Health Innovation Manchester

Innovation Impact Report

2023 - 2024

Contents

Foreword

The financial year 2023-24 marked Health Innovation Manchester's (HInM) seventh formal year of operations. It has been our most significant yet in terms of delivery of demonstrable impact from our innovation activities.

In this year's impact report, we focus in on our highest priority innovation projects and the key outputs, outcomes and impacts we have delivered to date – particularly in cardiovascular disease, obesity pathway discovery, deployment of virtual wards and optimising the GM Care Record. We have used increasingly detailed methods to define projects robustly and execute them thoroughly, learning from other industries. We have now progressed several projects efficiently to the point of readiness for operational rollout at greater scale.

It has also been a pivotal year for Health Innovation Manchester strategically – from strengthening our Board with the addition of internationally respected industry non-executive directors and augmenting our executive leadership team, to launching the new GM digital ICS strategy and codesigning our new three-year strategy for Health Innovation Manchester to advance our ambitions to be world leading in improving the lives of local people, transforming care and boosting the economy through innovation.

This year has also included Rowena Burns' intention to step down as chair at the end of her tenure in Summer 2024. As an original founder, Rowena has been a driving force behind HInM over several years and we are immensely grateful for her commitment and the lasting impact she has had. We have now announced that Prof. Mark Britnell will join HInM in September 2024 as the new chair, bringing with him deep experience of healthcare on a global scale, gained from both public and private sector roles at the highest levels.

All this comes at a time when the pressures facing health and care systems around the world are mounting, not least here in the UK in general and in Greater Manchester's integrated care system in particular. Poor standards of population health are an urgent challenge, with pockets of deep inequalities in many communities, contributing to further growth in demand for health and care services.

Research and innovation, and record levels of industry investment, are providing the tools with which we can tackle these challenges, with massive advances in artificial intelligence, precision medicine and other novel technologies – the opportunity and the need to partner with industry has never been more pressing. We demonstrate the difference innovation can make through this impact report, much of which has been delivered though industry partnerships, and believe that innovation will need to continue to grow in relevance and focus for the health and care system to get to grips with the current financial, population health and service performance challenges.

The report also provides a summary of key activities undertaken across our different commissions and designations, including the national Health Innovation Network, the Academic Health Science Centre, the NHS GM Digital Transformation Office and the National Institute for Health and Care Research (NIHR) Applied Research Collaboration Greater Manchester (ARC-GM). We would like to thank the HInM team, the Board, our partners and public members for your continued hard work and support – we are proud of what we have been able to achieve by working together.

With thanks

Ben Bridgewater, CEO
Rowena Burns, Chair

Rowena Burns
Chair

Professor Ben Bridgewater
Chief Executive Officer

We are Health Innovation Manchester

Health Innovation Manchester (HInM) is a place-based innovation organisation, with a vision to be world leading in improving the lives of local people, transforming care and boosting the economy through innovation.

Back to contents >

Our strength lies in the sustained commitment of Greater Manchester's civic, academic, industry and health and care partners since our formation in 2017, and in our agility as a learning organisation. We have evolved our operating model and method for how we deploy innovation to deliver demonstrable impact and benefits to local people, system partners and industry.

We are focused on four key elements to success:

1. Integrated governance
Health Innovation Manchester is a partnership of NHS, Local Government and Academic bodies, represented by senior officers from across Greater Manchester, along with globally leading non-executive directors from life sciences, MedTech and digital industries.

2. Integrated capabilities
HInM comprises the GM Health Innovation Network (formally AHSN), the Manchester Academic Health Science Centre, the National Institute for Health and Care Research (NIHR) Applied Research Collaboration Greater Manchester (ARC-GM) and the GM NHS city region digital transformation office. Whilst recognising their distinct accountabilities, we integrate the components to deliver our mission through blended innovation activities and driving collaboration across GM partners.

3. Industry partnerships
Greater Manchester's past, present and future success is based on compelling partnerships with industry. We recognise that major innovation supply chain opportunities for health and life sciences are coming from the pharma, biotech and digital industries.

We focus on partnership with industry to accelerate their product lifecycle management process and thereby deliver benefit to industry, as well as accelerated benefits to local people and the health economy.

4. Unrelenting focus on method
We recognise that reliable delivery of innovation at pace and scale has been a challenge for healthcare systems across the world.

To drive forward our approach in Greater Manchester, we have ensured that we place data and digital approaches at the heart of everything we do and developed an enhanced innovation method overseen by robust assurance and measurement of impact at the centre of our operating model.

Through this strategy we will optimise our return on investment for our partners, support system sustainability and economic growth, and importantly deliver better outcomes and experiences for the 2.8m people of Greater Manchester.

OUR STRATEGIC OBJECTIVES

Our new strategy sets out our refreshed vision, and a focus on delivering impact from innovation to improve lives of local people, supporting a safe and sustainable GM health and care system and boosting jobs and economic growth for the GM city-region through industry collaboration and partnerships.

To achieve this vision and impact, we have agreed four strategic objectives that will focus our work over the next three years:

1. Address high priority drivers of population health by deploying proven innovations at scale, with a major focus on primary and secondary prevention.
2. Establish GM as a global learning market for accelerated access to novel innovations at scale
3. Optimise digital and data products and services to understand the population, define their needs and develop new models and pathways.
4. Work with partners to enhance the GM system's capacity and capability to deliver health innovation and demonstrate impact.

Read more about our 2024-2027 strategy here >

DEVELOPING OUR PEOPLE PLAN

As part of developing our new strategy, we have developed a new people plan for Health Innovation Manchester. This recognises the pivotal role our dedicated staff plays in achieving our vision. Our organisation thrives on the commitment, talent, and expertise of our HInM team, who have a shared purpose of delivering innovative solutions to benefit the lives of GM's population and health and care workforce.

Through our co-design work, we have developed four core pillars that form the basis of the people plan. These pillars were developed by staff to describe the priority areas of focus, in a way that is meaningful and resonates with the needs of our people and the ambitions of the business.

Pillar 1: HInM ways of working
We work together from a shared understanding of our HInM philosophy; supporting and recognising growth and innovation, maximising the opportunity that hybrid and flexible working provide, operating with trust, autonomy and freedom to act.

Pillar 2: Belonging
We are connected through our strong HInM brand, which demonstrates a diverse and inclusive culture, valuing and supporting our individual and team contributions, and we are actively engaged with the HInM strategy and ambition.

Pillar 3: Leadership
Recognising the leadership capability of everyone, with a focus on shared decision making and having a compassionate approach to 'how' we lead at HInM, working with clarity of vision and purpose.

Pillar 4: Healthy and sustainable
A connected organisation which is cohesive, has clarity of objectives and purpose, and creates an environment which is trusting, encourages accountability and enables innovation through healthy conflict and solution focused thinking.

Thank you to every member of HInM, as it is your dedication and passion that propels us forward. With the people plan as our foundation, we will continue to contribute to a healthier, happier, and more innovative future for Greater Manchester.

Demonstrating our impact

Health Innovation Manchester delivers a broad portfolio of innovation activities across multiple care settings, population health and disease areas – from early-stage discovery, to solution development and deployment at scale.

Back to contents >

All of our programmes are underpinned by our rigorous pipeline method and approach, with a clear focus on delivering impact in terms of improving lives and outcomes, supporting the health and care system to be safer and more sustainable and promoting economic growth.

It takes time for the full benefits of innovation to be realised, but we are seeing promising outputs, outcomes and impacts from our work. We have highlighted four key projects delivered this year through in-depth case studies, demonstrating the difference they have made to local people, clinicians, and our partners.

Through the remainder of the report, we also highlight other notable projects through our work on industry partnerships, digital transformation, innovation deployment, academic partnerships and public engagement.

Demonstrating Our Impact: Key Case Studies

INCREASING ACCESS TO NOVEL THERAPIES FOR PEOPLE WTH HIGH CHOLESTEROL

Number of patients eligible for receiving injectables:

18,904 (between Jan 22 – Dec 23)

At the end of March 2024,

1,179 people had received access to novel therapies, which is approximately **6%**

of the eligible population at that time, including people who have now had more than one dose

Number of new medication orders placed:

4,964 between (July 22- March 24)

meeting the national NHS England target and putting GM in the top quartile for performance across England

In **496** patients reviewed,

there was a cholesterol (low density lipoprotein) reduction of **44%** in those who had received the novel medicine

UNDERSTANDING OBESITY ACROSS GREATER MANCHESTER

Around **1 in 4** adults in GM live with obesity **27.1%**

The cost of obesity and related diseases in GM was **£3.2 billion** in 2023 and **£5,297** was the average cost per person living with obesity

The highest prevalence of obesity in GM is seen in some of our most deprived communities, including **Rochdale, Oldham and Tameside**

There is **inequality** in service availability, service provision and service usage, as well as **geographical variation** across GM

Demand for services is outstripping capacity – **17,313** referrals to Tier 3 (10.1% eligible population)

only **28%** go on to enrol in the service

ENHANCING THE GM CARE RECORD TO INFORM PATIENT CARE

Over **21,000** healthcare professionals accessing the GMCR over **270,000** times each month:

21% increase in GMCR users from 22/23

Acute staff time saved – average **33** minutes per day

Time saving of **£10m** each year based on current usage rates

Training resources launched with over **2,000** visits to online training by frontline staff

DEPLOYING VIRTUAL WARDS ACROSS GREATER MANCHESTER

From February 2023 to January 2024, NHS trusts in Greater Manchester reported delivering more than **1,000** virtual ward beds, running at an average of **74%** occupancy – this is in line with the national targets set by NHS England. This is a **tripling** of the bed occupancy within the span of the last **12 months.**

Through this same period, GM virtual wards supported **33,000** patients, saving **96,000** hospital bed days.

