

South Yorkshire Health and Wellbeing Assets Study

A Report for the South Yorkshire
Mayoral Combined Authority

May 2022



MANAGEMENT SUMMARY

Kada Research was commissioned by the South Yorkshire Mayoral Combined Authority (SYMCA) to assess and map the health and wellbeing sector in South Yorkshire to identify opportunities for collaboration and future growth. The report explores the current and future challenges and concludes with some bold, but realistic, recommendations for how South Yorkshire could enhance its health and wellbeing sector.

The study background and its aims and objectives are covered in chapter one of the report.

CONTEXT

Chapter two sets the contextual backdrop. The [NHS's operational and planning guidance](#) for 2022/3, building on the [NHS Long Term Plan](#), detailed the following priorities: workforce investment, Covid-19, reducing the elective backlog, improving the responsiveness of primary and emergency care, improving services for people with learning disabilities and/or autism, exploiting digital technologies and developing a population health management approach. The preventive focus of the NHS fits with the objectives of many of South Yorkshire's health and wellbeing assets and the SYB ICS has already adopted a population health management approach.

The [Life Science Vision](#), (2021), aligned with the [UK Innovation Strategy](#), outlined how the UK will develop into an international hub of life science excellence.

The sub-regions [Strategic Economic Plan](#) (SEP) sets out an ambitious agenda to deliver a stronger, fairer and greener economy that works for everyone and explicitly recognises healthy places and people as a strategic aim. The Covid-19 pandemic, non-communicable diseases (NCDs), climate change, health inequalities, and an ageing and growing world population will continue to place significant pressures upon healthcare systems to adapt, invest and respond.

With growing pressure and opportunities on funding for innovation, South Yorkshire will need strong and ambitious plans backed up with robust business cases to ensure it is able to make the most of this growing sector.

THE SECTOR IN NUMBERS

With a Gross Value Added (GVA) of £3.3 billion, £1 in every £8 of GVA generated in South Yorkshire is in health and well-being. With some 1800 businesses over one in six people are employed the sector which has nearly 90,000 employees. The infographic on the next page summarises the economic analysis of South Yorkshire's health and wellbeing sector, which can be found in chapter three and the accompanying technical report.

South Yorkshire (SY) Health and Wellbeing Sector in Numbers



£3.3 billion GVA*

12% of total SY GVA.
(National share 8.6%).

* Gross Value Added



£1 in every £8

SY GVA generated
in Health and Wellbeing.



89,895 Employees

7th highest share of employment
of all 38 English LEP's.*

* Local Enterprise Partnership



1 in 6 people

in SY employed in Health
and Wellbeing.



1,815 Businesses (2021)

in SY in Health and Wellbeing sectors.



Concentration of Medical Instrument and Supply Manufacturers

Looking at the share of all business SY ranks
the highest against the 38 English LEPs.



5 SY Health and Wellbeing Strengths

1. Medical Devices & Medtech.
2. Digital Health.
3. Wellbeing & Applied Wellbeing Research Excellence.
4. Life Science & Bio Innovation.
5. Health & Clinical Excellence.



4 Take Aways

1. Home to the Advanced Manufacturing Innovation District which is able to combine research, innovation and technology for collaboration/commercialisation.
2. International reputation for medical device manufacturing/production. Cluster of orthopaedic and orthotic firms.
3. Breadth of health and wellbeing companies from medical devices to digital health and life science.
4. A cluster of globally recognised research assets including Medical Advanced Manufacturing Research Centre and Advanced Wellbeing Research Centre.

SUB-SECTOR PRIORITIES, STRENGTHS, AND RESEARCH CAPABILITIES

MEDICAL DEVICES AND MEDTECH

South Yorkshire has an international reputation for medical device manufacturing and production including large firms such as B. Braun and Swann Morton. There is a cluster of orthopaedic and orthotic firms in the sub-region (South Yorkshire). This business community is supported by research assets such as the University of Sheffield's (UoS) Medical Advanced Manufacturing Research Centre and Sheffield Hallam University's (SHU) Advanced Wellbeing Research Centre (AWRC). The sector is also supported by the two NIHR Medtech Cooperatives. **Key strengths include medical devices and implant manufacture/orthopaedics, surgical equipment and instrument manufacture, and medical equipment.**

DIGITAL HEALTH

South Yorkshire has a growing digital health sector with firms such as Preventyx, Isopharm, and Method Analytics in addition to an increased number of start-ups such as SleepCogni. This sector is supported by research assets such as the UoS's Insigneo Institute and the Centre for Assistive Technology and Connected Healthcare (CATCH). Sheffield Robotics is a research hub bringing together academics from UoS and SHU building on the South Yorkshire's strengths in this area. SHU has a range of digital strengths for example in virtual reality, artificial intelligence, and cyber security. **Key strengths include lifestyle and mobility tech, SaaS for healthcare, analytics, and digital transformation in medical device manufacturing.**

WELLBEING AND APPLIED WELLBEING RESEARCH EXCELLENCE

South Yorkshire has a developing wellbeing and applied research business community including long-established firms such as Westfield Health. South Yorkshire based incubators such as the AWRC Wellbeing Accelerator provide an excellent opportunity for a significant start-up community to emerge. South Yorkshire is also well served by different research assets that support the wellbeing and applied research sector. The AWRC and Olympic Legacy Park (OLP) are important assets that are complimented by SHU's Sport and Physical Activity Research Centre (SPARC), UoS's Centre for Wellbeing in Public Policy (CWIPP), two NIHR Medtech Cooperatives and Rotherham Doncaster and South Humber NHS Trust's Community Research Hub. **Key strengths include wellbeing, co-designed research, healthy ageing, and sport and physical activity.**

LIFE SCIENCE AND BIO INNOVATION

South Yorkshire has a burgeoning pharma, life science, and bio innovation business community including some large well-established employers such as ALS and Doncaster Pharmaceuticals and start-ups such as Exciting Instruments. This sector is well supported by the presence of a significant number of research assets within South Yorkshire such as UoS's Neuroscience Institute and SHU's Biomolecular Science Research Centre. Increased university life sciences and clinical research activity within the sector will be supported by the new Gene Therapy Innovation and Manufacturing Centre. **Key strengths include gene therapies, infectious diseases, nucleic acids, neurology, and instrumentation and devices.**

HEALTH AND CLINICAL EXCELLENCE

South Yorkshire is home to several excellent hospitals which provide clinical specialisms, carry out internationally respected research and specialise in a wide range of medical fields. South Yorkshire has an extensive network of very well-respected research assets focused on health and clinical excellence. These assets are largely centred around South Yorkshire's hospitals and universities. **Key strengths include children's health, neuroscience, pulmonary hypertension, oncology, and spinal injuries.**

CHALLENGES AND OPPORTUNITIES

Funding, skills, and internal NHS pressures were identified as national challenges impacting the health and wellbeing sector in South Yorkshire. Key challenges for the sub-region include communication and a lack of a South Yorkshire 'story' for the sector and a lack of connectivity. Tackling health inequalities, preventative health, net zero, and digital technology adoption are four challenges with substantive opportunities for South Yorkshire.

