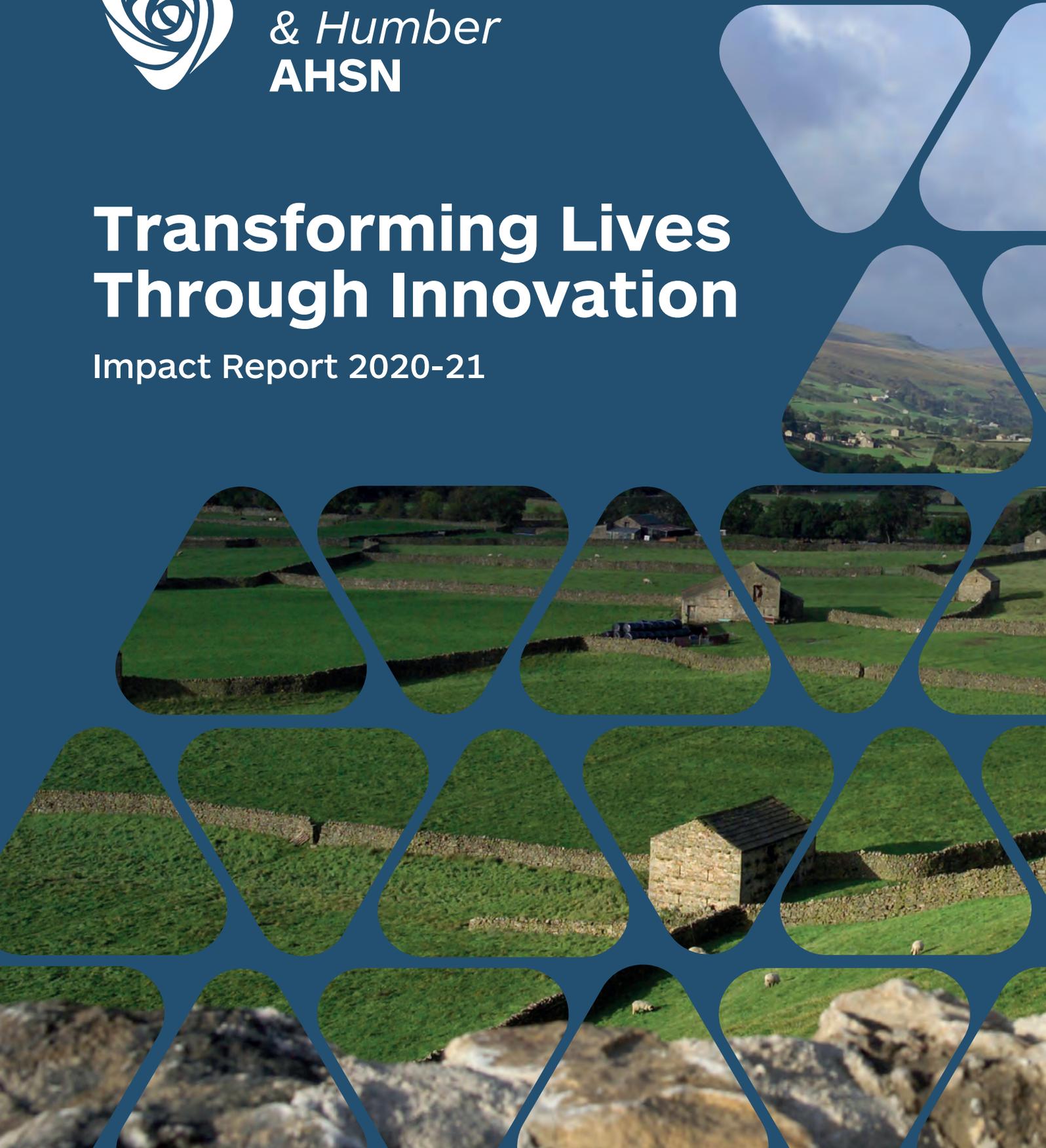




Yorkshire
& Humber
AHSN

Transforming Lives Through Innovation

Impact Report 2020-21



Part of
The AHSN Network



Office for
Life Sciences

Introduction

Our health and care system has undergone a dramatic and rapid transformation since the COVID-19 pandemic took hold in early 2020. The healthcare sector responded at pace, with some services being transformed more in the last 12 months than in the last decade. At the Yorkshire & Humber Academic Health Science Network (AHSN), we quickly refocused our activity to support the NHS response to COVID-19, at a national, regional and local level.

This 2020-21 Impact Report provides an overview of how, through our ability to be agile and flexible, we were able to realign our work and resources and adapt our offer so that we could contribute to, support and in some instances, lead activity as part of the pandemic response.

During the first wave of COVID-19, we designed and implemented a rapid insights programme to quickly identify and evaluate the innovative pathway transformations which were being implemented as a response to the pandemic. Working closely with our colleagues and partners across the North East and Yorkshire we considered the evidence that emerged from more than 470 contributors from every part of the healthcare system.

This rapid response work allowed us to provide real-time feedback to our health system partners on the innovations that were having a positive benefit upon

patients and supported their response to the pandemic. What we learned from this work went on to form the basis for a series of recommendations which will help the health and care system identify changes and innovations that will continue to be of benefit in the future and should be retained.

We published our Rapid Insights reports in which we highlighted how the pandemic has shown us that greater devolved leadership; effective collaboration with all stakeholders to develop solutions; a mindset shift for patients and clinicians who have now experienced a new way of delivering care; and an understanding of the local, societal

context, are all critical factors to creating the cultural transformation we need to achieve sustained and effective change in how care is delivered and received in our region.

Beyond the Yorkshire and Humber region, we played a leading role in the AHSN Network's national Health and Care Reset campaign. Our objective was to bring together all of the insights and examples of best practice identified across the national Network and we will soon publish a report that identifies nine key themes and makes a series of recommendations that we believe will be pivotal to realising the vision for a more innovative and equitable health and care system.

Complimentary to this work was our collaboration with NHS Confederation and The Health Foundation to support the 'Best Practice and Innovation' theme of the national NHS Reset campaign. We focused on how the health and care sector can work with staff, patients and the public to understand, translate and adapt the best COVID-19-related innovations and initiatives into everyday practice. Our own regional findings around how the speed and scale at which innovation was adopted was led by frontline staff and empowered by a changed leadership culture made a valuable contribution to both of these national campaigns.

As well as conducting insightful research, we are extremely proud to have been able to support the three Integrated Care Systems in our region with their COVID-19 response, leveraged an additional £5.3m of investment into our region over the last year, and worked with more than 350 companies to help them bring their innovations into Yorkshire and the Humber.

Much of our work has focused on helping to

keep people out of hospital and reduce the burden on frontline staff, for example;

- Our work to support the rollout of [COVID Oximetry @Home](#) saw an estimated 1,500 patients being able to self-monitor their COVID symptoms with pulse oximeters and detect early signs of deterioration with support from primary care.
- Through our work with NHSX, 14 organisations in our region are being supported to pilot [Tytocare](#), a handheld medical device that enables patients and their carers to self-test for a range of acute conditions as well as monitor chronic conditions.
- Our collaboration with Humber, Coast and Vale Health and Care Partnership to [introduce HN's service](#) to the region, will help up to 1,000 patients manage their long-term health conditions through a clinical coaching tool that uses artificial intelligence to help reduce the need for unnecessary hospital admissions.
- More than 1,100 women have safely been discharged from hospital thanks to our spreading of the [Placental Growth Factor test](#) across seven hospital trusts in the region which helps to eliminate the risk of poor prediction of pre-eclampsia in pregnant women and reduces unnecessary hospital admissions for women who will not develop the condition.
- Over 1,200 people with diabetes have been given the opportunity to complete urine tests at home thanks to [our partnership with Healthy.io](#) who have designed a special testing kit and smartphone app for patients to monitor their own kidney health.

While these innovations are already improving the lives of people in our region,

we have also recognised that the impact of COVID-19 goes beyond people's health, as increased unemployment and inequalities in health and wealth have been brought into sharp focus. This has only increased the importance of our YHealth for Growth campaign, which we launched back in 2019 with our partners at the NHS Confederation and Yorkshire Universities. Our aim is to promote better understanding of the intrinsic link between health and wealth as well as raising awareness of the health inequalities in our region.

In July, as part of this campaign, we published our 'Levelling Up Yorkshire and Humber' report in which we highlighted health inequalities in our region and across the North of England compared to the rest of the country. As a result, we have made a series of recommendations aimed at local and national leaders, for example, recognising the role of joint working in tackling health inequalities and the need for health and wellbeing to be a key consideration in all economic decision-making.

These recommendations have contributed to a positioning paper on the Levelling Up agenda, published by the House of Lords' Public Service Committee, after we were invited to a Lords' evidence session to present our report's findings. The paper has been sent to the Prime Minister and calls for 'better targeted' plans that protect health, education and skills in more deprived areas of the country.

Ultimately, we want to create an equitable and fair society, with all members of our communities living a healthy and prosperous life.

In 2019 we led the development of a set of pledges that define our role in championing and developing diversity within our health innovation pipeline. These pledges have now been rolled out across the AHSN Network. Over the last 12 months the fallout from

both the pandemic and the Black Lives Matter movement has further emphasised the importance and urgency of our work in this area and we have been active in collaborating with our partner organisations across the region to help them think about and address the issues connected with this agenda.

This Impact Report provides further detail on our successes in what has been an incredible and challenging year. All that we have achieved would not have been possible without the support of our partners and stakeholders and of course the resilience, dedication and diligence of our staff. Thank you.

Richard Stubbs,
Chief Executive Officer



Professor William Pope,
Chair





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Securing new investment for our region

Over the last 12 months we have led and supported bids for funding that have resulted in over £5.3m of new healthcare investment coming into our region. Here are just a selection of the projects we have won funding for this year.

Supporting the adoption of Healthy.io in West Yorkshire and Harrogate Health and Care Partnership
£145k from NHSX
(see page 32 for the full story)

Joined Up Care licences and devices for digital care homes across the region
£109k from NHSX
(see page 20 for the full story)

Joined Up Care licences and devices for complex care virtual wards in Humber Coast and Vale Health and Care Partnership
£960k from NHSX
(see page 17 for the full story)

Pathway Transformation Fund to deploy Urolift at Leeds Teaching Hospitals Trust
£33k from the Accelerated Access Collaborative

Joined Up Care licences and devices for paediatric virtual wards across the region
£300k from NHSX
(see page 19 for the full story)

Invention 4 Innovation grant for adaptive patterned electrical stimulation for Sheffield Teaching Hospital NHS Foundation Trust
£1.1m from the NIHR's i4i programme

Invention 4 Innovation grant to develop a diabetes chatbot for Sheffield Children's Hospital
£780k from the NIHR's i4i programme

Grant to develop Artificial Intelligence support for multiple long-term conditions (phase 1) for South Yorkshire and Bassetlaw ICS and the University of Sheffield
£150k from NIHR



How COVID has changed our health and care system

© Welcome to Yorkshire

Our Deputy Chief Executive Kathy Scott reflects on what we have learned from the work we have done to capture and evaluate the service transformations, digital solutions and behavioural changes adopted by health and care organisations across the North East and Yorkshire in response to the challenges posed by COVID-19.