Whilst the reported costs of a general hospital ward bed are **£536** a day, provider reported costs of virtual ward bed days in GM average **£133** a day.

A HInM health economic analysis estimated that from Feb 23 to Jan 24, GM virtual wards supported:

Avoided ambulance conveyance **11,000**

Avoided hospital admissions **16,000**

A&E attendances avoided **28,000**

The potential net saving to the system is estimated to be **£13.8 m** compared to traditional hospital care models (based on a comparison to the cost of a hospital stay).

Progress Across Health Innovation Manchester Programmes

IMPROVING CARE FOR PEOPLE LIVING WITH COPD IN GREATER MANCHESTER

A total of **48** GP practices utilised the LungHealth software, which provides a consistent and algorithm-guided consultation, used to deliver both remote and face-to-face patient reviews.

From December 2022 through to November 2023 a total of **1,928** patients were reviewed.

Patients who were reviewed face-to-face at a GP practice saw greater improvements to their **COPD** and overall **lung health** in comparison to patients who opted for reviews that were conducted remotely due to having a more structured and thorough review of their lung health. Specifically, **15.4%** of patients had their treatment stepped up, with the aim of reducing exacerbations that lead to emergency admissions through optimising patient therapy.

In response to NHSE sustainability improvement aims, we note **794 (43.2%)** patients saw a reduction in their carbon footprint following their review after being either referred to appropriate treatment or by switching their inhaler.

These patients account for a reduction of 56,178.3 tonnes of CO_2e, an 80% reduction from their pre-review carbon footprint.

SUPPORTING INNOVATORS

63 companies supported with **10** Postdoctoral Research Associate projects awarded by The University of Manchester,

11 Innovation Catalyst projects funded by Health Innovation Manchester and

25 events held to encourage networking and collaboration.

32 research collaborations facilitated between SMEs and Research Institutions that led to **11** products and services becoming ready for market and

12 new products being developed by SMEs

10 new jobs created and, in many cases catalysed ongoing activities that continue to drive health and care innovation.

DIGITAL FIRST PRIMARY CARE

Practice website improvement activity:

400+ total practice website audits were conducted

248+ practices took part in the journey to improve their website

(representing 61% of GM practices)

35% all GM GP websites have improved in line with national guidelines

102,700 online consultations through one of GM GPs' most popular tools in March 2024 - an increase of **154%** from March 2023

HEALTH INNOVATION NETWORK IMPACT

Jobs safeguarded **>755**

Jobs created **>554**

Funding leveraged **£476m**

Case study 1:

Enhancing the GM Care Record to inform patient care

Back to contents >

THE AIM

One key purpose of the GM Care Record (GMCR) is to provide frontline staff with access to vital and up to date information from across GP practices, hospitals and other care providers so they can make better decisions about what care and treatment needs to be provided.

Health Innovation Manchester has been focused on the continued growth and development of the GM Care Record across the system over the last few years, working closely with partners across the system.

The aim of the GMCR project for 2023/24 was to increase clinical use of the GMCR by 20%, to support frontline staff to deliver care and reduce the amount of time spent tracking down important information or repeatedly asking patients.

> “Emergency department staff can now see medical and care history, diagnoses, prescriptions, and personal preferences through the GM Care Record, so it is immediately clear where an end-of-life patient wants to be and their wishes are respected.”
>
> **Chris Pimlott,** Head of MH Strategic Commissioning NHS Greater Manchester Integrated Care

> “Prior to using the GM Care Record, we would spend roughly 30 minutes calling GPs and community pharmacies to understand the clinical history. We had to employ an additional member of staff to make calls and send emails as it was so time-consuming. With the GM Care Record, we can access vital information in less than 5 minutes, quickly checking medications, prescriptions and care history which helps us decide on an appropriate course of treatment.”
>
> **Lynn Elsey,** Respiratory Lead at Manchester University NHS Foundation Trust

WHAT WE DID

This year we have focused on delivering the following key activities:

Integrated Care Plans

We have developed and launched a new care plan on the GM Care Record to support people with dementia and heart failure. It means professionals involved in a patient's care will all be able to see their preferences, important medical notes and agreed approaches. This is a big step forward in providing care tailored to people's personal needs and circumstances across all health and care partners. The care plans are firstly being tested in Tameside and Glossop, and we hope to roll it out to all areas of Greater Manchester over the next year.

My GM Care app

Providing patients with the ability to view their own information and contribute to their care is vital for improving their understanding of their condition and improving their care and treatment according to their specific needs. Therefore, we have this year launched the My Care Plan app on the GM Care Record, which is initially being tested for people with dementia and heart failure. This app allows patients to share information on what matters to them, such as care preferences, home access and pet information. Again, we hope to roll this out further across Greater Manchester over the next year.

Increasing information available through the GMCR

The GMCR becomes more valuable to frontline staff if more information from different sources is included, and more people involved in care delivery can have access to it. This year we have continued to bring in more data from multiple sources including more hospital trust data, as well as preparing the ground for access into community pharmacies to support better medicines management and to some care homes so that practitioners can follow clinical plans for residents more easily.

Read more >

THE IMPACT

The GMCR is now used by more than 21,000 frontline staff to view 270,00 patient records each month. We have seen a 21% increase in users accessing the GMCR from 22/23 to 2023/24.

A health economic analysis has also been conducted which shows that the increased clinical use of the GMCR has delivered over £10m efficiencies in terms of clinical time saved alone– this has been calculated on an average of 33 minutes per day per user saved to inform care and treatment. This is only one aspect of benefit from GMCR usage defined by clinicians alongside improved patient safety, patient experience and decreased duplication of tests.

KEY IMPACTS AND OUTCOMES

Over **21,000** healthcare professionals accessing the GMCR over **270,000** times each month:

21% increase in GMCR users from 22/23

Acute staff time saved – average **33** minutes per day

Time saving of **£10m** each year based on current usage rates

Training resources launched with over **2,000** visits to online training by frontline staff

Care plans for individuals developed and gone live:

End of life (EPaCCS) Care Plan live in Salford, Bolton, Oldham and Wigan with **1,892 plans** completed.

Dementia Wellbeing Plan live in Tameside and Bury with **780 plans** (72% of target) completed. Proof of value ongoing and due to close in Q1 24/25.

Heart Failure Care Plan (after several delays of technology-based delays outside our control) went live at the end of 23/24 in Tameside & HMR, with **plans now starting to be populated.** The proof of value is ongoing in 24/25.

Frailty Care Plan live in Oldham with **191 plans** (19% of target) completed

Medicines Safety dashboard launched in April 2023 and is now used in all **10** localities, with **450+** unique users and **700** accesses each month.

7% reduction in patients at risk of harm during 2023

My **GM Care app** launched to **13,000** residents in Tameside.

Over **700** downloads on first day

Over **400** patient contributions daily.

Community Pharmacy access to the GM Care Record has been technically delivered, with Pharmacies currently signing off information governance documentation before **go live** (in up to **640** Pharmacies).

Case study 2:

Increasing access to novel therapies for people with high cholesterol

Back to contents >

THE AIM

Cardiovascular disease is evidenced as being as the largest area where the NHS can save significant numbers of lives over the next ten years, as referenced in the NHS Long Term Plan. This is particularly relevant for Greater Manchester, where the prevalence and consequence of cardiovascular disease is particularly significant.

HInM has been working on a complex programme to improve care for people at risk of or who have had a cardiovascular event. A specific project within this programme has been the deployment of a novel medication (called inclisiran) to reduce cholesterol in high-risk groups. Reducing blood cholesterol levels in high risk groups reduces the risk of further events such as heart attacks or stroke. This initiative is part of a broader agreement set by NHS England nationally and has been set as a priority for the Health Innovation Network (previously AHSN).

The aim of this particular project was to optimise cholesterol management across Greater Manchester, including the targeted deployment of cholesterol reducing medicines and novel therapies in high-risk groups – delivered through primary care, taking a population health approach.

WHAT WE DID

HInM worked with GP practices across Greater Manchester in a comprehensive programme of work to identify patients with high cholesterol to lower their cholesterol levels with a range of interventions including new medicines. The project has also involved close working with industry partners.

We delivered the following:

Enhanced guidelines and training materials for clinicians

Introducing a novel medication into an established clinical pathway requires significant engagement and collaboration with multi-disciplinary clinicians. Before delivery could get underway, we focused on developing a suite of resources to support clinicians at the point of care, including lipid management guidelines, prescribing toolkit, and a secondary prevention pathway.

Developing digital tools to support cohort finding and tracking delivery

We developed the GM case finding tool to enable GP practices to easily identify patients who required a lipids review and could be eligible for a more novel therapy if existing therapies were not achieving the desired outcome. The tool was integrated with GP practice clinical systems, and searches replicated in the GM Care Record which allowed us to track progress and uptake in real time.

Blueprint delivery model in primary care

This population health approach was delivered in primary care, and we deployed three different approaches across Greater Manchester to support practices. This included a standard delivery model at practice level, working with a third party supplier to support with cohort finding and patient onboarding, and a third approach working with primary care providers at scale.

Tracking patient outcomes, with an inequalities focus

By using the GM Care Record, we have been able to undertake an analysis of patients who have benefited from a lipids review and had their treatment plan modified according to the guidelines. We have then been able to understand what impact the medication has had on their cholesterol levels pre and post administration. Through the cohort finding approach, we can also segment cohorts according to demographics, and have put in place additional work packages to focus on underserved communities, including the Pakistani community in Rochdale, the Black Caribbean community in Manchester and diverse communities in North Manchester. This work is ongoing and will report later in 2024. This will help to ensure that we do not deepen inequalities through this new intervention.