The future opportunities for the health and wellbeing sector and South Yorkshire are significant. There are opportunities surrounding net zero, digitalisation, and using innovative technologies within the NHS. The SYB ICS has identified a range of unmet needs to address and South Yorkshire faces large health inequalities. There are opportunities to increase the interdisciplinary co-location of assets the benefits of which have been demonstrated at the Olympic Legacy Park and AMID more widely. Existing assets should seek to develop new facilities or satellite hubs across South Yorkshire to extend their reach and foster new collaborations. A more detailed discussion of the challenges and opportunities for the sector is provided in chapter five of the report.

RECOMMENDATIONS

The recommendations appear in full in chapter six.

OVERARCHING LONG-TERM RECOMMENDATIONS

The initial recommendations are strategic and long-term. They focus on creating a cohesive narrative and community for South Yorkshire's health and wellbeing sector and a roadmap of how to get there.

PRIORITY ONE: ECOSYSTEM DEVELOPMENT

This priority is designed to connect and grow South Yorkshire's health and wellbeing capabilities through innovation and research which address local health needs. The recommendations under this priority are designed to extend the reach of the assets, explore new collaborations and procurement opportunities and raise the profile of existing facilities so that their potential is realised. Stakeholders believe that South Yorkshire has the ingredients to develop a dynamic health and wellbeing ecosystem led by local needs and address the strategic health and wellbeing themes of tomorrow. It needs to embed its research and innovation culture more systematically across South Yorkshire.

PRIORITY TWO: PROMOTE THE HEALTH AND WELLBEING ASSETS OF SOUTH YORKSHIRE

This priority recommends that we transform the visibility of the sector by promoting key areas of commercial and research excellence so that South Yorkshire is known as an exceptional location to

develop, manufacture, and supply health and wellbeing products and services. This will involve crystallising the sub-region's distinctive features so they can be promoted and effectively communicated on a world stage to stimulate inward investment and international trade activity. A Festival of Health and Wellbeing technologies is recommended, led by the SYMCA in partnership with the Department for International Trade. Sheffield's 'outdoor city' brand and methodology should be extended for South Yorkshire to become an 'outdoor region'.

PRIORITY THREE: HEALTH AND WELLBEING COLLABORATION AND TALENT

This priority is designed to celebrate success, showcase expertise, collaborate with others, and attract and retain talent. Recommendations include mutual collaborations and shared learning with other health and wellbeing clusters as well as engagement with the Sheffield Hallam's Institute of Technology team and South Yorkshire's proposed Apprenticeship Hub to articulate STEM skills gaps for the sector. The health and wellbeing sector needs to work with education providers to improve career advice and guidance for young people and create meaningful STEM experiences. A new postgraduate pathway between universities and businesses should be considered to inspire future leaders and innovators. Collaborations between assets around vertical opportunities such as gene therapy, active lifestyle, mobility and independence, and child health are suggested.

PRIORITY FOUR: HEALTH AND WELLBEING INNOVATIONS

This priority focuses on stimulating research and innovations and helping the health and wellbeing sector exploit new opportunities. It is recommended that we harness a need led innovation approach to address health challenges faced by residents of South Yorkshire utilizing the diverse health and wellbeing expertise through interdisciplinary and participatory research. South Yorkshire needs to develop a complete pipeline for health and wellbeing innovators from ideation to commercialisation. It is recommended the current accelerators are extended and deepened, university spinouts and a seed-funding programme are considered and incubation spaces are developed. Sub-sectoral groups, such as tier two medical manufacturers should be supported to navigate and exploit funding opportunities. It is also recommended NHS partners are approached to see if there is an appetite for local business to help local trusts achieve their net zero ambitions in three areas (new models of care, medicines and supply chain, and the digital transformation).

The diagram on the next page summarises the priorities, strengths and capabilities of South Yorkshire's health and wellbeing sector.

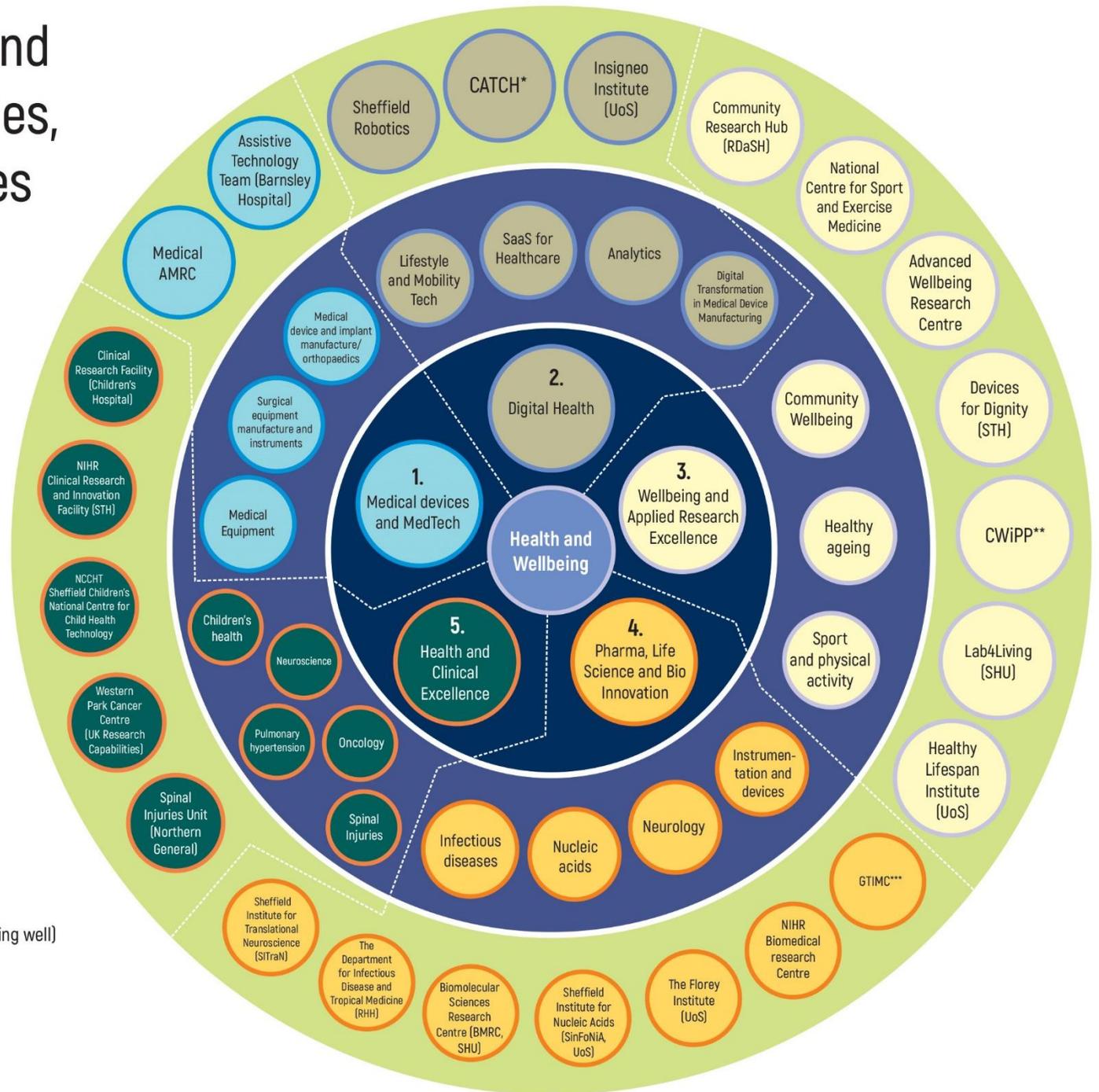
South Yorkshire Health and Wellbeing Sector: Priorities, Strengths and Capabilities

