ICS intelligence functions – toolkit to support implementation of the NHSE guidance

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Contents

Section 01

The purpose of this toolkit

IN THIS SECTION:

> Building on the national guidance for ICS intelligence functions

> What is included in this toolkit

Building on the national guidance for ICS intelligence functions

This toolkit accompanies NHSE guidance that describes what an ICS intelligence function should aim to do and what an emerging, developing and maturing intelligence function should look like. It has been developed for NHSE by the Strategy Unit with additional advisory input from the Nuffield Trust.

This toolkit is designed to be a source of ideas, inspiration and practical advice that an ICS can use when considering how to develop its intelligence function; it is a curated set of materials, kept deliberately succinct to make it easy to translate into system plans. The materials are all seen as important and useful. None, however, are prescribed. They are instead for ICSs to take and use for their own purposes in their own context.

The toolkit cross-references the national guidance by indicating how the resources in **section 4** relate to the component categories used in the guidance. These are:

Purpose:
What should your intelligence function aim to do?

Scope:
What should it include and what should it not include?

Governance:
How should it be organised and how can it effectively influence your system's activities?

Data and analysis:
What data should it be able to access and how will it ensure this data is available to users?

Scale:
Where should analytical capacity and capability be placed in a system?

Multidisciplinary teams:
What skills will the intelligence function need?

Resourcing and development:
How will it ensure these skills are available and enhanced?

What is included in this toolkit

In this toolkit, you will find the following information designed to support you to create and exploit the full potential of your ICS intelligence function.

2

Section 2 contains an introduction to what analysis (the foundation of intelligence) is for. This includes a distinction between strategic, operational and clinical analysis and a description of the types of analytical skills and techniques that an intelligence function will need to be able to access to deliver to its full potential.

3

Section 3 offers ICS boards and other members of a system's leadership a set of tips for getting started and key principles to consider as the intelligence function matures. These have been developed based on the resources contained in this toolkit and it is our hope that they provide useful prompts for ICSs in thinking about their approach to establishing their intelligence function.

4

Section 4 provides a selected set of reports and other resources that address some of the essential questions that ICSs will wish to explore in setting up their intelligence function. Each is accompanied by a short introductory note that gives a quick guide to its main content and therefore potential value for an ICS.

5

Section 5 provides case studies developed for this toolkit that set out a range of approaches being adopted by ICSs that have made early progress in establishing intelligence functions, in support of the tips and principles.

This toolkit has been designed for a wide audience. Although the content is directed primarily at ICS leaders and healthcare analysts, all who have a stake in system intelligence will find resources and insights useful to them.

Section 02

Making best use of intelligence: setting the scene

IN THIS SECTION:

- The decision-making eco-system of the intelligence function
- Bringing together clinical, operational and strategic analysis in an intelligence function
- What is analysis for?
- The relationship between strategic, operational and clinical analysis
- What types of analysis should an intelligence function be able to embrace?
- Typology for analytical projects

The decision-making eco-system of the intelligence function

Clinical decisions | **Operational decisions** | **Strategic decisions**

More automatable ← → More bespoke

A Population Health Intelligence Platform…

…provides automatable analytics and insights for clinicians, operational managers, and strategic decision-makers in PCNs and Place-based teams. It can support them to answer common questions – such as understanding the health usage of specific population cohorts. But in the future it will start to provide more advanced population segmentation and predictive techniques.

Platform supported by digital teams and maintained by IF analysts

Intelligence Function analysts…

…deliver bespoke, locally-tailored insights and analytical support to ICSs, Place-based teams and PCNs, helping to direct operational decisions, inform strategic issues, and identify opportunities for cross-system transformation. As capabilities improve, they will support the coordination of care across systems, Places and PCNs by supporting operational workflow management between different care providers.

Linked data infrastructure…

…underpins the work of the Intelligence Function and the Population Health Intelligence Platform, providing comprehensive information about the whole population, supporting a whole person, population-based approach and promoting cross-system decision-making.

Bringing together clinical, operational and strategic analysis in an intelligence function

Cross-system intelligence

(including data analysts, data scientists and qualitative researchers)

To include input from workforce analysts, finance analysts and/or quality analysts, as appropriate

What could the intelligence function do to support clinical decision-making?

Answer common clinical questions. The intelligence function could help:

- Identify gaps in care for individuals
- Identify gaps in care for at-risk groups in need of new care interventions
- Understand key points of inequality in pathways
- Understand patient/user trade-offs or judgements when considering access options

What could the intelligence function do to support operational decision-making?

Alter and improve the way a system delivers and manages services, supporting managers and operational decision-makers and promoting greater involvement of internal stakeholder perspectives. Operational analytics will draw on mostly internal sources of evidence to respond to questions related to areas such as:

- Capacity optimisation
- Management of waiting lists
- Workforce demand and deployment
- Service redesign (QI)
- Management of operational workflow between care providers

What could the intelligence function do to support strategic decision-making?

Support wider understanding of how services interact with their populations and with each other; support leaders and strategic decision-makers by focusing on the longer-term vision and policy of the system and drawing in external stakeholder perspectives. Strategic analytics will synthesise evidence from a range of sources to respond to questions and facilitate action. These could include:

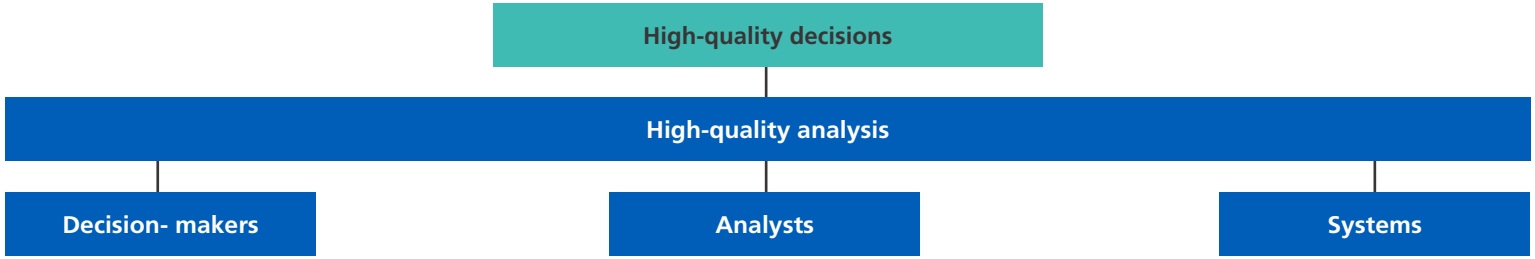
- At which points on the pathway are inequalities occurring and why?
- Which upstream interventions are likely to give greatest return on investment in our local context?
- What might be the mental health demand implications of the COVID-19 pandemic in our system?
- Has shifting more work into the community had the effect we intended and how?

Happening more at the local level ⟷ **Happening more at the system-level**

What is analysis for?

High-quality intelligence is built on high-quality analysis, of all types.

The primary purpose of analysis is to enable high-quality decisions to be made (as described **elsewhere***). The figure below describes the roles decision-makers, analysts and systems have in this.



- Have an agreed and consistent process for decision-making, designed to embrace high-quality analytical input
- Focus on getting the questions right, working with their analysts to do so
- Be motivated to avoid poor-quality decisions and have an appetite for analysis, recognising it needs adequate time and space, and for developing their own analytical understanding
- Support their analysts to have the skills and capacity to address the whole range of analytical questions to a high quality

- Are capable of supporting decision-makers with expertise and high-quality application of their craft
- Are motivated toward continual learning, development and sharing, and champion high-quality decision-making
- Are supported with opportunities to co-design and participate in decision support systems that can enable decision quality

- Pool and network the analytical resource at the appropriate level (i.e. place, ICP, ICS, region) into well-organised decision support teams led by skilled and experienced analysts with a "do once and share many" philosophy, using open source tools across the NHS and partners. This activity should engage existing resources such as **local knowledge and intelligence services**

ICSs should determine at which level of the system decisions are best taken (i.e. strategic/operational/clinical) and design the intelligence function in a way that supports this approach. There are a range of design options available for an intelligence function from centralised to devolved. The case studies in section 5 provide some examples of these options.

*See report slides 11-15

The relationship between strategic, operational and clinical analysis

The spectrum of insights on page 7 describes frontline clinical decision-making through to operational and strategic decision-making.

There are **four observations** to be made in relation to this spectrum that ICSs will wish to consider in their own local context:

1

There are different but related skills and ways of working required to deliver high-quality strategic analysis and high-quality frontline intelligence. Experience shows that high-quality strategic analytics, for example, will only be achieved if protected space and time is created to do this kind of work and if the team that does it has the **specific multidisciplinary analytical skills** needed. ICSs need to consider in the design of their intelligence function how to balance strategic and operational/clinical analysis and to ensure that the right conditions are created for each.

2

High-quality strategic analysis and high-quality operational/clinical analysis are essential partners. For example, an ICS should aim to have a strategic analytical capability in its intelligence function that understands the inner workings of risk stratification and the evidence base around it, and that has the clarity of thinking needed to support the system in assessing whether **risk stratification is the right tool for any particular job** (e.g. a team that could produce this if asked). For PHM to be effective, this ability to take evidence-based high-quality analysis through to operationally useful outputs that support targeted interventions for patients/citizens in 'clinical real-time' is a critical system requirement.

An ICS should then have:

a) An operational intelligence function capable of deploying the chosen method with precision and understanding (including working with frontline staff in implementation), making use of automatable tools to allow for timely clinical decision-making

b) The capability of its strategic team to work with the operational team to measure the impact of the chosen method in practice and make adjustments in response to this feedback.

Continued on the **next page** >>

The relationship between strategic, operational and clinical analysis (cont.)

3

As well as being essential to high-quality PHM, skilled strategic analysts can also bring vital contributions to questions concerning the optimisation of system capacity in terms of service configuration, design and scheduling. The analytical skills that ICSs should incorporate into their intelligence function also include those that fall under the umbrella of 'operational research'.

4

Experience shows that building a highly skilled strategic analytical team can act as a key catalyst/vehicle for raising skills and standards across the wider analytical/intelligence workforce and the system as a whole. This tends to be through the team becoming central to a local analytical network and a focal point for 'critical thinking', whilst also **connecting into wider regional and national networks of expertise.***

*See report slides 32-38

What types of analysis should an intelligence function be able to embrace?

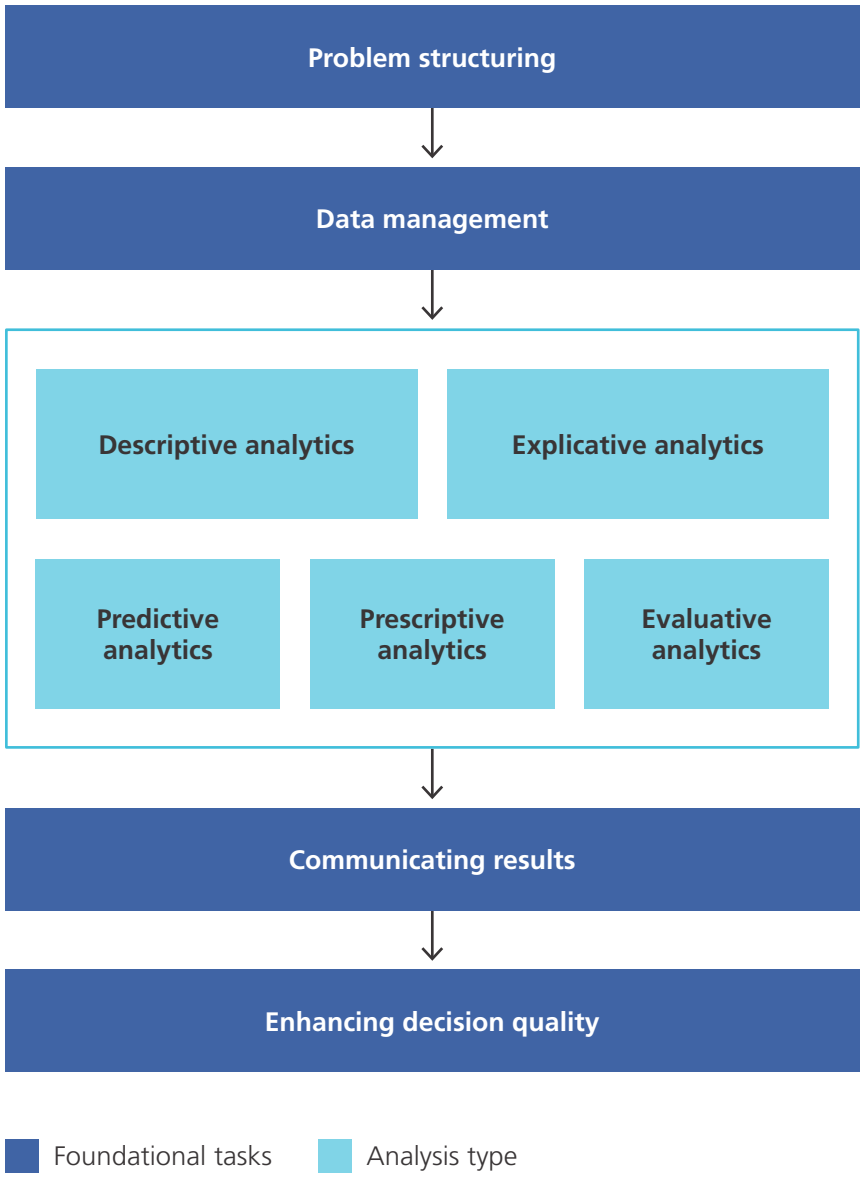
A widely-welcomed 'typology' of analytical question types and critical supporting foundations has been created to support the development of analytical capability across the NHS and its ICS partners.

We have brought that typology into this toolkit as a key resource to support systems in the design of their intelligence functions and in identifying their priorities for skills/capacity development. The typology is also described in greater detail on the next page, including notes about the skills implications.

Systems should use the typology to:

- Review the current balance of analytical work done by analysts within their system, including identifying where the gaps are and why. For example, a recent survey of healthcare analysts found that most are doing predominately 'descriptive' analytics. This leaves significant gaps in the types of analysis decision-makers are receiving
- Review the drivers of demand for analysis in their system and identify what is needed to achieve a broader use of high power analytics
- Help decision-makers identify where they need support to advance their own analytical understanding
- Frame the development of a learning strategy for their intelligence function team(s).

Analytical projects typology



A typology for analytical projects

Five types of analysis have been defined according to the nature and context of the problem to be addressed.

We acknowledge that some projects include multiple phases, and that different phases require different types of analysis. Some commonly used methods are listed for each analysis type, but these are neither exclusive nor exhaustive. In addition, four foundational analytical tasks are identified which will feature in most analyses, irrespective of type.