**Kathy Scott,
Deputy Chief Executive**

Some of the changes implemented as an immediate response to COVID-19 to protect patients and staff have permanently transformed the way health and care services are going to be delivered in the future. Whilst the pandemic has brought about enormous challenges, we have also seen positive service transformation and new ways of working that can be a benefit to the whole health and care system.

However, there is a risk that once the operational impact of the pandemic has diminished, much of this progress will be forgotten about. That is why it has been

“ Yorkshire & Humber AHSN colleagues have added immense value to our rapid insights learning and innovation work. From design and start-up, through to data capture, engagement and compilation of case studies, we have benefitted from the thought diversity, creativity and rigour of approaches and experience provided.”

**Jo Farn,
Programme Director for Systems & Leadership Development,
West Yorkshire and Harrogate Health and Care Partnership**

essential for us to work with our partners in local health and care systems to spend time thinking about what the future should look like using data and evidence from our work throughout the pandemic as the key driver for our conclusions. We focused on identifying which pre-pandemic operating practices we should revert to and which we should retain once the immediate pressures of the pandemic subside. We have also identified the new innovations and changes to working practices adopted during the pandemic that have the potential to positively shape our health and care services as we move forward.

Working in close collaboration with our colleagues at North East and North Cumbria (NENC) AHSN as well as our partners from the four Integrated Care Systems (ICS) across the North East and Yorkshire region, we have considered the evidence that has emerged from more than 470 contributions to capture the learning that will help inform future plans.

Our work resulted in the publication of research-led Rapid Insights reports to capture the significant changes that were possible through digital innovation, the reconfiguring of services and enhanced partnership collaboration.

We considered and evaluated the evidence that emerged from contributions made by a huge range of stakeholders including CEOs,





directors, managers, doctors, nurses, clinical staff and non-clinical staff across a variety of organisations including Trusts, local government, ICSs, care homes and the third sector.

Patients and the public also contributed to this research and we gathered feedback from 76 public engagement organisations and patient advocate groups. We conducted 54 hours of dedicated interviews and 47 facilitated discussions and workshops to create 34 case studies. We also received 509 responses to our Digital Primary Care survey. The methodology developed for these Rapid Insights reports will be valuable in the future to help us better understand what it is needed to scale up and adopt innovations. It is a legacy that will remain even after the end of the pandemic.

At the end of our work to gather and consider the excellent innovations and changes to working practice we were able to distil our understanding into half a dozen crucial points.

Four key areas of focus

- Health Inequalities

Disparity in health outcomes is more obvious now. Where you live, your ethnicity, your gender, all have an impact on the level of care and treatment you receive.

- Workforce

Recruiting, retaining and developing talent will be a priority in this ever-changing landscape. Reskilling, upskilling, redeployment, managing resources effectively as we go into more hybrid ways of working, will play a vital role in ensuring staff are equipped to manage future challenges. It will be also crucial to ensure work-life balance is maintained, remote working continues to be effective and staff wellbeing remains an absolute priority.

- Demand and Capacity Management

Increased demand and pressure on services from the rising backlog, waiting lists, long-term COVID cases, mean we need to proactively think about how this will be managed.

- Digital and Technology

Embracing, evaluating and encouraging the use of technology to be more efficient and try to become 'pandemic proof'. Ensuring organisations are equipped to deliver in this way, but also checking that patients are able to access services.

Two critical enablers

- Leadership

During the pandemic, the values of emotional intelligence, compassion and empathy in helping build resilience and supporting staff became even clearer and the need to keep these at the forefront of our work is critical.

- Patient and Public Involvement

Patient and public involvement is vital and needs to be at the heart of any decisions to ensure services are person-centred and respond effectively to their care needs.

There are still significant challenges ahead with much work to be done to build the right infrastructures, find the right funding models and provide the staff support and training needed to facilitate the spread and adoption of innovations, not to mention managing the ever-growing backlog.

We stand ready to work with all our stakeholders to understand how we can continue to support our health and care system to face these new challenges and capitalise on the opportunities that were presented to us during the pandemic as well as those that will emerge in the months ahead.



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Caring for COVID patients at home

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As the second wave of COVID-19 swept the country, NHS England and NHS Improvement launched their COVID Oximetry @home and COVID Virtual Wards projects. Melanie Johnson, Programme Manager for our Patient Safety Collaborative, explains how the Yorkshire & Humber AHSN played a key role in supporting the adoption of these initiatives in our region to better protect ‘at risk’ patients.



**Melanie Johnson,
Programme Manager,
Patient Safety Collaborative**

One of the major challenges for the NHS during the pandemic was detecting early signs of deterioration in patients with confirmed or suspected COVID-19. Known as ‘silent hypoxia’, oxygen levels in the blood can drop to dangerously low levels without the patient noticing, and that was extremely concerning for healthcare staff. Patients were arriving at hospital in a far worse condition than they realised and in some unfortunate cases it was too late to initiate effective treatment.

Monitoring oxygen levels at home

Oximetry @home was commissioned by NHS England and NHS Improvement to provide 'high risk' COVID patients with pulse oximeters to support the use of home monitoring of blood oxygen levels.

The normal oxygen level in the blood is between 95% and 100% but patients were being admitted to hospitals with oxygen levels between 70% and 80%.

A pulse oximeter slips over your middle finger and shines a light into the body. It measures how much of the light is absorbed in order to calculate oxygen levels in the blood. If oxygen levels dropped to 93% or 94%, then people were encouraged to follow advice they were given and call the dedicated phone lines for help. If they went below 92%, people were advised to go to A&E or call 999 for an ambulance.

As the region's Patient Safety Collaborative (PSC), which is hosted by the Yorkshire & Humber AHSN, we have been supporting the use of the oximeters in our local health and care systems.

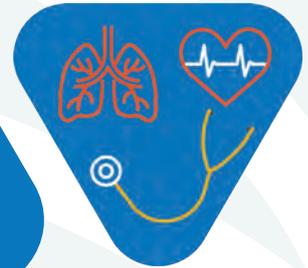
Through regular meetings with dedicated oximetry project teams, we have supported all 15 Clinical Commissioning Groups (CCG) in Yorkshire and the Humber to successfully adopt and spread an Oximetry @home project. Oximeters were given to patients as part of the on-boarding process either by the GP practice or COVID 'hot hubs' that had been established in some areas.

Data up to April 2021 estimates at least 1,500 patients across the Yorkshire and Humber and North East and North Cumbria regions were able to remain in their own homes and be supported by a clinical team.

Virtual wards

The COVID Virtual Ward initiative is aimed at patients recovering from COVID-19 in hospital who are improving and can be safely cared for in their own homes with support from an expert clinical team. The

15
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Commissioning
Groups



have adopted
the Oximetry
@home
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homes to be
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same can be applied to a patient who has arrived at A&E and may not need admitting, but care staff feel they need further support and monitoring at home.

Before being sent home, these patients will be assessed, provided with a pulse oximeter and will have a clear plan in place with daily monitoring and escalation arrangements in case their condition deteriorates.

After 14 days of supported care, if the patients are well enough, they will be discharged from the scheme or if not, they may stay on the scheme for further care. They may also be referred on for help with long-COVID symptoms.

We supported 11 of our acute trusts to successfully implement the COVID Virtual Wards between January and March 2021, this will have allowed at least 134 people across the Yorkshire and Humber and North East and North Cumbria regions to be discharged earlier from hospital and to recover at home with specialist clinical support.

Our support

We have also hosted a series of monthly webinars which have educated and advised on:

- The projects themselves and their accompanying evidence base
- Learning from pilot sites and from other models of remote monitoring
- Addressing inequalities and developing accessible patient information
- Digital solutions to increase referrals onto COVID Oximetry @home pathways
- The role of the Emergency Department
- A focus on patient and staff experience

The PSC has been a strong advocate of these two schemes and we continue to provide support to the Trusts and CCGs through regular meetings with project teams to discuss issues, share good practice and learning and provide national updates.

11
acute trusts

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COVID virtual
wards
project



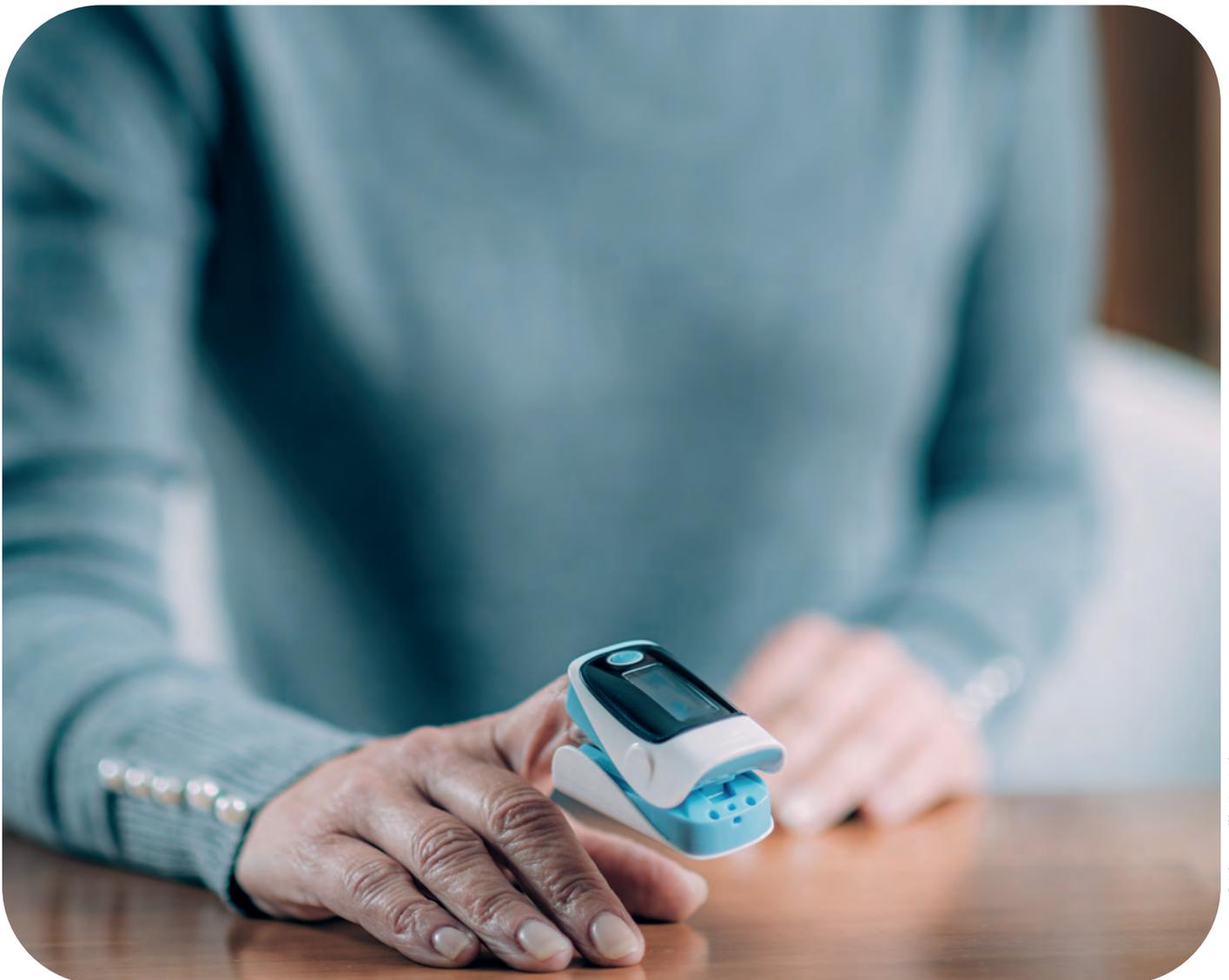
134
people



were discharged
earlier from
hospital as a
result

“ Their presence has been warmly welcomed and appreciated. The AHSN has provided a facilitatory role, offering advice and guidance, escalating any issues raised and sharing feedback and best practice tips from across the region, aiding our delivery. As CCGs across West Yorkshire coming together to work collaboratively in the delivery of the COVID Oximetry @home project we have felt fully supported by our AHSN colleagues.”

