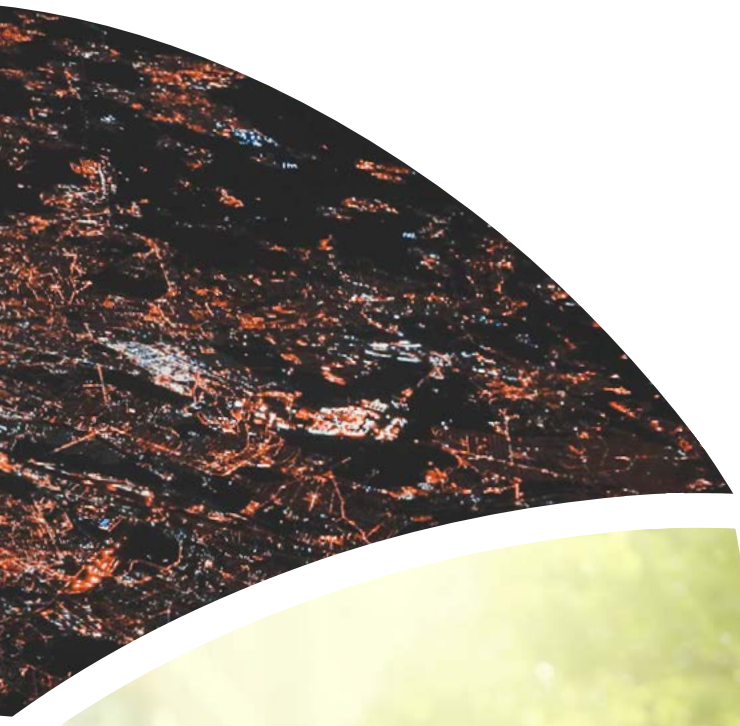
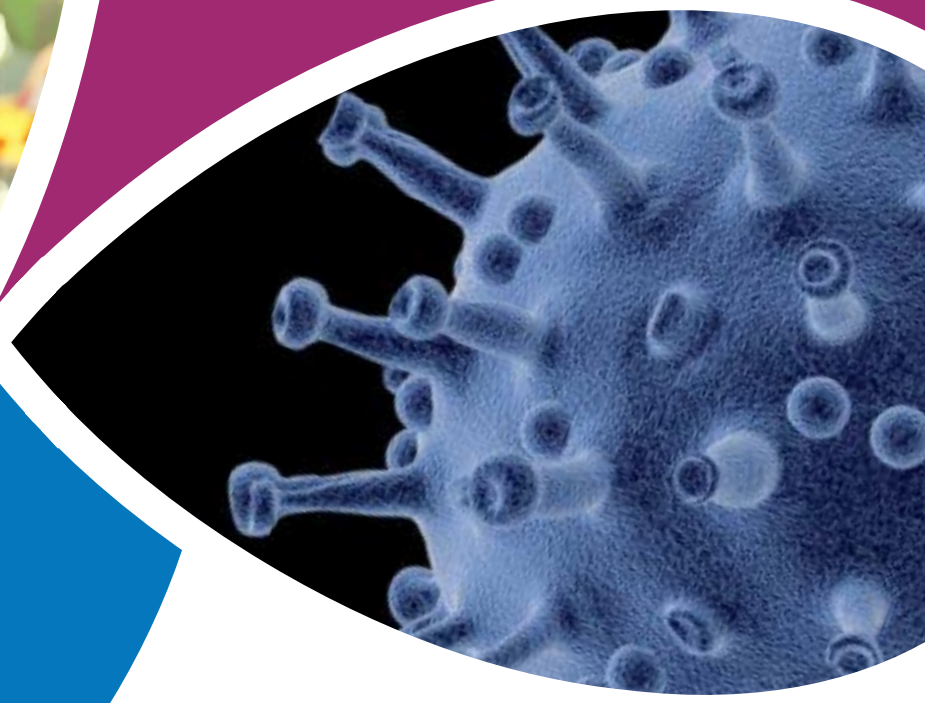
Graphnet
Transforming Care



Population health

Transforming care through actionable intelligence



Graphnet is part of SystemC& Graphnet Care Alliance

We are leading the way in data-rich population health intelligence that provides actionable insights for the reset, recovery, resilience and continuous improvement of health and care economies.