Read more >

THE IMPACT

Almost 20,000 patients have been identified as being eligible for receiving novel therapies to help reduce their cholesterol, and over 170 practices across Greater Manchester have received support to identify their most at-risk patients and ensure they receive optimal treatment to manage their cholesterol.

In high-risk patients, with persistently high cholesterol who had already had a heart attack or stroke, a novel medication has been shown to further reduce cholesterol by 44%. Treatment with this novel medication in addition to standard statin treatment and a healthy lifestyle has the potential to prevent approximately 80 heart attacks and strokes over 5 years in Greater Manchester and save the NHS at least £2 million in direct cost alone.

KEY IMPACTS AND OUTCOMES

Number of patients eligible for receiving injectables:

18,904 (between Jan 22 – Dec 23)

At the end of March 2024,

1,179 people had received access to novel therapies, which is approximately **6%**

of the eligible population at that time, including people who have now had more than one dose

Number of new medication orders placed:

4,964 between (July 22- March 24)

meeting the national NHS England target and putting GM in the top quartile for performance across England

In **496** patients reviewed,

there was a cholesterol (low density lipoprotein) reduction of **44%** in those who had received the novel medicine

> “It’s one thing to say you want to address health inequalities: the next is to enable it to happen. In a first-of-its-kind population health management approach, we are working together with our partners to deliver a new pathway for the treatment of CVD including broad and rapid access to novel treatments in primary and secondary care.”
>
> **Tracey Vell,** Medical Director at Health Innovation Manchester

Case study 3:

Deploying virtual wards across Greater Manchester

Back to contents >

THE AIM

Set by NHS England as a national priority, virtual wards are a new transformational model of care intended to provide acute care and support to patients in their own homes enabled by technology, as an alternative to a hospital stay. They allow patients to access care at home safely and conveniently, with providers using remote monitoring technology to monitor their health indicators.

The aim of the project was to design a model for virtual wards across Greater Manchester and support providers to deploy it across the system to deliver 1,095 virtual ward beds by March 2024.

> “This has the potential to personalise care for patients, and to improve the patient journey like no other service we could possibly deliver in a face-to-face environment.”
>
> **Karl Guttormsen,** Interim Virtual Ward Lead at North Manchester General Hospital

> “I was handed a band to wear on my arm and the monitoring took care of everything. It was just like wearing a watch. Occasionally I would need blood tests so a couple of nurses would still visit me to make sure I was alright. You’ve got your home life available to you, you’re fully mobile and you don’t have to stay in.
>
> I could continue to go out to the shops and the bakery, you can live your life as normal. You can have visitors when you want, without having to stick to the hospital visiting hours. If you’re eligible to take part, I would say go for it. It’s ideal, it gets you out and away from the hospital environment into your home life where you are happier, and more relaxed and settled.”
>
> **Richard,** Hospital at Home (virtual wards) patient in 2023

WHAT WE DID

Working on behalf of the GM Integrated Care Board and the Trust Provider Collaborative, Health Innovation Manchester led the virtual wards programme to codesign the model of care and pathways, and then operate a PMO function overseeing delivery across the NHS trust providers.

We delivered the following key outputs:

GM virtual ward blueprint

The blueprint codesigned model of care based on a network model across all GM localities, including what should be delivered at system level, network level and local level to achieve common standards and optimise economies of scale from use of technology.

Standard pathways, definitions and data sets

We codesigned standard pathways for virtual wards with clinicians for acute respiratory, frailty, general medicines and heart failure, which are now being implemented by all providers. To ensure we could report and analyse virtual ward activity from across providers consistently, we agreed standard definitions and data sets, clarifying the classification and coding of virtual ward cohorts and enabling providers to flow data into a single GM virtual wards dashboard.

Communications campaign

An insights-based communications campaign was launched in Summer 2023 which has helped raise awareness, understanding and usage of the service across Greater Manchester.

Building an evidence base and deepening understanding

Given this is a new transformational model of care, we worked with providers and academic partners to deepen shared understanding of virtual wards and what evidence supported the approach. This included the NIHR ARC undertaking a rapid evidence synthesis, resulting in a published academic paper[1]. HInM has completed a programme evaluation, and researchers from the NIHR ARC-GM are undertaking an independent evaluation of the GM virtual ward programme which will complete in late 2024.

[1] Norman G, Bennett P, Vardy E R L C. (2023). Virtual wards: a rapid evidence synthesis and implications for the care of older people. Age and Ageing. https://doi.org/10.1093/ageing/afac319

THE IMPACT

Virtual wards are a new transformational model of care, requiring significant change to provider operating models and clinical practice – realising the benefits of such a change will take time and continued effort to properly embed across the system.

Over the course of the programme, we now have a place where all localities in GM provide a virtual ward service, working to a set of common pathways, with some local variation. There is still much to do to fully optimise this model of care, but some key outcomes include:

From February 2023 to January 2024, NHS trusts in Greater Manchester reported delivering more than **1,000** virtual ward beds, running at an average of **74%** occupancy – this is in line with the national targets set by NHS England. This is a **tripling** of the bed occupancy within the span of the last **12 months.**

Through this same period, GM virtual wards supported **33,000** patients, saving **96,000** hospital bed days.

Whilst the reported costs of a general hospital ward bed are **£536** a day, provider reported costs of virtual ward bed days in GM average **£133** a day.

In addition to savings on bed costs, there are also potential savings on A&E avoidance and ambulance costs. Providers are continuing to develop and monitor the service through real time data collection and evaluation.

A HInM health economic analysis estimated that from Feb 23 to Jan 24, GM virtual wards supported:

Avoided ambulance conveyance	Avoided hospital admissions	A&E attendances avoided
11,000	**16,000**	**28,000**

The potential net saving to the system is estimated to be **£13.8 m** compared to traditional hospital care models (based on a comparison to the cost of a hospital stay).

It should be noted that the above are preliminary estimates, but based on modelling that includes conservative assessments and a **40%** optimism bias. A more comprehensive assessment of the programme is being undertaken by colleagues in the ARC.

Case study 4:

Understanding obesity across Greater Manchester

Back to contents >

THE AIM

Obesity is a complex, chronic condition that increases risk for over 200 diseases and for the world's leading causes of poor health and early death, including cardiovascular disease, several common cancers, diabetes and osteoarthritis. The UK has among the highest rates of obesity in Western countries. It is clear, that there are significant benefits to be gained from bringing down levels of obesity in GM.

The aim of the project was to deepen understanding of the cost of obesity to the GM system (both in terms of direct health costs and wider productivity impacts), and the current status of weight management and obesity services provision, as well as the potential impact of introducing alternative models of care and novel medicines.

This project was delivered by HInM in partnership with Lilly UK and select industry partners to undertake specific work packages.

WHAT WE DID

Service mapping

Through engagement with the NHS GM ICB and weight management service providers, we mapped weight management services across GM, covering from tier 1 to 4 services, via stakeholder workshops, interviews and data analysis.

Health economic analysis

We worked with a partner to develop a health economic report detailing the full range of costs incurred in GM due to obesity, including health and social care costs, economic inactivity and the non-financial costs of informal care and reduced quality of life.

Pathway redesign

We undertook further work with Tier 3 (weight management support service for people living with obesity) providers to understand the anticipated impact of introducing new obesity medications into the pathway, supported with modelling the potential capacity, demand and costs.

Innovation products horizon scan

We undertook a market review to identify potential industry innovations, including digital and MedTech products, that could help to solve some of the pain points in a future designed pathway. This included consideration of the NICE early value assessment of digital weight management service providers.

Public engagement

Given this is a complex area of care, we needed to understand the patient perspective and undertook a series of focus groups to gain insight into their lived experience and barriers to accessing care and treatment.

> "This work has cast a light onto the significant impact of obesity on individuals, a healthcare system under pressure and wider costs, while also providing important insight into current capacity to support people living with obesity in Greater Manchester. I am hopeful that these reports will enable healthcare teams to reflect on emerging opportunities to improve access and help reduce the burden of obesity in Greater Manchester.
>
> **Dr. Jonathan Schofield**, Clinical Lead for Diabetes, Endocrinology & Metabolism, Manchester Royal Infirmary"

THE IMPACT

It is the first time an in-depth analysis and review of the obesity pathway, demand and cost has been conducted in this way across the GM system. There is now an increased awareness of the problems and economic burden faced by GM which presents a significant opportunity to optimise system readiness and appropriate use of any future innovations, such as medicines and/or technology to support people towards healthier weight management.

Around **1** in **4** adults in GM live with obesity

27.1%

The cost of obesity and related diseases in GM was **£3.2 billion** in 2023 and **£5,297** was the average cost per person living with obesity

The highest prevalence of obesity in GM is seen in some of our most deprived communities, including **Rochdale, Oldham and Tameside**

There is **inequality** in service availability, service provision and service usage, as well as **geographical variation** across GM

Demand for services is outstripping capacity – **17,313** referrals to Tier 3 (10.1% eligible population) only **28%** go on to enrol in the service

Waiting times for services of **12 months** for **Tier 3** and **18 months** for **Tier 4** are typical

Stigma and language are real barriers for patients seeking care and treatment

There is no clear plan for how to optimise innovation or novel therapies into the obesity pathway

Several recommendations for the system have been produced which include stratifying patient groups according to need/risk levels, developing a new model of care across the system, improving efficiency to increase capacity and address stigma, language, and negative culture.