**Julie Oldroyd,
Transformation Lead,
NHS Kirklees CCG on behalf of the West Yorkshire CCG
COVID Oximetry @home Group**





Protecting our healthcare workers with a constant supply of PPE

Barbara Conneely is one of our Programme Leads. As we work towards a Net Zero NHS, Barbara tells us about how she and her team have been working to unveil innovations that not only keeps our healthcare system stocked with personal protective equipment (PPE) during a global pandemic, but does so in a way that is cost-effective and reduces the sector's carbon footprint.



**Barbara Conneely,
Programme Lead**

The COVID-19 pandemic led to a significantly greater need for personal protective equipment (PPE) to protect health and social care staff caring for patients. Since February 2020, just before the first national lockdown, the Department of Health and Social Care distributed over 9bn items of PPE, predominantly for use by health and social care services in England. But this increase in demand happened on a global scale resulting in subsequent supply challenges to get PPE consistently to the frontline.

In response there was an increase of innovation activity in the PPE industry and we helped to support these innovators to bring their products into the NHS. This included companies that were developing reusable equipment, and those researching how to effectively use it and in turn to help develop a greener and more consistent supply of PPE for our healthcare providers.

Working closely with our colleagues at North East North Cumbria (NENC) AHSN, we triaged high volumes of new suppliers, found alternative suppliers of PPE in areas that were experiencing shortages and conducted first stage due diligence, which was fed back to healthcare providers. Many of the PPE suppliers were smaller operations or new to the PPE market. As such they did not meet national requirements to join the NHS Supply Chain, but often had high-quality products in demand by NHS providers.

Together the AHSNs assessed 200 new suppliers against PPE standards, with stock and contact information for around 500 companies. The AHSNs went on to work with partners at regional Local Enterprise Partnerships, local resilience forums, the North of England Commissioning Support Unit, and other networks across the whole of the North East and Yorkshire and Humber regions on innovation and economic growth opportunities as well as supporting the innovators with product development.

Wearing PPE correctly and safely

We continue to support new innovators to help ensure NHS staff have access to a safe supply of PPE. For example, we have been working with Blue Mirror, a training tool that helps staff understand how to wear and dispose of PPE safely. Blue Mirror provides a scalable PPE training buddy using artificial intelligence on a tablet. The

system provides a real-time visual and audio guide to users, advising on the next steps of the protocol whilst also highlighting errors as they are observed to support safety and continual learning with compliance reporting.





Creating a greener NHS

The surge of PPE equipment has meant a surge in the use of disposable PPE, and this has had a huge environmental impact. As part of our commitment to work towards a Net Zero NHS, we are expanding our collaborations to consider sustainability. The AHSN environmental sustainability community of interest group, chaired by our Deputy CEO, Kathy Scott, is set to develop a new strategy that will include a clear objective to support a Net Zero NHS in the adoption and implementation of innovative and reusable PPE.

Since the start of the second national lockdown in November 2020, we have been working with NHS England's National PPE programme and the PPE Innovation and Sustainability team who are leading on reusable PPE in the UK. We were involved in workshops earlier this year to allow us to understand the innovation needs of the 60 clinicians, regulators and those representing areas of work around infection prevention and control, procurement, sustainability, and supply chain.

The workshops have proven just how valuable it has been for us to be a part of a wider network of organisations dedicated to bringing new innovations into the sector, providing visibility of the many initiatives dedicated to reusable PPE that are underway such as a pilot programme

41
trusts took
part in the
reusable PPE pilot



looking at reusable gowns involving 41 trusts. Initial findings from this pilot have shown a cost saving in the region of £1.54 per use based on 75 washes and including laundry costs. The sustainability benefits are significant: 28% less energy, 41% less water and 66% fewer emissions are needed or generated in the production and laundering of a reusable gown compared to the equivalent number of disposable gowns.

Adopting innovation at pace and scale, rapid evidence gathering and understanding the solutions available was key to delivering necessary changes as part of the pandemic response. Our role within the network of AHSNs enabled us to draw on our pre-existing relationships within the PPE industry that allowed for collaboration and learning and the subsequent impact to take place on a much greater scale.

Reusable gown pilot findings

£1.54
saving per use

28%
less
energy

41%
less water

66%
fewer
emissions



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Digital innovation to protect the vulnerable

In 2020, NHSX initiated a new Joined-Up Care Programme to build on the digital health gains achieved during the COVID-19 pandemic and accelerate the scale of using digital innovations to transform patient care.

As part of this programme, we worked closely with the three Integrated Care Systems (ICSs) in our region to gather information about promising innovations that could meet their needs and enable them to make informed decisions about which approach and product to select. We helped to ensure that our partners saw all options available and then provided support to secure funding and implement their chosen solutions.



Virtual Wards

Programme Lead Kate Lodge explains how we have been supporting the implementation of home-based care through our Virtual Wards project.



**Kate Lodge,
Programme Lead**

During the first wave of the COVID-19 pandemic Yorkshire & Humber AHSN were asked to help identify technologies that could help manage the care of patients in their own homes to reduce the need for hospitalisation and emergency admissions.

This work came together in the implementation of the Virtual Wards project which we have been delivering across all three of our Integrated Care Systems (ICS). We helped them to identify and assess a range of healthtech companies who had solutions that could meet their needs and they selected to adopt products which were funded through the Joined Up Care Programme.



Structured health coaching to reduce unplanned hospital admissions

With our partners at Humber, Coast and Vale Health and Care Partnership, we used funding from the Joined Up Care Programme to build upon the successful introduction of HN's Clinical Coaching CARE service in York. This is a six-month, high intensity clinical coaching and navigation intervention programme that uses Artificial Intelligence (AI) and personalised care to identify patients with long-term conditions, who are at high risk of deteriorating and needing unplanned acute and emergency care.

HN's predictive algorithm is supported by well-tested and robust information governance, complying fully with GDPR. Patients are supported by a clinical coach – a telephone-based, nurse-led service – that aims to support patients' needs and improve care coordination with other services. The role of a clinical coach is to build relationships, understand context and work alongside other healthcare professionals and services to create a Personalised Care Plan.

Our project will benefit 1,000 patients in the Humber Coast and Vale region by helping these individuals to improve self-management of their conditions, reducing unnecessary hospital admissions by 30-40% and visits to Emergency departments by 20%-30% within a year.

We made a successful bid for funds to spread the HN model based within secondary care from York into populations in Scarborough and Ryedale and Harrogate and District. We also worked with Vale of York Clinical Commissioning Group (CCG) to further develop the HN model, this time rooting it within primary care – York Primary Care Network. We are also continuing to support HN with a patient and public engagement programme.



1000
patients

will be supported to improve the self-management of their conditions



Hospital admissions will be reduced by up to

40%



Visits to Emergency Departments will be reduced by up to

30%

Enhancing virtual care capabilities for children and adults

We advocated for TytoCare's device to be included in the Joined Up Care Programme after seeing its potential in a pilot project in the paediatric department at Bradford Teaching Hospital. Tyto was piloted shortly before COVID-19 first hit in March 2020, with its use adapted in response to the pandemic.

TytoCare have developed a wireless, handheld examination device that allows users to perform medical examinations anytime, anywhere, for the ear, throat, lungs, heart, temperature, skin and abdomen. These examinations can be on-line, live with a medical professional, or can be recorded by the patient, parent or carer and uploaded to a secure platform for review by the clinical teams. Tyto can be used to diagnose a range of acute conditions such as colds, flu, ear infections, bronchitis and sore throats. It can also be used for monitoring and managing patients with chronic conditions such as chronic obstructive pulmonary disease (COPD), high blood pressure, asthma, congestive heart failure, eczema and diabetes.

There are two versions of the device: TytoHome™ is for use in a patient's home and TytoPro™ is designed for use by professionals in a clinical or community setting.

We are actively supporting 14 healthcare organisations across the region to implement TytoCare pilots across a range of use cases – from ventilated patients at home to ED departments to Care Homes. At the heart of this clinical redesign is the aim to reduce the need for healthcare admissions and in-person attendances – where care can be delivered in a better way, either closer to or within people's homes. Our implementation programme is piloting at scale TytoCare's capabilities in enhancing

the care that can be provided for patients remotely, including patients who are at the end of life, have long-term conditions or have recently been discharged from hospital.

This collaboration has enabled a co-ordinated and efficient implementation for partner organisations alongside opportunities for shared learning. Leading and managing the implementation centrally via the AHSN has removed duplication of effort (e.g. for procurement), optimised preparations for benefits realisation and ensured that implementation is robust. As part of this implementation, we have successfully completed the first supplier Digital Technology Approval Process (DTAC) approval process for the region and are developing capabilities for DCB0160 local Clinical Safety compliance across the region. We have created a 6-stage digital implementation approach with supporting materials that will enable the adoption and spread of this and other innovations beyond our current pilots. This is of benefit to our region, and increasingly to those outside Yorkshire and the Humber too – as we work with colleagues in the North East, North West, Midlands and London to share what we have learned from the implementation of Tyto.



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Digital Care Homes

Kate Lodge tells us about the digital innovations that were selected to support care homes.

Remote monitoring for care homes

We have been working with South Yorkshire and Bassetlaw ICS on their Digital Care Homes project. This will see the implementation of the HealthCall solution within selected early adopter care homes to improve the process of communicating key information on the health and wellbeing of the care home residents to aid better care planning and treatment.

HealthCall allows care home staff to refer patient details to an Advanced Nurse Practitioner (ANP) using a secure portal, in this case an app pre-installed on the care home iPad. This allows staff to remotely review, triage and refer the resident appropriately and effectively.

Other key benefits include a reduction in unnecessary admissions to hospital which will ultimately allow the residents to be cared for in their own environment.

Using the Situation, Background, Assessment and Recommendation (SBAR) tool, staff are able to provide clinical observations such as blood pressure and oxygen saturation and provide details of their concerns. These observations are used to calculate a National Early Warning Score (NEWS2) which clinicians can analyse and determine the most appropriate next steps for that patient. This not only helps plan care for the patient, but also helps staff prioritise their caseloads.

All the information is pulled through into the electronic patient record making this visible to the wider health system as well should they need it.

Across Rotherham Clinical Commissioning Group (CCG), we are working with nine care homes and the HealthCall team to implement the remote monitoring app and any support and training requirements.

Reducing emergency admissions from care homes

Humber, Coast and Vale Health and Care Partnership's Digital Care Homes project aims to reduce the admission of residents into Emergency Departments. This involves remote monitoring of patients' weight and fluid intake and supporting residents with chronic obstructive pulmonary disease (COPD).