Problem Structuring	Data Management	Descriptive Analytics	Explicative Analytics	Predictive Analytics	Prescriptive Analytics	Evaluative Analytics	Communicating results	Enhancing decision quality

Problem Structuring

Deriving a problem definition and analytical plan from a presenting management, clinical or operational context.

Systems should systematically assess their current capability against this typology. Without full coverage of these skills and methods, intelligence functions will not be able to fully exploit the data available and answer all complex strategic questions.

Resources to support this are provided in section 4 >>

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Data Management

Information governance, data ethics, data processing, wrangling, and linkage.

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Problem Structuring	Data Management	Descriptive Analytics	Explicative Analytics	Predictive Analytics	Prescriptive Analytics	Evaluative Analytics	Communicating results	Enhancing decision quality

Descriptive Analytics

What is the world like now and in the past?
Using multiple data sources to provide a coherent overview of activity, resource use, performance, quality, efficiency, experience and outcomes.

Commonly used methods:

Summary statistics, data visualisation, geospatial mapping, metric development and derivation, prevalence studies, experience surveys.

Systems should systematically assess their current capability against this typology. Without full coverage of these skills and methods, intelligence functions will not be able to fully exploit the data available and answer all complex strategic questions.

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Explicative Analytics

Why is the world the way it is?
Exploring and explaining observed patterns of activity, performance and outcomes and the variation in these between groups and over time.

Commonly used methods:

Explanatory regression modelling, inferential statistics and hypothesis testing, data-mining, observational (risk) studies, choice experiments.

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Predictive Analytics

What might the future hold for patients, services and populations?
Estimating how activity levels, performance and outcomes change in the future under different assumptions and scenarios.

Commonly used methods:

Time series forecasting, risk prediction, machine learning, scenario planning, simulation, ex-ante modelling, epidemiological and demand modelling.

Systems should systematically assess their current capability against this typology. Without full coverage of these skills and methods, intelligence functions will not be able to fully exploit the data available and answer all complex strategic questions.

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Prescriptive Analytics

What should we do?
Providing specific advice for decision-makers in order to make best use of available resources to maximise health outcomes.

Commonly used methods:

Opportunity assessments, options appraisals, resource allocation, resource planning, scheduling, optimisation, statistical process control, decision aids and decision analysis.

Systems should systematically assess their current capability against this typology. Without full coverage of these skills and methods, intelligence functions will not be able to fully exploit the data available and answer all complex strategic questions.

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Problem Structuring	Data Management	Descriptive Analytics	Explicative Analytics	Predictive Analytics	Prescriptive Analytics	Evaluative Analytics	Communicating results	Enhancing decision quality

Evaluative Analytics

Did it make a difference and was it worth it?
Estimating the impact and costs of changes that are or have been made to the health system to inform decisions about implementation and whether to continue/roll-out.

Commonly used methods:

Causal inference, logic modelling, experimental and quasi-experimental studies, directed acyclic graphs, contribution, mediation and moderation analysis, cost effectiveness, cost benefit and return on investment analysis.

Systems should systematically assess their current capability against this typology. Without full coverage of these skills and methods, intelligence functions will not be able to fully exploit the data available and answer all complex strategic questions.

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Problem Structuring	Data Management	Descriptive Analytics	Explicative Analytics	Predictive Analytics	Prescriptive Analytics	Evaluative Analytics	Communicating results	Enhancing decision quality

Communicating results

Constructing narratives, report writing, data visualisation, verbal presentation, conveying risk and uncertainty, describing concepts and methods to non-technical audiences.

Systems should systematically assess their current capability against this typology. Without full coverage of these skills and methods, intelligence functions will not be able to fully exploit the data available and answer all complex strategic questions.

Resources to support this are provided in section 4 >>

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Problem Structuring	Data Management	Descriptive Analytics	Explicative Analytics	Predictive Analytics	Prescriptive Analytics	Evaluative Analytics	Communicating results	Enhancing decision quality

Enhancing decision quality

Supporting decision-makers and the decision-making process with problem formulation, relevant and reliable data, evidence and analyses to evaluate alternatives, sound and insightful reasoning and effective communication.

Systems should systematically assess their current capability against this typology. Without full coverage of these skills and methods, intelligence functions will not be able to fully exploit the data available and answer all complex strategic questions.

Resources to support this are provided in section 4 >>

Section 03

Tips for getting started and a summary of key principles for ICSs to consider when establishing their intelligence functions

IN THIS SECTION:

Introduction

For those who are just starting on the journey to a cross-system intelligence function, we start this section with some simple tips to follow from the outset. These are practical early tasks that can help with managing the system effort.

These tips should be read in the context of the totality of what great system intelligence looks like. This is described through a set of principles for ICS boards and other members of a system's leadership.

The principles are organised according to five intelligence function development areas that are used throughout this document:

1. Thinking about the **design** for your intelligence function
2. Assessing your **current readiness** to host an intelligence function, in terms of local workforce capability
3. **Developing your workforce** to overcome identified capability gaps
4. Developing a **multidisciplinary conception** of your intelligence function
5. Planning for **data infrastructure** and making **best use of data** in your intelligence function

The principles act as tests to be applied as the function evolves from 'emerging' to 'maturing'. They are a distillation of the source documents set out in later sections of this toolkit, in the context of the NHSE intelligence function guidance. We hope these provide a useful guide for ICSs in thinking about their approach to establishing their intelligence function.

Tips to get started

If an ICS is just starting out with its intelligence function, we suggest the following tips for early action, aligned to the five development areas.

Design

- Don't work sequentially – **start small if needed, and then work out to other teams.** Engaging widely is important, but even getting the willing together can be a good starting point.
- **Think about analysis your system has commissioned externally –** why was it outsourced and what does that tell you about what you need to do to make sure such resources are invested internally where possible?
- **Identify a prioritisation process for new work that responds to ICS priorities.** Ensure this prioritisation is agreed with senior leaders so they are aware of the time commitments and what can reasonably be expected within limited resources.
- **Get the team working on an agreed, manageable work programme straightaway, focussed on system priorities.** Allow a realistic timeframe for doing high-quality work. Make sure that the analysis is feeding a designed and genuine decision-making process, sponsored by a system leader.
- **Work with the intelligence function team to establish some team and ICS standards for what a good product looks like.**
- **Put in place a Programme Management Office (PMO) for robust planning** and to ensure that there is a dedicated team for raising governance issues and keeping projects moving.

Assessing workforce capability

- **Find out who your ICS analysts are (most systems will have up to 150)** and who is recognised amongst them as being a leader, a technical star or a new talent. **Find out who in your clinical community is an analytical enthusiast** (many welcome peer support from professional analysts).
- **Find out about the analytical assets in your ICS** – university teams; public health intelligence networks; Academic Health Science Networks (AHSNs) and other regional networks.

Developing the workforce

- **Choose the right team leader and make sure the team is led by an analyst who has system-wide credibility.**
- **Engage the system leadership openly in committing to a development programme at board level** aimed at establishing ways to advance/systematise the use of data and analysis in decision-making.

Engaging multiple disciplines

- **Encourage the team to seek out others they can work with and learn from.** Over time this can develop into a structured programme of training.
- Identify people to work within the intelligence function team **with skills in areas like evaluation, qualitative insights, knowledge and evidence.**

Data infrastructure and making best use of data

- **Make sure the team can access the tools they need;** identify any barriers to this and unblock them for all partners in the function.
- Start work to **identify priorities for early work in developing a PHM platform,** considering co-design with clinicians.
- **Map the data you have and bring together your system information governance (IG) resource** to work out how best to liberate/link the data assets you need.

Key principles to consider when establishing your intelligence function

The table below lists the key principles that ICSs should consider when establishing their intelligence functions, grouped by development area.

Design	Assessing workforce capability	Developing the workforce	Engaging multiple disciplines	Data infrastructure and best use of data

Principles to be tested:

- Do you have senior buy-in for and sponsorship of the intelligence function?
- Do you have full cooperation and support for your approach – in terms of active engagement in its design and delivery – from stakeholders from across your system (e.g. local knowledge and intelligence services, local government, voluntary and community sector etc.)?
- Have you worked out a locally tailored way to ensure that strategic and operational analytics (which require different skills and working methods) are both addressed but that neither crowds out the other? This might include separation of teams whilst maintaining close collaborative working between them
- Have you determined how analytical resource will be spread across the various levels of the system, working towards coordinated workplans wherever feasible?
- Are there processes in place as a system to determine key questions and therefore analytical priorities that are best addressed at scale, providing the intelligence function team space to operate and innovate?
- Is there a way to agree with your clinicians the key clinical processes that most require analytical support to address gaps in care etc.?
- Is there a decision-making process for designing-in using whatever analysis is 'commissioned' from the intelligence function?
- Have you got a mechanism for learning from, and sharing your intelligence function plans with your neighbouring ICSs, to identify opportunities for collaboration and scale working?

Key principles to consider when establishing your intelligence function

The table below lists the key principles that ICSs should consider when establishing their intelligence functions, grouped by development area.

Design	Assessing workforce capability	Developing the workforce	Engaging multiple disciplines	Data infrastructure and best use of data

Principles to be tested:

- Do you have a leadership culture that shows a real appetite for improving decision quality through better use of analysis; recognising that how it makes decisions is part of the answer?
- Do you have an intelligence function lead able to influence system-level decision-making directly through supporting leaders to shape analytical priorities and use analytical outputs?
- Does the leadership team take steps to understand its own levels of analytical confidence/capability and to improve those as needed (to be an effective user)?

Key principles to consider when establishing your intelligence function

The table below lists the key principles that ICSs should consider when establishing their intelligence functions, grouped by development area.

Design	Assessing workforce capability	Developing the workforce	Engaging multiple disciplines	Data infrastructure and best use of data

Principles to be tested:

- Have you mapped the skills available in the intelligence function team against the analytical typology set out in this toolkit and developed a plan to build the necessary skills/ partnerships to allow the team to undertake the whole range of analytical work needed?
- Have you identified a chief analyst to lead the team, with this person linked to the integrated care board (ICB) through governance?
- Have you identified leads in the intelligence function team for developing evaluation capability, for knowledge management and for building and applying qualitative insights?
- Is the intelligence function team sourced from diverse organisational and professional backgrounds?
- Is it an analytical team which has coverage of key analytical disciplines: statistics; operational research; econometrics; data science; epidemiology?
- Does the team have access to (a) network(s) that can help support their development (including specialist analytical skills learning) and that allow(s) effective sharing of knowledge and collaborative working as required?
- Do you have a plan for supporting clinicians to engage with PHM analytics tools?

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Design	Assessing workforce capability	Developing the workforce	Engaging multiple disciplines	Data infrastructure and best use of data

Principles to be tested:

- Is there a multidisciplinary team of skilled analysts in place, drawing on the best skills and contextual knowledge available across their whole system and clear agreements to secure their time?

Key principles to consider when establishing your intelligence function

The table below lists the key principles that ICSs should consider when establishing their intelligence functions, grouped by development area.

Design	Assessing workforce capability	Developing the workforce	Engaging multiple disciplines	Data infrastructure and best use of data

Principles to be tested:

- Does the intelligence function have unrestricted access to the tools of their trade (e.g. open source statistical software, appropriate computing capacity, etc.)?
- Is there a route for clinicians and other frontline professionals to access analytical support through both automated datasets and bespoke analytical requests?
- Do you have the necessary data permissions to allow the intelligence function to work on shared data and cross-system questions with IG leads working collectively to address data access issues, empowered by the system leadership to do so?
- Do you have plans to create a linked dataset in your system that will feed your PHM platform?
- To what extent is the intelligence function capable of developing the system's access to, understanding of and use of high-quality qualitative research data to support better decision-making?

Section 04

Supporting resources for your ICS intelligence function

IN THIS SECTION:

Summary of resources

This section contains a suite of resources that ICS leaders can employ to support their development of an intelligence function.

Some of these should be considered 'core' resources, as they cut across a number of points in the 'journey' to an ICS intelligence function described in the NHSE guidance. The table below describes their alignment with the points in this journey. Resources related to 'governance' are included in the 'specialist' content on the **next page**.

	NHSE guidance 'journey'						
Core resource	**Purpose**	**Scope**	**Governance**	**Data and analysis**	**Scale**	**Multidisciplinary teams**	**Resourcing and development**
The Strategy Unit: Recommendations for advancing the analytical capability of the NHS and its ICS partners	X	X			X	X	X
Nuffield Trust: What can the NHS learn from learning health systems?	X					X	X
The Health Foundation: Untapped potential: investing in health and care data analytics	X						X
Nesta: Report on the State of Offices of Data Analytics in the UK	X	X		X		X	
Goldacre et al.: Bringing NHS data analysis into the 21st century				X			X

Other resources are more specialist; they can be used to support a specific area of the 'journey' for your intelligence function. These are included in this table. Note: 'scope' is covered through core resources on the **previous slide**.

	NHSE guidance 'journey'						
Specialist resource	**Purpose**	**Scope**	**Governance**	**Data and analysis**	**Scale**	**Multidisciplinary teams**	**Resourcing and development**
The Health Foundation and Beautiful Information: The Analytical Capability Index	X						
MDSN: Design Principles for a Decision Support Unit	X						
MDSN course: Decision Quality for System Leaders							X
MDSN: Example process for prioritising analytical requests in an intelligence function			X				
The Strategy Unit: Outline role profile for an intelligence function chief analyst			X				
Health Economics Unit: A guide to data linkage (requires FutureNHS access)				X			
NHSX: Information Governance Framework for Integrated Health and Care: Shared Care Records				X			
Nuffield Trust: What can the NHS learn from learning health systems?				X			
The Health Foundation: Ensuring everybody benefits from the use of health data				X			
NHS-R Community				X			
NHS Python Community				X			
NHSE: Building strong integrated care systems everywhere: guidance on the ICS people function					X		X
The King's Fund: Understanding integration: how to listen and learn from people and communities						X	

Continued on the **next page** >>

	NHSE guidance 'journey'						
Specialist resource	**Purpose**	**Scope**	**Governance**	**Data and analysis**	**Scale**	**Multidisciplinary teams**	**Resourcing and development**
Joined Up Care Derbyshire: System Insight Group and Patient and Public Insight Hub (p. 14)						X	
MDSN: Evidence Guide						X	
MDSN: Evaluation Guide						X	
HFMA: What finance data is required to drive value at a population level?						X	
PHE intelligence skills mapping							X
NHS Skills Development Network – informatics (requires membership)							X
Health Education England: NHS Informatics Workforce in England							X
Health Education England: Data Driven healthcare in 2030: Transformation requirements of the NHS digital technology and health informatics workforce							X
Magenta Book: Government Analytical Evaluation Capabilities Framework							X
E-Learning for Healthcare: Population Health Management programme							X
AphA: Summary report on competency frameworks for health service analysts							X
Gov.UK: Digital, Data and Technology Profession Capability Framework							X
The Population Health Data and Analytics Centre of Excellence							X
AnalystX Observatory							X

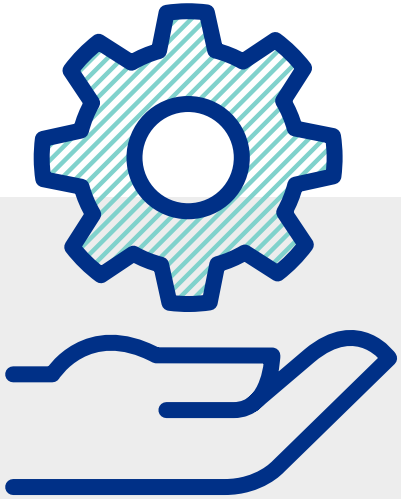
The following slides describe in detail how these resources can support you in the development of your ICS intelligence function >>

Using these resources

This section provides detail of resources that can help systems in the five key areas of their intelligence function development.