> "Obesity is one of the biggest public health challenges we face today, taking a massive toll on individuals' health and wellbeing, as well as placing strain on our NHS. There is huge potential for the pharmaceutical industry and the NHS to work together to tackle this crisis. Lilly's expertise in developing new medications and solutions, combined with Health Innovation Manchester's unparalleled access to patients and public health infrastructure, are driving real progress.
>
> Collaborative efforts are accelerating research into new obesity treatments, allowing innovative new options to be made available to patients sooner, and in an equitable way. Greater Manchester ICS's real-world data on patient outcomes can help Lilly refine the effectiveness and implementation of emerging therapies.
>
> Findings have driven our understanding of both the burden of obesity and current Weight Management service provision, allowing us to explore the "art of the possible" for future provision across the UK. Most importantly, this integrated approach has put patients at the centre, with Lilly UK and Health Innovation Manchester leading the way through strategic collaboration and partnership."
>
> **Khalil Asmar**, Associate VP, Pricing Reimbursement and Access, Lilly UK

Progress from across Health Innovation Manchester programmes

HInM receives commissions from multiple places to discover, develop and deploy innovation in Greater Manchester.

Back to contents >

We are an organisation hosted by Manchester NHS Foundation Trust and our major commissions and designations include the Health Innovation Network for Greater Manchester (which includes the Office for Life Sciences commission), the GM ICS Digital Transformation Office, the National Institute for Health and Care Research (NIHR) Applied Research Collaboration (ARC-GM) and the NIHR Academic Health Science Centre.

Our organisation is not limited in its structure or remit to any one of these different commissions – rather, we work in integrated functions within the organisation to enable us to be bigger than the sum of our parts, adding greater value using a unified approach, being focused on the health outcome priorities of Greater Manchester.

DIGITAL TRANSFORMATION

In 2023/24 we launched the **GM ICS Digital Transformation Strategy**, following several deep engagement and prioritisation exercises in each care setting using the GM Digital Maturity and Investment Framework, which has been adopted by NHSE. The Strategy encompasses 3 layers of activity to digitise, integrate and innovate
across 5 ambitions:

1. Deliver integrated coordinated and safe care to citizens
2. Enable staff and services to operate efficiently and productively
3. Empower citizens to manage their health and care needs
4. Understand population health needs and act upon insights
5. Accelerate research and innovation into practice, as a globally leading centre

In line with this Strategy, HInM has continued to coordinate investment and portfolio planning on behalf of the GM Digital Transformation Group for digital transformation programmes across HInM, NHS GM and Providers, reporting to NHSE.

HInM's digital & data portfolio encompasses GM digital products & services, notably the GM Care Record and GM Secure Data Environment, as well as leading several delivery projects aligned to the GM ICS Digital Transformation Strategy – including the Digital First Primary Care programme.

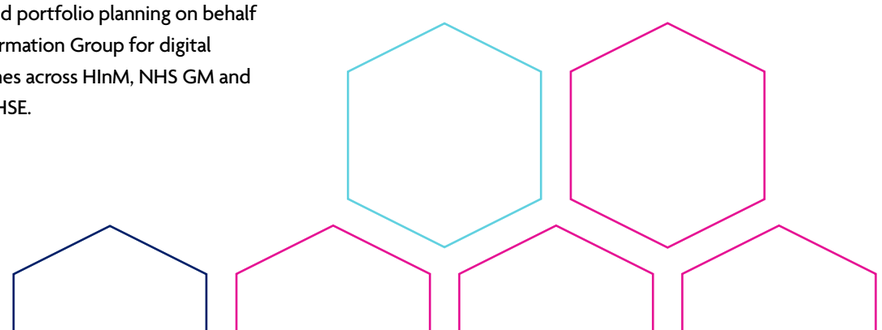
Developing the GM Secure Data Environment

Secure Data Environments (SDEs) are highly secure computing environments that can provide safe and secure access to health data for use in research. Utilising data from the GM Care Record, linked with other key datasets, Health Innovation Manchester is developing the GM SDE with the University of Manchester and NHS Greater Manchester.

The GM SDE will provide the infrastructure and analytical tools for artificial intelligence (AI) development, clinical trials, real world studies, translational research, epidemiological studies and health systems research in GM for the benefit of our citizens. GM has secured £2.5m from NHS England to develop the SDE from 2023-2025 as part of a collaborative across the North-West.

In 2023/24, progress in GM has focussed on:

- Designing the SDE service model, technical development and operating procedures
- Understanding data flows to define available datasets
- Developing the overall programme plan with key workstreams and milestones
- Securing relevant approvals from the national Confidentiality Advisory Group and developing data sharing arrangements for secondary uses of data
- Establishing system governance for both the SDE and data access requests
- Undertaking a public communications and engagement campaign on the use of patient data for secondary uses and research
- Working through the above to test with an initial set of academic and industry exemplar projects.



The exemplar projects that have been identified & selected to go through the GM SDE service within the initial test phase are:

Academic studies

- Establishing the clinical utility of pre-emptive pharmacogenetic testing across GM using linked data
- Understanding and addressing socio-economic inequality within the quality and safety of care and outcomes for people living with dementia
- Long-term opioid utilisation patterns and associated adverse consequences in patients with chronic non-cancer pain in GM
- Investigating the relationship between HRT prescribing and health care utilisation including referrals to secondary care
- ADAPT: Managing local follow-up for long term cancer survivors
- Optimising lung cancer screening for individuals from underserved communities within GM
- Exploring the early impacts of virtual wards in Greater Manchester, a comparative analysis
- Health outcomes and their determinants in patients with systemic lupus erythematosus (SLE) across GM

Industry projects

- Diabetes in Greater Manchester (ODIN-GM)
- Detecting EARLY Heart Failure in GM
- Redesigning Liver Care pathways to target underserved high disease burden communities
- Integrating Real-Time POCT into Lipids Management
- Remote Spirometry

> "There's an enormous untapped potential in Greater Manchester's healthcare data, but getting access is very slow or impossible. The GM SDE will change that. It will make this valuable resource available for research, while keeping everyone's information safe. This close collaboration between the NHS and the University of Manchester means that discoveries can be turned into real-world benefits much faster, improving the health of the residents of GM"
>
> **Dr. Richard Williams,** Senior Software Engineer in Health Informatics, University of Manchester

Information governance and system decision making

Significant progress has made in information governance this year. Following our application via the national Confidentiality Advisory Group (CAG) we have support from the Secretary of State for Health and Social Care to process confidential patient information without consent for non-research purposes under Regulation 5 of the Health Service (Control of Patient Information) Regulations 2002 ('section 251 support').

In February 2024, we made similar application to process confidential patient information without consent for research purposes. The outcome of that application was approved in April 2024. This is a huge achievement. We warmly congratulate the team responsible
– including Jenny Spiers (HInM), Graham Hayler (NHS GM), Peter Richards (HInM), Matt Hennessey (NHS GM), George Tilston (UoM) and Kate Wicks (UoM).

Governance groups, including the GM SDE Applications Review Group and GM Data Access Committee (GM DAC), have been established, with both groups underway to prepare the ground for the exemplar projects to be submitted. The GM DAC includes representation from the GM SDE Citizens Advisory Panel that has been established with patient representatives from across Greater Manchester to ensure that the applications to use the data meet the high expectations and needs of Greater Manchester's citizens.

The GM SDE has the potential to help us to understand and mitigate the many health challenges that the population of GM faces and its development is a key enabler for the future data-led development of the GM health and care system.

Digital first primary care programme

The Greater Manchester Integrated Care Partnership, NHS Greater Manchester and Health Innovation Manchester are working together on the Digital First Primary Care (DFPC) programme to support general practices on a digital transformation journey to:

- improve patient access to GP services so patients can easily access the advice, support and treatment they need using digital tools
- improve staff ways of working
- optimise capacity management

Over the last 12 months the programme team has continued to build strong relationships with general practice, PCNs and leaders across the region, advancing digital access to primary care services in Greater Manchester.

As part of the whole DFPC team, 17 Primary Care Digital Facilitators are collectively supporting PCNs and practices to implement improvements. Primary Care Digital Facilitators have contributed towards some excellent outcomes by working together and supporting each other to improve the digital access into general practice.

OUTCOMES

Practice website improvement activity:

400+ total practice website audits were conducted

248+ practices took part in the journey to improve their website

(representing 61% of GM practices)

35% all GM GP websites have improved in line with national guidelines

102,700 online consultations through one of GM GPs' most popular tools in March 2024 - an increase of **154%** from March 2023

NHS App usage increased:

1.53m NHS App logins in GM in March 2024 an increase of **93%** from March 2023

14,500 GP appointments in GM were booked or cancelled through the NHS App in March 2024 an increase of **51%** from March 2023

173,000+ repeat prescriptions for GM patients were ordered via the NHS App in March 2024 an increase of **53%** from March 2023

Repeat prescription activity via the NHS App now represents **5.6%** of total repeat prescription activity for GM – compared with **3.4%** in March 2023

INDUSTRY PARTNERSHIPS

HInM works with industry partners, from SMEs to global players in medical technology, digital technology, and new medicines - to discover, develop and deploy innovation for the benefit of people in Greater Manchester. We provide guidance and support services to accelerate businesses with new products on their journey, as well as partnering with companies who are dedicated to solving problems faced by people living in Greater Manchester - to develop projects through the HInM Innovation Pipeline.

The GM Health Innovation Accelerator

The UK Government launched an innovation accelerator programme in response to the levelling up white paper to invest £100m into three innovation clusters – Greater Manchester, West Midlands and Glasgow – to accelerate growth in R&D, attract private investment and develop future technologies.