Priority Sectors with Growth Potential

Sub-Sectors, Specialisms, Research Capabilities

Research Assets

- 1. Medical devices and MedTech
- 2. Digital Health Technology
- 3. Wellbeing Applied Research Excellence (Children to aging well)
- 4. Pharma, Life Science and Bio Innovation
- 5. Health and Clinical Excellence



*Centre for Assistive Technology & Connected Health Care; **Centre for Wellbeing in Public Policy; *** Gene Therapy Innovation and Manufacturing Centre; Note: SHU = Sheffield Hallam University, UoS = University of Sheffield, NIHR = National Institute for Health Research, STH = Sheffield Teaching Hospital, RHH = Royal Hallamshire Hospital, RDaSH = Rotherham Doncaster and South Humber NHS Foundation Trust

South Yorkshire Health and Wellbeing Assets Study



Research Centres

- 1) Advanced Wellbeing Research Centre- Darnall
- 2) Advanced manufacturing research centre (AMRC) and Medical AMRC
- 3) National Centre for Sport and Exercise Medicine- Olympic Legacy Park (OLP)
- 4) Sheffield Biomedical Research Centre- Royal Hallamshire Hospital
- 5) University of Sheffield:
 - Healthy Lifespan institute
 - School of Clinical Dentistry
 - The Florey Institute
 - Neuroscience Institute
 - Medical Humanities Sheffield
 - Insigneo Institute
 - Sheffield Institute for Nucleic Acids
 - Centre for Assistive Technology and Connected Healthcare
 - The Centre for Wellbeing in Public Policy
 - Gene Therapy Innovation and Manufacturing Centre [under construction]
- 6) Sheffield Hallam University:
 - Sport and Physical Activity Research Centre
 - Centre for Behavioural Science and Applied Psychology
 - Lab4Living
 - Biomolecular Science Research Centre
- 7) National Centre for Child Health Technology- Olympic Legacy Park (OLP), (under construction)



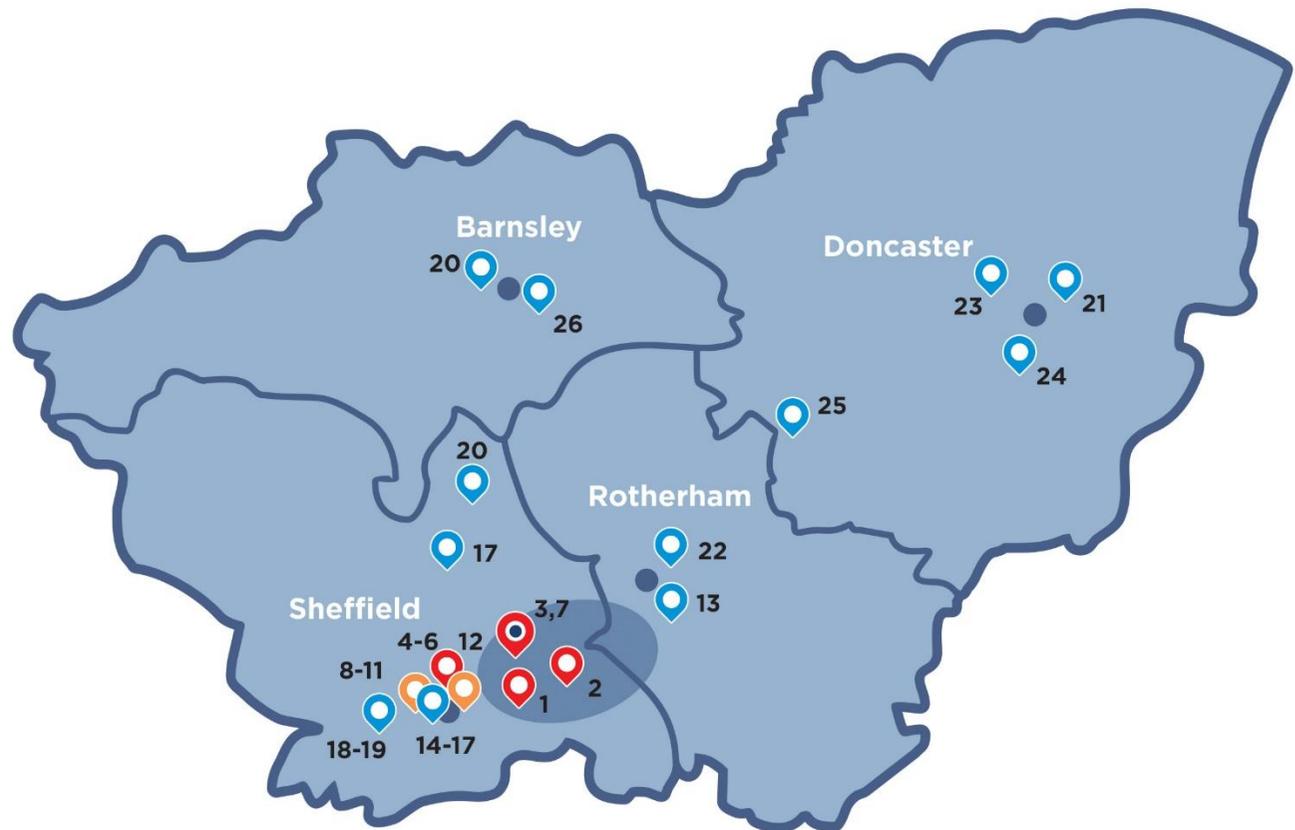
Networks & Co-operatives

- 8) NIHR Devices for Dignity MedTech Coop- Royal Hallamshire Hospital
- 9) Healthcare Gateway- Faculty of Medicine, Dentistry and Health
- 10) Medlink- Sheffield
- 11) NIHR Children and Young People MedTech Cooperative - Sheffield
- 12) Y&H AHSN- Sheffield



Hospitals (NHS/Private)

- 13) Rotherham General Hospital
- 14) Western Park Cancer Centre
- 15) Northern General Hospital
- 16) Royal Hallamshire Hospital
- 17) Sheffield Children's Hospital
- 18) BMI Thornbury
- 19) Claremont Hospital
- 20) Barnsley Hospital
- 21) Doncaster Hospital
- 22) Kinvara Hospital
- 23) Cheswold Park Hospital
- 24) Tickhill Road Hospital
- 25) Montagu Hospital
- 26) Kendray Hospital



Advanced Manufacturing Innovation District (AMID) and Olympic Legacy Park (OLP)

1.1 CONCLUSION

The priorities outlined in this chapter highlight the strengths of the health and wellbeing sector in South Yorkshire. Many of the assets traverse the priorities such as the two MICs, the AWRC and CATCH. The interconnections between priorities and the assets will strengthen the dynamic offer of South Yorkshire's health and wellbeing sector.