As a reminder, these are:

1. Thinking about the **design** for your intelligence function
2. Assessing your **current readiness** to host an intelligence function, in terms of local workforce capability
3. **Developing your workforce** to overcome identified capability gaps
4. Developing a **multidisciplinary conception** of your intelligence function
5. Planning for **data infrastructure** and making **best use of data** in your intelligence function



This set of resources is not intended to be exhaustive; resources have been identified and used to allow systems to undertake initial planning activities and provoke local design discussion.

Resources that can help you approach the design of your intelligence function

The NHSE guidance does not prescribe how your intelligence function must be designed, and as the case studies in section 5 of this toolkit demonstrate, there are many different models and approaches that systems might adopt.

Below are some resources that can support systems in thinking about the type of design that would suit their needs and align with their emerging ICS infrastructure. We see advantages in intelligence functions being networked (typically regionally), and this would allow design work to take place in collaboration with neighbouring systems and NHSE regions.

Core Resource

Specialist Resource

The Strategy Unit: Recommendations for advancing analytical capability of the NHS and its ICS partners (slides 30-34)

This report provides recommendations for how individual analysts and their teams, and regions, might organise themselves to support the coordination and use of intelligence in a system.

ICS leads can use it to consider:

- How they organise themselves for strategic analysis
- How analysts can be supported to develop
- How scale benefits can be realised
- What work to prioritise; and
- What professional networks can support this.

Nesta: Report on the State of Offices of Data Analytics in the UK

This report outlines different approaches to offices of data analytics, defined as:

- A model for multiple organisations to join up, analyse and act upon data sourced from multiple public sector bodies to improve services and make better decisions.
- A function with a shared vision and objectives, sometimes with shared capabilities and resource, often enacting a range of collaborative working practices, and always having a commitment to data analytics.

ICS leads can use this report to determine whether an office of data analytics is an appropriate mechanism for the way they organise their intelligence infrastructure.

Continued on the next page >

The Health Foundation:
Untapped potential: investing in health and care data analytics

This report highlights nine key reasons why there should be investment in analytical capability.

These include, amongst others:

- Clinicians can use the insights generated by skilled analysts to improve diagnosis and disease management.
- Senior NHS decision-makers can better measure and evaluate improvements and respond effectively to national incentives and regulation.
- Managers can make complex decisions about allocating limited resources and setting priorities for care.
- New digital tools can be developed and new data interpreted so clinicians and managers can better collaborate and use their insights to improve care.

ICS leads can use this to support the business case for investing in their intelligence function.

Nuffield Trust:
What can the NHS learn from learning health systems?

This briefing identifies opportunities for local organisations and systems to make better use of health data and recommends ways that national policy could promote the collaboration and greater use of analytics which underpin the learning health system concept. It focusses on lessons for the NHS but actions can be transferable across the wider health and care system.

It can be used by ICSs to understand how they can build analytics requirements into local digital plans from the outset.

MDSN:
Design Principles for a Decision Support Unit

The MDSN design principles set out how a decision support unit (DSU – the MDSN terminology for a system intelligence function) should organise itself. It includes the types of projects a DSU should deliver; ensuring projects are replicable; and the skills required in the team.

ICSs can use these principles to support the design of their own intelligence functions.

Resources that can help you assess your local workforce capability for an intelligence function

There are tasks that your system will need to undertake in order to understand whether it has the necessary analytical capacity and capability in place to deliver analytical projects of all types, as described in the analytical projects typology.

The resources below can aid your system in carrying out the necessary skills mapping work to identify capability gaps.

Core Resource

Specialist Resource

The Strategy Unit: Recommendations for advancing the analytical capability of the NHS and its ICS partners (slides 73-82)

As part of this work, a survey of healthcare analysts was undertaken to understand their current capability, the type of work they do, the coding languages they are familiar with, and development opportunities they access.

Intelligence function leads can use this as part of their skills mapping and can replicate it locally if appropriate.

The Health Foundation and Beautiful Information: The Analytical Capability Index

This is a tool that allows senior managers and decision-makers to measure their organisation's analytical capability and to understand where there are opportunities for improvement.

The tool splits capability into two domains:

1) Board perspective – a member of the board will complete
2) Analytical team perspective – a lead analyst will complete.

The assessment tool allows an ICS to complete a self-assessment of their capability that is benchmarked against other contributors.

NHSE: Building strong integrated care systems everywhere: guidance on the ICS people function

This guidance is intended to help NHS system leaders and their partners support their 'one workforce'. The document outlines responsibilities for ICS leads in relation to leading coordinated workforce planning using analysis and intelligence.

Applying this people function will support systems to understand their key gaps and shortages in their analytical workforce.

Continued on the next page >

Office for Health Improvement & Disparities (OHID) Population Health Intelligence Skills Mapping

Population health intelligence skills are a key enabler in delivering population health management approaches across local health and care systems. The skills mapping process was developed by OHID in collaboration with NHSE and local stakeholders. It forms an important initial step in helping local systems to undertake PHM. It does this by establishing where there are gaps in intelligence skills (both in terms of capability and capacity) and where there might be opportunities for collaboration on analytical work. It is a practical resource to support local systems in understanding their existing capacity and skills across a range of core competency areas related to Population Health Intelligence.

For more details on how to run the skills mapping process, please contact the corresponding team in your region:

LKIS London: **LKISLondon@dhsc.gov.uk**
LKIS South East: **LKISSouthEast@dhsc.gov.uk**
LKIS South West: **LKISSouthWest@dhsc.gov.uk**
LKIS East: **LKISEast@dhsc.gov.uk**
LKIS Midlands: **LKISMidlands@dhsc.gov.uk**
LKIS North West: **LKISNorthWest@dhsc.gov.uk**
LKIS North East & Yorkshire: **LKISNorthEastandYorkshire@dhsc.gov.uk**

Magenta Book: Government Analytical Evaluation Capabilities Framework

This framework provides a description of the knowledge and skills which enable the effective delivery of quality evaluations.

Intelligence function leads can use this to make an assessment of evaluation capability within their ICS.

AphA: Summary report on competency frameworks for health service analysts

This report reviewed the variety of competency frameworks currently in use for health service analysts and makes recommendations including the need for a 'standardised framework' across the health and care system.

Intelligence function leads can use this report to assess uniformity of analytical roles in their own system.

Continued on the **next page** >

AnalystX Observatory (requires FutureNHS access)

The Observatory is an initiative to better understand the make up of the analytical workforce via regular surveys and provide insights that result in interventions that make working life great for data professionals and analysts. This is part of the AnalystX community that provides a platform for collaboration for healthcare analysts.

Intelligence function leads, and workforce leads across ICSs, can engage with the Observatory and AnalystX community to build a clear view of capability and capacity to support strategic analytical workforce development.

Health Education England: NHS Informatics Workforce in England

This report contains intelligence on the size and make-up of the healthcare informatics workforce in England and identifies where shortages in skills are.

Intelligence function leads can use this to support their workforce planning.

Resources that can help you in developing your workforce to overcome identified capability gaps

Having mapped the current skills of your system's analytical workforce, plans can be put in place to address any gaps identified.

In addition, system leaders need to consider how to meet their own development needs so as to make best use of analysis provided by their intelligence function. This sub-section provides some resources for undertaking this development work.

Core Resource

Specialist Resource

Nuffield Trust: What can the NHS learn from learning health systems?

This briefing identifies opportunities for local organisations and systems to make better use of health data and recommends ways that national policy could promote the collaboration and greater use of analytics which underpin the learning health system concept. It focusses on lessons for the NHS but actions can be transferable across the wider health and care system.

It can be used by ICSs to understand how they can assess capacity for analytics, support collaborative approaches to building analytical capacity across an ICS, and build capability for transformation and improvement.

The Health Foundation: Untapped potential: investing in health and care data analytics

This report makes recommendations for:

- National and local agencies to develop strategies to support the development of analytical teams
- Investing in training and development tools to support better analysis, for analysts and 'users' of analysis
- Promoting the use of open-source software, data science and operational research
- Encouraging collaboration across organisations
- Creating leadership roles for analysis
- Setting higher standards for the way information is used and recognising the full potential of existing datasets.

ICS leads can use this to inform their programme of work to increase the capability and potential of their analytical resources.

Continued on the **next page** >

Goldacre et al.: Bringing NHS data analysis into the 21st century

This paper sets out the need for: a 21st-century NHS analyst workforce supported by clear career trajectories and training opportunities; a culture of 'build it once and share it to everyone' built around modern, open analytic methods; capacity building for non-analyst staff to participate in conversations about data; and frameworks to ensure good value from externally commissioned analytics.

ICS leads can use it to prioritise the areas of development recommended for analyst development.

The Strategy Unit: Advancing analytics in the NHS

This document provides example career pathways for healthcare analysts, outlines the skills a 'high-performing' analytical team will need and signposts to resources available for skills development.

Intelligence function leads can use this resource to consider how analysts in their intelligence function will progress in their careers and put together a development programme for their teams to respond to the skills mapping activity.

Gov.UK: Digital, Data and Technology Profession Capability Framework and The Strategy Unit: Advancing Analytical Capability (slides 53-68)

The DDaT provides useful summaries of the different skills various analytical roles might require e.g. data scientist/ data analyst.

Intelligence function leads can use this, in conjunction with 'Advancing Analytical Capability', to produce common job descriptions for intelligence function roles, describe career journeys through these roles and access relevant training and development opportunities.

The Strategy Unit: Outline role profile for an intelligence function chief analyst

This is an example outline role profile for an intelligence function chief analyst.

ICS leads can use this to plan for recruitment to this post.

Health Education England: Data Driven healthcare in 2030: Transformation requirements of the NHS digital technology and health informatics workforce

This report makes recommendations for policymakers to consider when preparing for the health and care analytical workforce required now and in the future.

ICS leads can use this to understand proposed current and future changes in this area to workforce planning; workforce development and professionalisation and workforce supply, as recommended in the report.

Continued on the **next page** >

NHS Skills Development Network – Informatics (membership required)

This provides a skills framework for practising information analysts and the growing numbers of data scientists. It provides descriptions of skills and capabilities for different levels of analyst (provided by AphA) and signposts to resources to develop these skills.

Intelligence function leads can use these resources to develop role profiles for their teams and identify development opportunities.

NHSE: Building strong integrated care systems everywhere: guidance on the ICS people function

This guidance is intended to help NHS system leaders and their partners support their 'one workforce'. The document outlines responsibilities for **ICS leads** in relation to:

- Growing the workforce for the future, and enabling adequate workforce supply
- Valuing and supporting leadership at all levels, and lifelong learning
- Leading workforce transformation and new ways of working
- Education, training and developing people, and managing talent.

Aligning to these people functions will support ICS leads to undertake the comprehensive planning for workforce development required for ICS intelligence functions.

MDSN course: Decision Quality for System Leaders

The MDSN offers its members a course on Decision Quality for Leaders. This is a development programme open to Midlands Network members to improve strategic decision-making in Midlands ICSs. It provides participants with cutting-edge thinking, practical tools and analytically-grounded techniques to improve decision-making in leaders' organisations and their ICSs.
The course may be extended to other geographies on request.

ICS leaders can benefit from understanding how to make best use of analysis and apply an evidence-based process to their decision-making.

E-Learning for Healthcare: Population Health Management programme

This programme has been developed to support analysts and other health and care professionals working in population health to build their knowledge and skills within this area.

Intelligence function leads can use this to build the expertise of their teams, and other analytical teams across the system, in PHM methods.

The Population Health Data and Analytics Centre of Excellence (PHDA CoE): requires FutureNHS access

The PHDA CoE will provide training to a wide range of local ICS analysts, utilising a number of partnerships with suppliers. It will build from the AnalystX community, which already has 15,000 members, many of whom are ICS analysts.

Intelligence function leads can engage with the PHDA CoE to access training provision for their teams and shape the offer as it develops.

Resources that can help you develop a multidisciplinary conception of your intelligence function

As set out in the NHSE guidance, intelligence functions should be built on multidisciplinary teams.

This includes representation from multiple stakeholders in the ICS – not just NHS – and close ties to finance, workforce and quality improvement teams. The function should also be able to draw upon qualitative as well as quantitative analytical skills and include service user insights.

These resources can support systems to pursue this aim.

The King's Fund: Understanding integration: how to listen and learn from people and communities

This guide, created by The King's Fund and Picker on behalf of NHSE, has been developed with input from ICSs, patient leaders, and engagement and experience experts.

Intelligence function leads can use the 'ten principles' included in the guide to help embed citizen engagement in their activities.

HFMA: What finance data is required to drive value at a population level?

"There is a need for systems to be clear about how best they can manage population health and develop a shared understanding of population segmentation and allocative value."

This requires finance data to understand how resources are currently distributed to subgroups of the population and data on the health needs of the population and outcomes to measure how well resources are distributed. The HFMA stress the importance of collaboration in pursuit of this aim, as an opportunity to explore fundamental, outcomes-based changes in the way resources are allocated, driving maximum value for our local populations. In describing what good looks like for costing in the NHS, the HFMA have further stated 10 tests that should be applied.

It is recommended that these tests be applied by intelligence function leads in delivering analyses.

Core Resource

Specialist Resource

Continued on the **next page** >

Joined Up Care Derbyshire: System Insight Group and Patient and Public Insight Hub (p.14)

Joined Up Care Derbyshire have created a system insight group. Its aims include to:

- Collect and organise insight being gathered across the system to make it easily accessible and searchable
- Support collaboration between organisations around gathering insight by enabling links to be made between individuals/organisations who are working on the same area, or are wanting the answers to the same questions
- Move away from seeing residents as patients, service users, or communities, depending on which organisational perspective you hold, and see them as people who need to be put at the heart of decision-making across the system
- Support the use of a variety of methods for gathering insight, moving away from an over-reliance on surveys to methods that nurture and use existing relationships.

ICS intelligence functions can use this as an example of how to engage citizens with their work.