Docobo was identified by the partnership as the most suitable device to help support care home staff to record patients' observations and report these metrics to clinicians. The metrics are reviewed by a clinician using DOCOBO-WEB™ to track

any severe changes and intervene before an emergency admission is needed. Home care staff use the DOCOBO-APP™ to help record patients' data and make those easily accessible to clinicians.

We have been working closely with Humber, Coast and Vale Health and Care Partnership, North Lincolnshire and North East Lincolnshire CCGs, to implement Docobo in four care homes and one supported living environment.

Docobo is helping to reduce A&E admissions through earlier primary care intervention and is also helping to improve communication between care homes and primary care by sharing residents' health data and providing a more joined-up approach to resident care.

We are delighted to be supporting such fantastic projects and would like to acknowledge the amazing collaboration of all our healthcare partners.



Connecting the NHS with Industry Innovators

Our work with innovator companies is a central element of our role as we seek to encourage health innovation and stimulate growth in life sciences and industry. In this article our Director of Enterprise and Innovation, Dr Neville Young, reflects on the last 12 months of work we have done to leverage investment into our region and give patients in Yorkshire and the Humber the opportunity to be the first to benefit from new technologies.



**Dr Neville Young,
Director of Enterprise and
Innovation**

The role of healthcare innovation in preparing our society to deal with the complex challenges of the 21st century has never been so critical. COVID-19 has brought into sharp focus the impact and potential of healthcare innovation in our daily lives – at both a regional and national level. As an AHSN we have needed to provide a rapid response to meet the ‘new needs’ of the NHS and we have been working with our AHSN Network colleagues to compile a horizon scan of proven, market ready innovations which could support

our healthcare system. We have triaged innovations, performed due diligence and supported national procurement and adoption of innovation in partnership with NHSX, NHS England and NHS Improvement.

Economic growth in the region

Over the past year we spent over 1,800 hours supporting 356 companies ranging from small and medium-sized enterprises (SME), clinical entrepreneurs and innovators to learn about their products and assess how we can best guide them according to their needs.

In addition to hosting 29 innovation surgeries through which we offer companies bespoke support and advice around evidence generation, regulatory, market access and commercialisation guidance, we have supported 26 grant applications for the likes of the Small Business Research Initiative (SBRI), Invention for Innovation (I4I) Programme and Innovate UK. Adding to that our other business development and investment activity, we have leveraged an additional £5.3m of investment into the region.

By working with the Local Enterprise Partnerships (LEP) in our region, we now have a strong understanding of one another's business support and inward investment activity and we continue to look at ways in which we can work collaboratively. In South Yorkshire, we have increased awareness of the AHSN's support to healthcare innovators through the Sheffield City Region LEP's Growth Hub and explored opportunities for partnering on international activity.

The Leeds City Region LEP as well as the Local Authority, Hill Dickinson LLP and Barclays Eagle labs have contributed to the delivery of our Propel@YH digital accelerator programme in Nexus at Leeds. We are working with them to strengthen a





health tech corridor with Israeli companies who are looking to invest in the Leeds City Region (LCR). We have also supported the West Yorkshire Innovation Festival organised by the LCR LEP, showcasing the breadth of innovation support infrastructure across the region. A process for referrals has been established with Hull and East Yorkshire LEP where they are working with healthcare innovators who may benefit from AHSN support.

Engaging with innovators

Despite three national lockdowns, we have successfully delivered 16 online events with a total of 500 attendees representing all aspects of health and innovation. Our Health Innovation Exchange service was the umbrella for us to host the Cervical Screening Best Practice Showcase in partnership with Yorkshire Cancer Research and Public Health England and we are now supporting innovators with follow-up projects and regional alliances.

In January we hosted an Immersive Technology event that focussed on virtual, augmented and mixed reality and how it is applicable to the NHS. With six guest speakers and 22 innovators sharing learning on the early adoption of this technology in healthcare on both a local and international level, we have cultivated strong strategic relationships to explore how the AHSNs can support this new agenda moving forward. In addition to this, SME innovators are also starting to request the support of the Yorkshire & Humber AHSN, with applications covering areas such as, primary care, workforce, children's mental health and elderly and social connections.

More than 150 people registered for our Robotic Process Automation (RPA) event in March where they heard how RPA has started to achieve both financial and productivity efficiency savings within the NHS while our Innovation in Rehabilitation event paved the way for 20

companies working on products around musculoskeletal, cardiac and respiratory care and cancer to connect and take a step closer to implementation with our local providers.

Global connections

We are working towards becoming a key international partner for healthcare innovations for import and export, identifying innovations from outside the UK that meet an unmet need in our region. We have taken big strides in providing knowledge exchange for our NHS organisations to work with peers from overseas in Switzerland, Sweden, Barcelona and Israel to build partnerships that help drive innovation and improve patient outcomes and ultimately, provide economic growth to our region through foreign direct investment.

The Department of International Trade's technology summits in India and Japan gave us the opportunity to present the work of the AHSN Network to world leaders, entrepreneurs and investors and the Health System Strengthening Week hosted by the Thailand Centre of Excellence for Life enabled us to demonstrate how Thai partners could draw on our AHSN Network experience to develop their own 'Health Innovation Clusters'.

Our work with Norway Health Tech introduced Norwegian SMEs and their innovations to the UK healthcare system and vice versa and we have recently submitted a first draft proposal for a partnership between Oslo Hospital and Leeds Teaching Hospitals to share knowledge and innovation. Meanwhile, we have been establishing relationships with sector related organisations in Japan and Taiwan to orchestrate workshops that can help their native innovators break into the UK market and our NHS.



Ongoing projects

- **Revolution-ZERO:** Thanks to our ongoing partnership with Rutherford Research Limited, the company's carbon neutral Revolution-ZERO surgical masks, that have been specially designed to significantly reduce waste, will be part of a trial project with Leeds Teaching Hospitals' surgical teams from July 2021.
- **PinPoint:** We have been supporting PinPoint and their artificial intelligence cancer detection test for the last year. The test, which allows clinicians to 'red flag' high-risk patients has been validated in retrospective assessments of 147,000 patients. We have been working with the three Cancer Alliances and a range of key stakeholders across Yorkshire and the Humber to socialise the test which has led to an SBRI funding application being submitted. We are now working with PinPoint to support the implementation of the test providing Cancer Alliances with innovative solutions that are ready to be adopted at scale, across a number of cancer pathways.
- **DATA-CAN:** Over the last year, we have successfully supported the establishment of DATA-CAN, a UK-wide partnership led by Health Data Research UK, that is unlocking the power of health data to improve cancer care.

As we look back at our successes in 2020-21, we would like to thank all our partners and stakeholders, without whose active collaboration and fantastic support we could not have achieved the scale of our results.

To see how we help innovator companies interact with the NHS take a look at our other articles within this report which highlight our successful partnerships with [Docobo](#), [TytoCare](#), [Healthy.io](#), [HN](#) and [Bridget](#).





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From an idea to a social business: an innovator's story

Bridgit Care Founder Darren Crombie explains how the Yorkshire & Humber AHSN has supported him on his journey to grow his business.



**Darren Crombie,
Founder of Bridgit Care**

Here is my story and how we would not be where we are without the free support, guidance, and friendship we have received from the Yorkshire & Humber AHSN.

My story begins in the summer of 2017. I was lucky enough to attend a session in Leeds and watched Yorkshire & Humber AHSN's CEO Richard Stubbs give a talk on the tech sector in our region.

I was perched at the back of the room quietly thinking about how and when to start my own business. How to make the jump from an employee to an unemployed founder with a young family to provide for.

After that session, I really got my head down and in early 2018 Upstream Health



was born. Our mission was simple: to deliver Upstream preventative care using technology to empower patients and care teams by helping them to introduce early interventions and prevent issues from becoming bigger (and more expensive to resolve) later. We wanted to enable integrated working. Putting the patient at the centre of the care provided by their GP, acute, community and social care teams.

A lot to learn and time for a big pivot

We slowly grew our services and solutions, deploying clinical portals, mobile clinical apps, patient apps and video consultation products and getting places on all the key government procurement frameworks. But through this growth, we struggled to deliver on our vision for integrated and early preventative care.

We struggled to get traction on our ideas and solutions that could help drive earlier interventions through cross-organisation workflows. During that time, we engaged in accelerator programmes, meeting Clinical Commissioning Groups (CCGs), Local Authorities, and developing our initial relationship with the Yorkshire & Humber AHSN. We received invites from the AHSN to attend several workshops to learn from users, and opportunities to present and share our mission at events.

The reason we don't deliver truly integrated care isn't because of a lack of tech, or innovation. At the ground level, there is a desire to integrate, but when you only have minutes for a patient consultation or visit, then there is just no capacity in the system to integrate to deliver preventative care.

That's why with these insights, in the summer of 2019, we decided to look at the problem a bit differently. I had seen in my personal life that the most important person looking after my grandad Doug wasn't his GP, hospital doctor or home care support. They all contribute and do a great job, but it's my mum and sister that are the

ones there for Doug every day helping with shopping, medications, and emergency support.

Our pivot was simple: rather than add to the catalogue of solutions designed for our 300,000 doctors, that they struggle to use because of lack of capacity, we will focus on the 6.5m family carers in our country.

We wanted to empower family carers with the tools, support services and solutions to help them to provide care to people like Doug. Helping with accessible devices to help monitor and support their loved ones and access to real-time support and guidance on how to deliver preventative care. We also focused on how important it is for carers to look after themselves, with access to on-demand care coaches to guide, support and listen.

Time to grow

With our refocused approach guided by our discussion with the AHSN, we started to receive more support and traction. With support from the AHSN, we applied for and won a Small Business Research Institute (SBRI) grant. With that, we completed the development of our home hub units, and an initial trial in the summer of 2020 with promising results.

During the study, we embedded ourselves within a local NHS facility, built close connections with our users and the carers' community. We learnt a lot, and with a letter of support from the AHSN, successfully won a grant of nearly £700k as part of SBRI Phase 2. With the grant, we have now significantly grown our team and the breadth of the solutions and services we provide.

Our model is designed so that it doesn't require any effort from the local care and social teams to implement. We can be commissioned to provide end-to-end support for family carers, which is increasingly important to help kick start the Integrated Care Systems emerging within the UK.



Turbo-charging digital health innovation

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Propel@YH is our digital health accelerator programme and was established to help accelerate the uptake of digital health technologies in our region. It provides innovators with a structured course of support and advice aimed at increasing company growth and market presence. Programme Lead, Helen Hoyland, tells the story of our 2020-21 Propel@YH programme.



**Helen Hoyland,
Programme Lead**

Propel@YH is open to all innovators that can demonstrate innovative digital solutions for patients and have either an existing presence in our region or are willing to establish one. Our objective is to recruit small and medium-sized enterprises (SMEs) with innovations that have the potential to improve health outcomes for our regional population and we are proud to have successfully completed our second year.

We launched the application process for our second Propel@YH cohort last summer and, as the country started to recover from



the first wave of COVID-19, we put the call out for solutions that would help our health and care systems recover in the aftermath of a global pandemic with an additional emphasis on addressing health inequalities.

In response, we saw a range of health innovations designed to ease pressures on NHS resources, including: a platform that supports early fracture diagnosis through X-Ray images, an online food diary system which automates food tracking and analysis and an AI enabled clinical assistant called Dora.