Our population health platform uses the rich data held in our shared care record to produce in-depth insight at the population, cohort or individual level. The insight drives actions such as enrolling identified individuals onto a remote monitoring programme, where clinicians can drill down into the underlying shared care record and patients self-record onto their integrated personal health record.

In addition, analytical tools measure the impact of interventions and the results are fed back into the shared record, closing the loop and creating a 360 degree solution.

Using our population health tools, ICS leaders, public health and care professionals can:

- **Track key aspects** of health and care operational delivery and forecast the impact of changing population needs on operational demands
- **Use these insights** to take action at population, community and person level
- **Identify groups** of vulnerable people who would benefit most from proactive care and target limited resources to where they are needed most
- **Improve existing care pathways** and establish new ones with a focus on offering more community-based care and enhancing patient outcomes
- **Study the impact** of interventions and use this insight to drive best practice

Using shared care and personal health record data intelligently, integrated care systems will be able to operate in a more agile way, adapting and scaling up new services as demands change.

Our population health platform is already transforming care in the following areas

Elective recovery analytics validating and rationalising waiting lists, identifying already deceased patients and duplicate entries, as well as those who are not surgically fit. This is saving huge amounts of wasted time and resources, and, in the latter case, ensures the not yet fit can be targeted for support.

Command centre dashboards providing an executive-level lens on local service demand, capacity and resources to aid system-level decision-making. These include real-time information for a health and care system, such as Covid-19 status, bed capacity, staff sickness and other factors that help understand existing and emerging demand and plan for the future.

Health equity analysis including support for the NHS Core 20 + 5 targets, made easier thanks to links to mass deprivation scores.

Enhanced case-finding at scale (from ICB to practice level) rapidly identifying individuals and specific groups who would benefit from early intervention for integrated and proactive care.

Case study: Delivering the National Immunisation Management System across England

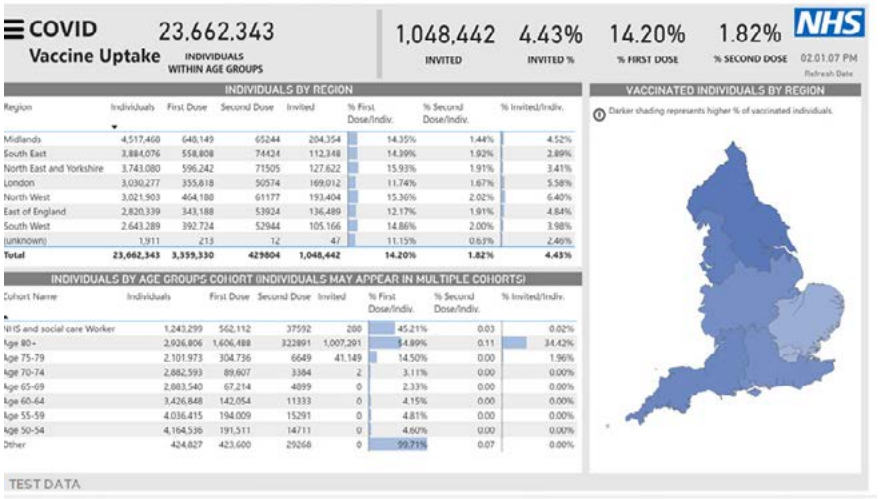
The National Immunisation Management System (NIMS) is the IT software provided by the System C & Graphnet Care Alliance that supports the management of the influenza and Covid-19 vaccination programmes across England. It supports almost every aspect of the national vaccination services, from identifying prioritised patients to be vaccinated, through to recording vaccinations as they are given. NIMS is the National Immunisation System of Record and provides data for Public Health England, NHS England and at ministerial level.