As part of the broader GM programme led by the GM Combined Authority, the Health Innovation Accelerator (HIA) has been established to rapidly improve the diagnosis and treatment of disease across the 2.8m Greater Manchester population. It focuses on tackling some of the most challenging disease areas through early diagnosis using novel approaches and holistic treatment aligned to people's specific needs.

The programme is delivered through a partnership between Health Innovation Manchester, Manchester University NHS Foundation Trust (MFT), the University of Manchester and a range of industry partners from digital, life sciences and creative marketing sectors.

Our shared ambition is to strengthen the research and innovation assets within Greater Manchester, support regional economic growth, and improve access to novel diagnostics and screening services in underserved communities. By enabling earlier diagnosis, it is hoped this will help to save more lives and improve health outcomes for people at high risk or living in the most disadvantaged communities.

Advanced Diagnostics Accelerator:

The Advanced Diagnostics Accelerator is a series of projects looking at Greater Manchester's major morbidities in which academic and industry excellence from advanced diagnostics, digital and data have been brought together to improve health outcomes for patients, targeting at risk cohorts who are in most need of improved and earlier access to diagnostics and treatment.

- **Chest Pain Diagnosis:** improve care for patients receiving an emergency ambulance response for acute chest pain by trialling the acceptability and feasibility of a point-of-care test delivered in an ambulance by paramedics. The point of care test will look for a biomarker called Troponin that is released when a patient is having a heart attack.

- **Chronic Kidney Disease (CKD) Discovery:** understand the prevalence of CKD in the Greater Manchester region and identify how current resources are utilised, including the pathways and their impact on patients, caregivers and healthcare professionals.

- **Early Detection of Liver Disease:** building on the expertise developed through a successful Innovate UK-funded project – ID LIVER – the project is expanding into Greater Manchester via a targeted data approach to assessing patients at increased risk of liver disease in underserved communities.

- **Early Detection of Heart Failure:** develop a new approach to detecting and treating patients at increased risk of heart failure through providing data for calibration of a novel risk calculator.

- **Lung Cancer Screening:** improve the early diagnosis of lung cancer by assessing novel diagnostic tests and approaches to improving awareness and access to screening in underserved communities.

- **Remote Spirometry:** test the feasibility of remote spirometry to help improve the diagnosis, quality and safety of care provided to current and potential COPD and asthma patients in the community.

- **Lipids Optimisation:** use novel approaches to assess cardiovascular risk, and explore the value of including an additional new diagnostic test for lipoprotein (a) alongside routine testing.

Development and Validation of Technology for Time Critical Genomic Testing (DEVOTE) programme

The DEVOTE Programme is bringing together academic, industry and clinical partners from across the region to deliver enhanced genomic diagnostics to optimise medicine effectiveness for patients. It includes three main projects:

- **Rapid Diagnostic Testing in Stroke:** develop a rapid, cost effective, point-of-care test to test for CYP2C19 genotype by the bedside to guide stroke therapy.

- **Rapid Genetic Point of Care Devices:** use advanced materials to develop novel, ultra-rapid genetic point of care devices.

- **Pharmacogenetic Passport:** develop an end-to-end solution for pharmacogenetic testing and reporting for a range of genetic variants to roll out across the NHS.

Measuring our success

The majority of this year has been spent shaping this complex programme, working across a broad range of partners and ensuring we can deliver against the requirements set by Innovate UK and the needs of our projects.

All of these programmes are also supported by cross-cutting working on novel approaches to community engagement, with a specific focus on addressing inequalities, as well as developing a common data platform approach to support partners to access relevant datasets and develop new technology products. The key to this programme is developing the GM innovation ecosystem, using the above projects and a vehicle for doing so.

We will be in a position to properly report on the outputs, outcomes and impacts of the accelerator programme and the individual projects next year. We are already seeing some early results, such as improved recruitment rates to studies, novel insights into barriers impacting peoples' ability to access screening and diagnostics, and are supporting industry partners to better collaborate with healthcare expertise and academia to develop their products and services.

KEY OUTCOMES MEASURES WILL INCLUDE

Increased
access to screening and digagnostic services

Increased
research participation and early diagnosis for underserved communities

Strengthened
research and innovation assets within GM

Increased
access to data and tools for novel diagnostic programmes

Increased
co-investment and income generation opportunities for industry partners, leading to improved sustainability

Chronic kidney disease discovery project

HInM has worked in partnership with life sciences company, Boehringer Ingelheim, to undertake a project to understand the current pathway and patient journey for people with chronic kidney disease, from early-stage diagnosis through to treatment.

The aim was to identify where there are opportunities to improve the experience and outcomes for patients with chronic kidney disease and their carers, with a special focus on prevention, earlier diagnosis and slowing disease progression.

HInM undertook an analysis of chronic kidney disease in GM, which found that the prevalence of CKD for GM is 3.9% (England avg. 4.2%), equating to 97,426 people. The estimated total cost of CKD care, treatment and provision in GM is estimated to be £78.1m – indicating the opportunity for improvement and efficiencies is significant.

Over a nine-month period, with the support of a service design agency called The Care Lab, the project engaged with multi-disciplinary clinicians, patients and carers to map the pathway, identify the main pain points and develop potential solutions for action and improvement.

The project identified eight key gaps in the current pathway from before diagnosis to advanced disease. This was then reimagined as an enhanced pathway, with nine opportunities for improvement or development.

This aspect of the project will formally conclude in early 2024, and the outputs will be published and shared with key partners to inform further pathway improvement work. HInM will also work to identify any potential innovation solutions that could be further developed through our pipeline.

Watch a video on the CKD Discovery project here >

Optimising care for people living with COPD in Greater Manchester

Respiratory diseases are amongst the greatest causes of death and disability. They are often mis-diagnosed or not treated with disease management guidelines which can be overlooked in busy clinical practice.

Health Innovation Manchester and pharmaceutical industry company GSK collaborated on a Joint Working project, to optimise care for people living with Chronic Obstructive Pulmonary Disease (COPD) in Greater Manchester.

The proof of value project helped to identify those who may benefit from a review of their lung health and support the ongoing treatment, guidance and management of their COPD, based on current best clinical practice. It has also helped to support primary care in prioritising patients for review, and in addressing most at risk populations to reduce healthcare inequalities.

PROOF OF VALUE OUTPUTS AND IMPACTS

A total of **48** GP practices utilised the LungHealth software, which provides a consistent and algorithm-guided consultation, used to deliver both remote and face-to-face patient reviews.

From December 2022 through to November 2023 a total of **1,928** patients were reviewed.

Patients who were reviewed face-to-face at a GP practice saw greater improvements to their **COPD** and overall **lung health** in comparison to patients who opted for reviews that were conducted remotely due to having a more structured and thorough review of their lung health. Specifically, **15.4%** of patients had their treatment stepped up, with the aim of reducing exacerbations that lead to emergency admissions through optimising patient therapy.

In response to NHSE sustainability improvement aims, we note **794 (43.2%)** patients saw a reduction in their carbon footprint following their review after being either referred to appropriate treatment or by switching their inhaler.

These patients account for a reduction of 56,178.3 tonnes of CO_2e, an 80% reduction from their pre-review carbon footprint.

Engagement with Small and Medium Sized Enterprises

Funded by the Office for Life Sciences, we are working closely with our local, regional and national partners, building on the expertise and cross-sector connections with the Health Innovation Network to identify, develop, test and spread proven innovation.

Our core functions include:

- Identifying need and communicating regional priorities: including horizon scans to identify existing and emerging technologies and innovations, and advancing cross-working through alignment with local, regional and national partners.
- Signposting and supporting innovators: including support through the Innovation Nexus to bring innovative products and services to the NHS.
- Validation in real world settings: including expert advice, support and evaluation to innovators to develop and improve their products.
- Adoption and spread of innovations across the system: including guidance, co design and delivery plans for innovators to implement their service or solution into a health and/or social care setting.

Health Innovation Network impact*:

- In 2023/24 the Health Innovation Network achieved a 10% increase in overall funding leveraged when compared to the previous financial year. In the backdrop of the current global economic state, this demonstrates the huge contribution that health and life sciences industries can make to supporting economic prosperity.
- Over half of the funding leveraged (£250m) was secured through locally-driven partnerships and bids, demonstrating the huge value of being 15 local health organisations, nationally-linked.
- A proportion of the overall funding leveraged was the result of our support to local Integrated Care Board bids, including the Health Tech Adoption Accelerator Fund (HTAAF) and the Secure Data Environment programme.

Jobs safeguarded **>755**

Jobs created **>554**

Funding leveraged **£476m**

* This data was acquired via a survey sent to all companies supported by the health innovation networks in 2023/24. The data is collated to understand the impact in relation to jobs secured, jobs safeguarded, and investment leveraged or sales obtained from products in the UK and the rest of the world. The figures represent the impact of all 15 health innovation networks collectively.

ERDF R&I Health Accelerator

The ERDF Research & Innovation (R&I) Health Accelerator aimed to support innovators and SMEs to collaborate with Greater Manchester's research and innovation institutions, to accelerate development and improve the commercialisation of innovative healthcare products and services.

The R&I Health Accelerator was an ERDF part-funded project bringing together Health Innovation Manchester, The University of Manchester, Bionow and Manchester City Council to accelerate development and improve the commercialisation of innovative healthcare products and services.

Support to innovators included funding, navigating the health and care system, developing value propositions, and access to university-wide expertise with the ambition to build lasting research collaborations.

KEY OUTPUTS AND IMPACTS

63 companies supported

with **10** Postdoctoral Research Associate projects awarded by The University of Manchester,

11 Innovation Catalyst projects funded by Health Innovation Manchester

32 research collaborations facilitated between SMEs and Research Institutions

that led to **11** products and services becoming ready for market and

12 new products being developed by SMEs

10 new jobs created and, in many cases catalysed ongoing activities that continue to drive health and care innovation.