One difference for year two of Propel@YH was the recruitment of commercial partners for the programme. The University of Leeds' Innovation Hub, Nexus, came onboard to support the programme with their research and innovation expertise and they also provided our cohort with membership to their community of high-growth tech start-ups and SMEs.

Barclays Eagle Labs were signed up to provide business support through their national incubator network and leading health law firm Hill Dickinson LLP returned as legal partners. Leeds City Council also supported the programme. Without their active support both in terms of practical content and investment, we could not deliver this successful program and we thank them for that.

Our partners were selected based on the value they could bring to the programme to help the innovators meet the specific demands of the NHS. It was also important that they could provide support on all aspects of building a successful and sustainable business and were either local to the region or were national companies that have a strong footprint here.

After a rigorous application process and selection day, the 10 companies chosen for our second cohort were:

- [Co-Optis Ltd](#)
- [CyberLiver Ltd](#)

- [I.M.M.E](#)
- Liria Digital Health
- [My Food 24](#)
- [SeeAI](#)
- [Ufonia Ltd](#)
- [Vastmindz](#)
- [Warner Patch](#)
- [Written Medicine](#)

At the end of the year, we assessed the impact of the accelerator which included:

- Over 42 hours of high-quality support delivered virtually to 10 companies over six months
- One company relocated to Nexus in Leeds as a result of the programme partnership
- Six collaborations facilitated with the University of Leeds
- Creation of three new jobs
- 12 months co-working space provided for each of the 10 companies
- Significant commercial engagement generated between the companies, programme partners and subject matter experts.
- Nominated for two awards at Leeds Digital Festival: Facilitator of the Year and Tech4Good
- Generated active engagement from two investors and three NHS Trusts

In January this year, we were commissioned by West Yorkshire and Harrogate Health and Care Partnership to launch a new pilot programme, Propel@YH NetZero. This sustainable health accelerator is aimed at SMEs with sustainable innovations that can be used in the NHS to support its ambition to reach net zero by 2040. We are now recruiting applicants for this programme and look forward to working with the successful innovators.



How Propel@YH has shaped my journey

We interviewed Craig Chaytor – one of the innovators from this year's Propel@YH cohort – about his experience of being part of the accelerator. Craig is the founder of I.M.M.E, an interactive physical book combined with technology. Each page is a sensory driven story or fun adventure that has been created to help calm children in difficult situations.



Craig Chaytor,
Founder of I.M.M.E

Could you tell us how I.M.M.E was created and what the main challenge is that the product is trying to solve?

The idea came from my daughter, Imogen. I.M.M.E which means 'Imagine Making Memories Everywhere' was named after Imogen because she is the one who inspired

“Anybody can do anything if you put your mind to it, never give up on what you believe because the reward at the end is only the beginning to more rewards.”

Craig Chaytor, Founder, I.M.M.E

me, and I wanted her to be part of this forever.

She struggles in life with her disability called Williams Syndrome and showed an interest in Virtual Reality (VR) but could not use it as it was too much of a sensory overload for her. I couldn't find any other platform designed for children with a disability to help them in V.R.

I created I.M.M.E. to help children feel safe when they are in hospital and are feeling anxious and scared. If a doctor wants to perform a medical procedure on a child, they can use my product to help calm them so the doctors can do their job. It can also help within education.

What have you learnt on the Propel@YH programme?

Propel@YH is an amazing programme to be on. I personally learnt a great deal from it. From a personal perspective, the programme provided me with confidence in myself to learn new skills that I needed to move my innovation forward.

The partners of Propel@YH have really given me the skills I need, from Hill Dickinson providing legal aid and regulations into medical products to mHabitat providing me with very useful information and research aspects I needed to think about.

How has the Propel@YH programme helped you?

The Propel@YH programme didn't just help me; it made me a better person. When I first applied back in 2020, I wasn't

optimistic because I am a solo owner and did a lot of work myself with no team, which I thought would go against me - but I stuck to it and did my pitch to join the Propel@YH programme. I was very nervous, and it showed because my legs were shaking my laptop so bad that it made the panel laugh.

However, the panel saw something in me and my product and how it can help change a child's life, and we were accepted to be part of the Propel@YH programme. I have connected to so many other establishments across the country, networked on a large scale, gained new friends - from the other cohorts that joined the programme to Jon Fordham at the AHSN and Dawn Carhart from Barclays Eagle labs, all of whom provided me the valuable life skills I needed to move forward with I.M.M.E and offered continuous support.

The Demo Day at the end of the programme was the perfect opportunity to showcase our product and gave me the reassurance of continued support after the programme finished. I honestly can't thank them enough for believing in me and I.M.M.E and accepting me onto the programme.



Smartphone self-care for people with diabetes

Katherine Ward, Chief Commercial Officer and UK/ Europe Managing Director for health-tech innovators Healthy.io, tells us about their award-winning work to help people with diabetes monitor their kidney health in Yorkshire and the Humber.



**Katherine Ward,
Chief Commercial Officer
and UK/Europe Managing
Director, Healthy.io**

We are three years into our work with the Yorkshire & Humber AHSN to enable self-care through smartphone technology – and the evidence is now shining through, showing better health outcomes for patients whilst relieving cost and resource pressures on the healthcare system.

To ensure they stay healthy and their condition is well managed, people living with diabetes should complete eight “care processes” each year as part of their annual diabetes review. Diabetes as a condition makes them vulnerable to complications,

“**Setting up home urinary ACR testing in our practice has been incredibly simple and easy. So far it’s allowed us to engage with harder-to-reach patients and overall has really increased uptake of ACR testing, quickly identifying people who are at risk so we can follow-up.**”

Dr Sab Gogna, GP, Fountain Medical Centre

like the risk of developing chronic kidney disease (CKD), yet the annual diabetes audit still shows that the care process with the lowest uptake is the urinary albumin test.

The test measures the albumin to creatinine ratio (ACR) and is used to monitor kidney health. While the test is clinically critical, 60% of people living with diabetes do not engage in the care process through the traditional models of care. This has worsened during the COVID pandemic with only 16% of people living with diabetes undertaking their urine test from January to September 2020.

This low uptake means CKD can be missed until it becomes symptomatic and much more serious for people’s health. But we are turning that around in Yorkshire and the Humber by giving people with diabetes the opportunity to complete the urine test themselves at home, without the need for an appointment at the GP surgery.

We pioneered this in 2018 in Hull, Airedale and Wharfedale – enabling 500 patients with diabetes, across ten Modality Partnership GP practices, to test their own kidney health from home using our ACR test kit and smartphone app.

An independent evaluation of this work commissioned by the Yorkshire & Humber AHSN showed the NHS could save £209m in care costs over five years by adopting the model nationally for people living with diabetes. Furthermore, testing other at-risk groups, like people with hypertension, could save £660m in total.

Some of the impacts from the work with Leeds CCG:



2000
patients
contacted



1200
patients
agreed
to be sent
the test



In September 2020, funded by NHSX, the Accelerated Access Collaborative, the National Institute for Health Research (NIHR) and in partnership with Yorkshire & Humber AHSN and NHS Leeds Clinical Commissioning Group (CCG), we began rolling out the programme in Leeds. Within the first six weeks, nearly 800 patients were contacted, and as it stands today, nearly 2,000 have been contacted by our patient support team.

So far, 1,200 patients agreed to be sent the test, and of those 1,024 (88%) have completed the test successfully from home with 236 (23%) patients identified as having abnormal ACR result. This means that those 236 patients are being followed up on the appropriate care pathway, allowing early intervention where necessary. Satisfaction on the use and recommendation of the service is high with 93% reporting the test “very easy” or “easy” to use and patients up to the age of 100 have used the app to complete the test.

Funding from NHSX, the Accelerated Access Collaborative and the NIHR has enabled further roll-out to patients living in the area covered by West Yorkshire and Harrogate Health and Care Partnership.

The aim of the project is to roll out urine ACR home testing across West Yorkshire and Harrogate, with around 20,000 patients eligible for the service. This is now going to be doubled in 2021 through additional national funding and as a result of the interest from Leeds CCG and Primary Care Network (PCN) colleagues.

I am proud of how we have worked with the Yorkshire & Humber AHSN to spread innovation around kidney health self-care for at risk people in this region, because CKD is a silent killer and if our tests can help avoid unnecessary deaths, transplants or dialysis then, aside from the NHS savings that will be generated, we will be achieving significantly better outcomes for many people.

Some of the impacts from the work with Leeds CCG:

93%

reported the test was ‘very easy’ or ‘easy’ to use



88%

completed the test successfully from home



23%

identified as having abnormal ACR result

“ You don’t have to be at the doctors every five minutes. You can manage things a lot more easily.”

**Lee Phelps,
Patient**





Spreading proven innovations across the region

As part of our commission from NHS England we promote the use of innovations selected to be part of its Innovation Technology Payment programme which aims to accelerate the adoption of innovative medical devices, diagnostics, and digital products by removing some of the financial and procurement barriers. Our Programme Lead, Stephanie Potts, explains the work we have been doing to spread two of these innovations.



**Stephanie Potts,
Programme Lead**

Throughout the year we have been focused on developing excellent working relationships with the companies selected for the Innovation Technology Payment (ITP) programme so that we can effectively promote their solutions to NHS organisations in our region. We have seen particular success with spread of Placental Growth Factor testing and the gammaCore device.

“ I am so glad I had the PIGF ratio test performed – after having headaches I am came to the Maternity Assessment Centre for a review. My blood pressure was normal and the blood test showed I was low risk of pre-eclampsia – this was such a reassurance for me and eased some of the anxiety I had.”

**Calderdale and Huddersfield NHS Foundation Trust
PIGF patient**

Improving diagnosis and management of pre-eclampsia

Pre-eclampsia is a condition that affects women usually during the second half of pregnancy. It causes high blood pressure and protein in the urine and, if not diagnosed and closely monitored, it can lead to potentially life-threatening complications. The development of pre-eclampsia is varied and has historically been difficult to definitively identify or rule out.

Placental Growth Factor (PIGF) testing is a simple blood test that eliminates the risk of poor prediction of pre-eclampsia and reduces the risk of unnecessary hospitalisation for women who will not go on to develop the condition. This creates the potential to free up hospital beds and provides both an improved patient experience and wellbeing and financial benefit for the NHS.

We have been working with all maternity services in the region to implement PIGF testing with the aim of providing equitable care for all women across Yorkshire and the Humber.

From April 2020 to March 2021

- Seven trusts have implemented the test across the region
- We are supporting three trusts with trial evaluations
- 1,470 blood tests have been taken

Some of the impacts from the PIGF programme:

7

Trusts have introduced the programme



1470
blood tests
have been
taken





- 352 women have been admitted to hospital for further monitoring
- 1,118 women have safely been discharged from hospital without the need for an admission

Data from the National Institute for Health and Care Excellence (NICE) shows that the average hospital stay for a woman with suspected pre-eclampsia is 4.8 days. Based on a cost of £345 a night, we calculate that the NHS in our region has avoided £1.8m of costs in bed days during the last financial year thanks to PIGF testing. This saving also means that clinical resources are freed up for other patients who need them.

Transforming quality of life for cluster headache sufferers

Around 66,000 people in the UK experience a cluster headache, with three times more men likely to develop the condition than women. Described by clinicians as being more painful than kidney and gall bladder stones and even childbirth, cluster headaches can be extremely debilitating.

