, incremental approach will be developed. We will continue to engage on both the ambition and delivery expectations for our ICS as we move through to delivery and implementation, including the risks and dependencies we will need to manage.

We must consider that the providers are themselves legal entities with National Statutory reporting requirements and ongoing data processing, data quality and data management responsibilities. The strategy seeks to build on the successes of our respective providers’ digital and data strategies with a focus on where, collectively, the ICS can accelerate our intelligence approach and support health and care provision across our system.

Appendix 1

Shared Data priorities for developing the Data Warehouse environment.



Appendix 2

Glossary of Terms		
AI	Artificial Intelligence	The NHS AI Lab - NHS Transformation Directorate (england.nhs.uk)
APHA	Association of Professional Healthcare Analysts	AphA Home - AphA - Association of Professional Healthcare Analysts (aphanalysts.org)
BCS	British Computer Society	BCS, The Chartered Institute for IT | BCS
Caldicott		The Caldicott Principles - GOV.UK (www.gov.uk)
DICOM	Digital Imaging and Communications in Medicine	Digital Imaging and Communications in Medicine - NHS Data Standards Directory - digital-imaging-and-communications-in-medicine-dicom
DSCRO	Data Services for Commissioners Regional Offices	Data Services for Commissioners Regional Offices (DSCROs) - NHS Digital
FDP	Federated Data Platform	NHS England » Federated data platform (FDP) – frequently asked questions
FEDIP	Federation Informatics Professionals	Health And Care Informatics | The Federation for Informatics Professionals (fedip.org)
FHIR	Fast Healthcare Interoperability Resources	FHIR (Fast Healthcare Interoperability Resources) - NHS Digital
ICD-10 (11)	International Statistical Classification of Diseases and Related Health Problems	NHS Classifications ICD-10 - TRUD (digital.nhs.uk)
IoT	Internet of Things	What is the internet of things? | IBM
ML	Machine Learning	What is Machine Learning? | IBM
Power Bi	Microsoft Power Bi	Data Visualisation | Microsoft Power BI
Pyphon	Pyphon Programming Language	Welcome to Python.org
R		R: The R Project for Statistical Computing (r-project.org)
SNOMED	Systemized Nomenclature of Medicine	SNOMED CT - NHS Digital
SQL	Structured Query Language	What is SQL? - Structured Query Language (SQL) Explained - AWS (amazon.com)