

C|B|I



Enhancing the Life Sciences Ecosystem in the West Midlands

November 2021





The Association of the British Pharmaceutical Industry (ABPI) exists to make the UK the best place in the world to research, develop and use new medicines and vaccines. We represent companies of all sizes who invest in discovering the medicines of the future.

Our members supply cutting edge treatments that improve and save the lives of millions of people. We work in partnership with Government and the NHS so patients can get new treatments faster and the NHS can plan how much it spends on medicines.

Every day, we partner with organisations in the life sciences community and beyond to transform lives across the UK.



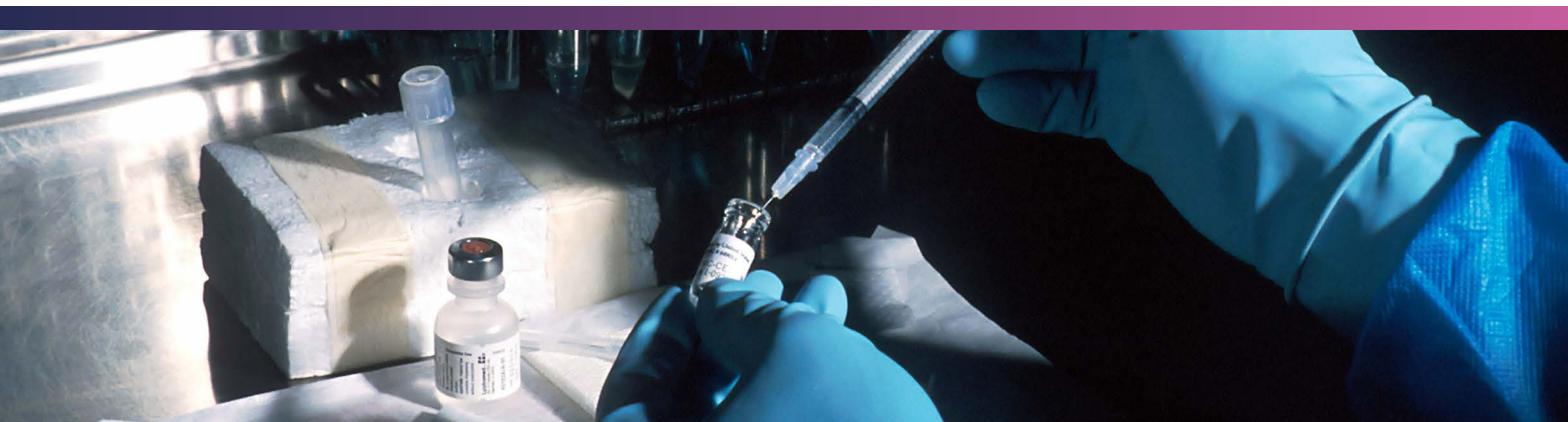
Birmingham Health Partners (BHP) is a cluster of contrasting, yet complementary organisations, sharing the common goal of achieving health and economic impact through the purposeful use of knowledge and expertise.

It is a strategic alliance between the University of Birmingham, the West Midlands Academic Health Science Network, and two NHS Foundation Trusts – Birmingham Women's & Children's, and University Hospitals Birmingham. Our members collaborate to bring healthcare innovations through to clinical application.

Its unique ecosystem enables the full spectrum of translational medicine: encompassing health data; an established local health system; academic excellence; and an extensive clinical trials capability.



The CBI speaks on behalf of every sector in the economy. Our membership includes firms and trade associations, coming together with common priorities and a shared vision. We represent 190,000 businesses; together they employ nearly seven million people. That's a lot of people with a lot to say. We make sure businesses get heard by being the UK's most effective and influential business organisation.



Foreword



Richard Torbett,
Chief Executive,
ABPI



This report demonstrates what is possible when industry, academia, NHS and local government work in partnership to deliver real benefits to patient care.

We have seen in recent years how critical these partnerships are at a national level, including in supporting the UK life sciences sector to thrive and grow.

Whether it be through clinical trials, providing support to the NHS or investing in the new enterprises which are driving innovation, industry has a critical part to play in developing a thriving life sciences ecosystem.

To deliver on the ambition for the UK to become a life sciences superpower, we must also look to our strengths in all areas of the UK. I believe the West Midlands has a key role in delivering this ambition and there's much to learn from this important report.



Tony Danker,
Director-General,
CBI



Health is wealth. The two are inextricably linked. Whether that be in the context of personal health and wellbeing and the value good health can give to our daily lives, or in the economic activity that a healthy and productive workforce can provide.

Businesses throughout the region have shown resilience in the face of the pandemic as well as showing impressive leadership in stepping up to the plate in response to urgent need.

We can build on this to ensure that the life sciences sector in the West Midlands can thrive in the future. This, in turn, would create new opportunities, attract new investment, deliver new jobs and generate more economic output, not just for the West Midlands, but for the whole country.



Professor David Adams,
Director,
Birmingham
Health Partners



As we emerge from the pandemic the need to generate health and economic impacts that directly benefit our communities has never been more apparent. Effective co-ordination of our region's research and innovation capabilities represent a key enabler of that ambition.

BHP and its constituent members provide the leadership, infrastructure, technical capabilities, human skills, and network of anchor institutions connecting industry, NHS, academia and government partners to catalyse that journey.

The award of Life Science Opportunity Zone status for Birmingham Health Innovation Campus highlights the ambition and increasing profile of the region as a global force with strong local roots. The future of the West Midlands is bright, but we must all work together to fully unlock the opportunity.

Comments from Andy Street, Mayor of the West Midlands

We have a proud industrial heritage here in the West Midlands, and now we have the opportunity to be at the forefront of the life sciences industry. Our region has the capabilities to build a thriving life sciences ecosystem, and we already have some of the best institutions in the country with more on the way. These are the foundations to build on, but we know we need the support from policy makers and decision takers to do more.

This is critical because of the health challenges facing our communities, and the life sciences sector has an important role to play in helping to address these. Doing more to attract leading innovators to work in the West Midlands can help benefit not only our local economy, creating jobs and skills for local people, but also the health of our people, helping them to live longer and healthier lives.

There is a real opportunity now to grow the life sciences sector here, and the West Midlands is committed to working collaboratively to achieve it - and ultimately make a real difference to people's lives.



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Executive Summary

The Government's *Life Sciences Vision* sets out the ambition to make the UK a leading global hub for life sciences. The West Midlands is a burgeoning centre of excellence in this sector and is home to world-leading anchor institutions, including universities and research hospitals, led by pre-eminent clinicians and academics. Combined with a large and diverse patient population, this constitutes an ecosystem where scientific and clinical insights and industry innovation can be rapidly translated into patient benefit and economic growth.

Five core themes have emerged from the research contributing to this report: investment; health inequalities; the pandemic response; leadership and collaboration. In each of these themes, there are areas of excellence and identified systemic barriers.

1. Attracting R&D Investment

Research shows that the level of R&D investment per head in the West Midlands lags behind other areas of the UK, with the average West Midlands resident only receiving £20 per head in government funding, compared to the £60 per head received in London.¹ Despite this disparity in funding from central government, the sector employs over 10,000 people, and is a significant driver of economic growth in the region. However, over a 10-year period, the West Midlands was the only English region which did not see a net increase in employment in the life sciences industry.² It is critical that this trend is reversed for the West Midlands life sciences ecosystem to reach its potential.

To do this, the region must attract more public and private R&D investment. To achieve the government's target for total R&D investment to reach 2.4% of GDP by 2027, there needs to be a significant increase in public R&D funding and adoption of policies and incentives to attract significantly more private-sector R&D investment.³ The government should look to increase regional public R&D funding, while local leaders should explore the barriers to attracting further investment from private companies. By supporting investment from both sources, the government can boost the productivity and knowledge base of the economy, supporting the government's ambitions to level up regions in the UK.

2. Health Inequalities and Diversity

The West Midlands has a more diverse population than other regions in England,⁴ making it an attractive location to undertake clinical trials. The Marmot Review 10 Years On found that health is getting worse for people living in more deprived districts and regions, and that intersections between socioeconomic status, ethnicity and race intensify inequalities in health for ethnic groups.⁵ The West Midlands Life Sciences Sector is at the forefront of addressing health inequalities and encouraging more underrepresented communities to engage with the sector, with organisations including the West Midlands Combined Authority (WMCA) and West Midlands Academic Health Science Network (WMAHSN) among those implementing policies and initiatives to support this.