We have been proud to support health trusts across the region to successfully implement gammaCore – a remote device that sends mild electrical stimulation through the skin into the neck to activate the vagus nerve from outside the body, thereby alleviating symptoms of severe cluster headaches.

Before gammaCore, treatment included medication or invasive procedures with management of cluster headaches costing the NHS more than £10,000 per patient. For 5% of patients, standard care is not enough or deemed unsuitable.

We have helped seven trusts in the region to implement the device so far. Out of 78 patients who trialled it, 43 are now using gammaCore as a preventative treatment for cluster headaches and this has improved their quality of life immeasurably.

With the advent of NHS England's new MedTech Funding Mandate policy (which replaces the ITP this year and includes these two innovations as well as HeartFlow and SecurAcath) we will continue to aid the spread and adoption of these products throughout the region, ensuring our NHS providers are aware of the products and are well placed to effectively and efficiently implement them into their care pathways.

Some of the impacts from the PIGF programme :

1118
women

have been
safely
discharged
from hospital



£1.8m

bed day
costs avoided



“ I started with the cluster headaches approximately three years ago. They were becoming more and more debilitating, and I was having them every other day. I was disorientated, could hardly stand up, wanted to bang my head against the wall... gammaCore has made such an impact on my life. I wouldn't be without it.”

**Hull University Teaching Hospitals Trust
gammaCore patient**





© Entia

Protecting patients with chronic kidney disease

We are helping to keep patients with anaemia of chronic kidney disease (CKD) out of hospital by encouraging the adoption of a new remote monitoring device to track patients' health. Programme manager, Sophie Bates tells us more about our work with Entia.



Sophie Bates,
Programme Manager

Entia's Luma device is a small, lightweight device that empowers patients with anaemia of CKD to self-monitor their haemoglobin levels. Patients undertake a blood test in the comfort of their own home using a simple finger-stick device. They are then able to record and share their results with their specialist nurse, and an app is in development to automate this process in the future.

Around three million people in the UK are known to suffer from CKD which is a condition we are also working to prevent through our Healthy.io work ([see page 32](#)). The prevalence of anaemia of CKD is approximately 15% and 22.2% in stage 5 CKD. Anaemia is a common complication



The current COVID-19 pandemic, and drive towards shielding vulnerable individuals, has highlighted the need for home testing pathways. From our initial experience and discussions with our patients, Luma represents a huge step forward in our monitoring and treatment of anaemia in our patient group. I am delighted to be part of the critical research.”

Professor Sunil Bhandari, Chief Investigator, Hull University Teaching Hospitals NHS Trust

of CKD and effective treatment is critical to prevent consequent co-morbidities.

Regular haemoglobin and blood pressure testing is crucial for efficient management of CKD and is necessary for:

- Timely detection of anaemia
- Selecting the right treatment for individual patient's anaemia
- Adjusting and maintaining the right dose of treatment according to the severity of the anaemia to maximise benefits and minimise risks

Current practice means patients have either to attend their GP surgery for a regular test or have a home visit from a district nurse. It has been evident that enabling patients to test their haemoglobin levels from home improves patient experience, allows them to maintain commitments to work and family, increases testing adherence and frees up NHS resources.

The Luma device has been designed together with patients and clinicians, all the while keeping in mind the challenges faced by health practitioners and patients.

Yorkshire & Humber AHSN have been working with Entia since early 2019 and, together with Hull University Teaching Hospitals NHS Trust we supported the company's successful Innovate UK bid which generated £800,000 in funding to allow them to develop and trial the Luma device

as well as enable the Trust to recruit a dedicated nurse to support the project.

When COVID-19 hit, the Luma service offered significant benefits for CKD patients who were deemed extremely vulnerable to coronavirus infection, by reducing their trips to the hospital or GP surgery and exposure to the disease. In response to this growing risk for CKD patients, Hull University Teaching Hospitals, under the guidance of Professor Sunil Bhandari took the decision to directly implement Luma into their CKD pathway to enable those patients to undertake monitoring at home.

An initial cohort of 30 patients have benefited from being able to monitor their haemoglobin levels at home with Luma and all the patients received virtual training sessions from the team at Entia. The patients selected had stage 3-5 CKD and had anaemia, pre-dialysis, or were post-transplant. The device was provided to enable home testing and the readings were recorded and closely monitored by the renal team.

Implementing Luma reassured patients of regular monitoring without the fear of missing appointments and the practitioners could easily track patients' health from twice-weekly results provided by the device.

The results from post-market surveillance showed that patients felt encouraged to use Luma as a way of being involved in their health management, with 100% of patients



agreeing that they would recommend the service to another patient. The overall feedback was that Luma was a 'preferred treatment pathway'.

As part of the Innovate UK project, we commissioned York Health Economic Consortium to undertake a health economic analysis to measure the anticipated benefits of the implementation of Luma.

Utilising data from Hull University Teaching Hospital's renal team, this analysis concluded that the adoption of the home monitoring device has the potential to generate cost savings when compared to current care pathways due to the reduction in frequent monitoring appointments in a care setting (hospitals or General Practices). In Hull, it is estimated that the use of the home monitoring device could reduce primary care resource by 510 appointments per year. The ability for patients to self-monitor at home could have a number of benefits for the patient, including:

- Reduced outpatient appointments
- Improved treatment and testing compliance
- Reduced home visits or attendance at general practices
- Greater satisfaction for people with anaemia of CKD
- Empowerment of patients
- Allowing patients to maintain integration in society

We have been really proud of the work we have done with Entia, particularly around being able to support our partners in Hull during the pandemic. The Luma device provided them with a solution to protect some of their most vulnerable patients as well as helping them to ease resource

pressures during an unprecedented and incredibly challenging period for the health sector. Hull University Teaching Hospitals are planning to continue to utilise the Luma device, with plans underway to increase the number of patients benefitting from the home monitoring pathway. Taking the learnings from Hull and the results of the health economic analysis, Entia is in talks with a number of other renal centres about adopting the Luma device for the benefit of their patients.





Supporting the South Yorkshire and Bassetlaw Integrated Care System through COVID-19

© Welcome to Yorkshire

Our pioneering Innovation Hub has been developed in partnership with South Yorkshire & Bassetlaw Integrated Care System (ICS). Its main purpose is to help the organisations in the ICS to share and articulate unmet needs and encourage collaboration to find innovative solutions to system wide challenges. In this article, Innovation Hub Director, Aejaz Zahid, explains how his team worked with the ICS to adopt new ways of working during the pandemic.



**Aejaz Zahid,
Innovation Hub Director**

2020 began with a range of Innovation Hub led exemplar projects getting off the ground and starting to make an impact in the areas of Population Health, Urgent and Emergency Care and Workforce. With a strong ambition to foster a better culture of innovation across ICS partners and to develop a pipeline of model innovation projects, the Hub was also establishing a network of innovation ambassadors and planning a quarterly series of Innovation Lab forums designed to cultivate collaboration and build



The support of the Innovation Hub was critical in enabling prioritisation of the agile working project within wider workforce strategy and investment. The project could not have been delivered in the timescales without the support of the Innovation Hub team.”

Ben Chico, South Yorkshire and Bassetlaw Workforce Transformation Lead

greater system-wide capabilities. When the pandemic took hold however, many of these activities needed to be paused to address the urgent challenges that were rapidly emerging.

The Agile Workforce Project

One of the projects taken forward was the agile workforce programme. Two months before the pandemic hit, we were in discussions with the ICS partners to encourage Trusts to adopt more agile and flexible working practices. Many Trusts were still not using digital platforms like Microsoft Teams and colleagues were not set up to work from home. The prospect of remote working raised questions and concerns around staff productivity and monitoring performance and there was significant reluctance to change in some areas. However, when the pandemic hit, suddenly everything changed overnight, and organisations had no choice but to adapt and work flexibly, with remote working becoming the norm.

The workforce project also adapted and changed to analyse what the learning opportunities were in this new age of working 100% digitally. Throughout the pandemic, we conducted interviews, surveys and nine focus groups at two provider sites (Doncaster & Bassetlaw Teaching Hospitals and Doncaster Clinical Commissioning Group) to capture staff experiences. The findings provided significant evidence of

the benefits of remote working, with 56% of respondents reporting it had a ‘Positive’ or ‘Incredibly positive’ impact on their mental health. A reduction in sickness absence was also recognised, and participants self-reported increased focus and productivity whilst working from home. These learnings helped build a business case for sustaining agile working post-COVID.

Fit Fans

Another of the Hub’s projects, under the theme of Population Health Management, that had to adapt due to COVID-19 was Fit Fans: a 12-week weight loss and healthy lifestyle programme incentivised through a love of Football. This project supported one of the main Population Health priorities of the ICS, which was to find innovative ways to prevent cardiovascular disease and to help people self-manage risk factors around the condition.

The programme’s aim is to help participants to be more active, help them lose weight through group-based exercise sessions and provide advice around maintaining a healthy diet. The first cohort of Fit Fans started in January 2020 at Sheffield Wednesday Football Club (SWFC).

Face-to-face delivery of the course was interrupted following the first COVID-19 lockdown, but participants had already managed to lose weight, improve their physical activity levels and their diet. Over 60% of participants completed the



programme despite the pandemic, and amongst the people from whom data was collected, there was a combined weight loss of approximately 3kg sustained on average per person. For some the programme had a transformational impact, with one participant expressing “I have never had a more rewarding experience. I genuinely believe it has improved my physical and mental wellbeing.”

To maintain engagement and momentum, Fit Fans was adapted to become an online “bite-sized” programme. Short videos on topics such as bone health, food labelling and cholesterol were produced and shared by the SWFC Community Programmes Team, backed up with twice weekly group-based Zoom meetings on nutrition and exercise.

Pivoting to virtual delivery of the programme has opened up new possibilities for the team, enabling continued involvement and ongoing self-care by individuals who are unable to attend sessions in person.

