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Marches Local Enterprise Partnership (LEP) Innovative Healthcare Analysis and Research



George Bramley and Anne Green
UNIVERSITY OF BIRMINGHAM

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List of acronyms

ACC	Accelerated Access Collaborative
ACI	autologous chondrocyte implantation
AHSN	Academic Health Science Network
AI	Artificial Intelligence
ARC	Applied Research Collaborations
AwLD	Adults with learning disabilities
BBB	British Business Bank
BEd	Bachelor of Education
BRACE	Birmingham, RAND and Cambridge Evaluation Centre
CCG	Clinical Commissioning Group
CE	Certificate Europe
CESR	Certificate of Eligibility for Specialist Registration
CPD	Continuous professional development
CQC	Care Quality Commission
ERDF	European Regional Development Fund
ESF	European Social Fund
FE	Further Education
GCHQ	General Communication Headquarters
HEI	Higher Education Institution
HEIF	Higher Education Innovation Funding
HTA	Health technology assessment
HWSTP	Herefordshire and Worcestershire Sustainability and Transformation Partnership
ISCF	Industrial Strategy Challenge Fund
ITP	Innovation and Technology Payment
KTN	Knowledge Transfer Network
LEP	Local Enterprise Partnership
LGA	Local Government Association
LIS	Local Industrial Strategy
MHRA	Medicines and Healthcare products Regulatory Agency
MMC	Modern methods of construction

MSCs	Mesenchymal stem cells
NIHR	National Institute for Health Research
NHS	National Health Service
NICE	National Institute for Health and Care Excellence
NMiTE	New Model in Technology and Engineering
NVQ	National Vocational Qualification
ONS	Office for National Statistics
ORLAU	Orthotic Research & Locomotor Assessment Unit
PCC	Person centred care
PGCE	Postgraduate Certificate in Education
RDAR	Research Development Analysis Revenue
R&D	Research and development
RJAH	Robert Jones Agnes Hunt Orthopaedic Hospital
SBRI	Small Business Research Initiative
SEP	Strategic Economic Plan
SOC	Standard Occupation Classification
SPiC	Shropshire Partners in Care
STP	Sustainability and transformation plan
UCS	University Centre Shrewsbury
UoB	University of Birmingham
UoW	University of Wolverhampton
WMCA	West Midlands Combined Authority
WMAHSN	West Midlands Academic Health Science Network
WMCA	West Midlands Combined Authority

Please note this report was produced before the outbreak of COVID 19. There is a supplementary addendum to this report that covers recent developments including the Marches Digital Strategy and [Midlands MedTech Sector Analysis](#) (produced for Midlands Engine) reports produced by Hatch Regeneris.

1 Introduction

The University of Birmingham was commissioned by Shropshire Council on behalf of the Marches Local Enterprise Partnership (LEP) to undertake analysis and research on the innovative health and social care sector within the Marches LEP geography (Herefordshire, Shropshire and Telford and the Wrekin). The research is intended to provide an independent complement to the LEP's new Strategic Economic Plan (SEP) issued in April 2019 and to inform the Local Industrial Strategy (LIS).

The Marches LEP recognises that there are significant economic and social opportunities that can be realised from the introduction and evolution of 'innovative health and social care' and the role of digital technology across the economy. Marches LEP has chosen to focus on supporting a more innovative health and social care sector. This involves the use of, but not exclusively, digital technologies in the planning, delivery and monitoring of health and social care.

1.1 Study Aims

The purpose of this study is to identify the Marches LEP area's relative advantages based on a series of consultations with stakeholders and a review of existing research and policy documents. More specifically it aims to:

- Provide a sound understanding of the innovative health and social sector and what is happening in the Marches geography already - including collaborations, and specific projects that are already taking place - to form an evidence base.
- Provide an analysis of the scale of opportunity and where are the gaps in knowledge, capacity, skills and infrastructure.
- Outline the scope for regional and national collaboration opportunities.
- Set out ideas on investment projects and interventions that the LEP and Local Authorities within the sub region can support.
- Recommended next steps to help inform the Local Industrial Strategy for the Marches.

The methodology for the study involved a desk review of relevant sources and consultations with stakeholders from the public and voluntary sector, academia and selected private sector businesses.

This report first sets out the broader context before identifying the area's strengths and the challenges it faces, consultees' suggestions that need addressing in the development of a local industrial strategy and indicative priorities.

1.2 West Midlands regional context

The West Midlands region has more than 500 Medtech companies, which is more than any other UK region (West Midlands Growth Company, 2015). Midlands Innovation has undertaken an extensive mapping of the life sciences sector within the region. This is much broader than the healthcare sector.

The West Midlands Combined Authority (WMCA) has identified ‘data-driven health and life sciences’ as one of four market opportunities drawing on existing sectoral strengths within the region (West Midlands 2019). WMCA is now developing an implementation plan for the LIS that will specify what activities will be undertaken and how they will be monitored. To support the development of the implementation plan the WMCA has commissioned case studies of other regions that might provide examples of international good practice.

Another relevant development is the establishment of a Life Science Park in Birmingham that will provide incubator space and also act as a catalyst for joined up provision of support for innovators and entrepreneurs developing new medical technologies. The establishment of the Birmingham Life Science Park should be considered to be complementary to the actions that Marches LEP is currently planning to undertake to support the innovative health and social care sector.

Parts of the Marches geography are non-constituent members of the WMCA, which is the principal geography of the Life Science Park. To extend the reach of the Life Science Park, the University of Birmingham (UoB), as lead partner, submitted a bid to the Research England Strength in Places Fund in September 2019 to establish a business support infrastructure to meet the needs of the Medtech sector in the region. This proposed infrastructure aims to cover the whole development pathway for medical technologies. This service will be called CONNECT Midlands and will bring together MD-TEC¹ headed by Professor Liam Glover which is a European funded centre at the University of Birmingham that currently provides advice and practical support to Medtech companies, in partnership with an entrepreneurial leadership programme based at Aston University, the University of Warwick and the Manufacturing Research Centre based in Coventry supporting prototyping and designing manufacturing processes. Should the bid be successful it will represent a significant asset that businesses and innovators in the Marches will be able to draw on.

There are a significant collaborations at the regional level to support innovation and growth within the West Midlands region. More broadly, there are bodies across the West Midlands and the East Midlands, including the Midlands Engine² (the vehicle for delivery of the Midlands Engine Economic Observatory³) and Midlands Innovation⁴ that stakeholders in the Marches can draw upon.

¹ MD-TEC is Medical Devices Testing and Evaluation Centre is funded by European Regional Development Fund and is based in the Institute of Translational Medicine, University of Birmingham. It works with businesses based in Greater Birmingham and Solihull LEP geography. Further information available at: <https://www.md-tec.com>

² The Midlands Engine brings together public sector partners and businesses to complement the activity of local and combined authorities, LEPs, universities, businesses and others see: <https://www.midlandsengine.org/>

³ <https://www.midlandsengine.org/our-programmes/economic-observatory/>

⁴ <http://midlandsinnovation.org.uk/about-us/about-us.aspx>

1.3 The Marches context

The Marches has an ageing population, many of whom live in rural areas. In a recent report published by Future Care Capital (2018) Herefordshire and Shropshire are classified as rural heartlands, and Telford and Wrekin as an old industrial hub (Box 1). The report provides an overview of challenges faced by local authorities by cluster. Being predominantly rural, Shropshire and Herefordshire Councils are presented with a particular challenge concerning the future workforce in health and social care given that people of working age comprise a smaller than England average share of the population and there is a tendency for a net out-migration of young people from rural areas to take up further and higher education opportunities in larger urban areas. However, it provides an opportunity for testing and implementation of new healthcare and ageing-related technologies. It is also important to note that in parts of Telford and Wrekin there is a fast growing, younger population.

Box 1: Future Care Capital /Cambridge Econometrics Facilitating Care Insights to Developing Caring Economies Clusters

Future Care Capital /Cambridge Econometrics Facilitating Care Insights to Developing Caring Economies Clusters

Cambridge Econometrics has identified six clusters based on demographics of local authorities:

- Inner London Plus
- Developed Community Belts
- Young Urban Centres
- Rural Heartlands
- Remote
- Old Industrial Hubs

Herefordshire and Shropshire are categorised as ‘Rural Heartland’ whereas Telford and Wrekin is an ‘Old Industrial Hub’. Features of these clusters are:

Rural Hub (86 local authorities)	Old Industrial Hub (51 local authorities)
Rural High share of older people and tendency for people to move into these areas Low international migration of people of working age Medium economic growth prospects High rates of home ownership and low rates of social renting Limited development of digital infrastructure	Low house prices Low rates of internal migration of older people (both in and out) and modest rates of international migration of people of working age High rates of social renting and low rates of private renting Weak economic growth prospects Relatively advanced in terms of digital infrastructure High rates of income, employment and health deprivation

Cambridge Econometrics provides an assessment of risks for each cluster. The table below pulls together their assessment of risks at cluster level for the two clusters that local authority areas within the Marches belong. The assessments of risk are relative to other clusters rather than absolute risk. For example, small care home in the clusters that local authority areas in the Marches map belong are considered to be at lower relative risk of financial failure than other clusters in Cambridge Econometrics’ model even though the risk is generally high for the sector.

	Rural Heartlands (Shropshire, Herefordshire)	Old Industrial Hub (Telford and Wrekin)
Growth in old-age population	Medium	Medium
Growth in the number of older people living alone	Medium	Medium
Funding		
Increasing dependency ratio	High	Medium
Low economic growth affecting local taxation base to pay for services	Medium	High
Income deprivation	Low	High
Limited personal wealth	Medium	High

Delivery		
High unpaid care which is a signal of high level of people in need of care which could lead to more costly emergency interventions as well as pressure on carers.	Medium	High
Competing demand for labour from high economic growth in other sectors	Medium	Low
Limited digital infrastructure that precludes digital health care solution	High	Low
Low population density reducing scope for economies of scale in provision, impacting access to services and increases risks of social isolation amongst older people endeavouring to age healthily and live independently.	High	Low
Limited space to expand care facilities in built up areas	Low	High
Small care homes that may be at greater financial risk from market instability	Low	Low
High rates of private rental among older people who may face greater difficulty in accessing suitable housing or adaptations to their home.	Medium	Low

It should be noted there is variation in the level of risk within each cluster.