Addressing the lack of proportionate representation in clinical trials offers the potential to transform treatments to cater to underserved groups. A system-wide approach of public health campaigns, building relationships with local communities and addressing digital health literacy, is required to increase engagement of communities with available services.

3. COVID-19 response

The West Midlands region experienced particular challenges during the COVID-19 pandemic, with existing deprivation in the region contributing to the high mortality rates;⁶ intense pressure on health services;⁷ and a significant economic impact.⁸ Despite this, the region played a significant role in the pandemic response, including making contributions to the government's ventilator challenge; developing diagnostic tools to detect antibodies; and supporting the trial design for a number of COVID-19 treatments. Going forward, the West Midlands will need to harness lessons from the pandemic to ensure the region remains a competitive ecosystem for life sciences to thrive, including developing the right infrastructure and skills base to tackle the health challenges of the future.

4. Leadership and Advocacy

Almost one in five healthcare professionals surveyed for this report felt that the strength of the West Midlands life sciences sector is not recognised nationally. All stakeholders, including civic leaders, have a role to play in setting the direction for the ecosystem. There is also a need for the sector to be its own champion and advocate on its own behalf. There are pockets of world-leading activity, but these are isolated. There is the potential to do so much more to raise the profile of the West Midlands life sciences ecosystem.

5. Collaboration

The vast majority of healthcare professionals in the West Midlands have experience of working with life sciences businesses. The Black Country and Birmingham Integrated Care System's (ICS) culture shift toward long term collaboration provides an opportunity to draw on the findings that 4 in 5 healthcare professionals agree that further collaboration would help bolster the ecosystem. However, a fifth of healthcare professionals spoken to for this report said that they did not have a positive perception of collaboration with the life sciences sector. Those that have not engaged with the sector say it is because they are unaware of the opportunities for collaborative work; because they do not have time to consider partnership working with the sector; or because they participate in partnership working outside of the West Midlands.

These are challenges to overcome. There are examples of excellence, such as the Health Data Research Hubs led out of the region and the Association of the British Pharmaceutical Industry-Birmingham Health Partners Clinical Research Restart and Recovery Resource. To achieve the region's potential, the sector needs to build on these examples and address the challenges identified.

Recommendations

Attracting R&D investment

1. As part of the government's 'levelling up' agenda and R&D places strategy, there should be a specific focus on increasing the amount of public R&D funding per head to regions across the UK, including the West Midlands, where there is a key asset in an emerging ecosystem.
2. The Department for Business, Energy and Industrial Strategy (BEIS) should work with local leaders in the West Midlands, to review the barriers that are preventing further public-private investment and develop solutions to overcome these barriers.

Health inequalities

3. System partners across the West Midlands should work together to pilot community-based projects to support local healthcare systems in building relationships with underserved communities in the region, considering the specific demography of the West Midlands. In particular, the NHS, academia and industry in the West Midlands should continue to tailor an approach to better engage and communicate with underserved communities, including identifying ways to tackle language, cultural and health literacy barriers.
4. The West Midlands region should further promote opportunities to take part in clinical research through a regional public health campaign developed in collaboration with UK Health Security Agency West Midlands, industry and local universities. The government should also look to invest in initiatives that promote research inclusivity in the West Midlands, not only to improve the health of the local population but also to ensure that future innovations better address health need as a result of being developed across diverse populations.
5. The NHS and public health authorities within the West Midlands should develop accessible and understandable education materials and assets on common health conditions, such as diabetes, to support local community engagement and improve awareness and health literacy amongst patients and the public.

COVID-19 response

6. The West Midlands region should look to take forward the recommendations from the G7 Therapeutics and Vaccines Clinical Trials Charter and 100 Days Mission, working together with system partners and Government to develop an action plan for the region, this could include:
 - a. Enabling the rapid review of and use of evidence generated by clinical trials conducted locally, nationally, and internationally to inform healthcare decision-making.
 - b. Building infrastructure, including data sharing networks and lab space, to rapidly respond to existing and emerging threats, including to allow a rapid set-up, and coordinated delivery of, clinical trials.
7. The region should harness the lessons from the pandemic to develop the right infrastructure and skills base to tackle the health challenges of the future and to build on the national leadership demonstrated by the region during the pandemic.

Leadership and advocacy

8. Regional political leaders should work with the Confederation of British Industry, Association of the British Pharmaceutical Industry and Birmingham Health Partners to develop a compelling showcase of capabilities and life sciences asset undertaken in the region demonstrating the health, social and economic value generated, aimed at potential investors. As part of this, there should be a conscious effort to develop a clear identity for the West Midlands in the way that the esteem of the 'Golden Triangle' has developed.
9. Leaders at every level should see promoting the life sciences sector as a core aspect of their roles. This requires high-level advocacy through the political process and asset-specific advocacy such as clinical research through Local Clinical Research Networks. Examples of this could include regular 'State of the Region' reports to highlight the work undertaken each year. Additionally, civic leaders, Chambers of Commerce and Local Enterprise Partnerships should commit to promoting the region's strengths through their work.
10. Regional Members of Parliament should engage the Office for Investment to make the case the West Midlands to attract inward investment.
11. Individual institutions' leadership initiatives and development of core strategic targets should be undertaken within a collaborative spirit within the ecosystem to develop shared expertise and provide results more remarkable than the sum of its parts.

Collaboration

12. Collaboration can be fostered through funding incentives. Regional funding mechanisms should include a condition of collaboration in assessing bids. Weight should be given to a bid's desire and demonstrated ability to collaborate with other organisations.
13. Funding channels from regional and national organisations should be reorientated to incentivise and support collaboration to ensure network development, including potentially through investment in co-located sites, such as the Birmingham Health Innovation Campus, due to open 2023.
14. Stakeholders in the region should facilitate network development to boost relationships in the region, raise awareness of collaboration opportunities and support knowledge sharing.

Methodology

To develop this report, researchers used a combination of quantitative and qualitative primary evidence, along with a secondary literature review.

For the qualitative evidence, researchers interviewed a range of leaders from across the life sciences - sector, from academics through to senior clinical leaders at the local trusts, as well as industry representatives. These interviews provided invaluable insights into the strengths of the region, as well as barriers to further growth. A full list of contributors can be found at the end of the report.

Alongside gathering the insights of system leaders, it was considered critical to understand the perspectives of the healthcare professionals working within the system as users and generators of biomedical innovation to improve patient care. Therefore, leading market research organisation Censuswide was commissioned to conduct a poll of 100 healthcare professionals in the West Midlands in October 2021, asking them for their views on the environment. This survey was an essential part of shaping the findings of the report.

Primary research was supplemented by thorough desk research, using sources of national and regional data, including from the Office for National Statistics, NHS England, the Office for Life Sciences), and policy documents such as the Government's Life Sciences Vision, R&D Roadmap, and the local Integrated Care System plan. The full list of source material drawn on can be found in the report references section.

Key findings from healthcare professional (HCP) survey

Over half of HCPs
(57%) indicated that the life sciences industry in the West Midlands is a **significant driver for economic growth** in the region.⁹

Around half (47%) of respondents agreed that the life sciences industry **supports jobs and training opportunities** in the West Midlands

Around three-quarters of those surveyed also agreed that the current regional life sciences workforce is **reflective of the region's population diversity**¹⁰

Introduction

From globally significant clinical trials in childhood cancers, to expertise in digital health innovation, maternal and youth mental health, multimorbidity, inflammatory disease and medical technologies, the West Midlands is a burgeoning centre for Life Sciences. The region also specialises in advanced therapies, regulatory science and essential research, which has recently informed the UK's COVID-19 response. It is home to world-leading universities and leading hospital trusts, along with internationally renowned clinical leaders and a diverse patient population. These assets provide the essential foundations for a thriving life sciences ecosystem in the region.

In addition, locally, the West Midlands Combined Authority is focusing on how to make the area more attractive as an investment destination, including as part of its 2022 Commonwealth Games Bid.¹¹ It has an ambitious plan to meet the future transport needs so that the area can benefit from the demands of a growing population and business. Improved transport and a vibrant city mean it is an excellent place to work, live and play. These factors are significant in attracting further investment, especially from the private sector.