The collaborations formed will continue to be used to share knowledge, address the barriers to adoption and co develop further proposals for research and development projects. The R&I Health Accelerator demonstrated that through partnership and collaboration, we are improving the care of citizens across Greater Manchester.

RESEARCH AND ACADEMIA

Greater Manchester is home to several world-class universities and research institutions with a strong history of life sciences and healthcare research. The diversity and size of the GM population and maturity of the health and care system, means we are able to conduct research across a range of disciplines from biomedical and health science discoveries to solve local, national and global problems.

The strength of relationships between GM universities, research trusts, and bodies, combined with strengths in health innovation and life sciences, means we can share talent, knowledge and facilities, to turn scientific discoveries into effective new therapies for the population.

Together, GM universities account for more than 100,000 students, of which around 25,000 are in medicine, health and care disciplines (30% postgraduate, 70% undergraduate). From a research perspective, from 2015-2022 GM has generated £910m in research grants in biology, medicine and health.

HInM delivers particular projects in line with partnership agreements with Higher Education Institutes (HEIs) and the NHSE and NIHR designated Manchester Academic Health Science Centre (MASHC) and NIHR Applied Research Collaboration Greater Manchester (ARC-GM) are nested in HInM.

Partnerships with HEIs

Relationships with Higher Education Institutions (HEIs) across Greater Manchester allow us to maximise research and academic capacity and capability. These collaborations across our HEIs and research infrastructure harness opportunities, attract major research and innovation funding, and ensure there is a constant pipeline of translational research feeding our innovation programmes.

HInM has continued to develop its partnership activities with all GM HEIs, understanding our shared areas of interests and strengths from which to agree some priority areas of focus.

Over the last year, we have focused on the following priority areas:

- **Development of a MAHSC Applied Health and Care Research Group,** detailed below.
- **Development of a 'shared supervision' PhD model** across all four GM HEIs that enables cross-institutional collaboration, including a MAHSC Cardiovascular domain PhD for supportive funding resulted in a collaboration between the domain and MMU.
- **Exploration of the use of de-identified real patient records to train our future health and care professionals.** We've gathered new insights from members of the public and health and care professionals to explore attitudes around this concept, with manuscripts in preparation. This work will inform wider activity with the potential to develop a new approach with students using electronic patient records as part of their training.
- **Exploration of the use of Artificial Intelligence (AI) to triage 999 calls** – HInM has supported forging a new collaboration between the North West Ambulance Service and the University of Bolton in this area.
- **Access to GM Data for Research** - several academic studies (including ADAPT Long Term Cancer Survivors, Pre-emptive Pharmacogenetic Testing and Virtual Wards) were selected as part the pipeline for gaining access to the GM Secure Data Environment in its alpha service.

Applied Health and Care Research Group

The Applied Health and Care Research Group was launched in 2023 to support high-priority applied health and social care research in GM that has the potential to generate health and social care impact and benefits to service-users, patients, and carers. The group is a joint initiative between National institute for Health and Care Research (NIHR) / NHS England designated MAHSC and the NIHR ARC-GM.

The Applied Health and Care Research Group aims to:

- Complement working with ARC-GM/MAHSC/HInM to accelerate excellence in health and social care research and education, and in service-user, patient and carer care and support.
- Collaborate to increase the volume of excellent, timely, high-priority applied health and social care research conducted in GM.
- Identify and prioritise effective innovations emerging from applied health (Including public health), and social care research for deployment across GM.
- To ensure inclusivity and collaboration across applied health, social care and public health research activity in Greater Manchester.
- To build research capability and capacity amongst the multi-professional health and social care sector.

In November 2023, the group launched a competition to fund projects aligned with the GM Integrated Care Partnership (ICP) strategy 2022-2028 and GM's 5-year Joint Forward Plan. The opportunity received a fantastic response, with 42 high-quality applications received from across GM universities, NHS Trusts, the GM ICP, the GM and Eastern Cheshire Strategic Clinical Networks, and multiple applications made in partnership between these groups.

Almost £190k was awarded to five research projects that all support cross-discipline, and multi-institution research that has the potential to generate health and social care impact and benefits to the people and communities, patients, and carers in GM.

Hearing loss prevention project – from discovery to deployment

Gentamicin is a commonly used antibiotic given to newborn babies who are at risk of sepsis. 1 in 500 people have a genetic change that means they will suffer hearing loss after treatment with gentamicin. A pioneering, rapid bedside genetic test can establish if a newborn baby is vulnerable to deafness if treated with gentamicin.

Developed by Manchester researchers, the test was piloted at MFT between 2017-2022, and was conditionally recommended by the National Institute for Health and Care Excellence (NICE) in 2023 for use within the NHS.

Health Innovation Manchester are now working with partners to deploy the neonatal point of care test to prevent hearing loss in NICUs across Greater Manchester. To date, 2,250 tests have been completed, equating to approximately 9 babies saved from hearing loss and a £585k cost avoidance to the health and care system. Funding contracts are now in place for the roll-out of the test at all eight neonatal units in Greater Manchester, and testing is due to commence in 2024 after validation and verification by point-of-care testing teams.

The test is also part of a NICE Early Value Assessment (EVA). EVA guidance rapidly provides recommendations on promising health technologies that have the potential to address national unmet need.

Health Innovation Manchester are actively engaging with the national Health Innovation Network regarding wider national rollout. If adopted nationally, the genetic test could save the hearing of hundreds of babies each year, and would reduce associated costs including surgery, healthcare utilisation and social care provision.

Learnings from the project will also feed into the 'Development and Validation of Technology for Time Critical Genomic Testing' (DEVOTE) programme, part of the Health Innovation Accelerator.

Manchester Academic Health Science Centre

NHS England and National Institute for Health and Care Research (NIHR) designated AHSC partnerships bring together expertise from universities and health and care organisations to drive excellence in research, education and patient care. MAHSC works closely with these and other GM partners, such as local authorities and industry, to improve health and care services by translating early scientific research and discoveries into benefits for patients and communities.

MAHSC amplifies the discovery and development of GM research to provide a rich pipeline of evidence-based innovations that can be deployed at pace and scale. In the last year, MAHSC has provided almost £500k of pump-prime funding to accelerate research in the HInM innovation pipeline towards this goal. These small funding pots can have a huge impact, e.g. a £10k funding grant from our Women and Children domain for 'Evaluation on the impact the role of the youth worker service for transition has on supporting children and young people with long-term conditions' has led to an external ~£750k grant to Prof. Marie Marshall and colleagues at MFT.

MAHSC Honorary Clinical Chairs

The MAHSC Honorary Clinical Chairs are awarded on an annual basis by The University of Manchester's Faculty of Biology, Medicine and Health Promotions Committee. The honorary professorships are awarded to individuals from across GM who have made a major contribution to their clinical specialty, including excellence in research and education.

This year's recipients are:

- Susmito Biswas, Consultant Paediatric Ophthalmologist, Manchester University NHS Foundation Trust
- Michael Callaghan, Clinical Specialist Physiotherapist, Manchester University NHS Foundation Trust
- Simon Carley, Consultant in Emergency Medicine, Manchester University NHS Foundation Trust
- Matthew Evison, Consultant Chest Physician, Manchester University NHS Foundation Trust
- Pauline Ho, Consultant Rheumatologist, Manchester University NHS Foundation Trust
- Daniel Horner, Consultant in Emergency and Critical Care Medicine, Northern Care Alliance NHS Foundation Trust
- Lala Leelarathna, Consultant Diabetologist, Manchester University NHS Foundation Trust
- Nicholas Lees, Consultant General & Colorectal Surgeon, Northern Care Alliance NHS Foundation Trust
- Raja Padidela, Consultant Paediatric Endocrinologist, Manchester University NHS Foundation Trust
- Benjamin Parker, Consultant Rheumatologist, Manchester University NHS Foundation Trust
- Agata Rembielak, Consultant Clinical Oncologist, The Christie NHS Foundation Trust
- Ferdinand Serracino-Inglott, Consultant Vascular Surgeon, Manchester University NHS Foundation Trust
- Smeeta Sinha, Consultant Nephrologist, Northern Care Alliance NHS Foundation Trust
- Jecko Thachil, Consultant Haematologist, Manchester University NHS Foundation Trust
- David Thomson, Consultant Clinical Oncologist, The Christie NHS Foundation Trust

Research Capacity Building

A key recommendation of the recent interim review of MAHSC was around the provision of support for academic pathways across all health and care professional groups. In response to the lack of research capability and capacity across the health and care workforce, other AHSCs have created Clinical Academic Training Offices to oversee and coordinate training, mentorship and leadership for clinical academic careers. These vary in scope and size but appear to be positively effecting change in this space.

It has therefore been proposed that GM (under the auspices of HInM/MAHSC) consider creating an enhanced and inclusive coordinating role or for all health and care clinicians/practitioners and healthcare scientists. This would amplify existing activity across GM in this area.

NIHR Applied Research Collaboration Greater Manchester (ARC-GM)

The National Institute for Health and Care Research (NIHR) Applied Research Collaboration Greater Manchester (ARC-GM) supports applied health and care research that responds to, and meets, the needs of local populations and local health and care systems. The NIHR ARC-GM is hosted by Manchester University NHS Foundation Trust, as part of Health Innovation Manchester, in collaboration with the University of Manchester and the other Greater Manchester Universities.

NIHR ARC-GM is one of 15 ARCs across England, part of an initial £135 million investment over five years by the NIHR to improve the health and care of patients and the public. In Summer 2023 NIHR confirmed the initial five-year investment was to be extended by 18 months until 31 March 2026.