MDSN: Evidence Guide

This guide is for analysts who are seeking to triangulate findings with the wider evidence base.

It can be used by intelligence function teams to help them frame questions to support their interrogation of the evidence base, and then to find and analyse evidence to support analysis.

MDSN: Evaluation Guide

This guide provides principles for best practice in evaluation, covering themes such as:

- Who to involve in developing the evaluation design
- Governance and ethics
- Resourcing
- The main qualitative and quantitative approaches
- How to report your findings.

Intelligence function leads can use this guide to support the development of evaluation skills in their teams, aid recruitment of evaluators, and promote the use of evaluation locally.

Resources that can help you with data infrastructure and making best use of data in your intelligence function

Having access to the right data and effective means through which users can access that data will be vital to an intelligence function.

What is done with that data is also important. Analysis should be openly available to system partners and code shared so that it is replicable for other analytical teams.

The following resources can support these activities.

Core Resource

Specialist Resource

Data infrastructure

Health Economics Unit:
A guide to data linkage (requires FutureNHS access)

This guide provides information about the linkage of datasets beyond primary and secondary care. It has been developed for anyone involved in the planning and delivery of health and care, from GP practices and secondary care to ICSs.

Intelligence function teams can use this to create and work with data linkage and see examples of data linkage in action.

NHSX:
Information Governance Framework for Integrated Health and Care: Shared Care Records

NHSX has set out how health and care information should be accessed and managed. This will help each area which is implementing Shared Care Records to demonstrate they are looking after information in accordance with good practice and the law.

This is for information governance professionals to help them plan, prepare and deliver data sharing arrangements.

Continued on the **next page** >

Making best use of data

The Health Foundation: Ensuring everybody benefits from the use of health data

This blog post introduces different approaches to using data, including:

- Rapid cycle evaluation
- Data linkage
- New tools such as discrete event simulation and predictive models.

Intelligence function teams can use this to explore new ways of developing and deploying data-driven solutions to address problems in the health system.

NHS-R Community and NHS Python Community (requires FutureNHS access)

The NHS-R and Python communities aim to support the learning, application and exploitation of these programming languages in the NHS.

Intelligence function leads can use these communities to develop the use of these tools in their own teams to support open-source and replicable analysis.

MDSN: Example process for prioritising analytical requests in an intelligence function

This is an example of how an intelligence function might plan to prioritise analytical requests that it receives.

Intelligence function teams can use this to support their own governance arrangements and assure their prioritisation process.

Section 05

Case studies

IN THIS SECTION:

Introduction

Ten case studies in England that contain features of an ICS cross-system intelligence function (as described in the NHSE guidance) have been consulted to inform this toolkit.

This section provides a narrative account of each of these case studies. The purpose of them is to provoke discussion rather than provide a template for an ICS intelligence function. Some case studies provide examples of a cross-section of the key areas of development for an intelligence function, whereas others are focused on a single area. These case studies are not a complete representation of what is happening in the function; we have highlighted features that may be of most interest to ICSs. These are summarised in the table below for ease of reference. In the individual case studies, we have also described how each aligns to the NHSE guidance 'journey' at the outset and demonstrate their application of the principles proposed in section 3. It should be noted that these case studies are 'live' examples and are therefore subject to change.

A common theme identified across the case studies is that they include representation from multiple stakeholders outside the NHS such as Public Health, local government and the voluntary and community sector (VCS). This wide system engagement is seen as a foundational task of intelligence function development.

		Development area				
	Case study	Design	Assessing workforce capability	Developing the workforce	Engaging multiple disciplines	Data infrastructure and making best use of data
1	Dorset Intelligence & Insight Service	X		X		X
2	Surrey Heartlands Health and Care Partnership			X		X
3	Kent and Medway ICS					X
4	System-P	X				
5	South West London			X		X
6	Greater Manchester Health and Care Partnership	X	X	X		
7	The Midlands Decision Support Network	X		X		
8	Healthier Futures - Academy: Black Country and West Birmingham	X			X	
9	Nottingham and Nottinghamshire System Analytics and Intelligence Unit					X
10	Local Knowledge and Intelligence Service			X	X	

Case study 1: Dorset Intelligence & Insight Service

Main themes addressed aligned to the NHSE guidance

- Responds to pressing cross-system and place-based requirements from senior leaders, providing intelligence on pressures within the system and forecasts of population need
- Supporting transformation programmes to embed principles of analytics and PHM in new care models
- Supported by a dedicated intelligence programme team to assist the function's governance and ensure cross-system engagement
- Linked data available on the whole population from primary and secondary care, including mental health and community services. Data accessible to intelligence function analysts.

Summary

The Dorset Intelligence & Insight Service (DiiS) links health and social care data from across the Dorset ICS and some external partners to provide clinical intelligence and enable insights to be delivered through their clinical networks, as well as to support PHM. It supports collaborative analytical projects and facilitates automated access to the linked dataset through bespoke dashboards. The requirement for the service was first established in 2016. Dorset ICS serves a population of c. 800,000. The underpinning objective of the DiiS is to mobilise knowledge by turning data into a shared understanding of what that data means to inform decision-making.

Design

A small and dedicated DiiS team coordinates the service's governance and work programme. The DiiS leadership board includes senior analytical leads from across the system (representatives for BI, finance and all system partners) who report into the ICS board to approve priorities and investments for the DiiS.

There is a dedicated PHM lead to provide the bridge between the DiiS team and end users to enable translation of data from insights to action. Intelligence champions are established within each ICS partner organisation and support the development of datasets and insights while clinicians and stakeholders can drive the shape and content of insights via feedback loops and partnerships.

"Right at the beginning we pulled together what became the DiiS board, which has representatives from BI, finance, every one of the ICS partners in Dorset. They keep attending and contributing. We got buy-in by using that board/our meetings for everyone to feed in what they want from the DiiS and how it could be made useful for them."

The DiiS is a founding member of the Wessex Data & Analytics Centre of Excellence. This is an initiative to empower data and analytics professionals across health and social care partners. It is supported by Wessex Care Records, the region's nationally funded Local Health and Care Record programme, designed to join up patient information across borders and use its potential for population health planning and informed, personalised care.

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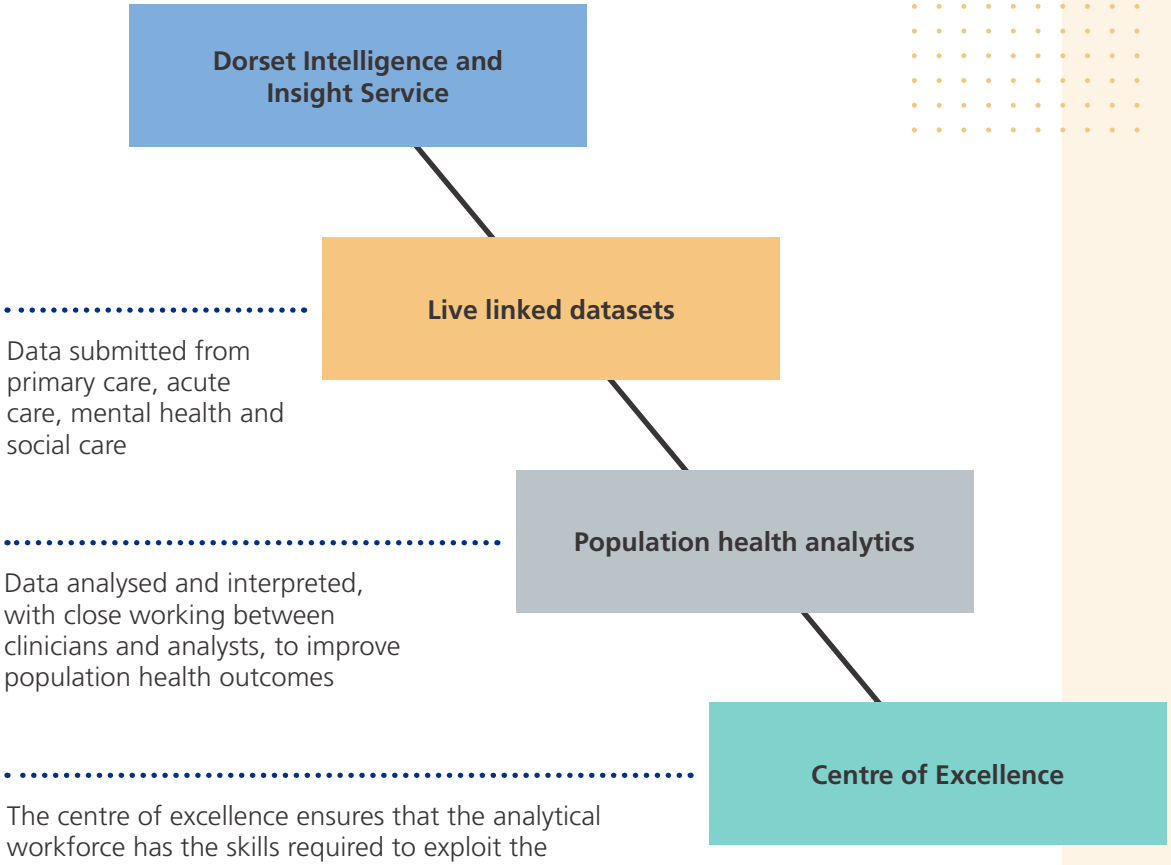
This figure shows the key elements of the DiiS



System partners:

- Dorset CCG
- Dorset Healthcare
- Dorset County Hospital
- South Western Ambulance Service
- University Hospitals Dorset
- Dorset Council
- Public Health Dorset
- Bournemouth, Christchurch and Poole Council

Applied principle

Have you determined how analytical resource will be spread across the various levels of the system, working towards coordinated workplans wherever feasible?

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Developing the workforce

System funding has allowed the DiiS to recruit a dedicated technical lead and pool of analysts with a diverse set of skills. There have also been secondments from across the system. Development of staff has been supported by technical specialists recruited on short-term and permanent contracts to build capability of analysts and to support them to deliver specific technical tasks.

"Recruitment has been organic and dictated by funding. It's also been organic in terms of bringing people in from other parts of the ICS – secondments from councils. We have slowly brought in specialists to help us in particular areas. Some are on a permanent basis, some on a fixed-term basis, and we can buy in day-rate people to deliver particular things, as some things we'll never repeat so it's more cost effective."

Analysts in different teams across Dorset are supported to give time to the DiiS. The centre of excellence enables professional development of BI analysts and developers. Analysts have set up their own training networks to develop specific skills and run DiiS demo sessions.

"One of the deliverables of DiiS was supporting a centre of excellence. It's morphed into a data and analytics centre of excellence with the aim to professionalise our data and analytics staff and make sure they are in the best position to make use of the data we have now."

The DiiS are now hosting a national peer learning network, run in collaboration with NHSE, and with participants from across the country, to share experiences as they mature as intelligence functions within ICS structures.

Applied principle

Is the intelligence function team sourced from diverse organisational and professional backgrounds?

Data infrastructure and making best use of data

The underpinning objective of the DiiS is to mobilise knowledge by turning data into a shared understanding of what that data means to inform decision-making. Linked health and social care data from across the Dorset ICS, and some external partners, provides clinical intelligence to enable insights to be delivered through their clinical networks, as well as support PHM. Data is pseudonymised using a pseudonymisation tool and data is inputted into the data warehouse from a number of sources. It is done on the NHS number to allow clinicians to reidentify patients to make use of the data. The following data is currently flowing into the DiiS:

- **Primary care:** patient level data submitted daily from practices using SystemOne. A small minority of practices using EMIS cannot input their data. Reidentification is possible for users accessing datasets
- **Acute care:** daily submitted data for patient flow; inpatient/outpatient activity; ED attendance; diagnostics; referral to treatment
- **Mental health:** data submitted for referrals; interventions; SMI; steps to wellbeing
- **Social care:** MOSAIC; COVID-19 community shielding.

"The DiiS links health and social care data from across Dorset ICS through our clinical networks (clinicians themselves) and some of our external partners. It provides clinical intelligence and enables insights to be delivered to help us understand our population better and our population behaviours."

Applied principle

Is there a route for clinicians and other frontline professionals to access analytical support through both automated datasets and bespoke analytical requests?

Continued on the **next page** >

Relevant projects

Examples of existing projects being delivered by the DiiS provide evidence of the type of work this model is able to deliver.

Project 1

Using live mental health data from primary care, the DiiS can view the population who have mental health conditions, including learning disabilities and serious mental illness, holistically. The data can be stratified and segmented by demographics, socio-economic factors, geography, ethnicity and associated long-term physical health conditions.

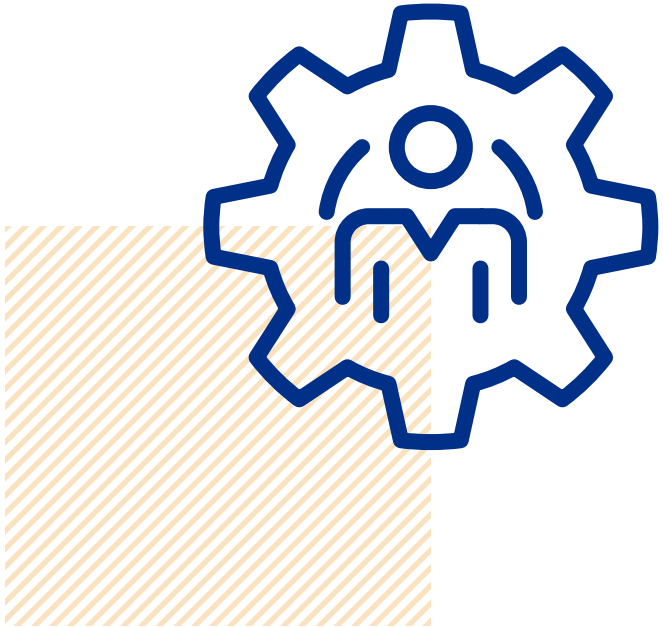
Project 2

To support the health inequalities agenda, the DiiS is providing interactive and filterable analytical tools with a number of metrics including deprivation, as well as other vulnerabilities including: risk of social isolation, unhealthy behaviours and active safeguarding flags. Using this data in their COVID-19 response, PCN colleagues designed a different intervention for each group using the breadth of workforce available to them including advanced nurse practitioners, social prescribers and the voluntary sector.

Project 3

In North Dorset a COVID-19 insights report from the DiiS was used to segment their population by risk factors for COVID-19 and direct their workforce accordingly for people who might require more proactive engagement. This has included the primary care workforce as well as social prescribers, link workers, volunteers etc who might benefit from holistic support.

Case study 2: Surrey Heartlands Health and Care Partnership



Main themes addressed aligned to the NHSE guidance

- Supporting transformation programmes to embed principles of analytics and PHM in new care models
- Mapping of system analytical workforce undertaken to identify capability gaps
- Single information governance framework across system partners, with an agreed way of sharing information for PHM.