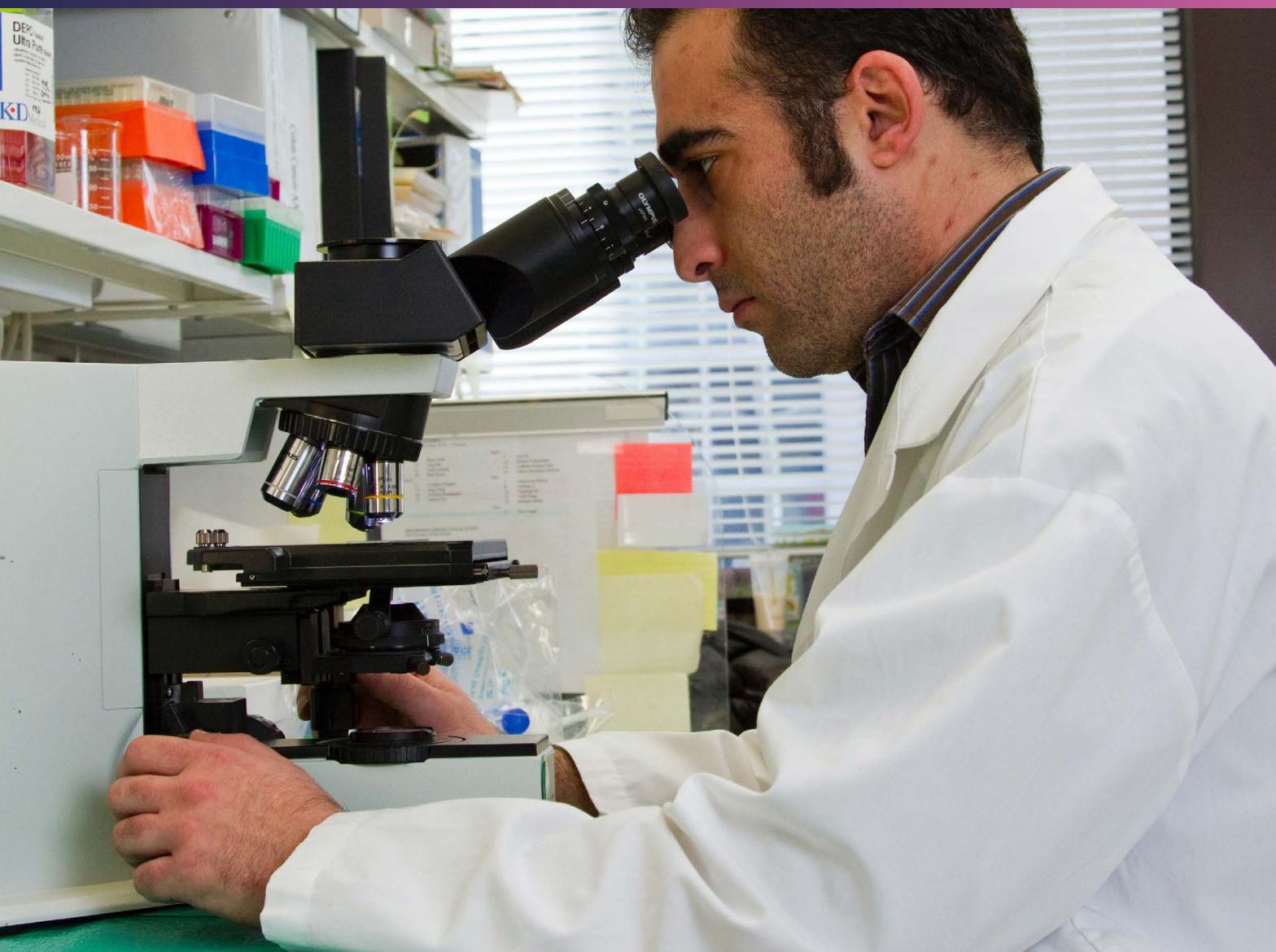
The government's recently published Life Sciences Vision sets out the ambition to make the UK a leading global hub for life sciences.¹² The UK approaches meeting this goal from a strong base, with a world-leading science and research offering and an attractive investment environment for companies. The Vision document sets out to maintain and build on this success by driving economic growth and self-sustaining clusters of excellence across the UK. The Life Sciences are an essential driver of the government's 'levelling up' agenda, in terms of both health and wealth.

The West Midlands has the potential to be one of the UK's leading clusters of excellence in the life sciences and can therefore support the government in implementing its Vision, given the right conditions to thrive. This report sets out to understand where the region is excelling, and what more can be done to enable it to compete nationally and globally.



Key statistics about West Midlands Life Sciences

- The West Midlands is home to 8.9 per cent of the UK's population¹³
- In the West Midlands Combined Authority, 30.6% of residents are from minority ethnic groups, compared with 14.0% elsewhere. The region also has a higher rate of international net immigration.¹⁴
- In the West Midlands Combined Authority, Gross Disposal Household Income per person in 2017 was £16,479 compared with £19,514 in the UK as a whole.¹⁵
- In the West Midlands Combined Authority, under 75s mortality rates from preventable cancers and from cardiovascular, liver, and respiratory diseases are all higher than the national average.¹⁶
- There are currently 10,000 jobs in the life sciences in the West Midlands, with medical technologies roles accounting for more than half of these.¹⁷
- Biopharmaceutical roles - including core functions, service, and supply chain – make up around 36% of the employment in the life sciences sector.¹⁸
- In 2019, 8% of jobs in human health were based in the West Midlands (ONS).¹⁹
- The output per job in the health sector in each region was £33,459, while the output per hour worked was £23.32.²⁰
- 56.4% of Birmingham's population live in the most deprived 20% of areas in England.²¹
- Birmingham's Health Profile Report (2019) also revealed that life expectancy in the most deprived areas in Birmingham was 8 years lower for women and 10 years lower for men than in the least deprived areas in 2013-15.²²



Chapter One

Attracting R&D investment

The Prime Minister's foreword to the Government's *Plan for Growth* sets out the importance of a "strong and active government" investing in science and technology, alongside a "dynamic enterprise economy", describing this as the UK's "formula for success".²³ Indeed, he notes that this formula has been central to the UK's success since the industrial revolution, which was of course, born in the West Midlands.

As the government seeks to 'level up' the economy and enable the UK to become a 'Science Superpower', we must ensure that the West Midlands life sciences ecosystem continues to benefit. Despite being designated one of the government's Life Sciences Opportunity Zones,²⁴ there is more that can be done to attract R&D investment. While funding for R&D and incentivising investment by private companies is important, funding is required in other areas, such as in improving infrastructure and connectivity, to ensure the region has the right environment and workforce to drive R&D activity. Collectively these changes would secure the West Midlands as a significant driver of economic growth, both regionally and nationally.

Size of the sector and the contribution to the regional economy

Overall, the West Midlands contributed £3.2 billion in R&D investment in 2018, 9 per cent of the UK total. The amount of R&D investment in West Midlands only fell behind the East of England, London and the South East.²⁵ 84 per cent of this investment activity was driven by business, with 27,000 people employed in R&D industries in the West Midlands in 2018.²⁶

In the Life Sciences industry, the latest data shows the sector employs approximately 256,100 people in 6,300 businesses, and in 2019 generated a turnover of £80.7 billion.²⁷ Just under 10,000 of these jobs are based in the West Midlands, with medical technologies roles accounting for more than half of life sciences employment in the West Midlands.²⁸ Biopharmaceutical roles – including core functions, service, and supply chain – make up around 36% of the employment in this sector. The OLS data is aligned to the regional data published by the Office for National Statistics (ONS), which finds that in 2019 8% of jobs in human health were based in the West Midlands.²⁹ The output per job in the health sector in each region was £33,459, while the output per hour worked was £23.32.³⁰

This data paints a picture of a buoyant industry in the region, providing a number of employment opportunities. This was supported by the survey of healthcare professionals undertaken for this report, which showed that over half (57%) found that the life sciences industry in the West Midlands is a significant driver for economic growth in the region.³¹ Around half (47%) of respondents agreed that the life sciences industry supports jobs and training opportunities in the West Midlands. Around three-quarters of those surveyed also agreed that the current regional life sciences workforce is reflective of the region's population diversity.³²