NIHR ARC-GM work with health and social care partners, the voluntary, community and social enterprise sector, industry and other NIHR infrastructure to translate priorities into answerable research questions, ensuring that their jointly co-produced research is relevant, useful and applicable to local service needs and affects policy and practice within Greater Manchester and beyond.

[1]Norman G, Wilson P, Dumville JC, et al. Rapid evidence synthesis to enable innovation and adoption in health and social care. Systematic Reviews. 2022

Spotlight on Rapid Evidence Synthesis

Synthesising existing evidence is an important way of assessing effectiveness and safety of innovations in healthcare, but this is frequently a lengthy process, and the evidence for many innovations may be limited precisely because they are novel.

In a **framework**[1] developed by NIHR ARC-GM, the **Rapid Evidence Synthesis (RES) approach** uses transparent methods to balance the use of robust techniques with short timelines, and can inform decision-making around adoption of innovative health technologies transparently, consistently and flexibly.

Read more – How RES helped to inform virtual wards in Greater Manchester >

> "The RES approach allowed us to explore the literature and research available [on virtual wards] in a matter of weeks and helped to answer key questions about the benefits and impacts of this model of care, as well as the disadvantages. It played an important role in shaping our thinking of what we needed to do as a system."
>
> **Paula Bennett**, Chief Nurse, Health Innovation Manchester


VELVET
VILLAGE BRASSERIE
PERONI

INNOVATION DEPLOYMENT – WORKING AS PART OF THE NATIONAL HEALTH INNOVATION NETWORK

HInM plays an active role in the national Health Innovation Network (formerly Academic Health Science Network (AHSN)) – delivering against several nationally-commissioned programmes alongside local projects aligned to GM priorities. In 2023/24 this integrated portfolio included several projects in lipids management, tackling health inequalities in paediatric asthma and CVD, patient safety and polypharmacy, and deploying MedTech products following their NICE approvals.

The Health Innovation Network has now completed Year 1 of the 5-year national re-licensing with a 2-year break clause, which was awarded in April 2023. The Network is focusing on 4 areas as a priority to support the re-licensure process – developing the target operating model for the national HIN function, improving impact metrics, benchmarking and performance support across the network, and a focus on external communications and influencing. We have been closely aligned and are contributing to all of these workstreams – as well as to the Innovation Ecosystem programme, sharing the extraction of what we believe makes our place-based innovation ecosystem different and potentially replicable, i.e. integrated governance, integrated capabilities with digital at the centre, industry partnership and unrelenting focus on method.

CVD - blood pressure optimisation

Health Innovation Manchester has supported local integrated care systems in improving the management of patients with undiagnosed and known, but untreated or sub-optimally managed blood pressure. The goal has been to work together to prevent heart attacks and strokes at scale.

Working collaboratively with key strategic stakeholders across Greater Manchester, including the GM CVD Prevention Network Team, we have developed resources to support primary care professionals in their management of patients at high risk.

We have engaged with over 90% of Primary Care Networks across Greater Manchester, promoting the UCL Partners Proactive Care Framework for Hypertension, a best practice model for risk stratification and prioritisation of patient cohorts at greatest risk. Key progress has also been made across the three main QOF indicators for raised prevalence and percentage of patients optimised for therapy.

Looking forward into 2024/25, we will continue to engage primary care providers at system level, targeting areas and neighbourhoods where we can maximise impact on addressing inequalities. We will use our new system level data insight capabilities to more effectively measure the impacts we achieve.

CVD - tackling inequalities in cardiovascular health prevention

Two grant awards, received in early 2023 are driving projects which aim to improve how we work with minority, under-represented and underserved communities within Greater Manchester. The projects focus on working with the Rochdale South Asian and Central Manchester's Caribbean communities and Afro-Caribbean communities across North Manchester.

Through empowering the communities themselves to co-design and lead on engagement, we will not just improve engagement and referral for CVD health prevention and management, but learn how to better work effectively with these communities.

An engagement and delivery blueprint will be created to inform future initiatives, aligning directly to the Greater Manchester's aspiration within Greater Manchester's new Strategy that states 'Transforming public services... working with communities; not simply 'doing to' as a core theme.

Both projects have made significant progress in mobilising and evolving their community engagement approaches using a quality improvement iterative learning methodology, the 'Plan-Do-Study-Act' cycles. The projects will publish a final insight report in October 2024. This will include recommendations for how CVD health improvement initiatives can more effectively engage and work with underserved communities.

Paediatric asthma – tackling inequalities

The Innovation for Healthcare Inequalities Programme (InHIP) aimed to address local healthcare inequalities around paediatric asthma experienced by deprived or underserved communities in Greater Manchester.

Health Innovation Manchester collaborated across the system to launch an innovative six-month pilot at the Royal Oldham Hospital (ROH) working with the CYP asthma Strategic Clinical Network, Treating Tobacco Dependency team and stop smoking services.

This approach involved increased access to FeNO testing on the paediatric wards and at community follow ups, ensuring those with uncontrolled asthma were referred to the asthma biologics pathway. In addition, a unique household approach to prevention was employed by opportunistically providing smoking cessation support to Children and Young people (CYP) and their families.

Local project development utilised a data-led approach which highlighted the correlation between high asthma and smoking prevalence. Recognising a gap in public knowledge around asthma management and the impact of smoking, Health Innovation Manchester and partners worked with community groups across Oldham to co-produce a suite of educational resources.

Eight diverse focus groups took place to hear and understand culturally nuanced experiences and what messages and communication methods would encourage better asthma management. These findings were collated into an insights report and community co-designed educational resources were published to resonate with our GM population to improve childhood asthma.

As a result of this pilot, increased access to NICE-approved innovations has been achieved, with 42 children and young people from underserved communities receiving a FeNO test with 1 child going on to receive asthma biologic treatment. Data showed the 93 CYP who passed through the pathway were from the identified target communities with two-thirds of the CYP also living in the top 20% most deprived areas in the UK. 56 adults were identified as smokers and referred for smoking cessation support, leading to 3 recorded quits and the creation of 3 smokefree homes.

The programme is a unique collaboration between the **Accelerated Access Collaborative (AAC), NHS England**'s National Healthcare Inequalities Improvement Programme and the **Health Innovation Network**, delivered in partnership with integrated care systems (ICSs).

Read Kai's story >

Polypharmacy programme

As more and more people live longer with multiple long-term conditions, the number of medicines prescribed increases. The resulting polypharmacy (use of multiple medicines) can expose patients to harm from interactions between medications.

In GM, 13.3% of people aged over 75 take 10 or more medicines compared to a national average of 9.87%. The Polypharmacy Programme aims to support primary care to identify patients at potential risk of harm and to enable better conversations about medicines.

Health Innovation Manchester was the highest referrer to the national Polypharmacy Action Learning Sets (ALS) training, with 76 Greater Manchester prescribers successfully completing the course, and able to use their new skills to drive forward a reduction in problematic polypharmacy through their clinical practice. This was supported by establishing the Greater Manchester Medicines Optimisation Community of Practice to create support networks and tackle problematic polypharmacy. Using data to understand population health risks and support prioritisation of patients for a structured medication review we piloted public-facing materials

across 9 GM PCNS to challenge perceptions of prescribing and encourage open conversations about medicines. The feedback from the pilot is that the programme has enabled more meaningful conversations, leading to more interventions and better patient outcomes. This will continue to improve patient experience in areas like Tameside, that have chosen to adopt the materials for all their structured medication reviews.

Blog: More Tools and Skills, Less Pills: Working with Greater Manchester stakeholders to reduce harm from medicines >

MedTech product deployment

The MedTech Funding Mandate (MTFM) is an NHS Long Term Plan commitment to get selected NICE-approved technologies to NHS patients quicker.

Health Innovation Manchester has supported the development of trust-level business cases to aid the adoption of these technologies, supported by establishing strong connections between industry partners and providers. This has resulted in the rapid adoption and spread of innovations which minimise the burden on the NHS whilst delivering improvements on wait time, capacity, and cost-savings.

Greater Manchester now has access to all NICE-approved technologies such as Urolift, used treat Benign Prostate Hyperplasia (BPH). Adopting this technology via a one-stop male clinic for Lower Urinal Tract Symptoms (LUTS), patients saw a significant reduction in wait times, from 18 months down to a matter of weeks. This technology also saved the NHS £981 for each patient treated, increasing to £1,230 over a five-year period. Approximately 87% of GM trusts have fully adopted the technology with six out of seven now self-sufficient and at Stage 5 level of adoption.

Patient Safety Collaborative

England's 15 Patient Safety Collaboratives (PSCs) play an essential role in identifying and spreading safer care initiatives. Health Innovation Manchester hosts the Greater Manchester and Eastern Cheshire Patient Safety Collaborative (GMECPSC) to deliver the National Patient Safety Improvement Programmes (NatPatSIP) with the aim of reducing harm. The safety improvement areas of focus include mental health, system safety, maternity and neonatal, and medicines safety.

HInM's support offer to the GM system has been based around the skillset of our multidisciplinary PSC team - bringing together expertise in system convening, programme management, quality improvement, insight and intelligence and communications to produce a range of resources and events aimed at supporting the work of Patient Safety Specialists.

Maternity and Neonatal

The Maternity and Neonatal Safety Improvement Programme (MatNeoSIP) aims to improve the optimisation and stabilisation of the preterm infant and improve the early recognition and management of deterioration in women and babies. In particular, this SIP supports Trusts in GM to implement the nine elements of preterm optimisation measures and launch the paper-based Maternity Early Warning Score (MEWS) and Newborn Early Warning Track and Trigger (NEWTT2) across GM localities.