South Yorkshire has shown its strength across the life course from child health to ageing with dignity. There is world-leading research taking place at SCH, supported by the universities; and the development of the NCCHT will accelerate this and cement South Yorkshire's position as a global leader in child health technology. The CYP MIC, D4D, MIC, and TITCH demonstrate the internationally significant research capabilities of South Yorkshire. The wide range of research and innovation surrounding healthy ageing is a strength from neuroscience research into dementia and Parkinson's to the development of technologies to provide dignity for people with long-term conditions. The UoS, SHU, and several South Yorkshire hospitals excel in this area. South Yorkshire's digital capabilities in AI, VR, and robotics are producing innovative solutions in health care settings for both young and old. Both research themes benefit from the collaborative and trans-disciplinary approaches taken and the applied nature of the research. South Yorkshire can design, research, create, implement, and evaluate innovations in childhood and healthy ageing.

South Yorkshire has research strengths and clinical expertise from diagnostics to rehabilitation and recovery. For example, UoS scientists have identified a 'biomarker' with the potential to screen more effectively for an early Alzheimer's diagnosis. The sub-region also has strengths in rehabilitation and recovery of a range of health conditions, supported by the two MICS and assets such as the AWRC. The AWRC is leading research into long Covid-19 and post-Covid-19 rehabilitation which is of growing importance at a national and global level. The opening of the GTIMC this year will accelerate the development and use of gene therapies within the NHS, pioneering work can already be seen at SCH, and South Yorkshire is ideally placed to lead this field. There are strengths in the creation and use of assistive technologies for example at the UoS, SHU, and Barnsley hospital. South Yorkshire has an orthopaedic manufacturing cluster and the AMRC has developed new innovations in this field. The AMRC and the AMP are internationally recognised for their research in engineering and manufacturing. Alongside this, the sub-region has an important manufacturing cluster for medical equipment and devices.

The co-location of assets at AMID is an important research strength and facilitator of innovation as well as an attractive feature for future businesses. For example, at the AWRC, the trans-disciplinary mix of researchers with industry, practitioners, and local people enables truly innovative and co-produced research. South Yorkshire demonstrates the importance of participatory research with communities and patients. The relationship with local communities provides insights about unmet needs which need addressing, including the sub-regional health inequalities, and offer access to diverse populations to test and evaluate innovations. The outreach work and location of education providers at OLP (from nursery to FE) is a strength which is creating the talent pipeline for the future and showing children and young people the potential opportunities for the future.

2. SOUTH YORKSHIRE HEALTH AND WELLBEING ASSETS: CHALLENGES, CONNECTIVITY AND OPPORTUNITIES

This section uses qualitative evidence to explore the current and future national and sub-regional challenges and opportunities for South Yorkshire's health and wellbeing sector.

2.1 CURRENT NATIONAL CHALLENGES IMPACTING ON HEALTH AND WELLBEING ASSETS

FUNDING AND INVESTMENT

Funding for proof-of-concept activities, pilots, and developing and testing new innovations is a key challenge within the health and wellbeing sector locally. For many health and wellbeing products, early-stage or seed funding is required to test, trial, or validate new ideas to be able to bid for larger sums and follow-on investment. Stakeholders commented on the need to have "...*the evidence to demonstrate success before you have achieved it*".

"We struggle with these early-stage projects to secure proof of concept funding and get projects through that really early stage and de-risking them. This includes those coming out of universities and the NHS. They may only need £10,00 or 20,000 to get some pilot data and de-risk them which will allow them to go for the bigger pots of funding, for example from NIHR (National Institute for Health Research)."

A pressing concern for universities is what will happen after EU funding ends in 2023 as universities require a consistent funding pipeline to plan and deliver their research otherwise "...*it curtails investment in new evidence, talent and collaboration with research partners*".

Businesses in medical devices and health care manufacturing sometimes struggle to secure more substantial funding to support innovation and product development.

"But when you look to SME businesses like ours [health care manufacturer £2m turnover] realistically, there's actually no funding available".

Some tier-two manufacturers consulted were worried they were being left behind through lack of investment and an inability to compete effectively in global markets. They would like support for the adoption of new technologies to improve productivity such as 3D manufacturing and other forms of digitalisation.

"What we're seeing now is that the large OEMs and tier ones are starting to drive the digital agenda and essentially, whatever digitalisation platforms they are putting in place, they will then dictate the requirements to their supply chain. So, unless you are prepared it's very challenging."

Operating in a global marketplace was a challenge currently with global supply chain constraints, the impact of the UK's exit from the EU (highly regulated industries have been faced with additional requirements) and higher prices in heavy energy-consuming industries.

SKILLS SHORTAGES

National skills shortages in many industries impact South Yorkshire's health and wellbeing sector which requires technical staff with a range of skills including manufacturing, engineering, and digital technologies. The proposed Apprenticeship Hub and SHU's Institute of Technology may help to address this (see recommendations).

Commercial and business development skills can be lacking in innovators which can inhibit product development. There are also shortages in regulation and information governance expertise. Stakeholders identified more support was needed to understand regulatory requirements including those in different countries (where for instance products are launched in overseas markets). In health tech, *"the innovations tend to be a step ahead of the regulations"* in terms of the use of AI, VR, and machine learning.

NHS CHALLENGES

It is challenging for businesses to engage with NHS procurement supply chains as it can be *"difficult to make connections externally"*, particularly for smaller companies. If businesses do not have NHS connections for procurement or connections with appropriate clinicians, they will be unable to produce the solutions the NHS requires. Stakeholders felt the current innovation ecosystem tended to work in silos which hindered the development of local solutions to address the NHS's unmet needs.

The NHS in South Yorkshire, as elsewhere in the country, has a large elective backlog, faces increasing pressures on its resources, and has a stretched workforce who have been on the frontline of the Covid-19 pandemic. Thus, medical professionals have less time to spend on research and innovation to develop their ideas from theory into a clinical environment.

2.2 THE CURRENT CHALLENGES FOR SOUTH YORKSHIRE

COMMUNICATION

The perception of South Yorkshire does not match the reality of its health and wellbeing offer which is *"...so much more than metal bashing"*. This was a recurring source of frustration for stakeholders who described perceptions of the sector as outdated and inward-looking.

"For years it's been a bugbear of mine, that we've got all these strengths, and it's so invisible. We're really bad at shouting about it."

"We punch above our weight, but we blow a tiny trumpet."

Stakeholders unanimously felt the South Yorkshire 'story' for health and wellbeing was unclear and some raised concerns over a perceived lack of sub-regional ambition for the sector.

"To drive investment, you need to tell the story of what's the academic and manufacturing expertise? What parts of the supply chain it relates to? What's the support for entrepreneurs? How do we help people relocate?"

"We don't have a clear story. South Yorkshire could be a DIT high potential opportunity (HPO). Currently no HPO in SY and getting the story and offer right is an opportunity to market SY to the DIT International Network."