However, when placed into context, over a 10-year period, the West Midlands was the only English region in which did not see a net increase in employment in the life sciences industry. In fact, over this time period, employment in the sector has fallen by 1,700 roles.³³ The Office for Life Sciences highlights that the reasons for this reduction in employment is due to a mixture of causes but can broadly be attributed to both the movement of businesses to other UK regions, and the acquisition of businesses by overseas owners leading to restructuring in the med tech sector.³⁴

Moreover, the output per job (£33,459 per job) and per hour (23.32 per hour worked) for the health sector in the West Midlands was below the national average of and £24.03 per hour worked.^{35,36}

Our research shows that making the case for the benefit derived from increased funding and investment in improving local productivity and knowledge base is an important part of bolstering the life sciences ecosystem in the West Midlands. Investment in R&D from public sources as well as private companies can boost local productivity and contribute to the development of a knowledge-based economy,³⁷ while creating innovations that can have national or indeed global applications. Greater investment in R&D and associated infrastructure links directly into benefit for the local population. High-skilled employment and training in the life sciences sector can help achieve the aim of the local ICS to promote prosperity and support people and communities to be active, healthy and positive.³⁸

Examples of excellence – Attracting R&D investment

It is possible to see a number of examples where the West Midlands has successfully attracted R&D investment. This is particularly the case for private sector investment, where the West Midlands attracts business investment at a rate in line with, or above the UK average.³⁹ Often, these investments are designed to support tackling significant health challenges within the local population.

One example of this is the Precision Medicine Centre, which is based at the Birmingham Health Innovation Campus, in which a partnership with pharmaceutical company Bayer will transform what the area will deliver for a particular type of childhood soft tissue cancer.⁴⁰ Bayer's investment will enable the University of Birmingham's Cancer Research UK Clinical Trials Unit to deliver a new study arm of an international clinical trial, which aims to identify more effective treatments for a rare childhood cancer, rhabdomyosarcoma. Birmingham was uniquely placed to benefit from this investment due to the strength of the Precision Medicine Centre, and its unique trial design capabilities. The Precision Medicines Centre is designed to deliver a flexible and comprehensive service to address the needs of industry for translational medicine, bringing together relevant experts in state-of-the-art facilities.⁴¹ The Precision Medicine Centre integrates expertise, services and stakeholders, responding to the sector's need for novel and more efficient trial designs, for which Birmingham are longstanding pioneers.

Another example is the Binding Site, which is based in Birmingham and spun out of the University and provides specialist diagnostic products to clinicians and laboratory professionals across the globe.⁴² This included developing a COVID-19 antibody detection test with the University of Birmingham, in addition to their large diagnostics portfolio in areas including plasma cell, central nervous system and immune system disorders. The Binding Site is an international business, with 90% of their tests exported globally, demonstrating the international reach of a company based out of Birmingham.

Finally, the Birmingham Health Innovation Campus which is due to open in late 2023 provides another example of R&D investment in the area, with potential to attract further investment in future. The Campus will have seen £210m of investment by 2030 to develop state of the art innovation and incubation facilities that will act to catalyse the sector in the region. The Campus will provide cutting-edge innovation facilities, building on the West Midland's nationally recognised strengths in healthcare data, genomics medicine and diagnostics, medical technologies and clinical trials. It will bring together academic and clinical strengths, while attracting new commercial power to the region to drive forward research in life sciences.⁴³ The work undertaken on the Campus will seek to deliver "the full circle" of translational medicine and will tackle significant global health challenges such as cancer, dementia and antibiotic resistance. The Campus is being delivered through a collaboration between the University of Birmingham and investor-developers

Bruntwood SciTech.⁴⁴ The vision of the Campus ultimately involves attracting investment from SMEs and larger biopharmaceutical companies, due to the exciting facilities - including space to locate - and access to leading researchers, which will create further long-term inward investment to the region.

Areas for improvement – Attracting R&D investment

While these examples show some positive investment in the health ecosystem in the West Midlands, there is still more to be done. In order to achieve the government's target for total R&D investment to reach 2.4% of GDP by 2027, there needs to be a significant increase in public R&D funding, and adoption of policies and incentives to attract significantly more private-sector R&D investment.⁴⁵ A study by Oxford Economics commissioned by the Department for Business, Energy and Industrial Strategy found that each £1 of public R&D stimulates between £0.41 and £0.74 of private R&D within the same year. In the longer term, the same £1 of public R&D stimulates between £1.96 and £2.34 of private R&D, meaning benefit increases over time.⁴⁶ This means that getting the public-private investment environment right now, could lead to future benefit for the region.

Research from the Institute of Fiscal Studies has found that the West Midlands lags behind other areas in terms of its R&D funding. In 2018, the average London resident received £60 per head in government funding, whereas those in the West Midlands only received £20 per head.⁴⁷ When higher education spend is factored in, the West Midlands is the lowest ranked English region in terms of total government expenditure in R&D.⁴⁸ The West Midlands also has the third lowest amount of capital expenditure per head of any English region, with an average level of £453 per person plus £267 in transport capital expenditure, critical to supporting the wider investment landscape.⁴⁹ Nearly all of our contributors identified a significant gap in central government funding received by the West Midlands, in comparison to the 'golden triangle'. This is supported by the survey undertaken for this report. Over a third of respondents argued that improved infrastructure in the West Midlands would encourage the growth of the life sciences sector in the region. Nearly one in three called for more funding for R&D in the region.

The government's own UK Research and Development Roadmap has acknowledged that research and innovation funding is highly concentrated in some parts of the UK and states the government's intention to address these regional imbalances as part of its levelling up ambitions.⁵⁰ A more detailed demonstration of how this will be tackled will feature in the upcoming R&D Places strategy, which will explore areas with untapped potential for future growth.⁵¹ It is also encouraging to see the government considering related priorities and investments through the Roadmap, exploring how R&D funding can support growth in infrastructure investment, education and skills.⁵²

Recommendations

1. As part of the government's 'levelling up' agenda and R&D places strategy, there should be a specific focus on increasing the amount of public R&D funding per head to regions across the UK, including the West Midlands, where there is a key asset in an emerging ecosystem.
2. The Department for Business, Energy and Industrial Strategy (BEIS) should work with local leaders in the West Midlands, to review the barriers that are preventing further public-private investment and develop solutions to overcome these barriers.

Chapter Two

Health Inequalities and Diversity

The West Midlands has a diverse population – in the West Midlands Combined Authority, 30.6% of residents are from minority ethnic groups, compared with 14.0% in England.⁵³ This diversity correlates with trends of high health inequalities in the region – socioeconomic deprivation is at a higher level than the national average, with a quarter of children living in low-income households,⁵⁴ and life expectancy and healthy life expectancy is at a lower rate than the rest of the UK.⁵⁵ These inequalities have also been further exacerbated during COVID-19, with the West Midlands having a death rate of 80.5 per 100,000 people compared to the national average of 69.3.⁵⁶

The high level of diversity creates an opportunity for the West Midlands' life sciences sector to become a leader in reaching out to underserved communities to ensure they get involved in clinical research, including clinical trials. Increased participation will allow the West Midlands to be at the forefront in developing the right medicines and vaccines for the right patients and in doing so, improving patient outcomes, and addressing health inequalities. Levelling up research activity in areas of high health inequalities and community outreach is needed to achieve this.

The link between deprivation and poor health is a clear indication of the task at hand for the life sciences sector within the West Midlands. Many living in deprivation tend to exhibit unhealthy lifestyles, such as a higher chance of smoking or drinking alcohol to excess.⁵⁷ Currently, in line with the rest of the UK, the West Midlands also has a lower rate of minority ethnic groups taking part in clinical trials,⁵⁸ despite the potential for the area to be a leader in diversifying trials.