Medicines Safety

Greater Manchester (GM) has one of the highest opioid prescribing rates in England and prolonged use can lead to harm. During a discovery workshop, stakeholders said that to successfully support people living with chronic pain, primary care health care professionals (HCPs) needed more education, training, tools, and resources. As a result, the HInM team collaborated with system colleagues and people with lived experience to design the NHS **Greater Manchester Pain Management Resources Hub**. The Hub, launched in January 2024, brings together all the GM Pain Management resources into one place in accessible, short-form formats.

Pain Management Workshops facilitated by the programme to support and upskill HCPs, were attended by over 400 people with more than 300 people choosing to re-watch the workshops online. A podcast produced on Chronic Pain released at the start of January 24 has had 9.3k downloads to mid-March – **Primary Care Knowledge Boost Podcast - Chronic Pain**

Blogs - Empowering Chronic Pain Management: A Patient Advocate's Journey with Health Innovation Manchester >

System Safety

The Patient Safety Incident Response Framework (PSIRF) is a key deliverable in the NHS Patient Safety Strategy. PSIRF supports the overarching aim of helping the NHS to improve its understanding of safety by drawing insight from patient safety incidents and transform the way we review and improve patient safety.

The key objective for the PSC team in 2023-24 has been the use of quality improvement approaches and methodology to support PSIRF implementation across GM. We have delivered webinars supporting the embedding of PSIRF approaches such as After Action Reviews (AARs), Swarm huddles and multi-disciplinary team meeting outlines.

The PSC team has also supported the GM ICB as a thinking partner through regular meetings with their Patient Safety Specialist lead and via ICB hosted meetings to all 10 localities. These meetings have enabled generative discussion and development of focussed, directed work from the PSC team into the ICS at the request of the ICB.

Mental Health

The Mental Health Safety Improvement Programme aims to improve safety by reducing harm caused to people using mental health, learning disabilities and autism inpatient services. Restrictive practice refers to any act which involves restricting a person such as physical restraint, the use of rapid tranquillisation, or the use of a seclusion room.

This has formed an approach to support 12 ward-based mental health teams to understand the true prevalence of restrictive practices, the contributing system and human factors that drive restrictive practices and to utilise a data-driven, quality improvement approach to reducing restrictive practices.

Overall, the programme has seen a 45.5% reduction in restrictive practices across participating wards. Ward staff have reported benefits from participation such as improved ward atmosphere, 'headspace' away from clinical practice, staff wellbeing, investment in staff knowledge and skills and empowerment of staff to make better decisions.

PUTTING LOCAL PEOPLE AT THE CENTRE OF OUR WORK

At HInM, the voices and lived experience of local people is at the heart of all that we do. The involvement and engagement of patients, carers, the general public and voluntary sector remains a key enabler in the delivery of our work around innovation and research. This partnership is crucial in helping us to ensure that the projects and innovations we take forward will enable us to address the health needs of our population and the diverse communities of Greater Manchester.

We take a threefold approach in this area:

1. We have invested in People and Public Involvement and Engagement (PPIE) leadership to develop a highly engaged and carefully supported network of public members who have deep expertise and experience relevant to HInM's portfolios. **The Public and Community Panel** is comprised of 16 local people from diverse socio-economic and ethnic backgrounds. The **GM Forum** brings together people and organisations, including the VCFSE sector, that are leading or have an interest in public involvement and engagement.
2. We involve public members in our governance – to represent the interests of the people of Greater Manchester. This includes groups such as the GM Secure Data Environment Citizens Advisory Panel, who review applications from researchers and are a formal part of data access decision making.
3. We involve public members in all our development and deployment projects – to fully understand the problems faced by people in navigating and receiving services, to codesign new models of care, co-create messages for public facing communications, and to test potential solutions to the problems people themselves have told us about. This includes discussion groups, surveys, workshops, interviews and reviews of material.

Below are just a few examples of how we have been engaging with our diverse communities across Greater Manchester.

GM Patient Data Sharing Campaign

Central to GM's ambitions around the development of the GM Care Record, the Secure Data Environment and working with the Health Research Authority's Confidentiality Advisory Group, is to ensure that the communities of GM, particularly those that are least likely to engage with the health and care system, are consulted upon the use of patient information and are communicated clearly about how to opt-out.

A large public engagement exercise was conducted in late-2023 through to March 2024 to understand further the views of specific communities on data sharing. At the same time, a large-scale public communications campaign was delivered to drive awareness of how de-identified patient information could be used for research and non-research uses in future and the opt-out mechanisms in place.

The communications campaign was estimated to reach at least **15%** of the GM population using a mix of **outdoor advertising** across GM's transport network and **paid-for social media advertising.**

Social media advertising reached approximately **356k** people with over **1.8 million** plays of the film-based advertising.

Over **22k** people visited the campaign website with over **76k** page views

There was a negligible effect on opt-out rates despite the large reach of the campaign.

85 people took part in the engagement activity focused on under-represented groups, recruited through networks working with **South Asian women, Black African/Caribbean people, and older people** in areas of deprivation in Greater Manchester.

For any participants who had concerns about use of patient data for research, good data sharing looks like:

Sharing what is done with the data, widely and accessibly (transparent)

Sharing the benefits of the use of the data, back to services and communities (reciprocal, accountable)

Sharing peoples' concerns, and providing reassurance about how data is used and how benefits are being realised for the NHS (responsible, accountable)

Health Innovation Accelerator - Co-Production and Engagement work stream

The Health Innovation Accelerator (HIA) has been established to rapidly improve the diagnosis and treatment of disease across the 2.8m Greater Manchester population. It focuses on tackling some of the most challenging disease areas through early diagnosis using novel approaches and holistic treatment aligned to people's specific needs.

The Co-Production and Engagement work stream is a cross-cutting theme across the programme with the overall aim of empowering the public, particularly those facing the greatest health inequalities. Engaging and involving people from socio-economically deprived and ethnically diverse backgrounds, including those experiencing digital poverty or exclusion, will help us better understand how we can increase access and uptake of advanced and community-based diagnostics amongst underserved groups moving forward.

The work of the cross-cutting theme will contribute to the development of evidence-based outputs to inform a blueprint for future activity, projects or health research. The impact and lessons learnt from the GM Health Innovation Accelerator will play a vital part in informing future strategic priorities, funding applications and bids.

> "The innovation accelerator is all about tackling health inequalities, of levelling up, but, we can't deliver this in isolation from the people, patient groups and communities most affected. So public involvement and engagement is a cross-cutting theme, the golden thread throughout this programme and this will provide some of the insights and learning that can help us link projects together."
>
> **Nicky Timmis**, HInM PPIE Manager

The Greater Manchester Research Engagement Network (REN)

The NHS England funded Research Engagement Network aims to increase the diversity of those who take part in research to be more representative of the local population, support engagement with communities who are typically underrepresented in research, and support ICSs to develop and grow local Research Engagement Network activity.

The Greater Manchester REN programme is a partnership between the Greater Manchester NHS Integrated Care Partnership; working in collaboration with NIHR ARC-GM, Vocal, the Caribbean and African Health Network CIC, the GM Voluntary, Charity and Social Enterprise (VCSE) Leadership Group and NIHR infrastructure in Greater Manchester.

The key aim of this collaborative work is to make research systems and processes more joined up, accessible and equitable. Our approaches include:

- Growing a sustainable GM REN to improve research inclusivity.
- Scoping and developing sustainable knowledge and skills exchange models between the ICS, research teams and VCSE colleagues.
- Delivering exemplar projects with those most underrepresented in research.
- Exploring options for a prototype for system-wide monitoring of research participation.

Highlights for the GM REN include:

- Co-development of a **Respectful Research Charter** with VCSE colleagues and members of the public, consulting widely on this during a 'Collaboration Week'.
- Scoped possible models for improving coordination and sharing of opportunities via Community Research Champions and VCSE led Community Research Hubs.
- Developed and piloted a learning resource with Community Research Champions **'A Mile in Their Shoes'** highlighting the importance of these roles in building trust with underrepresented communities.
- Delivered four exemplar projects for often excluded groups: people with learning disabilities; children and young people; older adults and two ethnic minority groups (South Asian; Black, African and Caribbean).

Thank you Rowena

Rowena Burns was one of the founders of Health Innovation Manchester and has been instrumental in our growth, development and success over the last eight years. Throughout her tenure, Rowena has been a major advocate for the health innovation agenda, with a real passion to ensure local people benefit from some of the best and most advanced health, care and treatment the world has to offer. In leading the Board, she has ensured Health Innovation Manchester is well positioned to deliver innovation aligned to GM's greatest needs, while also influencing national policy in health research, innovation and life sciences.

Collaboration with partners across sectors has been at the centre of her work, with notable achievements include bringing the QIAGEN research and development hub to Manchester, which was estimated to directly create around 250 jobs and more indirectly – adding an anticipated £140m to Manchester's economy over a decade; spearheading Greater Manchester's partnerships with global industry to bring some of the most promising and breakthrough innovations to the population of Greater Manchester; and placing digital and data at the heart of our innovation activities, which has now resulted in GM now having rich data assets for direct care, research and innovation.

On behalf of the HInM Board, our staff and partners, thank you Rowena for all you've done for Health Innovation Manchester and for the people of Greater Manchester. We are immensely grateful for your commitment in creating HInM and for the lasting impact you will have on health and care in Greater Manchester

Health
Innovation
Manchester

We are Health Innovation Manchester

info@healthinnovationmanchester.com

www.healthinnovationmanchester.com

YouTube