Source: Future Care Capital (2018). Facilitating Care Insights to Developing Caring Economies

The Marches LEP area has a relatively dispersed population with pockets of high density in urban areas. In terms of settlement structure the area includes hamlets and isolated dwellings, villages, and rural town and fringe areas (some of which are in sparse settings) as well as urban cities and towns. Compared to the average population density in the UK of 271 people per square kilometre, the Marches LEP area has a population density of 121 people. In Herefordshire density is as low as 88 people per square kilometre.

The Marches area offers the opportunity to pioneer new health and social care approaches to a dispersed population. By contrast, Telford and Wrekin has 606 people per square kilometre, but could nevertheless benefit from developments in innovative healthcare. At finer levels of spatial disaggregation there are of course variations in population composition and economic circumstances within Shropshire and Herefordshire and so there are specific local areas that face particularly high risks for high levels of unpaid care that could result in more emergency care demand and where lower economic growth reducing the local tax base to pay for care.

An ageing workforce is a major issue for employers in the Marches and puts pressure on the economy as the health and social care need accelerate. In the Marches LEP 60 per cent of the population in 2018 was aged 16-64 years,⁵ which is a similar proportion to that found in Worcestershire LEP, York, North Yorkshire and East Riding LEP, Greater Lincolnshire LEP and Cumbria LEP, but slightly higher than in New Anglia LEP, Heart of the South West LEP, Dorset LEP and Cornwall & Isles of Scilly LEP.⁶ There is an imperative to encourage healthy ageing and productive work for older people. It is also important for the Marches to retain graduates and young people, as well as to attract younger people to the area. On the other hand, an ageing population offers the LEP the opportunity to become a test bed for healthy ageing and new assisted living technologies linked to the Industrial Strategy Grand Challenge of Ageing Society.

Industry sectors with the highest number of jobs in the Marches LEP area are health and social care, the visitor economy, and construction, as well as retail and public services (Marches LEP, 2018). The adoption of new technologies and digitalisation will disrupt and cause turbulence across all industrial sectors. However, in the health and social sectors technological developments offer an opportunity for to respond to the pressures on the system set out above that will require more innovative approaches to how care will be delivered in the future. Hatch Regeneris have set out in a separate

⁵ These statistics are from the Office for National Statistics (ONS) Mid-Year Estimates (accessed via Nomis).

⁶ At local authority area level there are some areas where the proportion of the population aged 16-64 years is lower than at LEP area level.

report the key challenges and opportunities to be covered in the Marches Digital Strategy (Hatch Regeneris, 2019).

Table 1: Comparison of three Local Authorities within the Marches LEP by population, employment, skills and business stock

	Herefordshire	Shropshire	Telford and Wrekin	West Midlands	Great Britain
Population ^(a)	192,100	320,300	177,800	5,900,000	64,553,900
Age 16-64 ^(a)	113,00	189,600	111,000		
	59.0%	59.2%	62.4%	61.9%	62.7%
Retired ^(b)	3,800	4,700	3,200		
	20.0%	17.6%	13.1%	11.4%	12.9%
Economically active ^(b)	99,200	163,000	88,800		
	82.6%	85.3%	78.1%	77.3%	78.9%
Job density ^(c)	0.94	0.84	0.87	0.82	0.86
Standard Occupation Classification (SOC) 2010 Groups 1-3 (Managerial, Professional and Technical) ^(b)	39,500	71,600	33,000		
	40.8%	45.4%	38.4%	42.7%	47.1%
SOC 6: Caring, Leisure and other service occupation ^(b)	9,000	15,900	9,100		
	9.3%	10.0%	10.5%	8.6%	9.0%
Information and communication ^(a)	1,250	2,500	3,500		
	1.7%	2.1%	4.1%	2.8%	4.2%
Professional, scientific and technical activities ^(a)	4,500	10,000	4,500		
	6.1%	8.3%	5.3%	7.0%	8.7%
Human health and social work activities ^(a)	12,000	20,000	8,000		
	16.2%	16.7%	9.4%	13.6%	13.2%
NVQ3 or above ^(d)	59,600	106,600	56,500		
	54.4%	58.4%	51.9%	51.9%	57.8%
Businesses ^(e)	10,235	15,850	5,065	213,915	

Source: NOMIS Local Authority Profiles. Notes: (a) 2018 figures; (b) July 2018-Jun 2019; (c) 2017; (d) Jan 2018-Dec 2018 (e) 2019

Table 1 provides a comparison of the three local authority areas that make up the Marches based on Local Authority Profiles using selected data from Nomis. With the exception of Telford and Wrekin, the percentage of the population that is of working age is lower than the regional and national average and across all three authorities there is a larger proportion of adults who are retired and economically active (in part due to smaller student population). By standard occupational group, there is a higher proportion of the workforce in caring, leisure and other service occupations. This is significant in that there is a view there are many transferable skills in this group that could, with the right interventions, help address issues around recruitment and retention in health and care sector in rural areas (Green et al, 2018). Telford and Wrekin is similar to the regional figure for adults with NVQ3 level qualifications and above, whereas the figures for Shropshire and Herefordshire are higher than the regional average.

To take advantage of technological developments the Marches LEP recognises the needs to clearly define a strategic vision that identifies opportunities and risks within the region. The LEP has identified innovative health care as one of the largest enabling sectors in the Marches. It is about providing opportunities in digital innovation, data driven processes and the application of new technologies that will both provide commercial opportunities for business and support innovation in services provided by public, private and third sectors. Innovation may result from cross-fertilisation of approaches and technologies between sectors that have not previously interacted and that might have mutually supporting supply chains and skill sets.

The health and social care sector in the Marches is made up largely of independent providers and there is a relative absence of large chains backed by venture capitalists. This could be considered a potential benefit in that independent providers can make decisions locally whereas for those in chains decisions are more likely to be made outside the local area according to a range of criteria that may be at odds with local circumstances, needs and opportunities. If these independent providers are able to look to the medium- and longer-term there is potential for testing a range of

innovations in the Marches. However, to maximise potential benefits there is a need for learning to be captured and shared. On the other hand, there is a threat that with multiple small independent providers there are more key actors involved in making decisions. Sourcing and making significant monetary investment might be more difficult in this context than for larger players. Providers in Shropshire are generally rated higher in terms of quality compared the West Midlands average. Because of the costs involved in developing and growing provision, the care home sector was described as being 'not over bedded'. Overall, the sector includes well established businesses that have the money to invest in technologies and new ways of delivering care and their owners have the incentives to do so in terms of ensuring future sustainability of their business.

Invest in Shropshire and Shropshire Council have developed marketing material to attract businesses in the sector that sets out the opportunities and support already available to existing businesses. Enterprise Telford is foregrounding the digital and tech sector in Telford as a cornerstone of its local economy in addition to specialisms in metal and plastics. It highlights the fact that local universities specialise in digital education, including the University of Wolverhampton (UoW) Innovation Campus in Telford. Invest Herefordshire ⁷ (Herefordshire Business Board) lists a number of relevant initiatives including:

- The recent investment by Herefordshire Council, the University of Wolverhampton and the Marches LEP into Cyber Quarter – The Midlands Centre for Cyber Security. This £9million state of the art facility will specialise in cyber-security and resilience supporting research and development, offering employment space, secure testing, continuous professional development and short courses. This investment will consolidate the Marches as part of Cyber Valley and highlight the importance of cyber security to all business sectors, including the health and social care sector.
- Fastershire is a non-profit making collaboration between Herefordshire Council, Gloucestershire County Council and BT that will boost the local economy by approximately £419M over 10 years. The two counties' industrial zones and business parks are a key priority as fibre broadband will help local businesses to become more competitive. The project is being funded by Building Digital UK⁸, Herefordshire Council, Gloucestershire County Council and BT.
- Herefordshire Brand is a joint venture between Visit Herefordshire, the Herefordshire Business Board and the local authority.
- Short courses delivered by Hereford College of Arts, including Level 3 Extended Diploma Digital Futures & Interactive Media. This is a new course is designed for students who have a keen interest in interactive media, computing, digital and future immersive technologies developed in collaboration with employers and digital industry experts.

⁷ Further information: <https://www.herefordshirebusinessboard.co.uk/connect/>

⁸ Building Digital UK (BDUK), part of the Department for Digital, Culture, Media and Sport, is delivering superfast broadband and local full fibre networks to the nation.

2 The main features of the Marches local economy conducive to supporting an innovative health and social care sector

2.1 The Marches Strengths

Consultations with stakeholders (including individuals with responsibilities for economic development, care commissioning, the development of digital skills and R&D of relevance to the innovative healthcare sector) in Shropshire, Telford and Wrekin and Herefordshire identified the following **strengths**:

People

- (A) **The area benefits from a flexible and adaptive workforce who, with the right support, could take on new roles within the sector.** Consultees expressed concerns about the availability of skilled workers who can work in the care sector who have digital skills. Councils and partners across the LEP area are active in promoting digital skills. The use of technology might make some care roles more attractive for some potential workers in the context of changing from providing basic care to one with greater involvement in identification of clients' needs and care planning.

- (B) **Some domiciliary care providers are now adopting technology that both support care workers and allow capture of data about the conditions within which their clients are living.** This information, when shared with other health and social care professionals, can be used to flag individuals at higher risk of further health complications and being admitted to hospital. Information about poor insulation or lack of heating, for example, can be used to support decisions about providing a grant to install a new boiler or double glazing. The expenditure on these installations can be significantly less than an emergency admission and a long-term hospital stay. The availability of such data allows care commissioners and providers to optimise service provision and enables investment in preventive measures to save on interventions that are more expensive.

- (C) **Actors in the care sector are working together already on tackling skills shortages.** This includes the development of shared apprenticeships in which individuals gain a broader range of skills and experiences by working in a range of different placements with different employers, in partnership with local FE Colleges. Similarly, the care sector is working with Skills for Care to identify future skills needs. There are several trends emerging involving use of (digital) technologies including: (a) a shift towards 'single handed care' - where previously two care workers would be needed to turn and lift a patient, now moving and handling equipment and technologies are/ could be used so that one carer can perform a task previously undertaken by two people; and (b) the increasing need to share information digitally between different care and health providers to provide more integrated and seamless care for individuals and their families, which is changing the role of the domiciliary care worker who might have previously worked independently rather than as part of wider more multidisciplinary team.