Summary

Surrey Heartlands Health and Care Partnership are in the process of establishing a cross-system intelligence function for health and care. This will be centrally located through a core analytical team with networked intelligence functions at the place level. This team will come from stakeholders across health and social care and each of the four places in the system will have a nominated BI analyst to support them.

One of the central reasons behind this function was to align interpretation and decisions relating to information governance and support the system's PHM approach. The purpose of the function is to give more resource to the system for intelligence and make sure that decisions made as an ICS are joined up.

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Developing the workforce

Surrey Heartlands have previously conducted skills mapping of their analytical workforce, led both by the Surrey Office of Data Analytics (SODA) and the local council. Problem formulation was identified as a gap and as part of the system's PHM programme development, activities are planned to help analysts work with stakeholders on how to interrogate data. This skills mapping is intended to be repeated, aligned to the direction set by the emerging cross-system intelligence function.

A new head of PHM post has also been created to support analyst development and create a community for the profession in the system.

Three layers of professional community are planned:

- SODA senior analytical community
- PHM analytical community
- All analyst community of practice – this will have a technical subgroup focused on R and Python capability. Training in these areas will form part of the network offer. There are further plans to develop machine learning and artificial intelligence (AI) capability, analytical and statistical techniques and 'non-technical' skills e.g. data visualisation.

Applied principle

Have you mapped the skills available in the intelligence function team against the analytical typology set out in this toolkit and developed a plan to build the necessary skills/partnerships to allow their team to undertake the whole range of analytical work needed?

Applied principle

Does the intelligence function team have access to (a) network(s) that can help support their development (including specialist analytical skills learning) and that allows effective sharing of knowledge and collaborative working as required?

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Data infrastructure and making best use of data

The system leadership has been clear about the structural changes required in its transition from a PHM programme to an ICS (Surrey Heartlands was part of Wave 2 of the national PHM programme). Communication has focused on better use of data and supporting stakeholders to access the right data and ask the right analytical questions.

The intelligence function is supported by SODA. To accelerate their ambitions for joint datasets, SODA created the impetus for partners to work more closely over data. This encouraged the system to look at the infrastructure around data and they determined that a system intelligence function was the right approach.

"SODA was really set up as a joint function with public health colleagues and the county council insight team, bringing in colleagues from the main providers and some of the other councils. Then we're part of wave 2 of the national population health management programme. That really helped us to accelerate our ambitions for joint datasets."

The first step the system has identified in building system support for a coordinated approach to data analytics is to demonstrate the value of bringing data together to work on some key priorities.

This has been managed by overlaying data by adding detail to data from other sources e.g. demographic data to health data. The system currently has a shared care record which includes data from primary care, NHS providers and social care, supported by Graphnet. They are now developing the PHM Graphnet solution, which will bring in secondary use data, wider healthcare and local government, and are creating longitudinal linked records to support PHM. They also aim to incorporate police and wider determinant data e.g. education, financial, employment, environmental etc.

"One of the ways of developing our data was through a soft approach; it was just overlaid data to start with; it wasn't linked datasets. It was a really good way to get the intelligence function working together on some key priorities to start with – they were on children's, mental health, cardiovascular disease, some social care elements and young people violence – because they were neat things that are a priority for everyone in the system."

The first direct care dashboards have now been rolled out to primary care leads and the analyst community across the system. They are currently building a model to support PCNs and places to roll out further dashboards and are also working with their Thames Valley and Surrey Local Health and Care Record and Combined Intelligence for Population Health Action partners to share dashboards across the collaborative, which is also supported by Graphnet.

Information governance (IG) was seen as a restricting factor behind the system's ambitions, with a lack of consistency around its interpretation. In the ICS an IG group has been established with representatives from health providers, local government and the VCS, who make IG decisions collectively and once for all. This has helped share risk and accountability for IG.

The system is in the process of creating a data strategy for the ICS. This will support a shared IG framework which is interoperable, reduces duplication and reduces costs. Workstreams within the strategy group include:

- Vision and purpose
- Architecture and infrastructure (incorporating IG/governance)
- BI operating model – this workstream will be tasked with mapping out the cross-system intelligence function.

Applied principle

Do you have the necessary data permissions to allow the intelligence function to work on shared data and cross-system questions with IG leads working collectively to address data access issues, empowered by the system leadership to do so?

Case study 3: Kent and Medway ICS

Main themes addressed aligned to the NHSE guidance

- Linked data available on the whole population from primary and secondary care, including mental health and community services. Data accessible to intelligence function analysts
- Receiving a remit to inform and investigate system-wide priorities and using intelligence to inform the population health priorities of the ICS.

Summary

Kent and Medway ICS (K&M) are currently developing the Kent Research Network for Education and Learning (KeRNEL). The KeRNEL is supported by the Kent Integrated Dataset (KID), responds to the Analytics Strategy for K&M, and is supported by a shared health and care analytics board and joint data control and academic and industry relationships in the ICS.

The KeRNEL objectives are to:

- Support K&M to advance their work in PHM, specifically in relation to adverse childhood events and intimate partner violence
- Provide a single source of data across health, social care and non-health services to support collaborative working
- Provide transparent access to data
- Facilitate the continual evolution of data assets
- Support the development of analytical skills in problem formulation, analysis and communicating findings.

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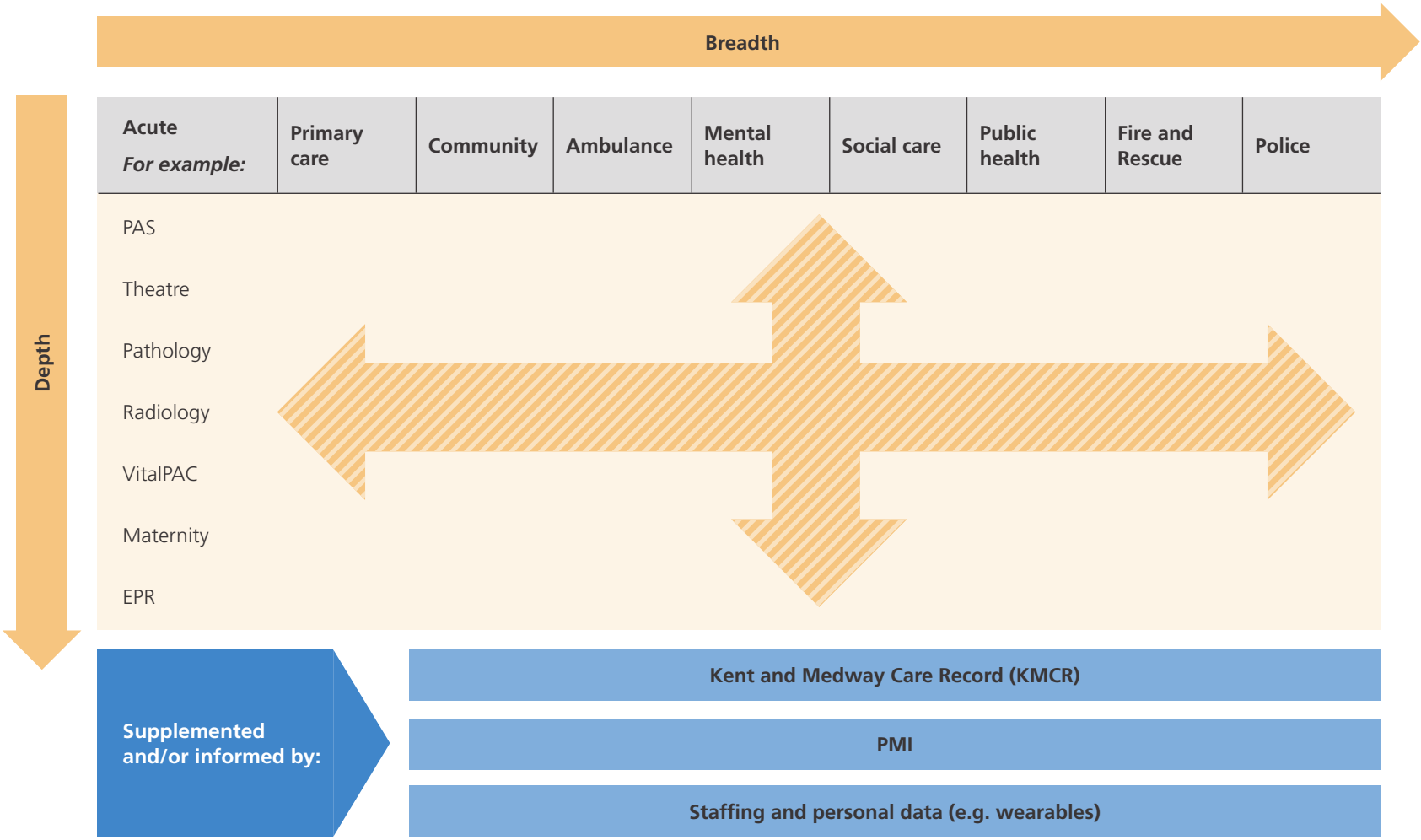
Data infrastructure and making best use of data

K&M have been developing a linked dataset over the past seven years known as the KID. Using the data feeds which informed the KID as one of its foundations, the ICS will create the KeRNEL and expand its breadth and depth in the use of more clinical datasets and across more NHS and partner organisations.



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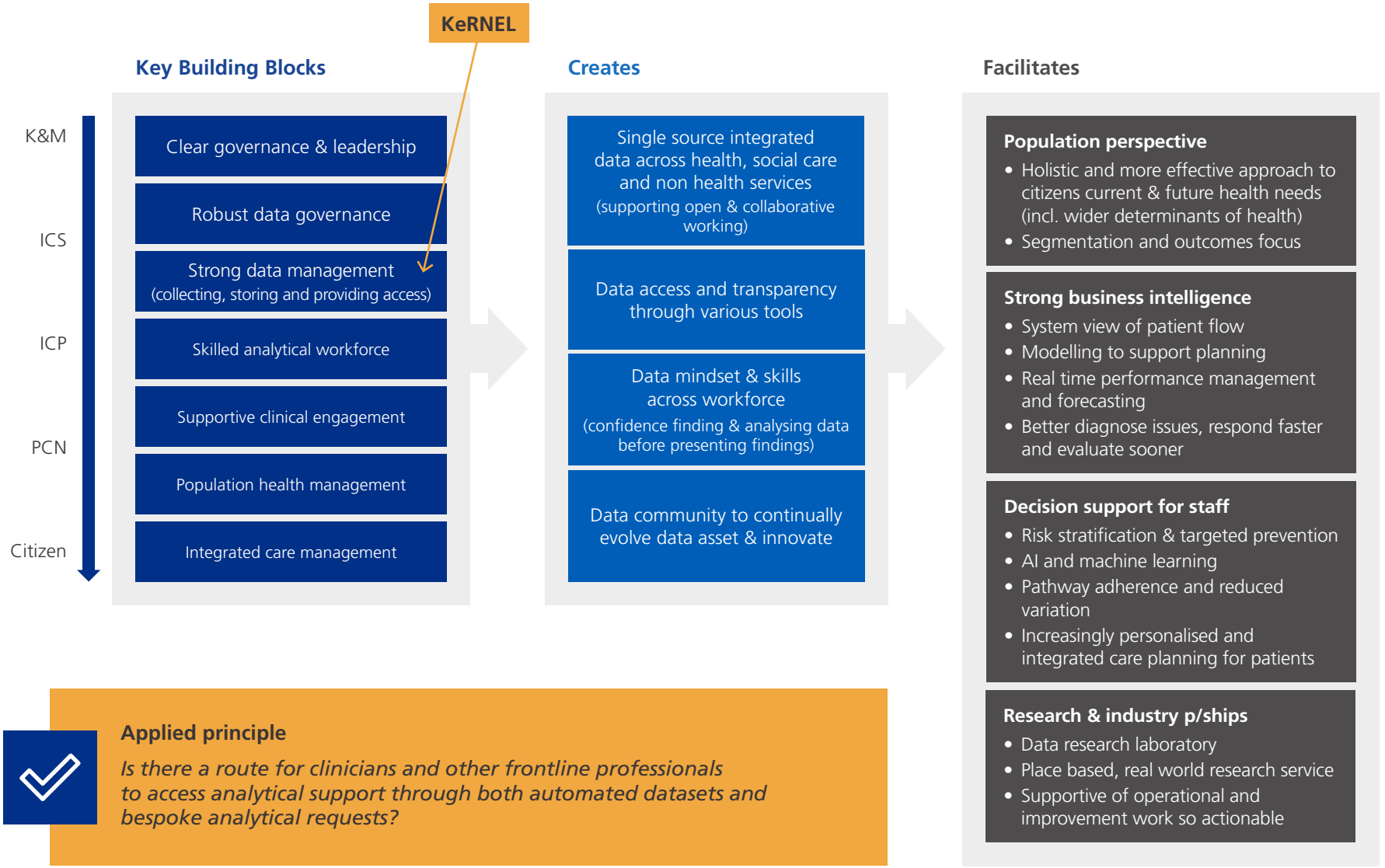
This figure shows how the KeRNEL is one part of a wider strategy in K&M to create a strong data culture through a number of 'building blocks'.



Applied principle

Is there a route for clinicians and other frontline professionals to access analytical support through both automated datasets and bespoke analytical requests?

Case study 4: System-P (Cheshire and Merseyside Health and Care Partnership)

Main themes addressed aligned to the NHSE guidance

- Responds to pressing cross-system and place-based requirements from senior leaders, providing intelligence on pressures within the system and forecasts of population need
- Clear governance into the ICB and ICP – where both have a steering, oversight and listening role.

Summary

System-P has been established as the intelligence function for Cheshire and Merseyside Health and Care Partnership, with investment agreed for a 12-month period in the financial year 21/22, culminating with a summative evaluation of the outputs. The function reports into the system population health board and there is a reference group comprising stakeholders from across the system – NHS, local authority, voluntary and community – who have oversight of System-P's activities. System-P can access a linked dataset hosted by Graphnet.

The function will focus on:

- Providing the system with population health insights
- Providing intelligence to places to develop intervention strategies
- Initially producing outputs related to complex lives and frailty and dementia.

In the short-term, System-P have commissioned the NHS Strategy Unit to undertake its analytical projects whilst they transition to a local team. Once the analytical team of data scientists and researchers are recruited they will take over the workplan.

Design

System-P is closely modelled on the **Midlands Decision Support Network** approach.

It has two main objectives:

- To provide the system with intelligence as to the population health needs for the whole population
- To provide intelligence to places to enable them to develop a strategy to address their population health needs.

System-P will work with two places (out of nine in total) within the system through which to test action based on its initial analytical projects. System-P will work with these places to help them to develop action plans and have funding ringfenced to do so.