Graphnet's population health solution provides the NIMS dashboards for reporting and analytics which are currently used by 1,500 local professionals to manage local vaccination programmes. These are targeted dashboards for specific users in three main categories:

1. Vaccination centre dashboards which track progress at individual centres so that they can manage throughput and plan.

2. A local dashboard to monitor and plan vaccination uptake across a local care community. This supports targeting of vaccination services in local areas ranging from groups of GP practices through to Integrated Care Systems (ICSs) and entire Sustainability and Transformation Partnerships (STPs) covering millions of people.

3. Health and social care employer dashboards which help NHS Trusts and local authorities manage vaccination programmes for their staff.



Identify people who would benefit from early interventions

We collate information from our shared record i.e. primary, secondary, community, mental health, social care and Secondary Uses Service (SUS) data, our personal health record and public data sources such as Public Health England's 'Fingertips' profiles and other wider determinants data. Organisations can further enhance their analytical capability by loading in other datasets as required.

The Enhanced Case Finding tool uses rich, comprehensive data to allow public health and care professionals to rapidly identify individuals and specific groups who could benefit from early intervention for integrated and proactive care.

NHS Number	Full Name	Age	GP Practice	QoF Registers	Other Registers	Frailty	BMI Date	BMI	A&E Total	Inpati
XXX XXX XXXX	XXXXXXX, XXXXXXX	0	P00002 Practice2	Stroke/TIA	Patients at Risk of CoVID-19 (COVID); Chronic neurological disease (CND) (COVID)	Fit			0	
XXX XXX XXXX	XXXXXXX, XXXXXXX	0	P00003 Practice3		Patients at Risk of CoVID-19 (COVID); Chronic heart disease (COVID)	Fit			0	
XXX XXX XXXX	XXXXXXX, XXXXXXX	0	P00006 Practice6		Patients at Risk of CoVID-19 (COVID); Chronic heart disease (COVID)	Fit			0	
XXX XXX XXXX	XXXXXXX, XXXXXXX	0	P00006 Practice6		Patients at Risk of CoVID-19 (COVID); Diabetes mellitus (COVID)	Fit			0	
XXX XXX XXXX	XXXXXXX, XXXXXXX	0	P00007 Practice7		Patients at Risk of CoVID-19 (COVID); Chronic heart disease (COVID)	Fit	12/11/2019	13.17 kg/m2	0	
XXX XXX XXXX	XXXXXXX, XXXXXXX	0	P00007 Practice7		Requires influenza virus vaccination (COVID); Patients at Risk of CoVID-19 (COVID); Chronic heart disease (COVID)	Fit			0	
XXX XXX XXXX	XXXXXXX, XXXXXXX	0	P00008 Practice8		Chronic heart disease (COVID); Patients at Risk of CoVID-19 (COVID)	Fit			0	
XXX XXX XXXX	XXXXXXX, XXXXXXX	0	P00009 Practice9		Patients at Risk of CoVID-19 (COVID); BMI 40+ (COVID)	Fit	08/10/2019	23.068	0	
XXX XXX XXXX	XXXXXXX, XXXXXXX	0	P00009 Practice9		Patients at Risk of CoVID-19 (COVID); Diabetes mellitus (COVID)	Fit	13/02/2020	17.49 kg/m2	0	
XXX XXX XXXX	XXXXXXX, XXXXXXX	0	P00010 Practice10		Patients at Risk of CoVID-19 (COVID);	Fit			0	

Use case: Notifying care professionals of transfers of care

Using the Unscheduled Care Dashboard, care professionals are notified when a patient under their care experiences an unscheduled care event or is coming out of one. They are also made aware of repeat attendance and delays in lengths of stay. This helps care teams manage their day-to-day caseloads better and provides the opportunity to be more proactive and intervene sooner to stabilise patients and improve their outcomes.
E.g. Offering community-based support (such as remote monitoring) to expedite a patient's return home and support their recovery.

Establish new care pathways

The data intelligence generated by the population health platform is used to drive actions. This includes planning services such as working out what is needed, predicting when and where surges in demand are likely to come from (e.g. mental health pressures post Covid) and putting appropriate provisions in place.

Particularly important are interventions to establish new care pathways to treat and monitor targeted patient cohorts, such as those most at risk of complications from Covid, those with or at risk of diabetes or higher-risk pregnancies.