-
- (D) While there are relatively modest but growing opportunities to study for higher education qualifications, those who do leave to study are more likely to return for employment compared with the Midlands Engine area in general. Currently 4.1% of recent graduates from the Marches studied locally and stay for employment which is much lower than the Midlands Engine average (20%), but there is a higher rate of graduates who return for employment having left for study (39.6% compared to 30.6% in the Midlands Engine geography). Only 1.2% of those who study locally in the Marches leave for employment compared with 6.0% in the Midlands Engine region (Higher Education Statistics Agency, Destinations of Leavers from Higher Education (2018))
- (E) The care sector has access to a range of organisations that can provide training and skills development. Shropshire Partners in Care (SPiC) is listed as providing access to a range of skills programmes at different levels by Skills for Care. Royal Shrewsbury Hospital has a recognised Centre of Excellence in nursing that delivers degrees awarded by Staffordshire University as well as placements for ungraduated nurses. Additional provision is being developed by University Centre Shrewsbury (UCS) in response to local needs. New undergraduate nursing courses have recently been launched by the University of Wolverhampton⁹ at its Telford Innovation Campus. Across the Marches FE Colleges deliver health and social care courses, support apprenticeships and access to vocational qualifications and there are private training organisations that provide on the premises training and short courses. In Herefordshire the Wye Valley NHS Trust has been identified by the Centre for Rural Health and Care as an example of good practice in the development of new routes for progression for doctors to become consultants and general practitioners. The Robert Jones Agnes Hunt Orthopaedic Hospital (RJAH) has developed a programme of training through the Orthopaedic Institute that covers the application of technologies and new procedures¹⁰.
- (F) Local care providers have worked with a games company to develop more interactive training that can provided remotely for new entrants into the care sector in basic knowledge and skills. This highlights the value of working across sectors to deliver skills training that the care sector requires in innovative ways,
- (G) Local higher education institutions and NHS Trusts are developing new innovative entry and progression pathways for careers in the sector. University Centre Shrewsbury (UCS) has already successfully introduced a Bachelors in Education to meet the demand of local young people who both wished to enter teaching and stay in the area; (previously young people only had access to post graduate certificate in Education accredited by Edgehill University). Now UCS is introducing a new access degree in nursing. Box 2 sets out some recent developments to increase skills levels in the sector - including the examples from University Centre Shrewsbury and Wye Valley NHS Trust.

⁹ <https://www.shropshirestar.com/news/education/2019/06/05/180000-nurses-training-boost-at-telford-university-campus/>

¹⁰ See <https://www.orthopaedic-institute.org/courses>

(H)

Box 2: Innovation in skills development

Development in provision of training, skills and expertise in the Marches to support the health and care sector

University Centre Shrewsbury (UCS) is undertaking actions that support the **sustainability and transformation plan (STP)** including the development of local solutions and providers, the use of technology, and responding to the challenges around staffing in the health and care sectors. This includes a new foundation level **Access to Nursing degree** in 2020 in response to local demand and a full three-year programme in 2021. This will include an innovative curriculum focusing on providing care in rural communities and ensuring that graduates are technologically literate so that they are equipped for digitally enabled care in the community. The introduction of the new nursing qualification follows on from the successful introduction of BEd degree in response to local demand for teacher training, which now has three cohorts with 20 to 25 students each. Previously, the only provision locally was a Postgraduate Certificate in Education (PGCE) accredited by Edge Hill University. UCS is exploring introducing a pre-med programme for local young people. It will have links to medical schools at Keele and Birmingham. UCS has established itself as provider of support for digital health companies with a focus on the third age. It is working with Shropshire Partners in Care (SPiC) to help digitalise its members so that they are better able to adapt to changing environment and able to innovate. This includes the full spectrum of digitalisation from introduction of accountancy software, web site design, and compliance with GDPR, to assistive technologies.

The **Centre for Research into Environmental Science and Technology (CREST@UCS)** provides research and innovation support to small businesses in Shropshire, Telford and Wrekin. The setup of the Centre, partly through European funding, has enabled laboratory facilities and equipment to be upgraded. It now includes the latest drone technology for gathering geographic and geospatial data. Through industry links, close working with local authorities and health care and social care providers, and collaboration across centres, UCS has established itself as nexus for cross-fertilisation of knowledge and technology across sectors within the region.

The **Centre for Active Living** in partnership with Keele University provides a focus in the region on improving levels of physical activity, including exercise-based interventions such as Ageing Better that encourage older people to stay active for longer to improve health and wellbeing outcomes. It is working on assistive technologies to support re-enablement (rehabilitation) of patients returning home from hospital. Postgraduate training is available in the form of a MSc Exercise Medicine qualification (including PG Cert and PG Dip Options) and MRes Medical Science (Exercise Medicine). The Centre's Director has strong international links supporting the Centre's research programme.

UCS is co-producing with the **Institute of Coding** and local employers a new Master's programme that will provide local employers with individuals with the skills needed for health informatics and delivery of digital health interventions.

UCS is signing up for Civic University status underling its commitment to inclusive growth with the region.

Wye Valley NHS Trust Alternative Route to Specialist Accreditation

Wye Valley NHS Trust has adapted an alternative route originally developed for overseas doctors for locally employed doctors to become consultants. It is hoped that this will increase retention of consultants. The pilot is funded by NHS Improvement and started in February 2019 and runs to January 2020. The normal route is through the Deanery that rotates individuals around the wider West Midlands region every six months to gain experience. The Trust has 165 locally employed junior doctors. Poor job satisfaction and limited potential for progression was affecting retention of staff. Interested staff are supported in gaining relevant experience to qualify for a Certificate of Eligibility for Specialist Registration (CESR): a similar intervention in Royal Derby Emergency Department improved staff retention from 63% to 92% and improved morale and saving of £330K in agency costs for each person who CESR. The Trust is now looking into the feasibility of similar scheme for 'growing your own' GPs through the Certificate of Eligibility for General Practitioners Register.

NMiTE - New Model in Technology and Engineering¹¹ – is an innovative approach to the provision of training in engineering that is supported by Hereford local authority, national government, a local college Olin College that is working with industry. The ambition is that NMiTE will be recognised as a university and

¹¹ For further information: <https://nmite.ac.uk>

will be known as an innovator in education provision that is responsive to needs of the region including meeting the significant need for engineers and an incentive for attracting and retaining companies with strong engineering component to their business including innovators in health and social care. NMiTE like other new regional higher education institutions will offer a condensed degree programme that is more affordable with more relevant experience valued by local employer. NMiTE has potential to address recruitment of engineers into the NHS to provide services such as computer aided tomography (CT) scans as long as the right linkages are brokered.

Place

- (I) **The ageing population can be seen as both an asset and an opportunity to attract innovators and entrepreneurs** to develop and commercialise their innovations. This represents a good market opportunity – a growing and guaranteed market (especially in context of this not being the case for many other markets). There is an unmet demand for rural-based geographies to participate in clinical studies of new technologies and service innovation pilots to produce more robust and generalisable findings, which the Marches is well placed to help meet. For example, The Birmingham, RAND and Cambridge Evaluation (BRACE) Centre is funded by the National Institute for Health Research (NIHR) to conduct rapid evaluations of promising new services and innovations in healthcare is seeking examples of initiatives taking place in rural areas¹².
- (J) **The social care sector comprises a range of businesses of different sizes, including micro businesses which could be approached to take part in testing innovations.** Amongst these businesses there are likely to be a proportion of owner managers who will be keen to develop and grow their business or have the need for new technologies to assist them in running their business. Because competition between providers is not as intense as in some other sectors (due to the size of, and growth in, the market for care), the scope for sector to work collaboratively is good.
- (K) **The deployment of public buildings as accelerator spaces for innovation.** This was seen by stakeholders consulted as providing a point of access and means of raising visibility. This is especially the case given the prominence, and often central location, of public buildings.
- (L) **Parts of the Marches benefit from relatively affordable housing (in a wider national context) making it attractive location for businesses and their employees** and enjoy good local amenities and access to major conurbations. Telford has the most affordable housing (which is partly a function of higher average wages than in some other parts of the Marches). Northern parts of Shropshire are also more affordable than the national average. Much of south Shropshire and rural areas of Herefordshire have levels of housing affordability that are close to the national average. Housing affordability is a particular challenge for low income residents in rural areas in Herefordshire and Shropshire¹³ (which are characterised by relatively low wages).

¹² For further information see: <https://www.birmingham.ac.uk/research/brace/index.aspx>

¹³ Especially in South Shropshire.

Ideas

(M) [The ability and commitment of local authorities to work across policy domains to pilot joined up solutions to enable sustainable care.](#) The One Housing Scheme that provides technology-rich housing that can respond to changing needs of their occupants over their lifetime is a good example here (Box 3).

Box 3: The One Housing Scheme

The **One Housing Scheme** is a planned multi-phased flagship construction project led by Shropshire Council in partnership with University Centre Shrewsbury and private sector businesses. It will use modern methods of construction (MMC) to create 50 hi-tech, hi-spec properties that incorporate a range of technologies including solar tiles, micro grids, and assistive technologies into individual homes and the wider community. The project will allow planners to test of whether it possible to build a new kind of living arrangement quickly and cost effectively that combines MMC together with assistive technology to a societal demand for new homes, and at the same time help older people to live independently in their own homes for longer than would otherwise be the case. The architects Greenspace have been awarded a commendation by New Civil Engineer under the category of cities visionary in their 2019 Tech Fest Award for their design. The case for public funding to support the development includes the generation of evidence over the medium- and longer-term, on the potential gains of such developments and cost savings in terms of financial resources otherwise spent on health and care provision in acute settings, while also improving individual well-being.

Shropshire Council has set up a housing company Cornovii Developments which has raised initial finance to take the scheme forward and planning application has been made. The intention is start work in Autumn 2020.

(N) [Individual local Authorities are building intelligence on the care sector](#) by drawing together different data sets on individuals with social care needs and on the capability and capacity of the social care sector that they hold and combining these with other data sources. This combined data provided by partners and intelligence from networks and other organisations that they are working with allow units like RDAR using the Bridge platform (discussed below) to generate insights that can inform planning and service innovation.

(O) [The Bridge provides an example of how LEP partners are pulling together real world data to support decision making about care with Shropshire Council.](#) It could be developed further to become a platform to support the evaluation of new technologies, subject to data governance and ethics approval, on a case-by-case basis. There is considerable interest in the health technology assessment (HTA) community that act as gatekeepers by assessing the evidence on safety and efficacy of technologies and care procedures to the adoption of new health technologies about how real world data might be used evaluate new digital technologies which have shorter life cycle than medicines and non-digital medical technologies (HTAi 2019). It may be worth exploring with members of the HTA community how the Bridge (Box 4) could provide analysis and evaluation to support HTAs of technologies being tested in the Marches.