As the West Midlands has a large proportion of minority ethnic communities,⁵⁹ the region has a responsibility to cater to its diverse population's health needs. There are a number of examples of excellence, (see below), where the West Midlands is at the forefront of developing its services to support underserved communities/patients. Health and political leaders have recently released new strategies on combating health inequalities throughout the region, demonstrating that health inequality and diversity are at the forefront of the region's life sciences and political agenda. For example, the West Midlands Academic Health Science Network (WMAHSN) has committed to a series of Diversity Pledges, including the commitment to “understanding the impact of our work on all members of our communities and for our work to reflect the equality and diversity within these communities”.⁶⁰ Similarly, the Association of the British Pharmaceutical Industry (ABPI), which represents research-based pharmaceutical companies in the UK, has committed to work with NHS partners to address health inequalities as part of their recently published Equality, Diversity and Inclusion Strategy.⁶¹ The West Midlands Combined Authority recently published a report on the health of the region and committed to 50 plus actions to tackle regional health inequalities, including new projects to widen health access.⁶²

Examples of Excellence – Addressing health inequalities

Our survey of healthcare professionals for this report showed a clear majority (82%) agree that there are adequate plans in place within the West Midlands to tackle health inequities, with no-one strongly disagreeing.⁶³ This demonstrates that despite the significant challenges facing the region to tackle health inequalities, there's a degree of confidence among healthcare professionals that the right plans are in place to address them.

Another example of excellence within the region is that leaders from life sciences and political spheres are actively reviewing and undertaking research on how to improve health outcomes for its diverse population. Responding to COVID-19 and the high levels of death rate disparity between ethnic minority groups and white British people, the West Midlands Combined Authority (WMCA) orchestrated a review into the health of the region.⁶⁴ The first two key challenges identified related to improving health outcomes for ethnic minority communities and tackling the wider determinants of health through the region. To hold them to account on these commitments, the WMCA will hold Mayor's roundtable meetings every 6 months to monitor the steps that are being taken by the WMCA and wider regional partners to translate these commitments into action.

Furthermore, the National Institute for Health Research (NIHR) published its Clinical Research Networks West Midlands Entry Plan which again identified key priorities in improving health inequalities and ethnic representation through clinical trials.⁶⁵ Measures include engaging directly with West Midlands researchers and sponsors to design their research for inclusivity and monitoring progress through its Equality, Diversity and Inclusion dashboard, and increasing the level of engagement from these communities by identifying their research priorities and educating them about research.

An example of this work already underway is the NIHR Clinical Research Facility in Birmingham. It is playing a key role in supporting a campaign called 'Data Saves Lives' which is a government initiative to better collect and harness medical data.⁶⁶ The documentation on the campaign is currently being translated into several different languages to reach underserved communities to allow them to participate more easily. NIHR have also worked with local communities to ensure the documents are culturally sensitive.

The life sciences sector within the West Midlands is also leading on tackling 'health data poverty'. The term refers to digital health technologies, including artificial intelligence, which are being developed by using public datasets. These datasets tend to lack diversity, meaning products and technologies are being developed, to suit only certain groups. The health sector within the West Midlands is working together to highlight restrictions within datasets through research and by working with national regulators to ensure health data is more diverse.⁶⁷

University Hospitals Birmingham are further looking into digital transformation to reduce health inequalities by enabling people to access healthcare and information in a more accessible way, including creating community diagnostic hubs in local neighbourhoods.⁶⁸

Areas for Improvement – Addressing health inequalities

Although the West Midlands life science sector is actively working towards combating health inequalities, the interviews for this report highlighted that the region could significantly improve the inclusion of underserved communities in the clinical research conducted locally. The resulting valuable data sets would firstly assist in addressing local health inequalities, and secondly contribute to global efforts in tackling health inequalities by supporting diverse recruitment to global multi-country trials with arms in the UK.

Work to improve diversity in research participation is already underway within the West Midlands. However, further engagement with underserved groups needs to be improved and participation needs to be made easier. The ABPI's Clinical Research Report 2021 recommends ways to increase and diversify patient recruitment to clinical trials, including the need to pilot community-based projects to build relationships with underserved communities.⁶⁹

A further emphasis also needs to be placed on understanding cultural barriers on engaging with health care. One such barrier is language, as currently the region contains more residents who do not have English as their main language than other areas in England.⁷⁰ The West Midlands

life sciences sector has already demonstrated efforts to tackle language barriers, but more can be done to ensure those who do not speak English fluently are still engaged with. For the West Midlands Combined Authority's Health of the Region 2020 report, the authority received qualitative responses from civic, academic and voluntary and community sector organisations which revealed that a lack of culturally accessible public health information is a barrier to healthcare.⁷¹

Health inequality across the whole region is also being exacerbated by a lack of awareness of symptoms for common conditions and the services available to support people. Healthcare professionals interviewed for this report indicated that there was a lack of public understanding of very common symptoms of preventable diseases, such as heart disease, and the West Midlands Combined Authority's Health of the Region report suggested people were not aware of services to improve health, such as services to stop smoking. This suggests that increased engagement with communities across the West Midlands is required to inform them of the services available to them through supporting health literacy and health education.

Recommendations

1. System partners across the West Midlands should work together to pilot community-based projects to support local healthcare systems in building relationships with underserved communities in the region, considering the specific demography of the West Midlands. In particular, the NHS, academia and industry in the West Midlands should continue to tailor an approach to better engage and communicate with underserved communities, including identifying ways to tackle language, cultural and health literacy barriers.
2. The West Midlands region should further promote opportunities to take part in clinical research through a regional public health campaign developed in collaboration with UK Health Security Agency West Midlands, industry and local universities. The government should also look to invest in initiatives that promote research inclusivity in the West Midlands, not only to improve the health of the local population but also to ensure that future innovations better address health need as a result of being developed across diverse populations.
3. The NHS and public health authorities within the West Midlands should develop accessible and understandable education materials and assets on common health conditions, such as diabetes, to support local community engagement and improve awareness and health literacy amongst patients and the public.



Chapter Three

Covid-19 Response

The COVID-19 pandemic has presented the biggest global healthcare challenge of a generation, with countries worldwide feeling the effects of the virus both on the lives of their citizens and their GDP. Governments across the world are placing a renewed focus on the need to prioritise a healthy population as an economic policy, including in the UK. At a global level, this has resulted in action from the G7 to explore ways they can support greater research collaboration and improve transparency in data sharing to support pandemic resilience.⁷² Additionally, the case for the 100 Days Mission made to the G7 by the pandemic preparedness partnership calls for diagnostics, therapeutics and vaccines to be made available within 100 days of a pandemic threat.⁷³

In the West Midlands, the effect of the pandemic has been significant on the working age population. During the first and second waves of the pandemic, the West Midlands had one of the highest rates of mortality in under 65s – in the second wave, for example, this rate was 21.7 deaths per 100,000, in contrast to 6.4 per 100,000 in the South West.⁷⁴ Pressures on the health service have also been significant, with the West Midlands reaching close to their maximum number of critical care beds on several occasions during the pandemic spikes.^{75,76}

Links have been made between local areas with the highest COVID-19 mortality rates for people under 65 and areas with lower employment rates, a lower life expectancy, and more overcrowded housing, deprivation and child poverty than the England average.⁷⁷ According to the Index of Multiple Deprivation, 56.4% of Birmingham's population live in the most deprived 20% of areas in England.⁷⁸ Birmingham's Health Profile Report (2019) also revealed that life expectancy in the most deprived areas in Birmingham was 8 years lower for women and 10 years lower for men than in the least deprived areas in 2013-15.⁷⁹ Therefore, it may be unsurprising that COVID-19 mortality rates were higher in the West Midlands than in other parts of the country.

Exacerbating deprivation in the region, the economic impact of the pandemic on the West Midlands has also been substantial – in the first wave, the West Midlands was the hardest hit part of the UK, with a fall of 21% of GDP in the second quarter of 2020 in Birmingham and Wolverhampton.^{80,81} As a result, substantial challenges will need to be addressed to level up the health and wealth of the region – for example, in Birmingham, it's estimated that a 6.7 percentage point reduction in unemployment is needed for the city to level up.⁸² Encouragingly, there have been recent positive signs of recovery, for example in May 2021 the Purchasing Managers Index (PMI) reached a record high (65.5) for the region.⁸³

Examples of Excellence – Building resilience during the pandemic

The West Midlands' contribution the COVID-19 effort

Despite the significant challenges to the West Midlands posed by the pandemic, the contribution of the region to the national and international response has been significant. There have been examples of collaboration and innovation across the NHS, academia and industry to aid the pandemic response, with organisations in the West Midlands rising to the challenges posed by the pandemic and developing healthcare solutions which have contributed to the fight against the virus.

In the survey undertaken for this report, the contributions of the region to the pandemic response were recognised – 85% of respondents were aware of how life sciences businesses in the West

Midlands have supported the national pandemic response. In addition to this, almost three quarters of respondents felt that the life sciences sector in the West Midlands had supported the national effort during the pandemic,⁸⁴ demonstrating a clear awareness of the impact of the sector in the West Midlands in supporting the health service to respond to the pandemic.