Communication within the sub-region and externally is a challenge with a lack of a unified voice. By contrast, stakeholders noted the West Yorkshire Combined Authority has a strong collective voice, for example within its [Health Innovation Proposition](#). The lack of communication made identifying potential partners and opportunities difficult. Whilst organisations often have their own processes to promote success and learn lessons internally, there are limited opportunities for sub-regional promotion. This inhibits the sub-region's ability to communicate a clear message externally to potential partners, investors, and the Government. In contrast, London's [Medcity](#) provides a clear place for the promotion of its life science assets with an accessible website and activities, such as a monthly newsletter.

Health and wellbeing leaders need to coordinate and promote the assets more visibly, act as advocates and create spaces for new opportunities for interdisciplinary collaboration.

"We're so busy doing all the work and delivering rather than promoting".

A lack of resources within assets can make promotion, networking and relationship management challenging and can lead to opportunities not being fully realised.

The local NHS trusts could improve external communications to develop research and innovation collaboration and promote existing partnerships and projects more effectively. The SYB ICS Innovation Hub is starting to address this issue and there is scope to increase its visibility. Stakeholders reflected the SYB ICS could increase its risk appetite for innovation and promote the sub-region as a testbed to attract investors and research partners to South Yorkshire.

Due to the poor profile and communication of South Yorkshire's health and wellbeing sector, opportunities for business growth, funding, talent management, and relationship development are currently being missed.

CONNECTIVITY

"We have a lot of pockets of excellence often national or world leading excellence. But linking those connections from the research institute to the commercial base and the clinical base and so on is difficult and a challenge."

There was a sense that the health and wellbeing assets were disjointed and often worked in silos, which stifled potential innovations, partnerships, and access to funding. The lack of a clearly identifiable sector or community can make winning new business and maintaining relationships challenging, particularly when research and innovation priorities and regulations are changing. Smaller businesses need support to meet the changing demands of the NHS and the development of a like-minded community to share resources and learn lessons would assist this.

"What they [sub-regional OEMs] were saying is they need support on the tendering and the actual management of the relationship with NHS. Typically, the NHS is the biggest customer for these organisations, but they're developing their capabilities incrementally. Examples include electronic catalogue management, electronic purchase to pay systems and processes etc. One challenge is the constant need to keep refining tenders to ensure they are successful in light of the changes that the NHS are asking for on modern slavery law, Labour Standards, all of these kinds of things. So, they were saying it'd be great if there was a community or collaboration across the sub-region to help it be more successful in securing opportunities."

Stakeholders commented on the lack of physical spaces in South Yorkshire for health and wellbeing experts to connect, collaborate and innovate.

"Co-working space, and places to host accelerators, and those kinds of collaborative physical spaces don't seem to be as exciting as the rest of the country."

"If we go to a health tech event, or try and network within the health tech space, we typically go to Leeds rather than South Yorkshire."

"The biggest challenge has been space and premises. Sheffield has been losing spinouts to other cities because there hasn't been anywhere to put them in within the Sheffield area. I know it's beginning to change, but that's been a challenge."

The geographical fragmentation of assets is impeding collaboration resulting in a lack of 'cohesiveness' compared to other areas such as the [Cambridge and Oxford Arc](#). Most health and wellbeing assets are in Sheffield or the AMID, making collaborations outside these areas more difficult. The existing collaborative relationships are fruitful, particularly those within the STH, SCH, and the universities. There is potential for these assets to engage with other partners more widely across the sub-region through satellites, hubs, and new ventures (see recommendations).

The lack of connectivity and the perception this creates can deter potential investors who cannot see how assets will tangibly work together within a health and wellbeing ecosystem. For instance, [MedCity](#) promotes and connects London's health and life science sector to drive growth and investment.

"For policy makers, there is a challenge finding out about the little local networks that, that the companies will use, but nobody else knows about. Being able to tap into those would help the region welcome in companies and say, come along to these there's this regular networking event."

A shift is needed to see current competitors as potential collaborators rather than a threat. South Yorkshire could share lessons and complement health and wellbeing clusters outside the sub-region. It should be more outward-looking, proactively seeking partnerships with other clusters.

"I don't think it should be in competition with Leeds. I think it should collaborate to broaden out the scope to a wider kind of Yorkshire Powerhouse region."

"We do not need to compete with local regions, we need to be part of the UK offer and think how do we compete globally, say, with America?"

There is a desire to collaborate more with the private sector in South Yorkshire, but in some priority research areas such as biotech, there are few businesses to work with. Therefore, researchers tended to work with companies outside South Yorkshire which creates logistical and funding challenges.

RESOURCES, SKILLS, AND FUNDING

South Yorkshire has struggled to retain University graduates beyond a year. Several stakeholders claimed that *"graduates stay for a year or two and leave for London"*. This is thought to be a consequence of a lack of local progression opportunities across all sectors including health and wellbeing. Health and wellbeing assets could be used more proactively to create, grow, and connect existing businesses, and attract new ones to strengthen its talent pipeline.

The sector has not been able to fully exploit funding opportunities, especially in the emerging niches identified in chapter four such as health tech or bio. South Yorkshire does not currently have a strong pipeline of ambitious business development schemes to support assets from ideation to commercialisation for example it lacks incubation spaces.

There is a mismatch of perceptions between businesses and universities; the private sector perceived a lack of applied research and commercialisation capabilities from the universities whereas the university perspective described competing demands and a lack of resources to work with local businesses.

Doncaster and Bassetlaw Teaching Hospital (DBTH) aims to achieve University teaching hospital status over the next decade. The Trust is seeking to align its research strategy with SHU and the UoS and build relationships with the universities. To achieve university teaching hospital status and carry out high-quality research, the DBTH will also need to become more attractive to potential recruits.

HEALTH INEQUALITIES

"How can we make sure we can consistently help leverage that economic activity to benefit health inequalities as well? And how could people from the more deprived parts of the sub-region benefit from that economic activity? By using the region as a testbed and tackling inequalities at the same time".

Stakeholders saw the health inequalities and areas of deprivation as an important challenge to address and an opportunity to help communities and develop health and wellbeing assets. South Yorkshire encompasses areas of wealth and deprivation, often side by side. Out of the 316 English local authorities, Barnsley (44th), Doncaster (48th), Rotherham (45th) and Sheffield (61st) all had high levels of income deprivation ([ONS](#), 2021). There are clear links between economic deprivation and health inequalities with those with the lowest income at greater risk of poor health and a shorter life ([Marmot et al](#), 2020).

Many South Yorkshire residents have lower than the national average life expectancy and fewer years of good health; there are also significant variations between the most and least deprived areas. The [SYB ICS](#) five year plan identified several key health inequalities to address:

- The largest contributors to reduced life expectancy in SYB are cancer, cardiovascular disease, and respiratory disease.
- A sizable number of SYB residents live with multiple long-term conditions, with higher rates in the most deprived areas. There are large levels of smoking, obesity, physical inactivity, and hospital admissions for alcohol which are key contributors to poor health.
- SYB has high levels of mental health and the Yorkshire and Humber region has the second-highest rate of suicide in the country, although this figure has reduced ([ONS](#), 2021). People with severe mental health and learning disabilities have a lower life expectancy than the general population.

The SYB ICS has adopted a population health approach to address the health inequalities and improve the health of the whole local population. The SYB ICS identified five focus areas: best start in life; reduce harm from smoking, alcohol and obesity; improve cardio-respiratory health; improve mental health and wellbeing; early diagnosis and increased survival from cancer.