To take advantage of this opportunity the LEP will need to build strong linkages with relevant research, regulatory and health technology assessment agencies and draw on expertise within the wider Midlands region, including the Academic Health Science Network (AHSN)

and the National Institute for Health Research Applied Research Collaborations (ARC) that can provide access to the wider research infrastructure within the region and nationally. The ARC for the West Midlands has a number of research priorities that overlap with the Marches LEP's ambitions for the health and social care sector which may provide the basis of collaborative projects. It would also been worth exploring with the AHSN the availability and criteria for grants where management has been devolved to the regional level and where may have some has the discretion of which businesses and innovators receive awards.

Box 4: The Bridge Project

The Bridge Project aims to shape the social care and health market, predict and prevent demand and better utilise resources in Shropshire to address market fragility in the care sector. It has brought together Shropshire Council, a local games development company, NHS Digital, the West Midlands Association of Directors of Adult Social Services, University Centre Shrewsbury, the Local Government Association and partners across the local area – so illustrating cross-fertilisation across sectors which might not traditionally have worked together. Through the development of data visualisation tools, including a 360 degree immersion igloo produced locally, Shropshire Council has been supporting the market in the provision of domiciliary care through smarter commissioning and identifying specific pockets of demand not being currently met by existing capacity. This has been achieved by pulling together large datasets from health and social care and applying predictive analytics, artificial intelligence and deep learning, in order to better understand the current demand in social care, allowing organisations to better predict future demand and take preventative action as necessary. This approach will help inform the way the Council and its partners commission services in the future, leading to a more efficient use of resources and better outcomes for its communities.

Infrastructure

(P) [The Robert Jones and Agnes Hunt Orthopaedic Hospital \(RJAH\), an internationally regarded centre of expertise, has a very active Research and Development Unit](#) and works in partnership with Keele University on clinical trials. RJAH has strong international networks and collaborations (Box 5).

Box 5 Robert Jones and Agnes Hunt Orthopaedic Hospital R&D

Robert Jones and Agnes Hunt Orthopaedic Hospital R&D unit

RJAH has a very successful and specialised NHS R&D unit that is involved in a number of collaborative clinical trials and studies to test new health technologies. The unit undertakes two main types of research: (a) clinical research studies involving hospital patients to provide clinical evidence on the effectiveness of new therapies under development, and (b) experimental pre-clinical early stage research aimed at the development of new drugs/procedures in the longer-term (this is often laboratory-based and may, or may not, require hospital patient involvement). RJAH has strong links with Keele University Medical School. The Orthopaedic Institute Ltd founded in 1971, is a Registered National Charity and through voluntary contributions, helps to fund research in the specialist research centres and departments within the Robert Jones and Agnes Hunt Orthopaedic Hospital NHS Foundation Trust in Oswestry, Shropshire. It also supports the funding of educational facilities and activities such as organising training courses for Orthopaedic Trainees and Allied Health Professionals.

RJAH undertakes research from orthotics under development (prescription insoles, braces, splints, callipers, footwear, spinal jackets and helmets that help people recover from or avoid injury, or live with lifelong conditions) to stem cell therapies. The development of orthotics is often incremental (use of new materials, use of digitalisation in customisation) with the ideas often developed in house. There is a good return on investment in improving orthotic services for every for £1 spent on improving orthotics services, the NHS

could potentially save as much as £4. RJAH have, for example, different approaches to producing ASO 'ankle stabilization orthosis' braces for children comparing plaster castes against laser scanning and found that the precision of the latter accommodated growth.

Examples of collaborative experimental and preclinical studies listed on RJAH website at the time of writing include:

- Rheumatology Research Laboratory, Dr Oksana Kehoe is leading on research focused on understanding the mechanisms of rheumatoid arthritis progression and possible treatments including mesenchymal stem cells (MSCs).
- Wolfson Centre for Inherited Neuromuscular Disease, Professor Glenn Morris & Professor Caroline Sewry are leading on research which is centred on finding treatments for muscular dystrophies. The team produce novel monoclonal antibodies as reagents for diagnosis and monitoring of clinical trials of new drugs for these inherited disorders. More recently, they have used proteomic methods (mass spectrometry) to identify new targets for drug development. They also run the international Monoclonal Antibody Resource, funded by the Muscular Dystrophy Association (USA).
- Cartilage repair research group, Professor James Richardson & Professor Sally Roberts are leading on laboratory research to understand the biology and behaviour of mesenchymal stromal/stem cells (MSCs) from different sources e.g. bone marrow and umbilical cord, and how the cells may be important for treating patients with different root causes of osteoarthritis or with different stages of the disease.
- Biomechanics and Orthopaedic Interventions, Dr Jan Herman Kuiper is leading on research into the most effective suture material for surgical repair of Achilles tendon rupture, and mathematical modelling of healing cartilage defects.
- Spinal Studies, Professor Sally Roberts is leading on laboratory research into structures found on vertebrate cells called primary cilia, and their role in arthritis and degeneration of the intervertebral disc and the causes of back pain. Also, to identify biomarkers from bloods of spinal cord injury (SCI) patients that will predict their outcome neurology. Any such biomarker could then be used to enhance current treatments and rehabilitation regimes to ensure that these patients achieve their best potential clinical outcome.
- The Orthotic Research & Locomotor Assessment Unit (ORLAU), Mr Andrew Roberts, Dr Caroline Stewart are involved in a range of projects including researching and developing engineering solutions for mobility impairment, and musculoskeletal modelling work.

RJAH research has national significance in terms of the selection of preferred technologies for adoption by the NHS, for example, providing updating of NICE clinical guidelines on autologous chondrocyte implantation for repairing symptomatic articular cartilage defects of the knee. The ASCOT (Autologous Stem Cells, Chondrocytes, Or the Two) trial is a single-centre study sponsored by the RJAH that aims to determine if modification of standard autologous chondrocyte implantation (ACI) by the use of other cell types will improve its outcome. The trial will compare autologous chondrocytes with either autologous bone marrow-derived stromal cells (BMSCs) or a combination of the two, when implanted beneath either a periosteal or a collagen membrane for the treatment of articular cartilage defects in the knee.

Investment

(Q) **The Marches LEP benefits from having local authorities who are care commissioners and who are willing to support the development of innovative care services.** Consultations indicated that local government in the area sees this as priority and there is strong buy in, even though local authorities like health care providers can still be very conservative in their outlook. The creation of RDAR (Research Development Analysis Revenue) in Shropshire Council represents a significant development in that it provides an innovation lab that has the flexibility to enter into collaborations that support the testing and adoption of new technologies and service solutions (Box 6). These provide local companies and entrepreneurs with a potential advantage in the commercialisation of their innovations.

RDAR: Research Development Analysis Revenue is based in Shropshire Council. This unit acts as an innovation lab that:

- provides horizon scanning in identifying issues and potential technological solutions
- supports the diffusion and adoption of technology to solve problems identified by the Council and its partners.

It has funding links with Innovate UK and LGA Digital and actively seeks funding (revenue) and benefit in kind from partners to support innovation in the services the Council commissions or directly provides. By working with partner organisations the unit helps mitigate some of the risk associated with innovation. It supports the development of business cases and feasibility studies to support new initiatives.

RDAR brings together four centres of excellence that have links with industry which are:

- Assistive Technology – enhancing people’s independence (in the context of an ageing population, growing care demand, and budgetary issues);
- Digi Health – promoting healthy lifestyles;
- Green Tech – improve our sustainability and security
- Modern Methods of Construction – meet the demand for future housing and infrastructure

It has formed collaborations with a number of companies including Hitachi, Microsoft and Amazon.

RDAR has been instrumental in supporting new innovative applications of commercial ‘off the shelf’ technologies such as Amazon’s voice recognition software Alexa in the provision of social care, for example, as means of reducing social isolation amongst elderly living on their own. The use of voice recognition software has helped overcome some of the barriers to the use of technology including apprehension amongst potential users who were deterred by having to navigate multiple menus to perform relatively simple tasks. The presence of the kit has had the unexpected benefit of being an objective of conversation when family members visit and has led to longer and more frequent visits as grandchildren see it as cool. The ability to have more naturalistic conversation with Alexa has supported individuals to regain interests such as baking by one person asking Alexa for recipes, which has reduced isolation required them to leave home to buy ingredients and share surplus baking with neighbours and family.

- (R) [Track record of local authority commissioners and their providers engaging in national pilots of innovation in social care.](#) The piloting of Just Right approach to planning care for adult with learning disabilities is an example of this taking place in the Marches (Box 7). This indicates that there is a track record in the Marches of involvement in the testing, piloting and trialling new ways of working to provide new models of care.

The evaluation of the Just Right approach to planning and delivering care for adults with learning disabilities

Herefordshire was one of nine local authorities that took part in a large scale pilot of the Just Right approach (2014-2015) which was funded by an Innovate UK Small Business Research Initiative grant.

The Just Right (JR) approach combines using motion and other sensors to provide data on the activities of adults with learning disabilities (AwLD) over a period of 6 weeks or more and combines this information graphically with training and advice in person centred care planning. JR uses the Just Checking (JC) system originally developed for adults with dementia and involves placing motion and other sensors in the homes of AwLD and transmission of continuous monitoring data to a central secure server. Its distinctive feature is proprietary web based software that combines data collected from sensors in a given setting and visually presenting it as a chart to aid interpretation by care managers and other health and social care professionals. Technical support and assistance in interpreting charts is provided by a customer support team. Training was provided in interpreting charts, the principles of person centred care (PCC) and using charts in care reviews (e.g. if a chart shows a AwLD receiving care from waking night staff consistently sleeps through the night then less expensive sleep over staff or removing staff at night entirely may be considered). The information provided formed the basis for discussions between care providers, their staff, the client and their family, other professionals and commissioners on how care be best organised based on need to make the best use of resources to improve quality of care and life of customers and in some cases release resource that could be used to support others.

Herefordshire Council appointed a project manager who facilitated access to care providers and hosted events that provided training and opportunity for external evaluator to collect data. This study helped the company – based in the West Midlands – to develop its value proposition and the evidence base needed by commissioners as well providing important insights around the implementation of such technologies.

This evaluation not only provides an example of how the Marches has provided a test bed for innovative application of existing technology but also provided important learning in terms of how to introduce technology to the care sector. Particular attention was paid to establishing a baseline that captured success criteria and expected challenges relating to its introduction.