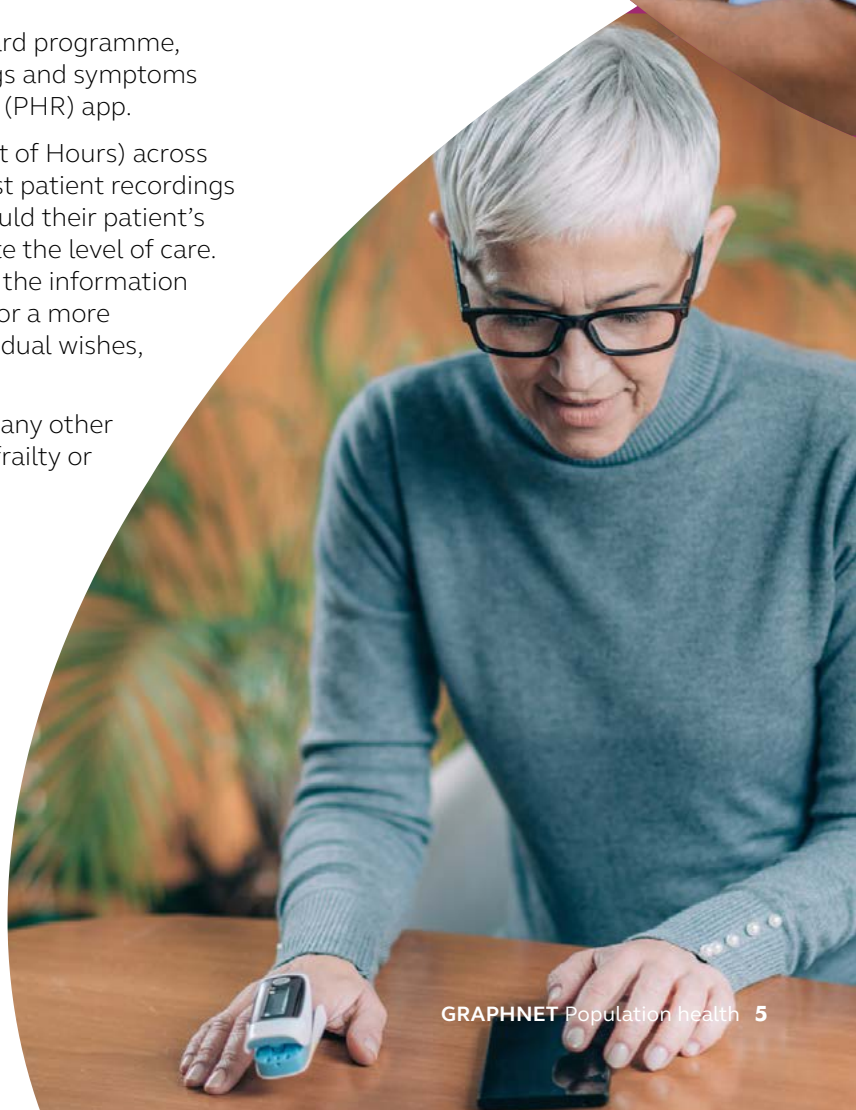
Case study: Covid Oximetry @ Home / Virtual Ward

Using the Enhanced Case Finding tool, our integrated care partners can interactively filter patient lists to identify and reach out to those patients most at risk from the complications from Covid, ensuring care is targeted to where it is of greatest benefit.

Under the Covid Oximetry @Home / Virtual Ward programme, patients can record their pulse oximetry readings and symptoms electronically using our Personal Health Record (PHR) app.

Care professionals (e.g. GPs, acute clinicians, Out of Hours) across integrated care systems have access to the latest patient recordings through our shared record. This means that should their patient's condition suddenly deteriorate; they can escalate the level of care. Being able to identify and recruit patients using the information routinely held in the shared care record allows for a more targeted and fuller response to a patient's individual wishes, needs and risks.

This same model could be applied to support many other care pathways such as higher-risk pregnancies, frailty or diabetes.