One such example is the region's response to the government's Ventilator Challenge, which saw the government issuing a call to arms to manufacturers and medical device companies to step up production of existing designs and design new ventilators from scratch.⁸⁵ The MD-TEC (Medical Devices Testing and Evaluation Centre), based within Birmingham Health Partners' Institute of Translational Medicine, rose to this challenge, using their purpose-built medical devices testing and evaluation centre to test ventilators from prototype to production ready. The Centre took a crucial role in the independent testing of ventilators developed for the challenge, supporting the national effort to ensure hospitals across the nation had access to enough ventilators for their critically ill COVID patients.

Another area where the region leveraged its expertise to respond to the pandemic is in diagnostics development, where academics at the University of Birmingham worked alongside the Binding Site in Birmingham to develop an antibody detection test that was designed to be accessible to every lab service provider.⁸⁶ The Binding Site is a leader in specialist protein diagnostics, with extensive expertise in antibody specificity technology. By collaborating with the skills of immunology experts at the University of Birmingham, they developed a test that can detect antibodies in patients who have had prior exposure to the virus, including recently infected patients and those with a mild response. In addition to this, the University of Birmingham was also one of the first academic sector lab partnerships to expand COVID-19 testing capacity across the UK, demonstrating the agility of the organisation in establishing the lab and recruiting and training staff.⁸⁷

As discussed throughout this report, the West Midlands has strong expertise in clinical trials, with knowledge from a range of legacy trials to draw on, and access to a diverse pool of trial candidates. It is therefore unsurprising that the region made a key contribution to the nation's COVID-19 effort, using the expertise in immunology and virology, as well as experience running trials in other areas, such as oncology.⁸⁸ One such example is the UK Coronavirus Immunology Consortium (UK-CIC) which was led by immunologist Professor Paul Moss from the University of Birmingham and was a major new UK study to search for answers on COVID-19.⁸⁹ The study aimed to improve the understanding of immune responses to COVID-19, particularly the T cell response, and informed the targets for new therapies to treat COVID-19 and efforts to develop a vaccine. More recently, Professor Moss has also been responsible for leading the National Core Studies programme into "understanding immunity against COVID-19 by predicting individual risk, working to protect against infection, preventing reinfection, and preparing for future pandemic challenges".⁹⁰ The programme was designed to focus on the most critical questions around COVID-19 to inform policy making, and the work Professor Moss has been leading on immunity is informing the Government's decision-making on the subject.

In addition to this, expertise from the National Lung Matrix Trial, based at the University of Birmingham, was drawn on to inform the trial design for potential COVID-19 treatments, where the urgency to find effective treatments necessitated a systematic approach to quickly understand which treatments worked against the novel coronavirus.⁹¹ The Trial was set up in 2015 and is the largest precision medicine trial globally in non-small cell lung cancer. Crucially, the National Lung Matrix Trial design is structured so that multiple arms and multiple drugs are tested concurrently, allowing the data to be analysed throughout the trial, rather than at its conclusion. Using the learnings from this trial design, treatments for COVID-19 were rapidly trialled, which, alongside the regulatory flexibility from the MHRA, enabled treatments for COVID-19 to be brought to patients in record time.

Areas for improvement – Building resilience post pandemic

While there have been clear examples of the West Midlands region excelling in the national effort to fight COVID-19, it was clear from our conversations with stakeholders that learnings from the pandemic must not be forgotten as industry, academia and the NHS shift their focus back to areas other than COVID-19.

The West Midlands Entry Plan, published in August 2021, used COVID-19 as an opportunity to reflect on how the region can be the best possible place to live, work and receive health and social care, while ensuring that research and innovation can thrive.⁹² The plan set out 12 key priorities for the region, including the goal to “*Embrace the opportunities COVID has created*” by “*maintaining and increasing the awareness of research, ensuring research is in regular communications, using social media to raise awareness, including of those frontline teams who have developed their research skills to deliver COVID research. Connecting research delivery staff from different organisations.*”

In addition, several stakeholders interviewed for this report mentioned the need to reflect on the regulatory flexibility and greater data collaboration facilitated during the pandemic, which led to vaccines and treatments for COVID-19 being developed and approved in previously inconceivable timescales. While these timescales will not be feasible for all future treatments, developing contracts between collaborating partners which allow for greater transparency and sharing of data, as well as ensuring trials are implemented in a way that is aligned with the line of sight of the pharmaceutical industry, will allow for a more efficient process, which benefits all parties. Combined with greater flexibility from the MHRA in reviewing the data, this will ultimately mean patients will have access to these innovations at the earliest opportunity.

Recommendations

1. The West Midlands region should look to take forward the recommendations from the G7 Therapeutics and Vaccines Clinical Trials Charter and 100 Days Mission, working together with system partners and Government to develop an action plan for the region, this could include:
 - Enabling the rapid review of and use of evidence generated by clinical trials conducted locally, nationally, and internationally to inform healthcare decision-making.
 - Building infrastructure, including data sharing networks and lab space, to rapidly respond to existing and emerging threats, including to allow a rapid set-up, and coordinated delivery of, clinical trials.
2. The region should harness the lessons from the pandemic to develop the right infrastructure and skills base to tackle the health challenges of the future and to build on the national leadership demonstrated by the region during the pandemic.



Chapter Four

Leadership and Advocacy

Positive and proactive leadership, combined with enthusiastic advocacy is central to a thriving ecosystem. In this context of this chapter, we believe leadership encompasses ownership, direction and accountability both within existing collaborative networks, and from policy makers and decision makers at regional and national levels. It means taking responsibility for the direction and strategy of the sector as well as advocating on its behalf to decision makers.

Almost one in five healthcare professionals surveyed for this report felt that the strength of the West Midlands life sciences sector is not recognised nationally and almost half say that the region should make a positive case to Government about why it is an attractive destination for life sciences companies.

There is an acknowledgement amongst stakeholders in the region that the life sciences sector is doing great things in the West Midlands. There is also a desire to see more from decision makers and regional leaders to champion the sector on the national stage. Though there is recognition within the region for the work being pioneered locally, research suggests that there is a lack of advocacy at higher levels. The result of this is that the regional life science sector is not on the agenda of key national decision makers. The Golden Triangle is recognised globally, but other regions are also leading the way. The Northern Health Science Alliance and the NP11 (the collection of Local Enterprise Partnerships in the North of England) produced a report on the potential economic dividend of a life sciences supercluster in the North. If it is not to be left behind, the West Midlands needs local leadership and national advocacy.

But who should be making a case for the West Midlands? Those surveyed see a role for all civic leaders, with MPs, Combined Authority Leaders and Councillors all having a role to play in championing the region and a greater focus on the life sciences industry by key regional decision makers.

Raising the Profile of the Region

Other centres of excellence of life sciences in the UK have a clear identity, whether that be London, Oxford, Cambridge, the Golden Triangle as a whole, or the Northern Powerhouse. The fact that the “Golden Triangle” is understood as shorthand shows the prestige with which it is viewed. This prestige is a key selling point in attracting investment and new life sciences organisations to the area.

Research conducted for this report suggests that the West Midlands lacks this recognition, despite having many potential foundation stones to build a distinct identity, such as Women's Health, particularly obstetrics and maternity services, and Advanced Therapies. These pockets of excellence can form the basis of a distinct life sciences ecosystem identity, but it will require collaboration with civic leaders to develop further.

Individual institutions cannot rectify this situation alone, nor can it be the responsibility of partnership organisations. Raising the profile of the region in life sciences will take a collective effort.

Local, regional and national leadership has a clear role in promoting the West Midlands as a thriving locality, a place to do business and a centre of excellence. Furthermore, this

leadership is essential to creating an environment of collaboration between Higher Education, the NHS and industry, as well as attracting further investment.

The central government can provide direction and leadership as a framework for local leaders to elevate the region's standing as a place to do business. There is a clear role for the Office of Investment to champion the West Midlands as a place for investment, showing it not just as a leader in life sciences, but as a thriving City-Region.

Within this context, local leaders will then have the clarity regarding national priorities to set the local direction with support from regional experts who understand local strengths.