One of the evaluation findings highlighted the importance of a supportive local authority as commissioner in bringing on board care providers and their staff. The pilot was more successfully adopted in those areas like Herefordshire where the local authority placed greater emphasis on service innovation and getting the right level of care than as means of achieving cost savings (Bramley, Mangan and Conroy, 2018).

- (S) Planned investments in innovation parks that will provide space for the sector. An example in Box 8 below is the proposed innovation park that will have potential links with a neighbouring centre of research expertise (RAH) in Oswestry.

Oswestry Innovation Park

The development of an innovation park has been proposed, with RJAH being a potential anchor tenant. There is currently no published information on the expected timeline of the park's development. The proposed remodelling of the Mile End roundabout and road network opens up new opportunities for the Oswestry Innovation Park site on a 57 acre site and is anticipated to create 1,500 jobs. Recently Shropshire Council has received an award of £9.3m from the Government's Housing Infrastructure Fund (HIF) to improve the capacity of the road network on the A5 at Mile End to improve the viability of planned housing developments. The development of the Park is still at relatively early stage with business case being refined, though the remodelling of the Mile End roundabout and road network is expected accelerate delivery of the Oswestry Innovation Park through improved access and infrastructure arrangements.

RJAH is exploring funding for laboratory space on the park to support the translation of its research on stem cell therapies. If funding is successful, this would secure local production to support clinical trials without going outside the Marches area. It is not only funding that is required but also access to advice around regulatory compliance and the provision of access to such advice will need be a feature of the innovation park and Marches wider offer to the sector.

Business Environment

- (T) **A strong sectoral trade association that can act as collective voice.** Shropshire and Telford and Wrekin have a strong independent care sector, represented collectively by Shropshire Partners in Care (SPiC). This trade association is estimated to include over 90% of the sector as members and is underpinned by individuals being well networked across the area. SPiC supports its members by promoting access to training, including Lead to Succeed (a Skills for Care licensed programme), End of Life Care (a Skills for Care licensed programme), Activity provision, Assisting and moving, Dementia, Medication, Mental Capacity Act, Safeguarding, and End of Life Care. The sector is less well organised in Herefordshire and this represents an opportunity to scale up the approaches developed by SPiC across the Marches area.
- (U) **Stakeholders considered there to be a potential cadre of providers in social care sector that are active and/or keen to innovate and engage in new ways of delivering care and its management.** These providers both form a resource in terms of collaborative research that would allow the Marches to act as a test bed, and as potential advocates through using their own experiences of adopting new innovative approaches.
- (V) **There are a number of exemplar technology companies within the Marches that are leading on significant national projects to support the care sector, including Bronze Labs (Box 9) based in Telford and Remote (Box 10).**

Box 9: The Tribe Project

The Tribe Project is being delivered by Bronze Labs based in Telford. The project aims to increase social action; improve the quality of life for millions of vulnerable people; reduce pressure on public services – in order to address the challenges of an ageing population, loneliness and inequality across the UK. It employs a machine learning approach to predict areas of high need, resource demand and Artificial Intelligence (AI) augmented resource allocation to predict and action areas of high need through organised local citizen engagement. The project, funded by Innovate UK, has resulted in a platform that supports local authorities, commissioning groups, health trusts, and other public services to build the capacity and resilience of communities they work with to reduce future demand on services, deliver social prescribing programmes, develop adaptive training and create sophisticated and interactive networks of local intelligence. It can be deployed to support a range of services. There is potential for added value for organisations that use the platform in terms of managing volunteer schemes and providing tools for elected members to build and understand social action in communities. Examples of use of the platform include: Adult Social Care and Housing Support Services; Social Prescribing Programme; Cross Sector Care Navigation, Coordinating and Signposting; Management of Council Volunteer Schemes for Residents; Emergency Planning Volunteers and Elected Member Tools to Build and Understand Social Action.

Remote is an example of a Marches company that has global reach and the skillset to support innovation in health and care sector (see Box 10). Its value proposition is that can help purpose driven organisations and individuals achieve their objectives through helping them refine and develop their idea into an app that genuinely meets a need and generates benefits for the end user, therefore increasing its likelihood of adoption. As the apps it develops for clients who wish to make a significant difference to care become more sophisticated the level of information needed by regulators increases. Remote and its clients, like the RJAH, will increasingly need access to specialist advice around regulatory compliance.

Box 10: Remote apps

Remote is based in Shrewsbury, employs 10 people and since it was established in 1999 has progressed from building websites into custom software systems and apps that allow organisations to engage with their staff and customers, drive efficiency, innovation and profitability and scale without necessarily hiring more staff. Their clients include household brands like Volvo to entrepreneurial GP's launching apps to transform healthcare.

Remote provides a full spectrum of support from working with clients to develop their initial ideas (exploring with the client, why an app might be needed, how it might be used and by whom, how it might make a difference) through wire framing and prototyping, user testing (human factors and acceptability) to launch.

Remote has been specifically involved in the development of two apps that support innovative healthcare. These are at different stages of development. The first is the **StrokeActive** app, which was created for a purpose driven tech start-up. The company, which was named and branded by Remote at the start of the project, aims to transform the recovery of stroke patients across the world through an online application and iOS mobile app that can be used by Patients, Carers and Healthcare Practitioners to manage care in the vital first few weeks of recovery following a stroke. The original idea was born from the care that the founder was able to access for a family member at a national private centre for stroke rehabilitation, which inspired him to create an app to help as many people as possible. As part of their comprehensive approach to app development, Remote were able to facilitate a 'pivot' early on in the project, when it became clear that there was an opportunity to create a system that had incredible potential to transform the recovery

process of stroke patients. The resulting application connects Healthcare Practitioners with stroke patients and their representatives. The app provides task setting and monitoring, video recording of daily therapeutic practices, and messaging between the practitioners, representatives and the patient, enabling a joined-up rehabilitation regime to be set for each patient and the patient's progress to be monitored by those with the correct access privileges. The system also boasts a directory of Neuro Physios, Occupational Therapists and Speech and Language Therapists closest to their postcode. The value proposition of the app is that it provides an alternative means of organising and delivering care in the first few critical weeks after a stroke. The app was named Innovation of the Year Award at the 2019 European Neuro Convention, has been reviewed and accredited by ORCHA¹⁴, and is currently being trialled by University College London and several NHS Trusts. The aim of these trials is to quantify the benefits of using StrokeActive through empirical as well as anecdotal evidence.

The second app was **instigated by a group of entrepreneurial GPs to manage hypertension**. Remote have been working on this application for some time, and it is now nearing completion ready for in-surgery trials. One feature common to other apps is the regular measurement of blood pressure to provide better information to inform care (blood pressure naturally varies and depending on when it is measured can result false positives and false negatives in the diagnosis of hypertension and its severity). There are other features that are currently commercially sensitive that generate the value proposition to the NHS in terms of reducing the number of patient visits and improved prescribing that would support the case for adoption by the NHS in terms of releasing resources.

(W) There are examples of collaborative projects that cut across traditional professional boundaries and sectors - including the Broseley Project - that are piloting new models of care with the region. The value of such projects rests on showing what can be achieved. By having example of successful collaborations within the region the LEP will be able to engage local NHS organisations who have to date not actively engaged in creating the necessary partnerships required to support service innovation in care health and social services interface. However, it is important to keep in mind that those involved in projects such as this may be amongst the most 'tech savvy' and others may be slower to adopt new models (see Box 11).

Box 11: Broseley Project

The **Broseley Project** is a new and innovative technology project that could help address/ reduce loneliness and support people to remain independent for longer. It is being trialled in Broseley, Shropshire. It has come about through a collaboration between Shropshire Council, The Lady Forester Centre, University Centre Shrewsbury, the local GP, and the community, along with global technology companies Hitachi, Microsoft and Amazon.

The project is trying out innovative applications of 'off the shelf' consumer technologies such as smartwatches, voice-activated devices and messaging apps to support the health and social care needs of vulnerable people. Initially the project aims to improve quality of life, reduce social isolation and demand for more intensive forms of care.

Companies provide the technologies in return for data that can be used for product development and for submission to regulators about new uses.

(X) The presence of University Centre Shrewsbury (UCS) which has developed expertise in digital health and the University of Wolverhampton which has a presence in Telford and in

¹⁴ ORCHA is an independent organisation that evaluates and advise on health apps. ORCHA conducts reviews for NHS Digital and NHS England providing input into the National Innovation Accelerator Programme (<https://www.orcha.co.uk/about-us/>)

Hereford and is promoting the use of digital technologies. Both universities have a commitment to supporting entrepreneurship and innovation in the Marches area and are seen as source of local expertise that the sector can draw upon. UCS Digital Solutions programme provides support for SMEs to commercialise their innovations, including conducting research to support the development of their value proposition to health and social care payers of their digital innovation, development of the evidence they need to provide on efficacy and safety for regulators and to develop new products, processes and services. However, neither are premium members of the Academic Health Science Network (AHSN) for the region, which can provide access to grant funding to companies developing new innovations, but potentially work with other partners who are like RJAH.

- (Y) The general view of consultees is that existing business support services are good but there is a need to develop access to more specialised support tailored to the needs of the health care sector. Access to business support hubs, national catapults and accelerator and incubator units were all mentioned by consultees as potential contributors to improving the business environment. The creation of enterprise zones was also seen as a possibility to foster business development. There was a view that there was good access to general business support within the Marches and the wider West Midlands region, but consultees felt there was scope to develop complementary interventions that support the sector, building on what is already being delivered by University Centre Shrewsbury's Digital Solutions Project and campuses of University of Wolverhampton. For example, the Digital Solutions project works with and supports SMEs to develop new digital innovations through research, innovation, technology transfer and commercialisation, with a particular emphasis on using digital innovations to benefit the health sector. The specification of what such an additional offer might look like and consideration of how it might be funded should be the next step. For example, the Tech Gym (Box 12) and University Centre Shrewsbury Digital Solutions programme are both well regarded. While some of this support may be available at the regional level, such as through Academic Health Science Networks (ASHNs), its presence in the Marches is less than optimal and this may be because the network does not include the Universities with campuses in the Marches (University Centre Shrewsbury is not part of the consortium that has bid to deliver the AHSN to the West Midlands). The Digital Enterprise is an emerging digital academy in Telford. It will support businesses to integrate digital processes such as advanced digital connectivity, augmented reality, cyber security, sensors and 3D printing.