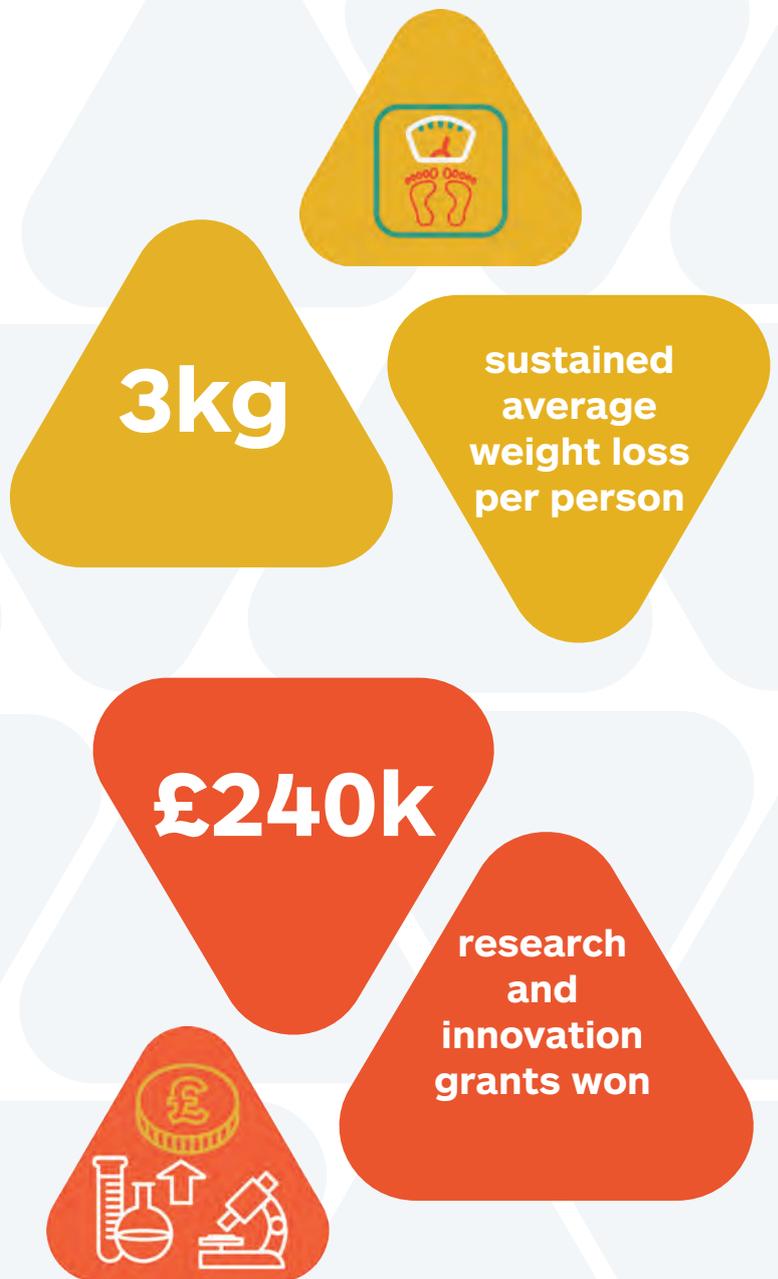
The Innovation Hub continues to support the Fit Fans delivery team in this new phase of the development of the programme.

Finding funding opportunities

Over the last year, the Innovation Hub has also taken on a leading role in bringing funding opportunities that support innovation to the attention of ICS workstream leads and ICS partners and developing consortiums of stakeholders to co-ordinate applications to the National Institute of Health Research, SBRI, NHSX and the Health Foundation. This has so far resulted in £240k of research and innovation grants being won. Besides the additional investment, the partnerships created and the initiatives scoped out have resulted in closer working relationships with ICS partners around innovation and new collaborative initiatives have emerged, creating a foundation for more successful bids in the future.

Future plans

Although the pandemic affected each programme in different ways, learning and outcomes from the completed Population Health Management and Workforce exemplar projects are proving to be of value to the ICS in post-pandemic recovery planning. The Innovation Hub team is looking to restart work on a third Urgent & Emergency Care exemplar project in the next quarter and the team is scoping out themes for new programmes that link to the ICS’s recovery and planning priorities over the next year.





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Ensuring patients and the public get to shape healthcare

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Imaging Co-operative

The role of the public is vital in helping to shape and develop future health and care services that understand and meet the needs of people and patients. Our Public and Patient Involvement Lead, Graham Prestwich, explains how we are giving people a voice to shape healthcare services so that they deliver better and more patient centred outcomes.



**Graham Prestwich,
Public and Patient
Involvement Lead**

Yorkshire & Humber AHSN are committed to driving the adoption and spread of innovation and best practice in health and care delivery. We do this successfully by having patients and the public at the heart of our work. Their early and ongoing involvement is essential for the successful implementation of any product or service design programme as it is their insights, experiences and ideas that will help optimise the benefits of innovation. Over the last 12 months we have been working on several interesting and exciting projects.

“ The support of the AHSN has ensured that CONDOR has benefitted from a breadth of public opinion in the planning, governance, and dissemination activities of the project.”

Dr Philip Turner, CONDOR Investigator and Senior Researcher, NIHR Community Healthcare MIC and the Nuffield Department of Primary Care Health Sciences, University of Oxford

National Pathology Imaging Co-operative (NPIC)

NPIC is a digital imaging deployment and artificial intelligence development project, part of a £33m government and £11m industry-funded programme to implement a digital pathology capability across England. One of the five centres in the country leading this work is based in Leeds. We established the patient and public involvement component of this project, initially setting up and chairing a Public and Patient Advisory Group (PPAG) to share data and help build public trust in the concept.

In addition to contributing to the project's communications and delivery plans and conducting surveys on behalf of the PPAG, we are working closely with the Ethox Centre and Wellcome Centre for Ethics and Humanities at the University of Oxford, a collaboration that seeks, amongst other ethical issues, to ensure there is greater parity across all communities when it comes to inclusion and diversity.

CONDOR

The COVID-19 National Diagnostic Research and Evaluation platform (CONDOR) was established in March 2020 through a collaboration between five of the 11 Medtech and Invitro diagnostics Co-operatives which are funded by the National Institute for Health Research. We have been supporting the patient and public

contribution to the evaluation of commercial COVID-19 tests which explores evidence of the effectiveness and suitability of new tests for use in different situations.

To help ensure the views of patients and the public were considered in all stages of this work, we organised patient and public involvement group meetings where senior members of the research team were able to discuss topics and issues.

This has helped to guarantee a public perspective is always included in discussions and decisions. Importantly, this contribution has included work to improve and support greater and wider public knowledge and understanding by encouraging the production of more publicly accessible descriptions of the outputs and findings.

HN's clinical coaching service

We are collaborating with HN who provide a clinical coaching service for people with long-term health conditions. This service has been piloted in our region and we have been supporting the design and execution of a qualitative evaluation of patient and public views and experiences of being involved with the programme. The aim of the work is to provide robust and valued patient and public perspectives that can be included in the development of a larger funding bid that is due to be submitted later this year.



This piece of insight work will document and compare the views, experiences, and expectations of three groups of people and patients:

- 1) Patients currently using and benefiting from the service
- 2) Patients who have been approached to participate but decided not to enrol
- 3) A similar age-matched group who do not live in the area where this service is available

The results of the patient feedback exercise will be published, and we have been invited to be involved in ongoing research discussions with HN based on this work.

As well as contributing to HN's funding applications to the Small Business Research Initiative (SBRI) we will also contribute to their National Institute for Health Research Invention for Innovation (NIHR i4i) funding application.

Find out more about our work with HN on [page 17](#)

University of Leeds Business School

Working with a team comprising senior researchers from the University of Leeds Business School, School of Politics and International Studies, and School of Languages, Cultures and Societies, we contributed to public involvement in the refinement of artificial intelligence (AI) tools to analyse media coverage of COVID-related issues and the impact on public behaviours. This work has led to further collaborations with the Business School and our South Yorkshire Innovation Hub alongside our partners at the South Yorkshire Integrated Care System to develop proposals for funding bids to look at how public health messaging can be better tailored to meet emerging needs and priorities.

Patients and the public have increased access to knowledge, medical records and online peer support and now it is time to ensure we extend the reach of patient and public involvement to enable greater impact and benefit on the sustainability of our healthcare systems.

“ Help from the Yorkshire & Humber AHSN has been absolutely invaluable for NPIC, from initial planning and set-up through to our national scale-up this year. Their practical help includes chairing our steering group meeting of over 40 partners, essential patient and public engagement work and support for industry interactions. The support from the AHSN has been a key factor in NPIC's success, and we are delighted to be working with them.”

Darren Treanor, Director of the National Pathology Imaging Co-operative (NPIC)





Improving the assessment process for ADHD

We are working with NHS mental health trusts and community paediatric services to improve the assessment process for Attention Deficit Hyperactivity Disorder using computer-based tests. Programme Manager Mark Dines-Allen explains how it all works.



**Mark Dines-Allen,
Programme Manager**

ADHD is a disorder affecting brain development that impacts on the behaviour of around 5% (1 in 20) of school aged children. ADHD is a treatable disorder but if left undetected and untreated, it can have a significant impact on personal development, academic outcomes, and family interaction.

There is no simple test to determine whether a child has ADHD. The process for diagnosing or ruling it out varies across the country. It will often include multiple steps and is based on clinical judgement informed by subjective reports from parents, teachers, and observation of the patient. Before COVID-19, children were waiting an average of 18 months to obtain an accurate diagnosis. This compares unfavourably



with the rest of Europe where the average waiting time to receive a diagnosis is about 11 months and we can only assume the pandemic will have increased this average diagnosis time. Multiple clinic visits over this period result in significant costs to the NHS, estimated to be £23m.

A new way to test for ADHD

The Focus ADHD programme concentrates on transforming the assessment process of ADHD in children by introducing a proven test that measures the core components of ADHD: a patient’s attention, impulsivity, and motor activity all at the same time. These indicators are core symptoms of this condition and accurate measurement adds objectivity to support timely diagnosis.

The Focus ADHD programme uses an objective assessment tool (QbTest) as a supplement, rather than replacing conventional clinical examination and subjective assessments and reports. The objective assessment evaluates all three core components of ADHD and compares these to normal values from a sample of children without the condition.

An evaluation of the use of an objective assessment was commissioned by East Midlands AHSN in 2017 and this demonstrated a reduction of one appointment to make a diagnosis which helped to release valuable staff resource.

We have begun work to implement Focus ADHD with mental health trusts and community paediatric services. The outcomes that we are looking to achieve are to:

- Increase in the number of children and young people who have an objectives assessment as part of the clinical assessment
- Reduce the time for assessment and decision making (from first referral to decision to diagnose/rule out)
- Reduce the number of outpatient appointments between referral and diagnosis
- Improve the patient experience and

family satisfaction

- Improve clinician satisfaction and confidence in diagnosing or excluding ADHD

Uptake of the Focus ADHD programme across our region

Five sites are already using an objective assessment in our region including Humber Teaching NHS Foundation Trust, Sheffield Children's NHS Foundation Trust, Bradford District Care NHS Foundation Trust, Mid Yorkshire Hospitals NHS Trust and South West Yorkshire Partnership NHS Foundation Trust.

Since last September, four more sites went live including Rotherham Doncaster and South Humber NHS Foundation Trust and Leeds Community Healthcare NHS Trust. We are now working with these Trusts to increase the number of sites utilising the Focus ADHD programme and to increase the uptake of the QbTest across South Yorkshire and Bassetlaw Integrated Care System and Humber, Coast and Vale Health and Care Partnership. Another site in Bassetlaw is due to go live soon. Between April 2020 and March 2021, 1,123 tests were completed across all sites in Yorkshire and the Humber with 285 of these tests undertaken at the four new sites. Based on the East Midlands AHSN assessment this will have saved 1,123 appointments across the system.





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Driving economic renewal and social inclusion

Our Chief Executive Officer and Vice-Chair of the AHSN Network, Richard Stubbs, explains how we are and will continue, championing a region-wide and cross-sector commitment to tackle increasing socio-economic inequalities and boost health outcomes in Yorkshire and the Humber.



**Richard Stubbs,
Chief Executive**

Our YHealth for Growth campaign has been running for 18-months and was established in partnership with NHS Confederation and Yorkshire Universities to promote the role of health in driving economic and inclusive growth in our region. In the last six months, our work in this area has accelerated considerably. Following the publication of our 'Levelling Up' report last July, we were invited to a House of Lords virtual evidence session as part of its enquiry into the Government's levelling up agenda and our recommendations have since been included in the Public Services Committee's positioning paper which has been sent to the Prime Minister.