2.3 INTERCONNECTIVITY AND SYNERGIES BETWEEN ASSETS

The universities have strong links with each other and collaborate in several areas such as through the UKRI funded EMERGENCE network which brings together four UK universities to accelerate the use of robots in healthcare. The universities are also developing their own inter-disciplinary links through the creation of research institutes such as the Healthy Lifespan Institute at the UoS and SHU's Health Research Institute as well as cross-cutting research centres.

Stakeholders provided a small number of examples of the universities working with local businesses such as the Lab4Living at SHU collaborating with a local manufacturer or the UoS and HMA (a Barnsley based digital health company). More commonly, collaborations with businesses were outside the sub-region with national and international project work. Accelerator programmes were recognised as an important tool to support collaborations between academics, practitioners, and businesses.

An important aim of the SYB ICS is to build external relationships with the NHS and increase collaborations for research and innovation. This work is in its early stages but will be a key player in supporting local collaborations with the NHS. There were good links between the universities and the STH and SCH; stakeholders reflected the links seemed strongest between the UoS and STH and SHU and SCH. RDaSH has links with the UoS through its mental health research as does Barnsley Hospital through the Assistive Technology team. The hospitals in the sub-region collaborate, for example, through delivering satellite clinics and the sharing of staff resources, equipment and expertise from STH and SCH.

The collaborations with local communities and research centres in South Yorkshire and the focus on co-design of research and innovations are an important interconnectivity and strength for the sub-region. The AWRC's work with Darnall Wellbeing is a prime example of the benefits of this collaborative relationship. The SYB ICS is focused on community collaborations and reducing inequalities within deprived areas. It actively considers how it can bring new opportunities to areas, including employment, to help address inequalities and subsequently improve the lives of people in South Yorkshire. Similarly, the location of assets within these communities is important as can be seen through the work at the OLP.

The two MICs in South Yorkshire and the TITCH network facilitate collaborations across South Yorkshire and beyond. The AHSN has an important role to play in supporting collaborations and they are *"constantly bringing in potential innovators and companies from a vast spectrum of areas to the attention of the health and care agencies in the region"*.

For digital health and wellbeing assets, there are opportunities to explore the existing and potential connections between each of the core capabilities and verticals in considering responses to specific health challenges. For example, the work of SHU's Ivan Phelan at the Impact VR Research Lab, who is pioneering the use of VR in pain relief and training patients in the use of prosthetic limbs. Or the award-winning Arctic Escape, an immersive Augmented Reality application developed by Megaverse for the SCH's burns ward, which entertains and distracts young patients.

There are other examples, such as the partnership between Parkrun and the AWRC, and many opportunities to combine expertise in movement and flows across application areas. This also applies to sensing and the use of next-generation telecommunications networks to provide sensor coverage in more remote and socially excluded areas of the region, which also builds on the legacy of initiatives such

as the [Perfect Patient Pathway Testbed](#). There are also connections, and opportunities, between the EdTech cluster and the active lifestyle agenda, as indicated with iMoves, DrumFIT and MoveMore.

2.4 THE FUTURE CHALLENGES AND OPPORTUNITIES FOR SOUTH YORKSHIRE

FUNDING

Funding will continue to be a challenge with new funding streams coming at a time of increased inflationary pressures. Without long-term coordinated funding streams, health and wellbeing assets will struggle to develop to the size and scale required for South Yorkshire to be a leader in this area. The sub-region needs to be better prepared to exploit funding opportunities and attract investment.

ADDRESSING NATIONAL AND LOCAL HEALTH PRIORITIES

The health inequalities across South Yorkshire present an opportunity for the health and wellbeing sector to develop needs-led solutions to improve the lives of local communities. Additionally, numerous strengths of the health and wellbeing assets in South Yorkshire align with NHS needs such as healthy ageing, preventative health, and wellbeing. By addressing these inequalities and unmet NHS needs, there is the potential to improve the health of the sub-region physically, economically, and socially – aligning with the aims of South Yorkshire’s SEP. Moreover, the increasing collaborations and innovations will increase the strength and reputation of South Yorkshire’s health and wellbeing sector.

The SYB ICS is keen to increase collaborations with SMEs in the sub-region who can bring fresh ideas to inform clinical practice. The adoption of a population health management approach provides a range of opportunities for health and wellbeing assets. For example, solutions to improve wellbeing such as green social prescribing or digital products, which allow the remote self-management of health conditions.

TECHNOLOGY ADOPTION

The NHS adoption of innovative technologies is an important opportunity including IoT, AI, virtual reality, robotics, remote monitoring, diagnostics, virtual wards, telehealth, and bolder ideas around transforming wards (for example, using technologies from a F1 pitstop to support neonatal care). There is also an interest to collaborate with the games industry, which has a cluster in Sheffield, with health care and use the skill set to improve patient experiences and outcomes.

"We've been having the conversation in the ICS recently on how we might borrow ideas from other industries and apply them where they could be of benefit our healthcare provision... There are also opportunities to utilise gaming for healthcare, I do know, of academics at the University here who have a really strong interest in the use of gaming or gamification type thinking in the design of digital health products, but also using gaming as a therapeutic tool as well."

The digitalisation of health care and the adoption of new technologies creates future risks around regulation and ensures the sub-region has the skills to support digital transitions. Data connectivity and privacy are growing challenges within the digitalisation of the NHS and present opportunities for South Yorkshire with its cyber security expertise. Data analytics is a future challenge and opportunity for health

and wellbeing assets which, if done successfully, could accelerate the NHS's population health management approach.

Technological adoption also needs to occur in social care where there is some reticence, a lack of funding to invest in technology, low technological knowledge and awareness among staff and providers, and concerns about ethical or data protection implications. Manufacturers in South Yorkshire will need to adapt to innovative technologies such as AI and machine learning if they are to compete globally.

COLLABORATION

There is a desire and need to increase collaboration in South Yorkshire including networking events, forums, or the creation of a digital hub. To unlock the growth potential of the sector, the health and wellbeing sector needs to work more effectively across the sub-region to promote key assets. Collaboration between assets provides opportunities to tackle local unmet health needs and stakeholders saw real opportunities in creating problem-based collaborative networks to drive innovation and make tangible change in South Yorkshire. The recommendations address this.

The GTIMC and NCCHT will allow South Yorkshire to cement and promote its expertise in gene therapy and child health technology. There are opportunities for both these new centres to be collaborative catalysts for existing health and wellbeing assets in the region and to encourage new businesses to South Yorkshire.

"The ambition for that centre [GTIMC] is to use it as the catalyst to attract an agglomeration of small companies coming in accessing the facility, co-locating, training, building up the skills and talent base and so on and then commercialising out and attracting revenue for the University through those companies."

South Yorkshire has the "right ingredients" to become a leading health and wellbeing cluster and, if it is to seize future opportunities, it needs to ensure it is presenting itself effectively and to the right people. Stakeholders reflected health and wellbeing were of increasing interest across Government departments and South Yorkshire needs to position itself to be the first port of call for Government when health and wellbeing funding becomes available. The SYMCA should help the health and wellbeing sector identify, navigate, and successfully exploit funding opportunities.