Box 12: Tech Gym

Tech Gym allows individual entrepreneurs and businesses to pay a fee to access the latest hi-tech equipment, such as 3D printers and laser cutters, as well as training, development, advice and networking sessions, with opportunities to access venture capital. Tech Gym has its own building and professional corporate identity as it is considered important to have a clear presence and brand. Working with University Centre Shrewsbury and local businesses, the. It provides a meeting point that allows cross-fertilisation of companies using the technologies made available.

- (Z) There is potential for the innovative healthcare sector to enter into collaborative projects with the defence sector that has a strong presence in the Marches, drawing on technologies such as cybernetics, robotics and remote monitoring that might be adapted to provide solutions for specific problems identified by the care sector in the provision of services to its customers. As the technology and mechanism which allows secure operations within the digital world in terms of business, commerce and private lives, cyber security is concerned

with secure engagement with the cyber infrastructure. Security of data is central to the defence sector; indeed, the defence and intelligence sector is one of four main areas of the cyber security sector in the UK, along with Government (apart from defence and intelligence), commercial enterprises/businesses, and small and medium sized businesses and consumers. Herefordshire is home to the Special Forces and the Marches also benefits from specific establishments that are likely to have expertise in human factors and ergonomics, such as RAF Cosford. Herefordshire has become a centre for cybersecurity including surveillance software that could be adapted for telecare (Box 13), and Doddington in terms of logistics. The neighbouring areas of Worcestershire and Gloucestershire also have considerable strengths here (e.g. GCHQ in Gloucestershire). It is important that developments in the Marches are taken forward in conjunction with the three other LEP partners in Cyber Valley (Swindon and Wiltshire, Worcestershire and Gloucestershire), with specialisms in cyber business and industry.

Box 13: Centre for Cyber Security, Hereford

Centre for Cyber Security, Hereford is a joint venture between the University of Wolverhampton and Herefordshire Council that has secured £9 million funding. The Centre will offer high quality research facilities through the University's Cyber Security Research Institute, as well as providing office space for cyber businesses and advanced training facilities designed specifically to tackle threats in cyberspace. There is the potential transferable expertise across to the care sector in terms of ensuring security of data and development and application of analytics.

2.2 Potential barriers that the Marches Local Industrial Strategy will need to address

Consultations with stakeholders identified the following **barriers** to development of the Innovative Healthcare sector in the Marches:

People

- (A) **The health and social care sector is experiencing a shortage of skilled individuals at all levels** and this is reflected in the recruitment, retention and progression of staff within the sector. There is a lack of awareness of how individuals can make a career in social care and how the sector can provide opportunities for progression – both within social care and more broadly within the care and health sectors.
- (B) **There is currently limited training locally in health care - it mostly takes place in nearby conurbations.** This affects potential recruitment and retention of staff as there is evidence that care professionals often stay in the area where they trained and the take up of CPD can be limited because people need to travel.
- (C) **There is the challenge of engaging those who are less comfortable with technology and since pilots tend to focus on those who are engaged with technology this will affect adoption following piloting.** These are also the same individuals who would be best to pilot new technologies for usability as they face more barriers and issues and by involving them increases the likelihood of developing sustainable new models of care.

Place

- (D) Because the Marches LEP has until recently lacked any significant university presence it scores less well than many other LEPs on innovation indicators compiled by the Smart Specialisation Hub (2018)¹⁵.

Ideas

- (E) How to best bring together a diverse range of potential contributors to the innovation process: there are clear advantages in linking up different groups and sectors to collectively identify, discuss, prioritise and develop novel and creative solutions to problems faced by the care sector. The LEP, in partnership with KTN Ltd and other bodies, has a role to support innovation through knowledge mobilisation across professional and sectoral boundaries. Tech Severn provides a useful and successful annual focus and was seen as very positive by consultees, but consideration needs to be given to events leading up to the conference and follow up activities, as well as testing and piloting different outreach approaches to groups and sectors who may be able to contribute.

Infrastructure

- (F) Deficiencies in 4G and internet coverage are a barrier to the adoption of digital technologies that can assist the sector, especially the provision of smart technologies to support the provision of auxiliary care. According to Tech Partnership, the likelihood of digital exclusion is high in Shropshire. In 2017 38% of households did not receive 4G reception, only 44% of adults had used all five basic digital skills (communicating, handling information and content, transacting, problem solving and being safe and legal online) in the last three months and 16% of adults had not been on line (Tech Partnership 2017). To support the development of e-citizenship Shropshire Council has developed the Digital Skills for Shropshire Citizens project which signposts individuals to existing providers and creates a framework of providers for classroom style learning.

Business Environment

- (G) The Academic Health Science Network for the West Midlands is considered to have a very light footprint in the Marches area and is perceived to be more focused on other areas in the West Midlands region. The same could be said for Collaboration for Leadership and Applied Health Research and Care for the West Midlands. There was the view that this might be because local NHS bodies and academic institutions with a presence in the Marches are not members of either of these collaborations. Working with these collaborations would provide access to a wider research infrastructure to support the LEP's ambition for Marches to be a test bed for innovative health and social care provision.
- (H) Provision of targeted support for the health care sector to innovate is limited. This is partly an issue of capacity within the region and the recognition that some services needed are

¹⁵ Smart Specialisation Hub report on Marches can be access at: <https://smartspecialisationhub.org/wp-content/uploads/2018/02/THEMARCHES-SSH-PROFILE-Dec-2018.pdf>

more specialised and can only be accessed in Birmingham, Manchester and London. There is probably a greater need to assist companies in navigating the support available and providing introductions to specialist consultancies who may be sourced in the wider region. The role of the Marches Growth Hub, the LEP's business advice and support service, could play a critical role here.

2.3 Potential threats and risks

Potential risks and threats include:

- (A) **The impact of Brexit on the regulatory environment for health technologies and potential loss of a single market that provides the scale needed to commercialise innovations.** Under existing arrangements businesses can apply for a CE mark that allows them sell their product within European single market. There are proposals for UK equivalent certification but this will mean additional time and expense for those developing new products within the Marches. Also, there is likely to be a reduction in the number of notified bodies that can provide advice and CE certification based in the UK. There are also implications for the sector in terms of its supply chain due to specialisation of production in different European centres depending on what form Brexit takes.
- (B) **Developments in neighbouring LEPs and the broader WMCA area, including the development of Birmingham Life Sciences Park and new business support offer to Medtech companies, can be seen as both a threat and opportunity.** Digitalised healthcare is one of the strategic opportunities identified in the WMCA local industrial strategy, which could give the area first mover advantage, but it should be noted that consultations suggest that the Marches can provide its own distinctive focus that would be complementary.
- (C) **The predominance of small providers in the care sector who may be more vulnerable to changes in funding, increases in regulatory, staffing, financing and other costs and therefore more likely to become insolvent.** The joint initiative between SPiC and University Centre Shrewsbury to help the sector digitalise represents a useful first step in beginning to mitigate this problem.
- (D) **Changes in the regulatory and policy environment** could introduce new cost demands on the sector.
- (E) **The withdrawal of ERDF and ESF funding** and any potential delay in its replacement with the Shared Prosperity Fund could affect the ability of higher education institutes to provide support to the sector and whether they are able to access Higher Education Innovation Funding (HEIF) to support relevant knowledge exchange activities.
- (F) **Reputation risk from failed initiatives that cause harm to individuals in receipt of care and their carers.** The management of this risk will involve working with partners to develop shared ethical standards building on best practice. Where innovators are working with HEI or R&D unit within the NHS interventions are more likely to be subject to ethical review that will take account of potential harms.

3 The Marches Value Proposition for supporting a more innovative Health and Social Care sector

Invest in Shropshire has already set out what it considers to be the key opportunities for the health and social care sectors provide and these are applicable across the whole of the Marches area (Box 14). This includes being *'an excellent test bed for health related businesses in finding solutions before scaling across the UK to directly affect the 11.8 million people aged 65 plus.'* To this we would add care for adults with learning disabilities given that Herefordshire has been a test bed for testing new approaches to planning and delivery care.

Box 14: Opportunities identified by Invest in Shropshire

Key opportunities identified by Invest in Shropshire

- Digital innovation to help access social care and improve services
- Commercial opportunities to help improve the quality of life
- Innovation around facilitating engagement and interaction in a rural locality, addressing social isolation
- Tech Severn Conference and Exhibition attracts influential speakers from around the world
- Opportunities to find innovative solutions to reduce demand on public health services and increase quality of life
- Specific industrial clusters linked to Robert Jones and Agnes Hunt Orthopaedic Hospital HMS Foundation Trust
- Clustering opportunities around flagship health projects associated with the 4 centres of excellence
- Well over a third of our care is self-funded, with a UK market worth £5.5 billion and Shropshire population of over 65s set to grow by 52% by 2037.

In addition to key opportunities set out by Invest in Shropshire, innovators and entrepreneurs benefit from:

- Local authorities as commissioners are supporting the testing of digital solutions within the region to support innovation in care.
- As commissioners of care, Local Authorities act as early adopters of new technologies and facilitators of new collaborations between care providers and technology companies to support innovation.
- Local Authority commissioners are providing long term public sector commitment to supporting innovation within the sector that is independent of changes in the political and funding environment.
- Local authorities already act as brokers for companies and research institutes that need access to care providers to run trials of their technology or new models of care.
- Recent developments supported by National Institute for Health and Care Excellence and regulators to support and encourage the adoption of new technologies and innovations by local NHS commissioners. Poor adoption of new technologies by local commissioners is a recognised barrier to innovative health care and this has been attributed to the conservative nature of clinicians and high barriers in terms of evidence. NICE has introduced Medtech Innovation Briefings on technologies that have been identified as promising that provide information in an accessible format to commissioners and have a lower evidence requirement than a traditional health technology assessment. Until recently such briefings have been made available for information purposes but commissioners are being encouraged to consider and adopt new technologies described more.
- The increased interest in co-production of new approaches to care by NHS commissioners in response to more complex needs of patients through involving patient and public involvement. Such consultations have the potential to more clearly identify and articulate needs and there is opportunity to bring entrepreneurs and innovators in the discussions

once needs have been identified to develop new solutions. Birmingham City University has been developing their Steamhouse model¹⁶ to do this and Marches could learn from this.