The publication of the House of Lords' Public Services Committee's [positioning paper](#) on the levelling up agenda was a crucial moment for us and is the result of our collaborative efforts to raise awareness of how the health of our population plays an integral part in creating a productive and prosperous society.

Life expectancy in the Yorkshire and Humber region is now one year 10 months lower than the national average in England and COVID-19 has exacerbated these inequalities. People from black, Asian and minority ethnic communities, older people, men, people living in the country's most deprived areas, those who are obese, and those living with long-term conditions have been most affected by the pandemic and have the highest associated mortality. We know that a higher COVID-19 risk was evident in disadvantaged communities whilst mental and physical ill health were also disproportionately concentrated in poorer communities during the pandemic.

Pre-COVID, we had already recognised these health inequalities and is the reason why we launched [YHealth for Growth](#). It is vital that we 'level up' our region and this agenda will remain one of our top priorities for the foreseeable future as we continue to engage with our local, regional and national stakeholders to look at how we can support this ambition.

Achieving inclusive growth

Creating a more inclusive and sustainable economy and society is at the heart of our YHealth for Growth report, '[Levelling Up Yorkshire and Humber: health as the new wealth post-COVID](#)' which we launched in July 2020. In this report, we made recommendations on actions for local and national leadership to support a renewed focus on reducing health inequalities using the levers of economic growth

Regionally, research shows that health inequalities undermine our area's economic potential and that the North clearly lags





behind the rest of the country – with a two-year gap in life expectancy between the North and the South, with people in the North 20% more likely to die early.¹

We also highlighted figures for regional infrastructure investment, regional growth of GVA (a measure which captures economic activity), and the region’s health outcomes which fall far below the national averages:

- The region’s GVA per head lags behind the UK average by £6,129 ²
- Life expectancy in Yorkshire and the Humber is 1 year 10 months lower than England’s average ³
- Around 22% of Digital Health jobs in England and Wales are based in the Leeds City Region alone ⁴
- Yorkshire and the Humber is home to over 650 health companies compared to a total 350 in Oxford and Cambridge combined ⁵

At a national level, we provided recommendations that offer a real opportunity to contribute to and shape the ongoing debate and future economic decision-making process. We want to see the Government provide further investment in health research and development in our region as well as more power devolved to local leaders to improve health outcomes.

Cross-sector working is vital

We have identified a tremendous opportunity in our region to use our unique assets as an economy to improve health and wellbeing, whilst contributing to inclusive economic growth and a fairer society where everyone benefits.

This cross-sector working is vital. Health and economy are bound tightly together. Interventions to improve growth and inclusive wellbeing are in all of our interests and it should be a shared priority and endeavour and should not rely solely on the health sector.



The region’s GVA per head lags behind the UK average by

£6,129



Life expectancy in Yorkshire and the Humber is

1 year 10 months lower than England’s average

22% of Digital Health jobs

in England and Wales are based in the Leeds City Region alone

Over the past year, we have hosted a series of events to really drive forward the social inclusion agenda including our inaugural YHealth for Growth conference which brought together senior leaders from the NHS, local authorities, education, and industry to explore the role of health in driving economic and inclusive growth in our region.

Last December, our subsequent ‘One Year On’ webinar saw us welcome executives and senior leaders from across the health and care sector, higher education and local authorities, as well as business leaders in med tech and life sciences. This allowed us to highlight opportunities and develop practical approaches to embedding sustainable and inclusive economic renewal and growth across all sectors.

Lobbying the Government

In March this year, as a result of our YHealth for Growth campaign, I was invited to represent the Yorkshire & Humber AHSN at a [House of Lords Select Committee virtual evidence session](#). This gave us a fantastic platform to present our findings and our recommendations to those with power and influence and feed directly into the Lords’ ‘Levelling up and Public Services’ inquiry.

I discussed how levelling up our local economies is reliant on increased investment in health and education services and reinforced the importance of recognising the wider social and economic determinants of health when it comes to investment in ‘health’ rather than ‘healthcare’.

The Lord Filkin CBE thanked us for our work and for providing ‘incredibly helpful’ insights on how public services can contribute to the levelling up agenda as well as reinforcing the vast health inequalities seen across the North of England and the impact that has on productivity.

Ahead of the Government’s White Paper on the ‘levelling up’ strategy, these insights contributed to the Committee’s positioning

paper which was sent to the Prime Minister calling for ‘better targeted’ plans that protects health, education and skills in more deprived areas of the country.

As an organisation, we recognise that greater joint working across our region is key to economic recovery. We have taken great strides in bringing together developing bodies and anchor institutions across all sectors to align their strategies to deliver inclusive growth and collaborate to engineer transformative place-wide change for the benefit of improved population health. This work will continue as we build on this momentum for change, working to make sure we, as a region, emerge from the pandemic in a better place than when we entered it.

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- ¹ NHSA, 2018, The Northern Powerhouse in Health Research: A Science and Innovation Audit
 - ² Public Health England, 2019
 - ³ Office for National Statistics, 2020
 - ⁴ Leeds Inclusive Growth Strategy
 - ⁵ Benchmarking the Life Sciences Sector in the UK, Smart Specialisation Hub report

Yorkshire
and the
Humber is
home to over

650 health
companies
compared
to



350 in
Oxford and
Cambridge
combined



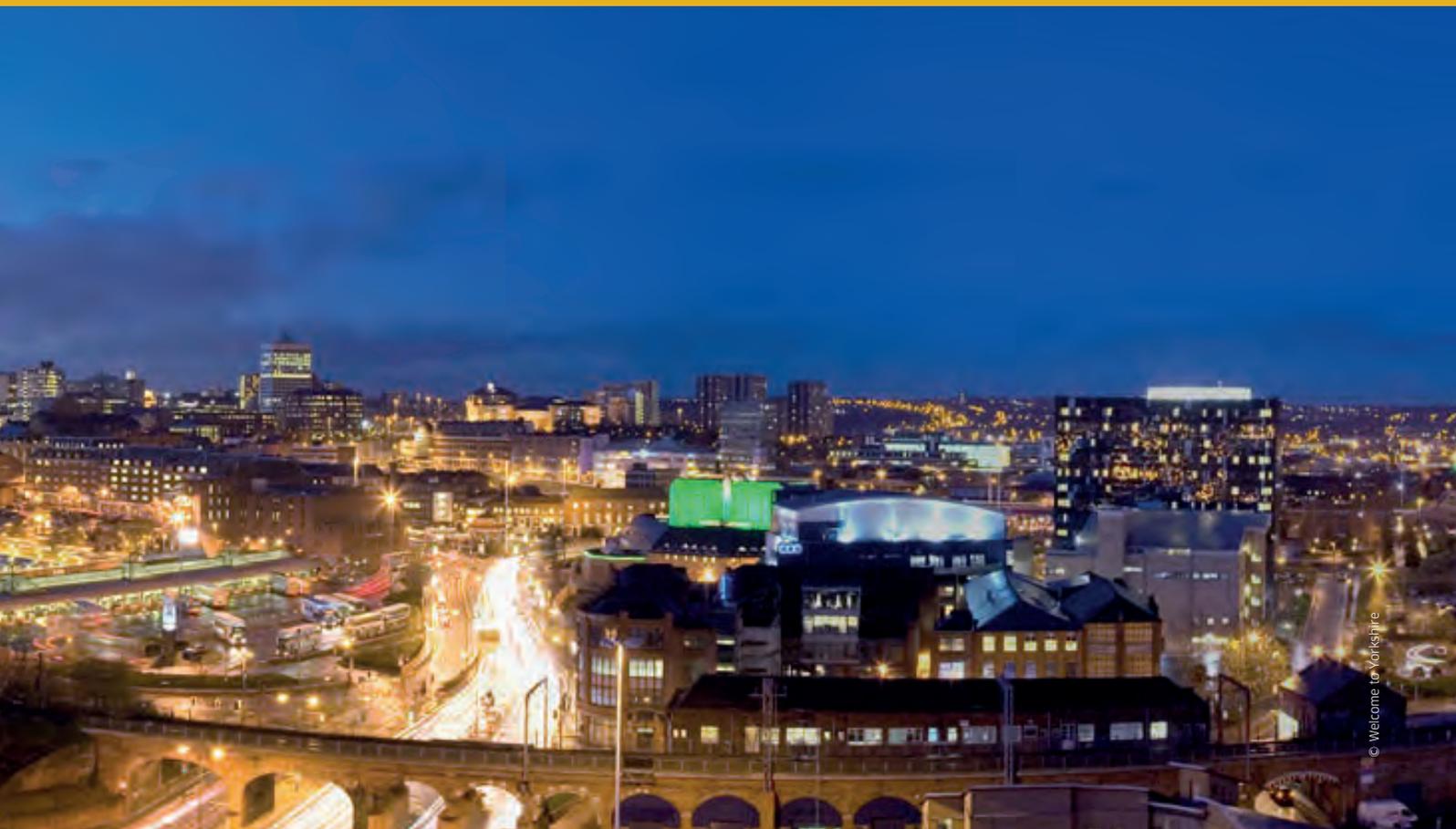
The year ahead

Over the last year we have worked incredibly hard to adapt our services to ensure that, whatever the challenges, we are uniquely placed to support the needs of our partners. Working with industry, we have made a significant contribution to the pace and scale at which innovation has been adopted by our health and care systems in response to the pandemic.

Now, with the health and care sector at a major crossroads, we need to make sure we capitalise on the increased appetite for change. Everything we have learned from the last 12 months means we can continue to help our NHS partners drive sustained changes in the way care is delivered and to support them as they face a new set of challenges in the wake of the pandemic, such as the growing patient backlog.

Over the next year, we will continue to support our local health and care systems to identify and address unmet needs, bringing in innovative solutions and brokering new relationships to support spread and adoption.

The Yorkshire and Humber region is blessed with a vibrant life sciences ecosystem. We have over 650 companies with global capabilities in health technology operating here. However, as our YHealth for Growth campaign has highlighted, we need further targeted investment and empowerment for our local leaders to make the right changes for our communities and economies. Our health system should represent and reflect the communities we serve. The way that we develop and adopt innovation and technology must also be based around our core mission to serve all our population.



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Our ongoing commitment to diversity in innovation will help us to ensure that everyone benefits from health innovation and, through our YHealth for Growth work, we will continue to lobby the government and local leaders on our own research recommendations. This is part of our pledge to support the health sector and industry in creating a more inclusive and sustainable economy and society, tackle long standing inequalities, and ‘level up’ our regions to make improved population health an equal opportunity for all.

We will continue to collaborate with our AHSN colleagues across the Network to multiply the scale and impact of our work, helping to further embed our current national programmes as well as identify other opportunities for the high-impact adoption and spread of innovation.

In our next reporting year, we will be supporting the AHSN Network on the implementation of its new strategy as well as driving forward our commitment to support a Net Zero NHS with the launch of a range of new initiatives such as our

collaborative accelerator programme, Propel@YH Net Zero.

Our mission is to ‘transform lives through innovation’ and we will continue to strengthen our ability to work nationally, regionally, and locally to effectively pivot, cascade, empower and enable rapid transformation in what is set to be another monumental year for health innovation.

Kathy Scott, **Deputy Chief Executive**





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