EXTENDING THE REACH OF HEALTH AND WELLBEING ASSETS

The examples of assets being co-located in the OLP demonstrate the benefits of this model and the importance of location for community engagement and wider benefits to the locality. The future development of a ground-breaking diagnostic imagery research hub for Canon Medical Systems Europe at OLP will enhance research and innovation and reinforce the diagnostic strengths of South Yorkshire. There are opportunities to use the co-location model in other areas of South Yorkshire to encourage innovation and regeneration in deprived areas.

The development of satellite hubs of existing Sheffield assets into other areas of South Yorkshire provides an interesting opportunity. They could increase collaborations, share knowledge and resources, and raise the profile of assets which are not as well known. The hospital trusts outside Sheffield offer access to

different populations with unique unmet needs for example DBTH is keen to collaborate with AWRC to tackle local obesity.

With the right support, the OLP can become a thriving health and wellbeing ecosystem with businesses, academics, health providers, educators, and communities. UKRI is interested in the OLP model and believes it could become an important health and wellbeing business cluster. The attraction of new businesses to the OLP will allow it to develop a talent pipeline and provide progression opportunities for graduates.

South Yorkshire has many green credentials with Sheffield's reputation as the outdoor city and various green spaces across the sub-region. A challenge and opportunity for South Yorkshire is utilising this image more effectively to promote health and wellbeing assets and stimulate green innovation. There is scope to deepen connections to exploit mutual areas of interest; for example, South Yorkshire's expertise in active travel has health and wellbeing impacts and innovation potential.

NET ZERO HEALTH

The NHS faces challenges to meet its net zero demands by 2040 and the ambition to reduce 80% of carbon emissions by 2032. The NHS is responsible for 4% of England's carbon footprint ([NHS, 2020](#)) and affects the NHS in numerous ways from physical infrastructure, food, medical tools, and packaging, to travel. Whilst stakeholders recognized the significant challenges faced to achieve net zero, these offered a range of opportunities for local impactful innovation by adapting existing carbon-heavy practices; innovative technologies; active travel; and greener packaging, healthcare practices, and food.

"And there's so many interesting innovations that are emerging, you might have heard of the use of drones to for medical and emergency purposes as well."

"...surgery is one of the most carbon intense or biggest expenditures of carbon...We obviously manufacture as far as I'm aware quite a lot of surgical related medical devices in South Yorkshire and so if they're going to pilot trying to achieve net zero in a particular clinical areas within surgery that would be one of the options and that might be an opportunity there."

As South Yorkshire has a cluster of medical device manufacturers there is an opportunity to be a global leader in this field. Several net zero areas of focus are suggested in the recommendations.

DIGITAL HEALTH

There are several opportunities for the use of digital technology in health and wellbeing focused on building connections across the sector and expanding on existing digital strengths. For example, forging a health-tech identity for South Yorkshire which is compatible and complementary to other areas could leverage the strengths of our sector. There are opportunities to support innovation in hard-tech at the universities and within private-sector research. South Yorkshire is well-positioned to support the digitalisation of medical manufacturing and services. The development of key health-tech verticals such as active lifestyles, mobility and independence, and child health are prime opportunities for South Yorkshire given the existing assets. There is scope to expand major digital industry verticals such as Ed-tech, creative and cultural tech, movement-tech, and manufacturing-tech.

3. RECOMMENDATIONS

The SY MCA and partners may want to consider the following recommendations. The first set of recommendations (1-3) are strategic and long-term and focus on creating a cohesive narrative and community for South Yorkshire’s health and wellbeing sector and a roadmap of how to get there. The following recommendations (4-21) provide short/medium-term activities which should be considered in tandem with the long-term recommendations for the sub-region.

OVERARCHING LONG-TERM RECOMMENDATIONS FOR SOUTH YORKSHIRE’S HEALTH AND WELLBEING SECTOR

Rationale: South Yorkshire needs to adopt a much longer-term strategic lens and consider where it wants to be in the next five years plus. It should consider the reputation, assets, and structural aspirations the sub-region is striving towards in the long term and set out a roadmap to get there.	Impact	Time-frame	Priority
1. Building upon the SEP, the findings/recommendations of this report, and other complementary documents such as the Sheffield Joint Health and Wellbeing Strategy, South Yorkshire should set out its long-term ambition, mission, and shorter-term aims in the form of a health and wellbeing sector strategy document . The document should take this report’s findings and outline what the region wants to become and what it wants to be known for, amongst other factors. This structure and core narrative should provide the backbone for all other plans and strategies within the sub-region to hang off and will likely improve general structure/direction and coherence, and further promote more collaborative working.	●	L/T	●
2. South Yorkshire is often inadvertently disadvantaged around bidding for large scale structural investment funds/grants as there is a lack of collaboration and alignment of partners around a core narrative. Building upon the recommendation above and the recommendations within the report around collaboration and reducing fragmentation, South Yorkshire should seek to develop a roadmap of worked up ‘one pager’ project and investment opportunities which are aligned to the sub-region’s overarching health and wellbeing strategy and build upon partner expertise. These ‘one pager’ outlines should subsequently serve as the basis for bringing together project/bid teams across South Yorkshire: ensuring the sub-region continually works towards its overall ambition, input from partners is maximised, and South Yorkshire is on the front foot when it comes to responding to funding opportunities.	●	L/T	●
3. South Yorkshire is lacking a centre of gravity and a rationale to bring together the breadth and depth of stakeholders required to ensure the benefits and opportunities of pan-regional collaboration are maximised. Other city regions have adopted the model of ‘Academic Health Partnerships’ (e.g., Leeds) which drives collaboration between regional universities, local NHS organisations, the regional health and care system, councils, LEPs, industry, and third sector organisations. The partnership’s activities are structured around utilising the partnership’s collective expertise to identify and implement transformative and sustainable solutions to the sub-region’s health and care challenges. Creating a centre of gravity to bring together partners around a core agenda central to improve the health and wellbeing of the population	●	L/T	●

through the mechanism of an Academic Health Partnership is a model which the sub-region may wish to consider adopting to continue working towards fully maximising South Yorkshire’s potential impact.			
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PRIORITY ONE: ECOSYSTEM DEVELOPMENT

Rationale: South Yorkshire has the ingredients to develop an internationally impactful health and wellbeing ecosystem which could address local health needs more explicitly. It needs to embed its research and innovation culture more systematically across the sub-region and build upon its good practice in co-designed research with communities.	Impact	Time-frame	Priority
4. It is recommended that the health and wellbeing assets are better utilised across the sub-region . This includes the continued development of satellite clinics with clinical expertise, using Sheffield’s expertise to upskill staff across Barnsley, Doncaster and Rotherham, new collaborations and the research co-location model exemplified by the OLP. This would extend the reach and impact of AMID. For example, the AWRC could collaborate with DBTH and Rotherham NHS Foundation Trust over addressing obesity in the local population.	●	M/T	●
5. Foster greater deeply embedded academic/ clinical/ commercial collaborations across South Yorkshire which align with areas of local needs and expertise . Increase opportunities for co-designed and participatory research with local communities across South Yorkshire and ensure research and innovation strengths are utilised to address health inequalities and unmet NHS needs. Support health and wellbeing assets to effectively promote their research and innovation strengths and activities, and the impacts of participatory research addressing local health inequalities.	●	M/T	●
6. Explore opportunities to connect the clear sub-regional procurement demands in health and care with local suppliers to deepen supply chain opportunities and address local health and care needs . For instance, navigators could help develop a pathway via procurement leads for innovative SMEs to help advance the introduction of innovations into the health and social care sector.	●	S/T	●