Local authorities have already demonstrated their support to provide a test bed for innovative uses of off the shelf technologies to support care in the community. However, to continue this role consideration needs to be given to changes in regulation of software and apps to bring them more in line with regulation of medical technologies and medicines. Responsibility rests with the company providing the technology to ensure it has the right certification under CE mark system¹⁷ to bring apps and software in line with other medical technologies. In practice, this means software or apps that provide predictive analytics and diagnostics will need to have higher CE mark certification which, in turn, requires more evidence around safety and efficacy for regulators. This is likely to increase demand for evaluations of new technologies or new applications of existing technologies which could take place in the Marches. To take advantage of this opportunity, the LEP will need to work with partners around ensuring the right processes are in place to safeguard those taking part in such research including approval from relevant ethics committee.

Herefordshire and Worcestershire Sustainability and Transformation Partnership (HWSTP) have developed a digital health and care strategy that sets out key priorities and success measures (Box 15). These are mutually supportive of the LEP's ambitions to support and grow innovative businesses in the health and social care sectors.

Box 15: Herefordshire and Worcestershire Sustainability and Transformation Partnership (HWSTP)

HWSTP key priorities

- Enabling integration by sharing care and wellbeing information and intelligence
- A 21st Century digital infrastructure to enable the ambition of digitally enabled care
- Empowering individuals and communities to live independently
- Intelligence led and data driven care
- A learning community and culture of innovation
- Attracting inward investment and maximising internal resource to deliver digital change.

HWSTP measures of success

- Prevention, self-care and promoting independence
- Maximise efficiency and effectiveness
- Developing out-of-hospital care
- Establishing clinically and financially sustainable services

The local area is characterised by innovative providers of education and training who are developing courses that meet the needs of local employers and residents who wish to stay and work in the area (see Box 2).

The Oxford Institute of Population Ageing was commissioned by UKRI to produce a review of previous government funded initiatives in healthy ageing, to inform the development of an approach

¹⁶ For further information see: <https://www.steamhouse.org.uk/>

¹⁷ In the European single market, a CE mark demonstrating the device is compliant with the relevant European Commission Directive on medical devices. The manufacturer must provide regulators with information on performance and product safety and the level of evidence they require is determined by potential risk to patients. In the European single market medical devices can be classified according to risk from Class I (low risk) through Classes IIa and IIb (medium risk) to III (high risk) and there is a progressively higher evidence bar for required for clinical evaluations of class II and III devices though regulations are being tightened to make regulation of devices equivalent to those of pharmaceuticals

to the Healthy Ageing Challenge. The Institute set out a number of features they would expect in an ecosystem that would support innovation in health and care for the third age (Box 16).

Box 16: Oxford Institute for Population Ageing recommendations for creating a technologically enabled ecosystem for healthy ageing

Oxford Institute of Population Ageing (2019): Developing The Industrial Strategy Challenge Fund Healthy Ageing (ISCFHA): A Technologically Enabled Ecosystem For Healthy Ageing.	
Recommendations around ecosystem	How the Marches currently meets the recommendation
<p>1. Creating a productive, effective innovation ecosystem</p> <ul style="list-style-type: none"> Supporting partnerships between researchers from the social, life and medical sciences, technology, creative arts design and humanities, innovators, industries and businesses to support more effective knowledge exchange and development. Supporting navigation through the various funding sources and mechanisms at different stages of the development and investment pipeline. Improving the quality and effectiveness of current early-stage innovation activity, steering this towards prevention, inclusivity and evidence-based, user-informed design. 	<p>UCS Digital, RJAH, Tech Severn and RDAR all contribute towards meeting this recommendation. As does willingness of local authorities to commission and support the adoption of new innovation. The ecosystem could be strengthened further with greater involvement and engagement from local NHS providers in activities with the Marches region to support knowledge exchange and service innovation.</p> <p>Intelligence gathering by local authorities to help address information failures around potential demand and needs so thereby providing a basis for improved investment decisions by entrepreneurs.</p> <p>Linkages with WM-AHSN need to be further developed.</p>
<p>2. Creating a viable, attractive funding ecosystem</p> <ul style="list-style-type: none"> Providing sources of early-stage development funding which supports higher-financial risk, high social impact return ventures to develop; socially-minded ventures to scale sufficiently to be 'investment-ready'; and for alternative funding models, which enable high social impact, slower or lower-return ventures to scale and achieve commercial viability. Incentivising the entrance of key industry players such as large retailers, manufacturers, financial services and creating channels for new and more established ventures to reach the mainstream market. 	<p>There are potential gaps in early stage funding. Again, there is a need to investigate the extent to which the WM-ASHN acts a gateway to devolved discretionary funding from Innovate UK. There are also periodic calls for challenge funds to support specific government objectives including the recent Social Care Digital Pathfinders¹⁸ that provided £4.8m for innovations that had been tested at the local level to scale up thereby providing more evidence on their effectiveness. The pathfinders are supported by NHS Digital which is working in collaboration with the Local Government Association to deliver the Social Care Digital Innovation Programme to support local authorities in use of innovative technologies in delivering social care Potential to link with Birmingham City University to run local Steamhouse¹⁹ co-production events in the Marches region, or UCS could deploy a similar approach. StrokeActive app is an example of a socially minded venture being scaled up with the support of a local IT company. Local authorities in the Marches have supported evidence gathering for the adoption of new technologies through participating in pilots and innovative commissioning. Adaptation of off-shelf technologies – e.g. Alexi hubs</p>
<p>3. Creating an ecosystem for healthy ageing enabled by technology</p> <p>This would involve a multidisciplinary, multi-sector team working together to explore opportunities for the:</p> <ul style="list-style-type: none"> Co-creation of solutions by bringing together technology push and market-pull factors 	

¹⁸ For further information see: <https://digital.nhs.uk/news-and-events/latest-news/social-care-digital-pathfinders-funding>

¹⁹ For further information see: <https://www.steamhouse.org.uk/>

<p>across a diverse range of viewpoints, constraints and knowledge levels so as to sustain the exploration of new scenarios, concepts and related potential products and solutions.</p> <ul style="list-style-type: none"> • Exploration by engaging all stakeholders, especially user communities, at an earlier stage of the co-creation process to discover emerging scenarios, usages, commercial models and behaviours through live scenarios in real or virtual environments. • Experimentation that implements appropriate technological artefacts in vivo to generate live scenarios involving large number of users whilst, in parallel, collecting data for analysis. • Evaluation that assesses innovative concepts as well as related technological artefacts in real life situations through various dimensions such as socio-ergonomic, socio-cognitive and socio-economic aspects. It is the observation of what happens when technology confronts user value models that roots a Living Lab in experiential rather than experimental learning. 	<p>The Tech Severn annual event provides a forum for cross fertilisation of ideas across sectors between potential users and developers, but needs to be more explicitly part of wider programme of events.</p> <p>UCS Digital provides support for the sector, as does Remote for clients developing apps for innovative approaches for delivery of care (e.g. StrokeActive)</p> <p>SPIc is working with UCS to support workforce development and the adoption of new technologies in the care sector to make provision more resilient to change.</p> <p>RDAR is providing geographically based data to support service planning and information to support investment decisions in the sector.</p> <p>RJAH is undertaking research into use of STEM cell therapies and providing support for clinical studies through its R&D unit.</p> <p>Evaluation capabilities are available in nearby centres and there is potential grow expertise within the region drawing on established centres of expertise exist in UCS and RJAH. Marches LEP, along with other public sector bodies within the wider West Midlands region, will need to grow local talent as capacity became more centralised in London through the introduction of austerity programme.</p>
<p>Process</p> <ul style="list-style-type: none"> • Identify contrasting places with varying demographics, economies and social groups which would provide the real-life environment where systems, services and processes relating to healthy ageing could be developed at speed, evaluated, de-risked and integrated with the needs and ambitions of the local community. • Pipelines of talent and innovation into, across, and as outcomes of the programme are essential. Integrate a strong pipe-line of products and services drawn from innovators, developers, and businesses across the UK. • Define the balance between national objectives and local implementation. Adaptation to local conditions is increasingly seen as a precondition of success. • Manage the tension between innovation and implementation, especially when continuing evolution of the technology adds to complexity, needs to be recognised and integrated into the original design. 	<p>The Marches can provide contrasting rural localities for pilots and studies organised by regional research centres based in urban centres. There are significant centres of research expertise in close proximity to the Marches that UCS and service providers can partner in collaborative research bids.</p>
<p>Framework</p> <ul style="list-style-type: none"> • Produce a clear vision outlining the purpose, the kind of knowledge, and the expertise which is expected. • Identify measures of success whether the implementation of the experimental design or of the outcomes of the experiment. • Incorporate specific targets within the project design: scale-up within the setting; spread and transfer to new settings; sustainability over the long term. • Recognise complexity avoiding assumption that issues are either simple or <i>complicated</i> – 	<p>This set of recommendations is aimed at the managers of the Industrial Strategy Challenge Fund Healthy Ageing (ISCFHA)</p> <p>What might provide the Marches with comparative advantage in collaborative bids is the development of a shared statement of intent by partners and principles around the type of support that they can provide for innovators and organisations and individual who undertake research and evaluation on innovative care. This might include a signposting or referral service to providers or service commissioners open to piloting new innovations in the region, creating a database of local evaluation experts</p>

<p>knowable, predictable and controllable - rather than <i>complex</i>.</p> <ul style="list-style-type: none"> • Define ambition and scale with recognition that single time limited programmes cannot address complex system problems without time. • Leadership from the Challenge Team for the whole programme and local leadership for large and small projects within is essential • Build in adaptation as the programme evolves. 	<p>and clear set of criteria about type of projects the LEP is willing to support. This would transferable to other funding sources. UCS in partnership with the RJAH R&D unit might best place to lead on the development of such a document.</p>
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4. Recent developments in support for digital innovators in health and care

There have been a number of recent developments that need to be taken into consideration in the development of an offer for the innovative care sector.

May 2019: Accelerated Access Collaborative (ACC) (see Box 17) was formed as an umbrella body responsible for the UK health innovation ecosystem. Its remit covers all types of innovation new therapies, diagnostics, service innovation, digital and non-digital devices and drugs and works closely with NICE, the Care Quality Commission (CQC) and the Medicines and Healthcare products Regulatory Agency (MHRA).