Regional leaders will then also have the responsibility to advocate on the West Midlands' behalf in Westminster and through other appropriate channels.

Examples of excellence – Leadership

Alongside sectoral and policy leadership from decision makers, there are examples of clinical, system and digital leadership from institutions throughout the West Midlands as highlighted below. Within these, there is an example of research undertaken in the region that is leading the conversation at a global level. These examples are not exhaustive, but demonstrate the work being done.

Clinical leadership

The West Midlands has the greatest concentration of Women's Health academics in the whole country. Senior leaders in the region have said that those wanting to work in Women's Health come to Birmingham as a result of the leadership in this research area. Work in this specific area is recognised globally. Birmingham Women's & Children's NHS Foundation Trust is seen as the clinical leader in this area throughout the country. As such, the most complex cases and those in most need of care come to Birmingham for their treatment. The region is at the cutting edge of developing therapies and research in this area, and it is having a real benefit to patients. According to testimony from contributors, this has resulted in the West Midlands being seen as an attractive place to work by leading clinicians in the field. The volume and complexity of the cases is attracting the best and the brightest to the region.

In addition to this, experts in the region are leading the way across the world in developing best practices for patient-recorded outcomes data. Professor Calvert, Professor of Outcomes Methodology, is leading conversations in the United States and Canada with respect to this, further enhancing the West Midlands' reputation as a leader. The result of this is that health systems across the world are engaging with stakeholders in the West Midlands to discuss standards and best practices.

System leadership

In addition to the clinical leadership shown, system organisations have real determination to develop leadership skills. In the Health of the Region 2020 Report,⁹³ Birmingham and Solihull Sustainability and Transformation Partnership is creating a system leadership programme for 500 leaders who will receive specific training such as how to meet the needs of vulnerable people and tackling key inequalities as one of its "Partner Commitments" to the Combined Authority. That the organisation is committed to undertaking this training is an example of system leadership. Compared with the England average, areas covered by the STP have higher prevalence of children in care and children providing unpaid care to family members. One of the key areas of focus for the STP is in interventions around childhood and adolescence through integrated commissioning for children's services.

Digital leadership

Furthermore, there is a local ambition to improve how the region can lead the way in digital capabilities. This is illustrated by the NIHR CRN West Midlands Entry Plan, which commits the organisation to improving digital capability in research through facilitating partner working through a regional digital leadership role.⁹⁴ One of the core prioritised projects for the NIHR CRN West Midlands Entry Plan is to develop and join digital communities to improve the region's capabilities.

The experience of data sharing in the region is broadly good, but there is a recognition that it could be better. There are two Health Data Research UK Hubs being led from the West Midlands: INSIGHT, which focusses on eye disease and its application to wider health, such as diabetes and dementia and PIONEER, the research hub for acute care, led by the University of Birmingham. These hubs show that great work can be undertaken in the region. Contributors to our report considered data to be the cornerstone of the discovery pipeline and recognised that the West Midlands is 'data-rich'. Therefore, better collection and utilisation of the data produced in the West Midlands can provide benefits and enhance the research undertaken in the region.

Areas for improvement - Leadership

These leadership programmes are examples of the good work being trialled locally. To fully harness the value, we need to see a more joined up approach to addressing these issues. We want to see greater coordination in leadership programmes. This should include direction and leadership from local and regional policy makers and support to pursue this direction from national decision makers.

Recommendations

1. Regional political leaders should work with the Confederation of British Industry, Association of the British Pharmaceutical Industry and Birmingham Health Partners to develop a compelling showcase of capabilities and life sciences asset undertaken in the region demonstrating the health, social and economic value generated, aimed at potential investors. As part of this, there should be a conscious effort to develop a clear identity for the West Midlands in the way that the esteem of the 'Golden Triangle' has developed.
2. Leaders at every level should see promoting the life sciences sector as a core aspect of their roles. This requires high-level advocacy through the political process and asset-specific advocacy such as clinical research through Local Clinical Research Networks. Examples of this could include regular 'State of the Region' reports to highlight the work undertaken each year. Additionally, civic leaders, Chambers of Commerce and Local Enterprise Partnerships should commit to promoting the region's strengths through their work.
3. Regional Members of Parliament should engage the Office for Investment to make the case the West Midlands to attract inward investment.
4. Individual institutions' leadership initiatives and development of core strategic targets should be undertaken within a collaborative spirit within the ecosystem to develop shared expertise and provide results more remarkable than the sum of its parts.

Chapter Five

Collaboration

Further to leadership, advocacy and direction, a central pillar of a thriving ecosystem is how organisations and institutions interact with each other in shared ventures and joint working. Collaboration is at the heart of how the Life Sciences industry works, with engagement from academic institutions, clinical research in the NHS, support from commercial organisations, and decision makers' proactive involvement.

How organisations and institutions operate in conjunction with each other directly influences productivity and overall output, both in relative and absolute terms.

As with the theme of leadership, our research shows pockets of excellence, but there could be more done to foster collaboration. 86% of surveyed healthcare professionals work with companies or representatives from the life sciences industry, however a majority of these said that it was only occasionally rather than regularly. Understandably, this number fluctuates depending on the job role of the surveyed individual. Our survey of healthcare professionals asked those who worked with industry whether they do so occasionally or regularly. Fewer hospital managers work with the sector on the whole compared with health care professional on average. However, those hospital managers that do engage do so more regularly than the average healthcare practitioner, according to our survey findings.⁹⁵ Furthermore, all physicians and nine out of ten academic doctors surveyed stated that they work with the life sciences industry.⁹⁶

Of those that work regularly with industry, almost 80% viewed the collaborations as positive. These findings show a solid foundation on which to grow partnerships in the future. However, with more than a fifth of those who engage with the sector not having a positive perception of the collaborations, there is clearly more to be done

The proposed legislative changes to bring ICSs on to a statutory footing will provide some structural guidance on better collaboration. According to research by the Kings Fund, *“successful development of place-based partnerships will largely rest on local implementation”. The research further explains that a key principle of place-based partnerships is developing a shared local vision. This “requires a process of collaborative development across a wide range of partners, including with local communities”.*⁹⁷

Only around half of healthcare professionals in the West Midlands feel the life sciences industry works collaboratively with universities and NHS partners to bring forward new innovations. Despite this, around four-fifths of healthcare professionals agree that further collaboration between industry life science organisations, the regional health system and academic institutions would help to bolster the ecosystem as a whole. The net result is that there is a gap between the potential and the current reality; strategies need to be developed to realise this potential. In addition, co-location was raised on several occasions in conversations with contributors – would having all the expertise in the same place help drive forward more collaborative working?

The above findings beg the question: what more can be done to foster collaboration? Research identified a number of issues to be addressed:

- Not enough time to consider partnership working with the sector
- Professional connections elsewhere in the UK rather than within the West Midlands
- Not aware of the opportunities to work with industry

This aligns with the findings and conclusions from the previous chapter. Better advocacy of the work being undertaken in the West Midlands can help promote collaboration across the region. This responsibility falls on everyone, including civic leaders and elected representatives as well as anchor institutions and leading figures within the local ecosystem.

Fundamentally, this challenge has a direct impact on the growth and output of the life sciences sector. A third of healthcare professionals believe that a greater understanding of how colleagues can collaborate with industry to solve key challenges can contribute to the growth of the life sciences sector in the West Midlands.

A further barrier identified through our research is around inherent competition in the sector. This manifests in a range of circumstances, but there are two broad areas. Firstly, in bidding for research grants, some experts have told us that they see competition between 'rival' bids as harmful to joint working. Though this is the nature of bid processes generally, it is a barrier to collaboration and suggests that joint bids could foster more valuable bids.

These challenges notwithstanding, there are areas of positive work being pioneered by organisations in the region. A key priority of the NIHR in the West Midlands is to improve the integration of research at primary care level, by creating an integrated model with strong links between organisations.⁹⁸ Additionally, a core aim of the Black Country and Birmingham ICS is to shift focus to long term collaboration in the region.⁹⁹ Of note, the ICS recognises that transforming culture is critical to achieving this and changing how the organisation works is one of the ICS's five system principles.

Examples of Excellence – Collaboration

Birmingham Health Innovation Campus

A keystone in the regional efforts to improve collaboration is the Birmingham Health Innovation Campus, which is due to open in 2023. The vision for this crucial asset is to catalyse collaboration across the region between the NHS, industry, academia and government. Through its offer of high-quality laboratory, office, incubation and innovation facilities it will be central to an integrated, physically connected cluster of patient-centred health excellence.