Applied principle

Have you determined how analytical resource will be spread across the various levels of the system, working towards coordinated workplans wherever feasible?

Case study 5: South West London Health and Care Partnership

Main themes addressed aligned to the NHSE guidance

- Investment in skills development for analysts across a range of capabilities, including population health analytics and data visualisation
- Data accessible to system partners through a PHM platform and provides opportunities for automation and bespoke analysis.

Summary

COVID-19 was the impetus for South West London Health and Care Partnership (SWL ICS) to fully exploit their linked dataset to develop impactful analytics tools and outputs to support better patient outcomes, target inequalities, and direct their limited resources. The SWL Covid Dashboard – a PHM platform – went live in May 2020, combining patient-level data from across the system to deliver population health capability. It is supported by a linked patient-level dataset that includes acute, 111, primary care, mental health and community datasets. It also includes wider determinants information such as deprivation, vaccine uptake, opportunity to test and distance from prospective vaccine sites. The team are looking to link social care and local authority data.

Before developing the platform, SWL had already begun to ramp up their analytical capacity in response to the needs of the CCG and a need for the system to better understand its patients' health profiles.

Developing the workforce

SWL engages NEL Commissioning Support Unit (CSU) to deliver data, information analytics and PHM capability. NEL CSU analysts are well versed across a number of disciplines: statistical processes, data management and extraction, information visualisation, risk segmentation and stratification, data modelling, and communicating data analytics and insights. The key has been developing a well-rounded team, with specialisms in each area, coming from different members of the team.

There are 20 analysts within the SWL analytics team with two members closest to the PHM infrastructure. Each analyst takes a lead in their own clinical area, acting as a subject matter expert. Insights are used by experienced SWL transformation managers, working with senior clinicians and system partners, to pilot new interventions such as:

- Risk segmentation of Type 2 diabetes patients to be prioritised for a primary care-led annual review
- New communication methods and channels to co-produce and share COVID-19 messages to at-risk communities.

Applied principle

Is it an analytical team which has coverage of key analytical disciplines: statistics; operational research; econometrics; data science; epidemiology?

Continued on the **next page** >

Data infrastructure and making best use of data

The dashboard enables partners to understand the profile of the population they serve, providing insights at a strategic level all the way down to individual patient level. Currently, it can be used to identify 'live' problems/risks, develop interventions targeted at particular groups through patient reidentification, and then monitor the impact of interventions over time.

Initially, requests for data insights were made by emailing the analytics team. As demand grew, an executive cycle for approving and prioritising requests was implemented. More recently, a function has been built into the dashboard itself to enable anyone in the system to make a request, to see what others have requested and to keep up to date with upcoming work programmes. This supports cross-system planning and reduces duplication of effort.

"Slowly, over time, word has spread that there is this team here supporting all of analytics. Requests for analysis can be made via the dashboard and the executive team determines those that should be prioritised. This helps the system know what's coming up, which avoids different people duplicating requests and it helps the system to plan".

Access to the data tools and governance across the ICS is managed via MS Teams. Only users with a clinical relationship to patients have the additional level of access to be able to reidentify patients, where appropriate.

SWL has integrated AI algorithms (e.g. predicted outcome if a patient were to develop COVID-19, risk of acute attendance in the next 12 months, etc.), providing actionable intelligence for SWL system transformation teams to be able to deliver specific, personalised interventions, from an individual person to the population at scale.

Relevant projects:

- Mapped COVID-19 cases and linking to shielded list, deprivation, 111 calls, admissions and LTCs
- Risk segmentation of the shielded list
- COVID-19 health inequalities, including testing inequalities
- COVID-19 early warning system (second surge predictor)
- COVID-19 impact on health inequalities in accessing urgent and emergency care
- SWL flu vaccination: A PHM perspective
- Targeted flu vaccines in terms of risk factors, including frailty, deprivation, ethnicity and homelessness.

Applied principle

Is there a route for clinicians and other frontline professionals to access analytical support through both automated datasets and bespoke analytical requests?

Case study 6: Greater Manchester Health and Care Partnership

Summary

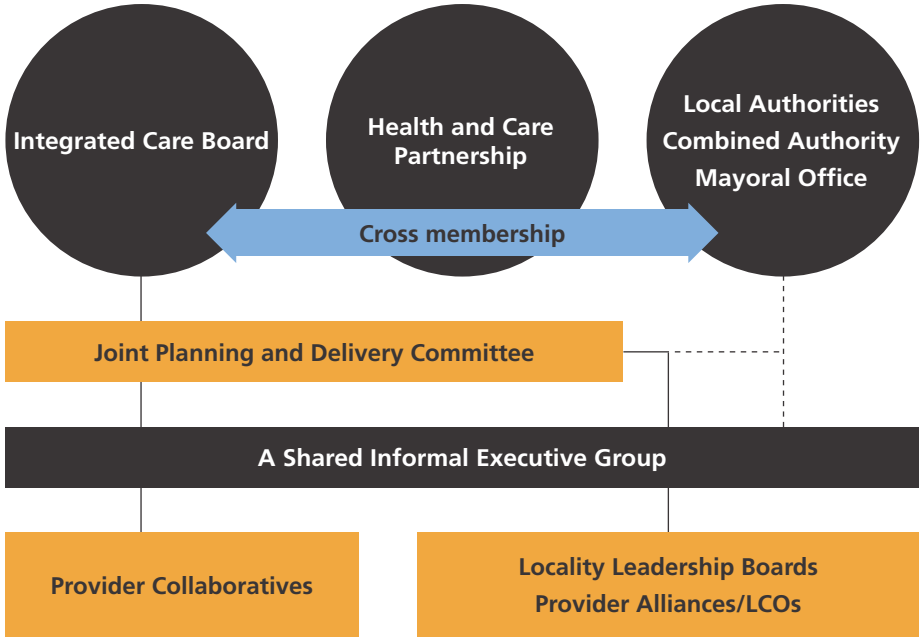
Greater Manchester (GM) are seeking a governance framework that will ensure that key functions within the ICS are linked to the ICS oversight that includes the integrated care board, health and care partnership and other non-NHS stakeholders. Digital and data and insight and intelligence will have sponsorship in the joint planning and delivery committee. The figure below demonstrates the emerging nature of this arrangement.

The development of a dedicated intelligence function for GM is focused on ensuring that members of these boards have access to the right analysis to inform their decision-making, and that they have a clear line of sight to the source of that analysis.

GM already has a shared care record with data from primary care, acute, mental health, community health and social care. This is supported by an analytics and data science platform. It is proposed that this infrastructure is adopted as the single data warehouse for the ICS and other data infrastructure in the system is interoperable with this data warehouse.

Main themes addressed aligned to the NHSE guidance

- Representation from analytical leaders across the ICS within formal governance; established analytical lead for each ICS
- Clear governance into the ICB and ICP – where both have a steering, oversight and listening role
- Receiving a remit to inform and investigate system-wide and place-level priorities and using intelligence to inform the population health priorities of the ICS.



Emerging GM ICS governance arrangement (draft)

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Design

GM has ten localities, with a diversity of analytical resources and capability within them. The current preferred approach is to formalise and strengthen the existing 'hub and spoke' model of analytics where each locality has its own analytics function, with some analytical work done 'once for all' by a GM system intelligence function, supported by the locality teams. What is done as a system-wide activity and what is done at the locality level will be context-specific. To help determine whether the 'hub' is best placed to do a piece of analysis, GM can apply a set of iterative principles:

Principle	Test of principle
Partnership and co-production	Proposed GM system-wide activity is developed in partnership with local systems.
Evidence of need	There is evidence that the proposed activity is needed to improve health outcomes and reduce health inequalities. There is a clearly defined 'use case'.
Prioritisation and alignment	There is agreement that the proposed activity addresses a GM level system priority and has a strong strategic fit, and that there is the capacity and resource to deliver the ambition.
The power of the collective	There is evidence that taking a GM system-wide or supra-district approach will harness and amplify the power of the 10 localities and GM infrastructure, particularly when responding to particularly complex or intractable challenges.
Efficacy of the approach	There is confidence that the proposed approach will be effective.
Scale/value for money	There is a benefit to a GM system-wide approach either because it provides significant opportunities for scaled delivery and/or value for money, or because the scale of need identified at an individual locality level is not sufficient to warrant locality-level activity.
Variance and consistency	There is evidence that a GM system-wide approach rooted in a culture of sector-led improvement and peer challenge, will reduce unwarranted variance, reduce unnecessary duplication, and improve consistency, where it is beneficial to do so.
Pragmatism	There is clear evidence that a GM system-wide approach is the only feasible way of addressing the issue which has been identified.
Seizing the opportunity	There is an opportunity to do something that is unplanned but may be of significant benefit, and a GM system-wide approach is the most expeditious, or there is a gap at locality level that could most effectively be filled by a GM system-wide approach.
Opportunity to learn	There is an opportunity to establish new learning through research which can be best realised by activity taking place at a GM system-wide level.

Applying these principles could mean that more healthcare data management and methodological standards development are done once at the GM level, together with some key contracting, performance, service redesign and assurance reporting elements and that localities can focus more on mobilisation, user research and engagement and developing targeted actionable insight.

Applied principle

Have you worked out a locally tailored way to ensure that strategic and operational analytics (which require different skills and working methods) are both addressed but that neither crowds out the other? This might include separation of teams whilst maintaining close collaborative working between them.

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Assessing workforce capability

The role of a chief intelligence and analysis officer will oversee the coordination of different types of intelligence – population health, commissioning, performance, workforce, finance – at the system level. It is the experience of the system that this role can take up to two years to build a profile and establish common agreements on how to organise for high-quality analysis in the system.

In line with the NHSE guidance, it is expected that a chief analyst that leads the intelligence function will be vital, acting as a recognised and delegated authority in the system for high-quality analysis. This role will operate as a trusted analytical lead, able to influence board level decision-making. In practical terms, this trust allows analysis to be presented to decision-makers in the form of possible decisions to take based on its findings, rather than presenting the findings themselves, so freeing up capacity to focus on decision quality.

Applied principle

Do you have an intelligence function lead able to influence system-level decision-making directly through supporting leaders to shape analytical priorities and use analytical outputs?

Developing the workforce

An important development for the workforce in GM will be to distribute the analytical capacity and capability according to where it is needed in the hub and spoke model, and reduce variation across localities and the 'hub'. For example, by placing more resource into network development and management to mobilise analytics in the system. This applies across the delivery of analysis and the enabling functions.

Applied principle

Does the intelligence function team have access to (a) network(s) that can help support their development (including specialist analytical skills learning) and that allows effective sharing of knowledge and collaborative working as required?

Case study 7: The Midlands Decision Support Network

Main themes addressed aligned to the NHSE guidance

- Consideration of the analytical support needed at system, place and neighbourhood levels
- Establishment of links between ICSs within a region and/or across regional boundaries
- Receiving a remit to inform and investigate system-wide priorities and using intelligence to inform the population health priorities of the ICS
- Has an agreed analytical project prioritisation process for ensuring that work is high-value and will be used to maximum effect by leaders, transformation teams and clinicians
- Investment in skills development for analysts across a range of capabilities, including population health analytics, programming languages and data visualisation.

Summary

The Midlands Decision Support Network (MDSN) is designed to support its members to develop local decision support units (DSUs) – or intelligence functions. There are 12 DSUs in the network, one for each of the 11 ICSs in the region and NHSE Midlands. They are fully autonomous, reflected in their varied emerging designs that are tailored to the local context. The Network has been in operation since November 2019.

The MDSN is overseen by a strategic group of ICS accountable officers from each of the member systems. They determine the activities of the Network's development centre, funded by subscription arrangements from the members. The development centre is operated by the expert team at the **NHS Strategy Unit**. The focus is on the members leading the direction of the Network, and this direction is supported by the development centre through three main strands of activity:

- Active knowledge exchange (facilitation of professional networks for analytics, evaluation and evidence and knowledge; tools and guidance to support Network members e.g. the Network **evaluation guide**; managing a regional **knowledge library**)
- Training and development (**targeted development programmes**; **large scale open events**; and educational seminar series)
- Individual **analytical workplans** – local DSUs will follow their own workplans dependent upon the priorities in their systems. In addition, the Network development centre undertakes **three or four large-scale analytical projects** per year, chosen by the Network members and applicable to the region. Examples of projects delivered to date at this scale include **classifying outpatient activity by function** and **socio-economic inequalities in access to planned hospital care**. These projects are complemented by 'insight to action' support for each Network member provided by the development centre team.

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The MDSN has incorporated public health and local government interests from the outset. Members of the PHE Local Knowledge and Intelligence Service were seconded to support the Network. Local government representatives are involved in DSU development locally and analysts from local social services and public health teams have joined the learning programmes offered by the development centre. The development centre is also engaged with one of its ADASSs in undertaking **analytical innovation projects**.

"We've realised major benefits by being part of a regional network of intelligence functions – there's no question that it has contributed to our moving ahead. It's provided opportunities for peer support and collaborating on shared problems, but also allowed systems to pool resources to fund the activity of a regional development centre … members shape the educational programme, the analysis agenda and the knowledge exchange activities so that they respond to emerging needs. We are finding that our development centre is delivering terrific quality and remarkable value for money."

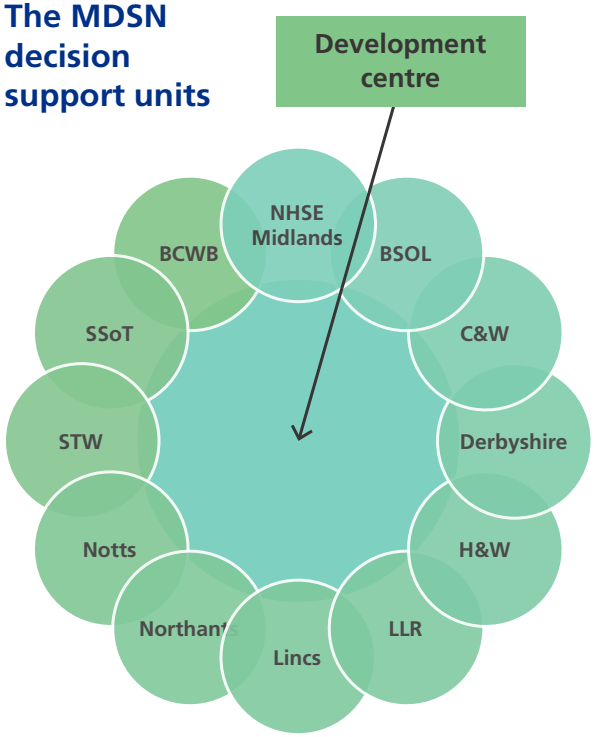
Design

The MDSN's overarching objectives are:

- **Sharing ideas** – through a networked approach to problem-solving and peer review
- **Learning for the demand side** – to advance the use of analysis as a means to improve decision-making processes and to increase analytical confidence amongst decision-makers
- **Learning for the supply side** – through a structured programme, training and development to advance technical analytical capability, analytical 'craft' skills (e.g. problem formulation and communicating findings) and analytical leadership. This also generates interaction between communities of interest
- **Sharing resources** – analytical project findings, code, literature/evidence reviews, local experience and expertise etc
- **Working on shared problems** – undertaking collaborative analysis/evaluations and implementation collaboratives across the network for each of the 3-4 analytical projects delivered each year on behalf of the MDSN by its development centre.