PRIORITY TWO: PROMOTE THE HEALTH AND WELLBEING ASSETS OF SOUTH YORKSHIRE

Rationale: This theme recommends that we transform the visibility of the sector by promoting key areas of business and research excellence so that South Yorkshire is known as an exceptional location to develop, manufacture, and supply health and wellbeing products and services.	Impact	Time-frame	Priority
7. It is recommended the outdoor city brand is extended to become the outdoor sub-region and the MCA should lead this marketing with partners. Use the outdoor city brand and methodology to tackle health inequalities across South Yorkshire and use the learning and opportunities from this to grow and commercialise innovations and share with other regions. This could include new running, cycling, and walking routes and wellbeing measures such as ‘green social prescribing’ or place-based outdoor neighbourhood pilots.	●	M/T	●

8. A Festival of Health and Wellbeing Technologies , led by the SYMCA in partnership with the Department for International Trade, is recommended to raise the profile of the sector and promote its expertise. It should showcase South Yorkshire’s health and wellbeing assets and foster new investments, commercial relationships, and import/export opportunities. It could include an exhibition, world-class speakers, immersive workshops, health-tech entrepreneurs and investors platform, and a co-designed young people’s pavilion.	●	M/T	●
9. It is recommended the health technologies group is extended to include health and wellbeing businesses and organisations. Ensure the health technologies group is utilised for consultation as key stakeholders to support key projects/investments to secure and accelerate growth in South Yorkshire’s health and wellbeing sector.	●	S/T	●
10. The SYMCA should promote the sub-region’s health and wellbeing sector more effectively by showcasing its research and innovation strengths and leading communications and PR on the value, assets, and South Yorkshire’s ‘offer’ to project a unified voice and celebrate success. Such as with a dedicated website which can be found for other life science clusters for example Medcity.	●	S/T	●
11. To increase trade its recommended that new health and wellbeing propositions are developed for each of the five identified priority sub-sectors in this report to stimulate inward investment and international trade activity.	●	S/T	●

PRIORITY THREE: HEALTH AND WELLBEING COLLABORATION AND TALENT

Rationale: A collaborative rather than competitive approach is suggested. These measures are designed to celebrate success, showcase expertise, collaborate with others and attract and retain talent.	Impact	Time-frame	Priority
12. It is suggested that areas of mutual collaboration and shared learning are identified with one area initially, West Yorkshire, where there is a rationale for collaboration which would create a very competitive international health and wellbeing offer.	●	M/T	●
13. It is recommended that SY Health and Wellbeing sector engages with SHU’s Institute of Technology team, the proposed Apprenticeship Hub and the current sub-regional skills strategy and implementation plan, to articulate STEM skills gaps for the sector so that intermediate higher level technical education is meeting the needs of the sector effectively .	●	M/T	●
14. It is recommended that career advice and guidance be improved to reflect the vast opportunities within the health and wellbeing sector in South Yorkshire and inspire the next generation of innovators . The sub-regions assets and SMEs should be used to provide new vocational experiences, from primary school through to FE, building on current best practices within the SY and fostering greater links between the sector and education providers. This might include being set a challenge with a business mentor or FE students using HE/Asset facilities to deepen their knowledge.	●	M/T	●

15. It is recommended that a new pilot talent development programme between businesses and universities is explored to develop a post-graduate leadership pathway for the sector ; for example in data analytics or gene therapy. For example, SHU has recently created a MSc Healthcare Analytics and Artificial Intelligence course in response to growing demand from the health sector.	●	M/T	●
16. Explore whether there is an appetite amongst businesses and practitioners to collaborate between assets around vertical opportunities such as gene therapy, active lifestyle, mobility and independence, and child health.	●	S/T	●

PRIORITY FOUR: HEALTH AND WELLBEING INNOVATIONS

Rationale: These measures are designed to stimulate technological innovations for health and wellbeing including net zero healthcare. The idea is that assets are leveraged to achieve business growth.	Impact	Time-frame	Priority
17. It is recommended that we harness diverse expertise through interdisciplinary applied research to address key challenges faced by South Yorkshire’s residents. A challenge-led multi-disciplinary research and innovation programme centred around SY health priorities could accelerate their translation to clinical settings across the primary care network. For instance, a pilot could consider matching SY digital capabilities with NHS needs such as in the ‘gamification’ of therapies. Potential models to build on include MedCity’s Collaborate to Innovate programme and Confidence in Collaboration in Advanced Therapies award scheme, a Research England Connecting Capability programme led by London Advanced Therapies (LAT).	●	M/T	●
18. Support the development of a complete innovation pipeline for South Yorkshire’s health and wellbeing sector from ideation through to commercialisation and deployment. This would include extending and deepening the current accelerator programmes in the sub-region, a small seed funding programme (£10,000 - £20,000) to support innovation through proof of concept and towards commercialisation and enable companies to bid investment, and the development of incubator spaces and support.	●	M/T	●
19. Help sub-sectoral groups such as tier two medical equipment suppliers to exploit funding and innovation opportunities more effectively and navigate strategic opportunities. For example, supporting the development of a contract manufacturing hub would enable local manufacturers to combine buying power and compete more effectively in the global orthopaedic market and invest in new technologies.	●	M/T	●
20. It is recommended NHS partners are approached to see if there is an appetite for local businesses to help local trusts achieve their net zero ambitions in three areas: (1) new models of care, (2) medicines and supply chain, (3) the digital transformation including horizon scanning function to identify future pipeline innovations. For example, support local SMEs to connect with the SYB ICS Innovation hub and collaborate to address the strategic themes of tomorrow.	●	M/T	●

4. ANNEX ONE: STAKEHOLDERS

Organisation
Advanced Wellbeing Research Centre
Yorkshire and Humber Academic Health Science Network
Capital Enterprise
NIHR Children and Young People Medtech Cooperative
Industry and Innovation Research Institute (Sheffield Hallam University)
Medical Advanced Manufacturing Research Centre
Northern Health Science Alliance
Medilink North
Northern Powerhouse Sector Specialist (Department for International Trade)
Sheffield Olympic Legacy Park
National Centre for Child Health Technology
Sheffield Hallam University's Health Research Institute
South Yorkshire Health technology group
Biomolecular Sciences Research Centre
Innovate UK (UKRI)
University of Sheffield
Yorkshire Universities
Mediplex Healthcare Innovations Hub
HMA
Lab4Living
South Yorkshire MCA
SYB ICS Innovation Hub
SYB ICS
Sheffield Teaching Hospitals
Sheffield Health and Social Care Trust
RDaSH NHS Foundation Trust
Well Doncaster
South Yorkshire Housing Association
Sheffield Children's Hospital
Sheffield Teaching Hospitals
NIHR Devices for Dignity Medtech Cooperative
UKRI Edge
P4SY
Sheffield Digital
TITCH Network

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