The mission for the campus is simple: to transform the health of all citizens, in Birmingham and beyond, by accelerating the development and adoption of healthcare innovations.

It is this model which lays the blueprint for wider collaboration across the West Midlands to unlock the region's potential.

Data sharing

Multiple stakeholders have highlighted data sharing capabilities as an area of strength for collaboration in the West Midlands. There are leading examples such as the work out of the Health Data Research UK Midlands Site, such as previously identified PIONEER Hub on acute care, directed by Professor Simon Ball from University Hospitals Birmingham NHS Foundation Trust. This is also a further example of the value of collaboration between anchor institutions as the Site, which is the only one in England to have an NHS Trust as a core partner, brings together the Trust, and then Universities in Birmingham, Warwick, Nottingham and Leicester. Collaboration and leadership are closely aligned in that strong leadership can foster a collaborative approach. Multiple stakeholders, when interviewed, pointed to the Hubs as examples of both positive collaboration and leadership.

Data must be shared responsibly so there is a need for transparency and accountability. Experts have discussed the incredible value of having the data collected through health organisations in the region and how that then aligns with the academic capabilities of the higher education

institutions. High-quality collaboration between these institutions results in a much richer ecosystem, which directly relates to the quality of the research undertaken and the outputs from this in terms of improved patient outcomes through real-world applications of technologies.

Clinical Research Restart and Recovery Resource

An example of effective joint working is the Clinical Research and Recovery Resource,¹⁰⁰ developed jointly by Birmingham Health Partners, the ABPI, patient involvement leads and NHS partners. The resource was designed to support sites and sponsors on restarting non-COVID-19 clinical research studies. As with the themes of this report, this resource recognises that patient involvement, innovative regulation and the use of data have a key role in rebuilding after the pandemic.

Areas for improvement - Collaboration

There is a recognition from organisations in the region that collaboration is central to addressing challenges across the West Midlands. Tackling the wider determinants of health, and the prevalent health inequalities in the region require a joined-up approach.¹⁰¹ New ways of working have emerged during the pandemic, as referenced later in this report, and policy makers should give thought to how best to cement these changes into new cultural ways of working.

The Combined Authority has the ambition to become a Marmot City Region, which will look to build 'a more collaborative system' to help address health challenges in the region. A key part of this ambition is to work with 'anchor' institutions, such as the University of Birmingham and other Higher Education providers in the region, and including the appropriate local authorities, care providers and commissioners.¹⁰²

Fundamentally, interviewees highlighted that collaboration has to be mutually beneficial for all involved. To facilitate greater collaboration, greater consideration should be given to creating an environment and culture that highlights mutual benefits and thus adds value to collaboration.

Greater collaboration means greater output, both in terms of value to the patients and the local population and in economic terms. The appetite and foundation are there, but further work is required to remove the identified barriers.

Recommendations

1. Collaboration can be fostered through funding incentives. Regional funding mechanisms should include a condition of collaboration in assessing bids. Weight should be given to a bid's desire and demonstrated ability to collaborate with other organisations.
2. Funding channels from regional and national organisations should be reorientated to incentivise and support collaboration to ensure network development, including potentially through investment in co-located sites such as the Birmingham Health Innovation Campus, due to open 2023.
3. Stakeholders in the region should facilitate network development to boost relationships in the region, raise awareness of collaboration opportunities and support knowledge sharing.

Conclusions

The West Midlands is home to clinical excellence, leading anchor institutions such as the Universities and major hospital trusts, and has key assets to attract inward investment, such as a diverse population and clinical trials expertise amongst many others.

The work undertaken in the region is recognised locally, but the West Midlands lacks a distinct life sciences ecosystem identity outside of its borders. Where individual projects have a global reach, the West Midlands as a whole does not.

In women's health, in translational medicine and in other areas such as patient-recorded outcomes, and regulatory science, the West Midlands has UK and global leadership assets and capabilities. However, there are systemic barriers to the region realising its full potential. These include funding disparity and a lack of leadership and advocacy.

This can change.

The life sciences sector in the West Midlands represents a real opportunity to support the delivery of the government's 'levelling up' agenda. The region holds so much potential, underpinned by real expertise and excellence. The foundations are there for a thriving life sciences ecosystem that builds on its successes. Health is wealth and a thriving life sciences sector in the West Midlands has the power to contribute both to the wellbeing of the local population and to the local economy as a core driver.

The ambition is there, but further support is needed to unlock it. To achieve this, we are making the following recommendations to local, regional and national leaders and decision makers:

Recommendations

Attracting R&D investment

1. As part of the government's 'levelling up' agenda and R&D places strategy, there should be a specific focus on increasing the amount of public R&D funding per head to regions across the UK, including the West Midlands, where there is a key asset in an emerging ecosystem.
2. The Department for Business, Energy and Industrial Strategy (BEIS) should work with local leaders in the West Midlands, to review the barriers that are preventing further public-private investment and develop solutions to overcome these barriers.

Health inequalities

3. System partners across the West Midlands should work together to pilot community-based projects to support local healthcare systems in building relationships with underserved communities in the region, considering the specific demography of the West Midlands. In particular, the NHS, academia and industry in the West Midlands should continue to tailor an approach to better engage and communicate with underserved communities, including identifying ways to tackle language, cultural and health literacy barriers.
4. The West Midlands region should further promote opportunities to take part in clinical research through a regional public health campaign developed in collaboration with UK Health Security Agency West Midlands, industry and local universities. The government should also look to invest in initiatives that promote research inclusivity in the West Midlands, not only to improve the health of the local population but also to ensure that future innovations better address health need as a result of being developed across diverse populations.
5. The NHS and public health authorities within the West Midlands should develop accessible and understandable education materials and assets on common health conditions, such as diabetes, to support local community engagement and improve awareness and health literacy amongst patients and the public.

COVID-19 response

6. The West Midlands region should look to take forward the recommendations from the G7 Therapeutics and Vaccines Clinical Trials Charter and 100 Days Mission, working together with system partners and Government to develop an action plan for the region, this could include:
7. Enabling the rapid review of and use of evidence generated by clinical trials conducted locally, nationally, and internationally to inform healthcare decision-making.
8. Building infrastructure, including data sharing networks and lab space, to rapidly respond to existing and emerging threats, including to allow a rapid set-up, and coordinated delivery of, clinical trials.
9. The region should harness the lessons from the pandemic to develop the right infrastructure and skills base to tackle the health challenges of the future and to build on the national leadership demonstrated by the region during the pandemic.

Leadership and advocacy

10. Regional political leaders should work with the Confederation of British Industry, Association of the British Pharmaceutical Industry and Birmingham Health Partners to develop a compelling showcase of capabilities and life sciences asset undertaken in the region demonstrating the health, social and economic value generated, aimed at potential investors. As part of this, there should be a conscious effort to develop a clear identity for the West Midlands in the way that the esteem of the 'Golden Triangle' has developed.
11. Leaders at every level should see promoting the life sciences sector as a core aspect of their roles. This requires high-level advocacy through the political process and asset-specific advocacy such as clinical research through Local Clinical Research Networks. Examples of this could include regular 'State of the Region' reports to highlight the work undertaken each year. Additionally, civic leaders, Chambers of Commerce and Local Enterprise Partnerships should commit to promoting the region's strengths through their work.
12. Regional Members of Parliament should engage the Office for Investment to make the case the West Midlands to attract inward investment.
13. Individual institutions' leadership initiatives and development of core strategic targets should be undertaken within a collaborative spirit within the ecosystem to develop shared expertise and provide results more remarkable than the sum of its parts.

Collaboration

14. Collaboration can be fostered through funding incentives. Regional funding mechanisms should include a condition of collaboration in assessing bids. Weight should be given to a bid's desire and demonstrated ability to collaborate with other organisations.
15. Funding channels from regional and national organisations should be reorientated to incentivise and support collaboration to ensure network development, including potentially through investment in co-located sites, such as the Birmingham Health Innovation Campus, due to open 2023.
16. Stakeholders in the region should facilitate network development to boost relationships in the region, raise awareness of collaboration opportunities and support knowledge sharing.

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Censuswide, and the participants of the Health Care Professionals Survey

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