There are various mechanisms for bringing together the members of the MDSN. ICS leaders are brought together to discuss the strategic and operational priorities for the Network through their membership of MDSN boards. The analytical communities of members are engaged through professional networks, which provide space to share work and identify collaboration opportunities, with the role of the MDSN to ensure these are actively managed and member-led.

The MDSN decision support units



Applied principle

Have you determined how analytical resource will be spread across the various levels of the system, working towards coordinated workplans wherever feasible?

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Developing the workforce

A primary function of the MDSN is to increase analytical capability within its membership.

The MDSN **Design Principles**, created for each member to use to inform their approach to establishing an intelligence function, make provision for the types of skills and experience that should be included. These include that a function should:

- Seek to employ a diverse workforce in terms of experience and personal characteristics
- Consider non-technical as well as technical skills when recruiting to the analytical team
- Be encouraged to adopt mixed-methods approaches to analytical projects
- Seek out different perspectives when applying evidence to the analytical project context
- Include direct work with patients where evaluation carried out by an intelligence function includes patient outcomes.

The MDSN development centre has also established an **evaluation network** to advance qualitative research methods in each member system and has delivered training in these methods. The centre has also produced an **evaluation guide**, openly available, to advance evaluation skills across the MDSN. The same has been made available for **best use of evidence**. The development centre is also actively exploring the use of more advanced social research methods to better understand citizen perspectives on decision trade-offs.

The **Midlands Analysts Network** is also managed by the development centre, providing fortnightly huddles covering 'live' topics of interest. The Network has 545 members.

"I would like to say they [the analyst network huddles] have been an inspiration to me and brought a sense of the wider analyst community to my role which I previously was missing."

Applied principle

Have you identified leads in the intelligence function team for developing evaluation capability; for knowledge management; for building qualitative research capability?

Applied principle

Does the intelligence function team have access to (a) network(s) that can help support their development (including specialist analytical skills learning) and that allows effective sharing of knowledge and collaborative working as required?

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Developing the workforce

The development centre is delivering a **training and development programme** aimed at building the competencies to support strategic decision-making. It provides a combination of structured development programmes, short courses and open events. The programme is led by **Professor Mohammed Mohammed**. The programme focuses on a range of analytical skills and techniques, as demonstrated below:

MDSN development centre analytical competency development offer

Technical skills	Advancing leadership and decision quality	Evidence and evaluation	'Non-technical' skills e.g. negotiation/ communication
Example: Systems dynamics modelling	Example: Decision quality for leaders	Example: Fundamentals of evaluation	Example: Leadership development for analysts

The MDSN also delivers an annual programme of events through its ***Insight*** festival. This brings together expert speakers around a theme. In 2021, this theme was 'insight to action' and the festival included speakers on the topic such as **Sir Michael Marmot**, **Professor John Wright**, **Professor Jon Glasby**, **Dr Katherine Mannix** and **CEOs from the King's Fund, Nuffield Trust and the Health Foundation**.

Applied principle

Have you mapped the skills available in the intelligence function team against the analytical typology set out in this toolkit and developed a plan to build the necessary skills/ partnerships to allow the team to undertake the whole range of analytical work needed?

Case study 8: Healthier Futures - Academy (Black Country and West Birmingham)

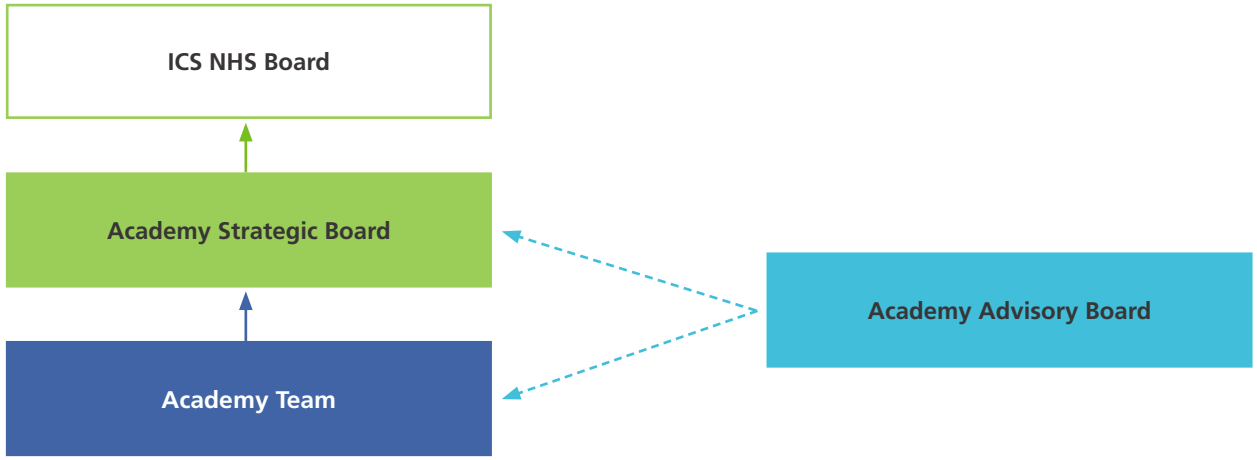
Main themes addressed aligned to the NHSE guidance

- Clear governance into the ICB and ICP – where both have a steering, oversight and listening role
- Consideration of the analytical support needed at system, place and neighbourhood levels
- Dedicated analytical resource identified in the ICB for addressing strategic challenges.

Summary

The **Academy** is a DSU within the MDSN. Its stated objective is to make choices matter for the health and wellbeing of the people of the Black Country and West Birmingham. It plans to ensure these choices matter through four activities:

- Establish system infrastructure, focusing on leadership, culture, data infrastructure, and stewardship for a networked workforce with multidisciplinary skills
- Design effective interventions that are built on evidence, design thinking, learning from citizens, evaluation, and accountability
- Generate actionable intelligence through understanding overall population need, having the right tools to identify specific needs of population subgroups, and understanding warranted and unwarranted variation
- Focus on all four pillars of population health: wider determinants; healthy behaviours and lifestyles; places and communities; and integrated health and care systems.



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Design

The Academy has created a governance framework that ensures it has a direct line to the ICS board through its oversight body, the Academy strategic board, with representation from a wide group of stakeholders. The advisory board draws its membership from the NHS, academia and national thinktanks to draw on local, regional, national and international perspectives. This is demonstrated in the table below. The strategic board will agree a prioritisation process that will establish the areas the Academy should focus on.

ICS boards can then submit analytical requests to the Academy team who will aid them with problem formulation, deliver the analysis, communicate the results and support action planning based on the findings.

Strategic board	Advisory board
• Establish overarching priorities and objectives for the Academy • Agree analytical priorities for the Academy to inform the ICS analytical programme • Agree the Academy education and development programme for the ICS • Agree priorities for evaluation supported by the Academy • Review recommendations from the Academy team as to which outputs from the Academy should become recommended practice or ICS standards • Advise the Academy on selection of bidding opportunities • Develop local partnerships to support the activities of the Academy • Identify appropriate membership of the Academy advisory board	• Provide advice and support to the Academy strategic board • (via the joint membership of the Chair, ICS SRO and Academy director) on the priorities and future direction of the Academy • Provide advice and support to the Academy team (via membership of the Academy director) in the design, operation and partnerships of the Academy • Identify and share relevant national and international learning and practice • Champion the Academy with national stakeholders

Applied principle

Have you determined how analytical resource will be spread across the various levels of the system, working towards coordinated workplans wherever feasible?

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Engaging multiple disciplines

The Academy has recruited leads for key qualitative analytical disciplines to support its production of intelligence.

These roles are:

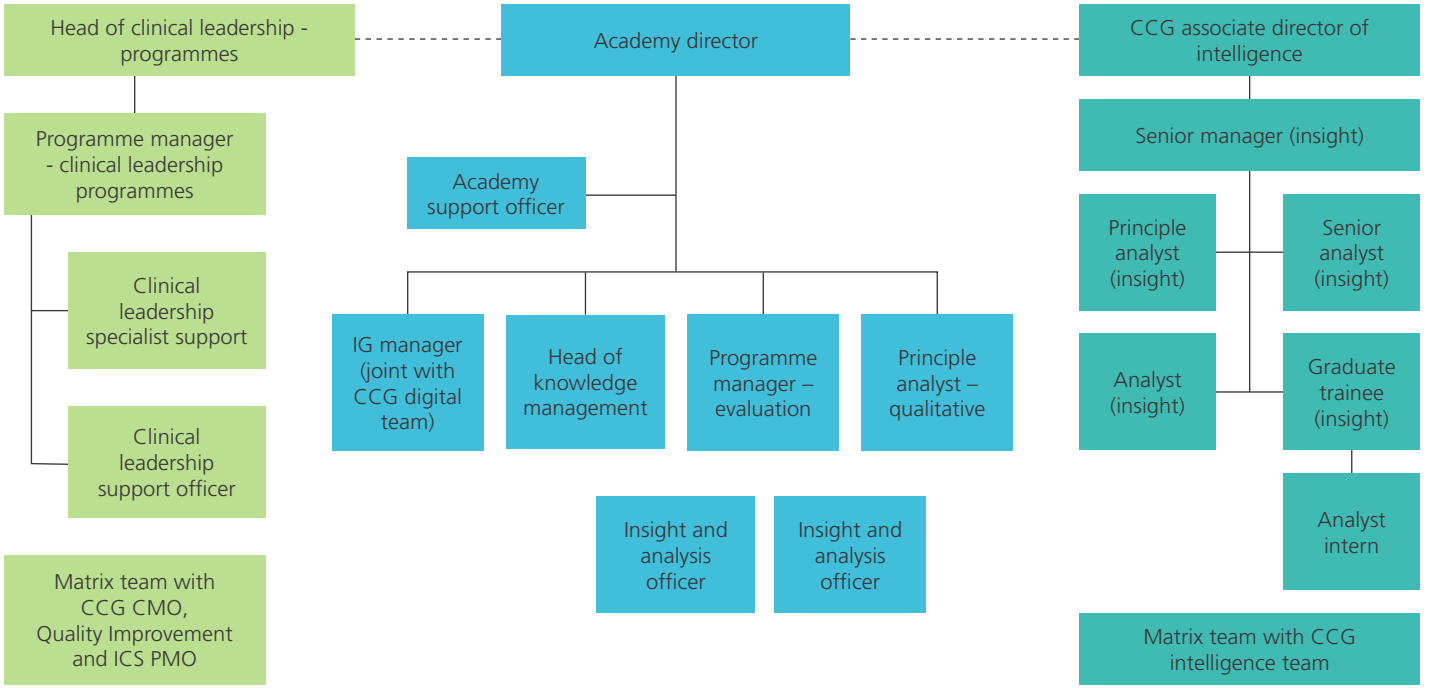
- Head of knowledge management
- Principal analyst: qualitative
- Programme manager: evaluation
- Information governance manager

All these posts are supported through peer supervision provided by the MDSN.

Quantitative data analysis is led by a chief analyst and head of insight who are part of the BI insight team within the Black Country CCG. They are 'virtual' members of the Academy, and can also draw on other areas of the CCG's BI team as needed. The Academy has recognised the need to build analytical capability across the system in order to deliver analysis of all **'types'**. The Academy is also linked to clinical input through its team structure. This structure is included below.

To support this, the Academy, through the MDSN, ran its own course for local analysts in leadership development. 23 analysts from across the system attended. These analysts will form a new network of analysts in the system, with plans to add other analysts from across all stakeholders over time. Networks are also planned to bring together qualitative analysis disciplines in the system. These networks will be closely linked to analysts regionally through the MDSN.

BCWB Academy team structure



Applied principle

Is there a multidisciplinary team of skilled analysts in place, drawing on the best skills and contextual knowledge available across their whole system, and clear agreements to secure their time?

Case study 9: Nottingham and Nottinghamshire System Analytics and Intelligence Unit

Main themes addressed aligned to the NHSE guidance

- Receiving a remit to inform and investigate system-wide and place-level priorities and using intelligence to inform the population health priorities of the ICS
- Supporting transformation programmes to embed principles of analytics and PHM in new care models
- Responds to pressing cross-system and place-based requirements from senior leaders, providing intelligence on pressures within the system and forecasts of population need.

Summary

The Nottingham and Nottinghamshire System Analytics and Intelligence Unit (N&N SAIU), another example of a Midlands DSU, is an integration of modelling, analytics and population health management, creating a central place that puts data at the heart of ICS decision-making. Its key objectives are:

- Embedding health inequality principles in all analytical projects
- Providing population intelligence to support planning and strategy
- Creating analytical intelligence services that span the entire commissioning cycle. This includes capacity and demand modelling, PHM deep-dives as well as quantifying and evaluating the value of transformational initiatives
- Creating oversight of regional, national benchmarking data, as well as insight, contextual analysis and comparative information to support the interpretation of local data to improve quality and outcomes of their population
- Utilising best practice evidence and new models to develop improved quality outcomes for their population.

Making best use of data

NHSE have established a template to describe where data collection and interpretation might take place and this has been applied in N&N SAIU. This is shown in the figure on the following page.

Applied principle

Is there a route for clinicians and other frontline professionals to access analytical support through both automated datasets and bespoke analytical requests?