> *I had a 45 year old male of BAME background with underlying diabetes whose son developed Covid and, a few days later, my patient developed symptoms and tested positive as well…*
> *We enrolled him in the pulse oximetry programme and after day 11 his symptoms suddenly deteriorated from 95% saturations to 80% saturations. He was taken straight into hospital and he had a Covid-related pulmonary embolism. Without the pulse oximetry programme, we wouldn't have known he had deteriorated and this has saved the patient's life.*
>
> **Dr Priya Kumar, Connected Care, Frimley ICS and Berkshire West ICP**

Use case: Diagnosing diabetes/pre-diabetes for earlier intervention and proactive care

The Diabetes Diagnosis dashboard uses the shared care record to identify patients whose latest HbA1c and/or blood glucose results indicate that they may have diabetes, pre-diabetes or are at emerging risk but are not coded as being on the QOF diabetic register.

This dashboard is part of a suite of dashboards which identify coding quality/possible missed diagnosis, including hypertensive patients with high BMI/blood pressure and also COPD exacerbation admissions without a primary care diagnosis.

Benefits to care professionals and patients include:

- Identifying 'missing diabetics' those who have not been formally diagnosed or recorded as diabetic
- Tracking the progress of individual care plans against national targets
- Identifying and following up on patients who may have disengaged
- Planning interventions to improve patients' outcomes
- Tracking performance at GP, community and population level and identifying if additional resources are required to manage caseloads

Evaluate the effectiveness of interventions on improving outcomes for the population

A linked longitudinal dataset can be used for retrospective analysis as well as forward planning. By first defining the metrics associated with interventions, cohorts can be identified to monitor against and metrics can be embedded into interactive dashboards.

To evaluate against other countries, we can provide global statistics (from open source data) on key indicators such as total deaths (absolute and aligned curves), growth analysis, growth trajectory, slowing growth ID, basic forecasting and analysis of risk by country.

Case study: Liverpool Mass-Testing / SMART Programme – informed by a regional population health platform

The Cheshire and Merseyside region rapidly deployed Graphnet's population health platform to inform its response to the Covid-19 pandemic, including its management of the Liverpool mass testing pilot, population level planning and the targeting of direct care. The deployment has been led by the Combined Intelligence for Population Health Action programme (CIPHA).

> *"The Liverpool pilot of open-access, community-based testing for the virus that causes Covid-19 has now tested over 160k people using the Innova lateral flow device across Cheshire and Merseyside – people who live or work in Liverpool – and the test has picked up over 1200 individuals who did not know they were carrying the virus.*
>
> *All this work needs intelligence on what works and what doesn't in a fast moving pandemic. CIPHA has been extremely valuable for the teams on the ground, and national policymakers, to adapt their tactics and plans according to the data.*
>
> *Each week the CIPHA intelligence is used to tune local and national plans to gain as much Covid-19 risk mitigation as possible from the tests available. This intelligence-led strategy will save lives and livelihoods."*
>
> **Professor Iain Buchan, Executive Dean,**
> **Institute of Population Health,**
> **University of Liverpool**

Graphnet is the leading provider of shared care solutions for integrating services across whole health and care communities.

We are part of the System C & Graphnet Care Alliance, bringing together five of the UK's most innovative and experienced providers of integrated IT solutions for the health and social care market: System C, Graphnet, Liquidlogic, Docobo and Clevermed.

Together we are:

- No. 1 supplier in shared care records with over 20m citizens' data held
- The national provider of the Covid and flu vaccination system NIMS
- Fastest growing supplier in social care with 60% of councils
- No. 1 supplier in population health analytics with over 17.3m citizens covered
- A pioneer in electronic observations with over 32 trusts using our system
- A leading supplier in acute EPRs with 30 NHS trusts
- No. 1 supplier in child health (covering over 6.4m children)
- Remote monitoring over 50,000 citizens
- Supporting £5bn+ / annum medications across 350+ hospitals in the UK and abroad
- An estimated 45% of UK pregnancies are recorded on our maternity system as well as being used by nearly every neonatal unit in the UK

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