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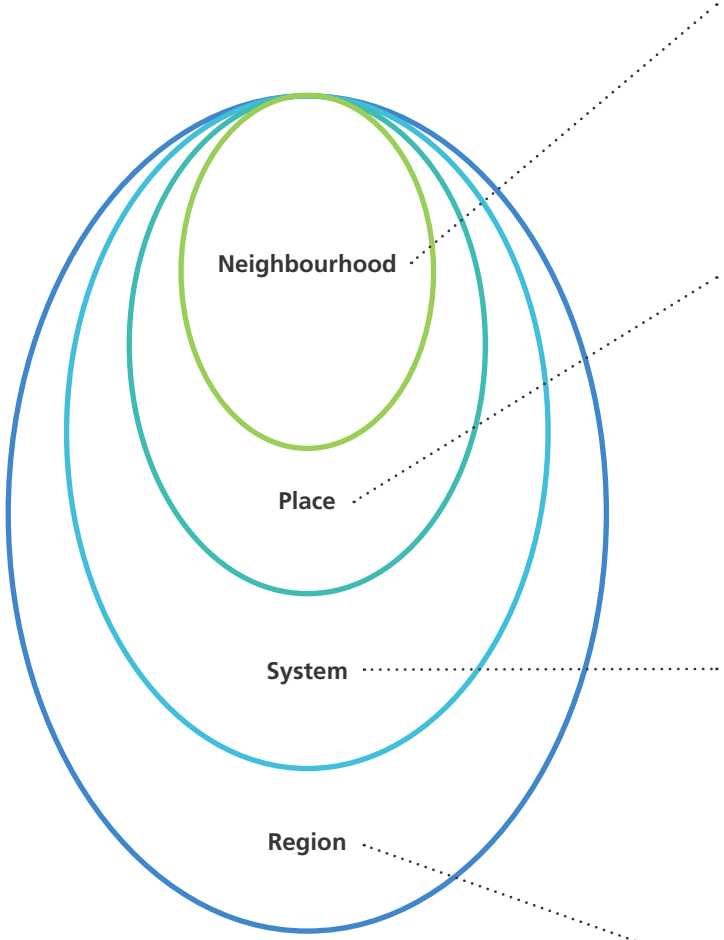
SAIU embedded functions within the ICS



SAIU – Analytical team supports the PCN collective to use and interpret data so that they can understand their population need and where new and integrated models of care and interventions may be able to support specific cohorts of patients.

Neighbourhood – Implementing individual care packages for patients based on recommended interventions and targeting.

SAIU – Providing data which describes the needs of different groups, and current and future risks driving poor outcomes including the impact of wider socio-economic factors and inequalities facing communities. Risk stratification and demand management and capacity planning to understand patient flow and operational delivery of pathways.

Place – Pathway modelling and implementation supporting transformation/coordination within ICPs, along with consideration of wider factors impacting people's health.

SAIU – Whole population segmentation and forecasting change across local health and care and strategic redesign and realignment of services. Data-driven strategic planning, informing contracting and financial planning across the system.

Demand management and capacity planning. Driving a system view of clinical strategy and service provision to enable effective provider collaboration. Encouraging a collective focus on health inequalities and population outcomes. Use of data and analytics to inform system improvement plans to accelerate recovery of critical services and target inequalities. Evaluation and metrics strategies tracking impact of interventions over time.

System – Supporting strategic overview of performance, peer review of unwarranted variation and productivity opportunities across the ICS, and transformation between providers.

Planning – Use of data for clinical service planning across multiple systems, clinical and wider research and consented trials to inform continuous understanding of risk facing different population groups. Use of system data to identify appropriate improvement support to meet system needs.

Region – Specialised commissioning decisions driven by integration with other data systems.

Case study 10: Local Knowledge and Intelligence Service

Main themes addressed aligned to the NHSE guidance

- Representation from a wide range of ICS partners, including NHS provider analysts and intelligence professionals from public health and other local authority teams
- Investment in skills development for analysts in population health analytics
- Establishment of links between ICSs within a region and/or across regional boundaries.

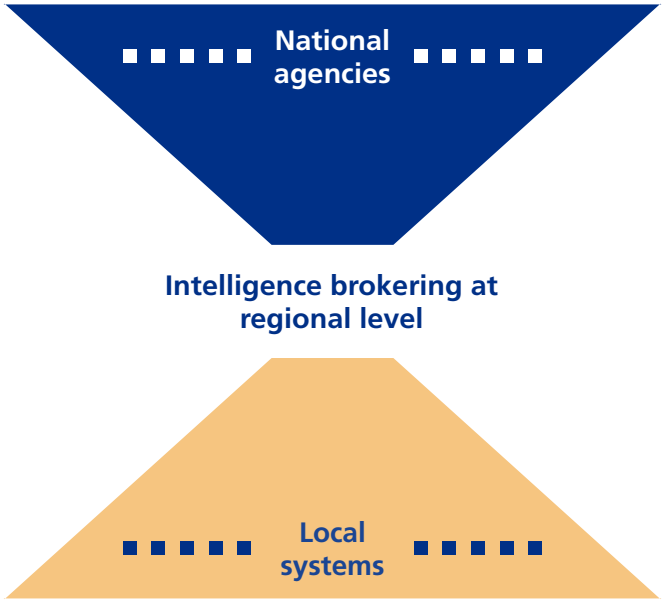
Summary

Local Knowledge and Intelligence Service (LKIS) regional teams now form part of a new Public Health Analysis Unit in the Office for Health Improvement & Disparities (OHID) within the Department for Health & Social Care (DHSC). They moved into OHID from Public Health England when it was dissolved at the end of September 2021.

LKIS are a key part of the existing regional intelligence support infrastructure providing a flexible and sustainable model to deliver regional population health intelligence and surveillance support to local health and care systems.

They are able to support the ongoing development of ICSs' cross-system intelligence functions in a number of ways:

- By providing an effective mechanism to ensure local-national engagement on population health
- By developing and managing cross-cutting capacity and resources in data analytics/surveillance, knowledge mobilisation and analytical workforce development at the regional tier – identifying at-scale opportunities and sharing good practice to support local government and wider integrated health and care systems
- Supporting a more joined-up and user-centred approach for developing and brokering access to national population health analytics tools and support offers
- Bringing together regional-level system leadership in population health intelligence as a key component of PHM and ICS development programmes.



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Developing the workforce

LKIS regional teams can support ICSs to develop their workforce to support intelligence function activities by:

- Providing regional knowledge mobilisation leadership – including facilitation of analytical networks, provision of training and workforce development activities, and active curation and management of regional collaboration platforms (AnalystX, Khub, etc.)
- Hosting a population health intelligence apprenticeships scheme and providing an overarching framework for recruitment and capacity-building to strengthen local system response
- Providing a regional footprint to enable and support effective user engagement as part of analytical workforce development priorities for NHSE, NHSX and the UK Health Security Agency (UKHSA).

Applied principle

Does the IF team have access to (a) network(s) that can help support their development (including specialist analytical skills learning) and that allows effective sharing of knowledge and collaborative working as required?

Engaging multiple disciplines

LKIS regional teams can support you to engage multiple disciplines in your intelligence function by:

- Providing a consistent, networked regional presence that can effectively support and underpin different regional collaborative arrangements (e.g. decision support units), working with key local partners from public, private and academic sectors to build capacity and expertise in population health intelligence and analytics
- Delivering and/or brokering access to specialist intelligence expertise and resources (thematic or technical) at scale from national/regional partners to support ICS requirements
- Providing surge analytical capacity at a regional level to support UKHSA in a local response on pandemics and related priorities.

Applied principle

Is there a multidisciplinary team of skilled analysts in place, drawing on the best skills and contextual knowledge available across their whole system, and clear agreements to secure their time?

For more details on the work of the LKIS, please contact the corresponding team in your region:

- LKIS London: LKISLondon@dhsc.gov.uk
- LKIS South East: LKISSouthEast@dhsc.gov.uk
- LKIS South West: LKISSouthWest@dhsc.gov.uk
- LKIS East: LKISEast@dhsc.gov.uk
- LKIS Midlands: LKISMidlands@dhsc.gov.uk
- LKIS North West: LKISNorthWest@dhsc.gov.uk
- LKIS North East & Yorkshire: LKISNorthEastandYorkshire@dhsc.gov.uk

Section 06

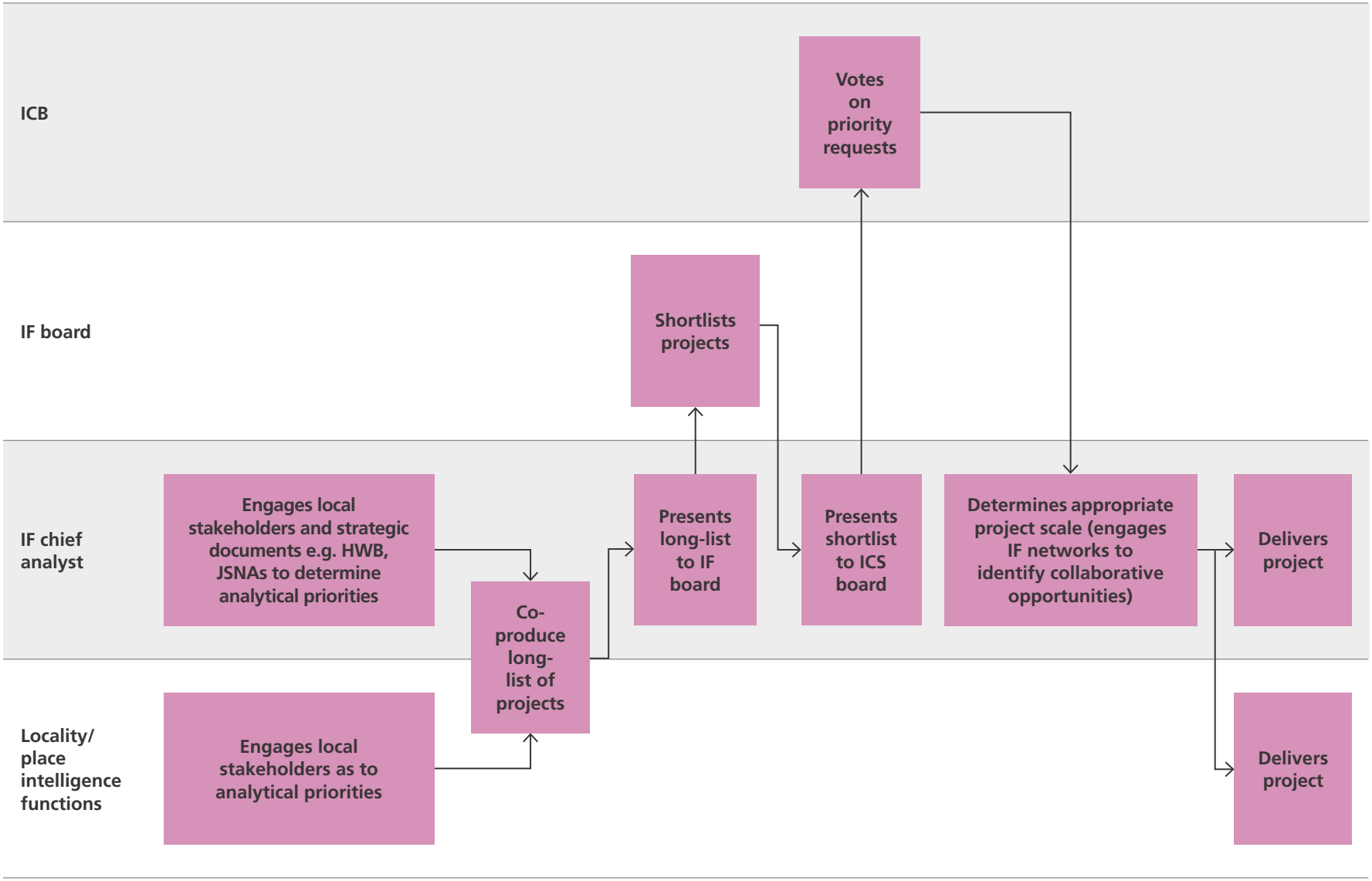
Appendices

IN THIS SECTION:

Appendix A: Unpublished resources

The following slides are unpublished resources that have been included in **section 4**.

Suggested process for prioritising analytical requests for strategic intelligence – cycle operates on a six-monthly basis (based on MDSN examples)



Intelligence function chief analyst

To support ICSs to identify an appropriate candidate to carry out the responsibilities of a chief analyst or similar role, the below outline role specification is provided. This can be tailored to the local context.

An ICS chief analyst will have significant demonstrable experience in the following areas:

Leadership and influencing decision-making

- Exercising autonomy within broad parameters
- Authority over all aspects of a significant area of work
- Contributing to the formulation and application of policy
- Contributing to the formulation and implementation of a data and intelligence strategy for the ICS
- Coaching and overseeing career development of colleagues
- Advocating for the assessment of decision quality based on analytical outputs, including developing methods for doing so
- Collaborating with chief analysts in other ICSs and acting as an advocate for a regional network of intelligence functions

Technical skills

- Addressing complex, non-routine organisational problems
- Embedding the routine use of data and intelligence into ICS/place/PCN planning and decision-making, utilising analytical methods of all 'types' e.g. prescriptive, evaluative, etc.
- Identifying areas for continuous improvement and embedding capabilities and resources to support efficient release of capacity for PHM
- Developing analytical strategies that help system partners address complex issues

They will also be able to demonstrate:

- A full range of strategic leadership and management skills
- An in-depth understanding of the industry and implications of emerging technologies on the wider business environment

Adapted from AphA and the **NWSkDF**

Appendix B: Glossary of key terms

AphA: Association of Professional Healthcare Analysts
BI: Business Intelligence
DiiS: Dorset Intelligence & Insight Service
DSU: Decision Support Unit
HFMA: Healthcare Financial Management Association
ICB: Integrated Care Board
ICP: Integrated Care Partnership
ICS: Integrated Care System
IG: Information Governance
KeRNEL: Kent Research Network for Education and Learning
KID: Kent Integrated Dataset
LKIS: Local Knowledge and Intelligence Service
MDSN: Midlands Decision Support Network
NHSE: NHS England
PCN: Primary Care Network
PHE: Public Health England – replaced in 2021 by the UK Health Security Agency and Office for Health Improvement and Disparities
PHM: Population Health Management
PMO: Programme Management Office
QI: Quality Improvement
SAIU: System Analytics and Intelligence Unit (Nottingham and Noittinghshire)
SODA: Surrey Office of Data Analytics
VCS: Voluntary and Community Sector

Appendix C: Contributors to this toolkit

In compiling this toolkit, we have conducted planning workshops and interviews with stakeholders from NHSE; NHSX; PHE; national thinktanks; local government; and academia, amongst others.

We extend our thanks to the following for their contributions, with apologies to anyone we may have missed.

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Jane Barnacle: NHSE

Vinod Bassi: Leeds Teaching Hospitals NHS Trust

Richard Bohmer: Nuffield Trust

Luke Burton: Surrey Heartlands ICS

Karen Bradley: Strategy Unit

Chris Branson: NHSE

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Simon Bourne: Strategy Unit

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Adrian Jonas: NHSE

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Alison Jordan: NHSE

Philippa Lynch: LGA

Holly Marshall: NHSE

Ben Meech: NHSE

Catherine Mitchell: HFMA

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Sarah Overton: NHSE

Sukhmeet Panesar: NHSE

Anita Parkin: Central London Community Healthcare NHS Trust

Rachel Pearce: NHSE

Emma Pencheon: NHSX

Jason Pickles: NHSE

Maria Principe: Nottingham and Nottinghamshire ICS

Jack Rodber: Nottingham and Nottinghamshire ICS

Sarah Scobie: Nuffield Trust

Peter Spilsbury: Strategy Unit

Ming Tang: NHSE

Zaheera Teladia: Strategy Unit

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Jayne Thorpe: SWL CCG

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