Box 17: Remit of Accelerated Access Collaborative

<p>Remit of Accelerated Access Collaborative</p> <ul style="list-style-type: none"> • Creating a “single front door” to the innovation ecosystem. This will take the form of an online portal with information, support, and signposting that links to existing teams that provide more detailed advice on certain aspects of the innovation pipeline. • Establishing a single horizon scanning approach to identify the best new innovations, so that the UK’s health services have an idea of what is coming down the track and is aligned and prepared to support them. • Developing an approach to local and national demand, sending clear signals to the market about what the NHS needs, or the problems it is facing and would like the market to address. • Establishing globally leading testing infrastructure that provides the necessary opportunities for innovators to develop and improve their products, collaborate with the NHS, and establish the high-quality evidence that clinicians need for adoption and spread. • Improving the quality of adoption and spread support for the best new innovations, to deliver on the innovation commitments in the NHS Long Term Plan and the second Life Sciences Sector Deal, including through better join up between the AAC and Specialised Commissioning. • Deliver better practical innovation support funding in line with the health innovation funding strategy set out by Her Majesty’s Government.

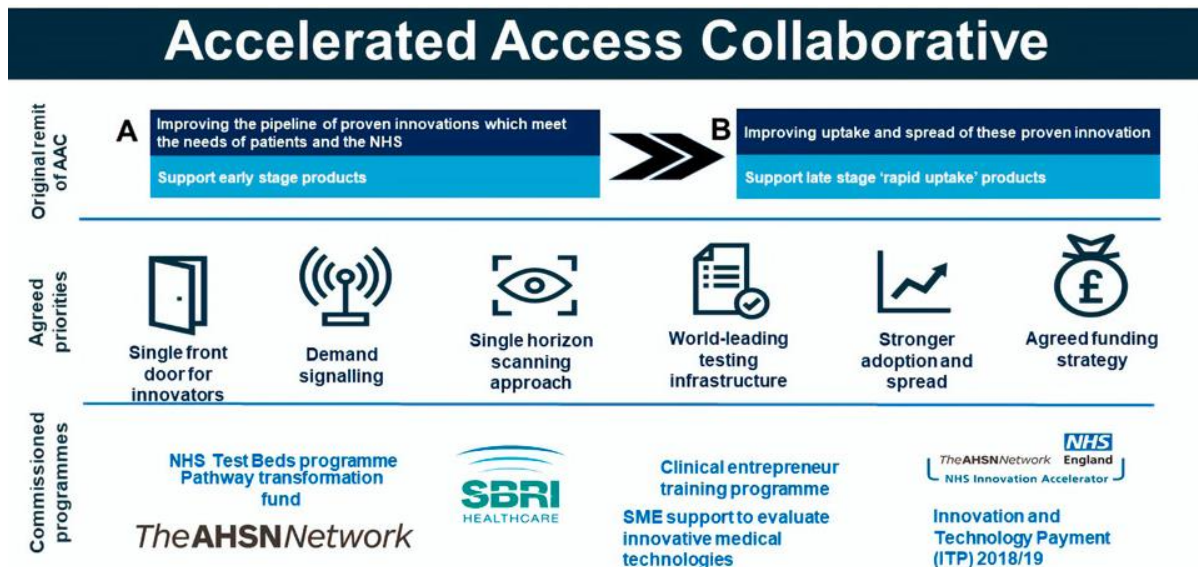


Figure 1: Overview of Accelerated Access Collaborative

Taken from NHSX (2019). Listening to digital health innovators

July 2019: Updated Code of conduct for data-driven health and care technology²⁰

July 2019: NHSX was launched to improve the ecosystem for digital innovation focusing on the needs of users (Box 18). It has recently published in partnership with the Accelerated Access Collaborative (ACC), the Academic Health Science Network, the Office for Life Sciences (OLS) and techUK based on consultations with digital health innovator which had over 200 responses (NHSX 2019).

Box 18: NHSX missions

NHSX five missions

1. Reduce the burden on clinicians and staff, so they can focus on patients
2. Give citizens the tools to access and use information and services directly
3. Improve patient safety across the NHS
4. Deliver efficiency of NHS processes with digital technology
5. Create a system that means clinical information can be safely accessed, wherever needed

Support the development of local capability NHSX has review and simplification of digital transformation programmes, reducing the number from 30 to 11. This should help navigation of national support system by the sector. The new programme list includes:

1. NHS App and NHS login
2. Digital child health and maternity

²⁰ For more information: <https://www.gov.uk/government/publications/code-of-conduct-for-data-driven-health-and-care-technology/initial-code-of-conduct-for-data-driven-health-and-care-technology>

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3. Integrating community providers (including pharmacists, optometrists, dentists, ambulances)
 4. Screening
 5. Booking, referrals and appointments management
 6. Standards (including medication standards)
 7. Primary care
 8. Urgent and emergency care
 9. Social care
 10. Local capability Local Health and Care Records (LHCR), Health System Led Investment(HSLI), Global Digital Exemplars (GDE) and Carter
 11. Infrastructure Health and Social Care Network (HSCN)

NHSX has responsibility for defining strategy and setting standards, for example, on: user experience; open standards; information governance and open source.

August 2019: Launch in beta format NHS Digital Service Manual provides guidance for developers to make consistent, usable services for patients and the public. The manual includes guidance on:

- design principles to guide all of our design
- look and feel - grid, colours and typography
- reusable components and design patterns that solve common problems
- content style guide - how to write for digital NHS services
- practices - how we approach accessibility, agile delivery and service design

5. Suggested Priorities

Based on the desk research and consultations with stakeholders and experts it is proposed that the Marches LEP focuses on the following priorities:

- 1) [Have a specific focus on social care for the 'Innovative Healthcare' sector while recognising the interactions between health and social care](#) - and that it needs to be seen as a 'whole system' approach. This will require that Clinical Commissioning Groups, Sustainability and Transformation Partnerships, local authorities and other key actors in the Marches continue to work closely together in a coordinated way that considers the whole health and care sector and wider factors when considering the novel application of technologies and digital solutions to ensure the Marches is an attractive testbed for innovation.

5.1 The scope for regional and national collaboration opportunities

- 2) [Build on existing recognition as pioneering innovations in the provision of care in more rural areas](#). Shropshire has committed to being the second Vanguard Local Authority after Lincolnshire in developing rural health and care services working with National Centre of Rural Health and Care to develop and share good practices. Similarly, Herefordshire through the Wye Valley NHS Trust development of an alternative route for doctors to become consultants and general practitioners along with the innovative nursing degree being

developed by UCS represents significant innovation in developing skills needed by the sector. Marches LEP could practically support applications by NHS partners and local education establishments for funding from NHS Improvement and Health Education England to develop and test new routes for under-employed in the region to have meaningful careers in the care sector.

- 3) [There is potential to explore with partners in the Marches the development of a strategy for attracting more research and innovation funding for providing care for third age and/or rural areas.](#) This will involve identifying and developing practical solutions to potential barriers and a mechanism for matching potential partners. Centres of research based in universities in large urban centres often struggle to recruit rural areas to take part in health services research and forging stronger links with such centres could bring more innovation and research into the region. There are already collaborations that exist with medical schools within the West Midlands and the Robert Jones and Agnes Hunt Orthopaedic Hospital that could be built upon. UCS is building its presence in a number of areas and with the support of LEP (e.g. contribution of match funding) may be able to join bidding collaborations with other universities to access funding related to delivering industrial strategies (e.g. Strength in Places Fund) by providing less urban centric geographies.

5.2 Ideas on investment projects and interventions that the LEP and Local Authorities within the sub region can support

Ideas for investment project by the five foundations of the Industrial Strategy:

People

- 4) [Continue to support local education institutions that are developing innovative approaches to staff recruitment and retention in the health and care sector.](#) This can take the form of practical support in convening and/or supporting forums between interested parties including employers, education institutes and private sector training organisation, local technology companies that provide online learning solutions, sector bodies.
- 5) [Support the roll out of successful interventions developed within the region to improve IT literacy and acceptance.](#) This includes the general population and more specifically vulnerable adults. For example, Shropshire has demonstrated working in partnership with organisations such as Amazon how off the shelf technology can be used with vulnerable groups in a ways that reduce barriers to adoption and acceptance. [Ensure that provision is place to ensure that new entrants and existing staff can progress through the NHS Health and Care Digital Capabilities Framework²¹.](#) This involves continuing to work with education and training providers and the sector to ensure sufficient opportunities are made available.

²¹ Access at: <https://www.hee.nhs.uk/sites/default/files/documents/Digital%20Literacy%20Capability%20Framework%202018.pdf>

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- 6) [The Marches LEP continues to play a strategic role in facilitating engagement and involvement with key players](#). This involves a coordination and signposting role to activities and events being developed and delivered by LEP partners.
 - 7) [Acceptance of new technologies by the care work force will be dependent on governance arrangements](#). While the Marches LEP may not have a direct role in ensuring ethical standards in the use of digital technologies by care providers and their managers for example, it can support necessary training in ethics around the use of digital technology.

Place

- 8) [Raise awareness and set out more clearly what the Marches can offer innovative healthcare companies](#). There needs to be an equivalent document to that produced by Invest in Shropshire that can be used that covers the whole Marches area for the sector (Invest in Shropshire, undated)
- 9) [Partners should continue to utilise assets such as public buildings and networks as a focal point for innovation in health and care services](#). This has included making the space available for third sector providers, local training in digital skills and networking events.
- 10) [The Tech Severn annual event](#) is example of intervention based around place that brings together different actors that allows cross-fertilisation of ideas and technologies across sectors. but it should be become annual centrepiece as part of regional series of events.
- 11) [Emphasise the key role of local authorities as commissioners and also as enablers in making links across to other policy domains such as housing, education and infrastructure, in driving forward activity](#). Furthering local authorities' roles in developing regional intelligence and insights building on the work of RDAR and UCS that provides an important horizon-scanning role. While local authorities have and continue to play a strong leadership role, they also face conflicting pressures from supporting providers to innovate whilst being mindful of the need to manage their own finite resources. Local authorities are playing an important role in creating the ecosystem - including the development and application of big data that needs to be showcased to demonstrate both the achievements and potential of the Marches region to innovators, investors, policymakers and public.

Infrastructure

- 12) [Continue to support investment in improved connectivity including improved mobile coverage and improved internet provision to support smarter ways of delivering care, as this remains a significant priority](#). However, investment in the installation of new infrastructure masks may require winning the hearts and minds of some communities who may be resistant because they have concerns about visual impact, possible detriments to their health and some cases idealised notion of being off grid.

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- 13) Thought needs to be given to the type of facilities and services needed by technology companies at the proposed Oswestry Innovation Park and how funding might be secured for RJAH to invest in facilities on the park and become an anchor institution.

Investment

- 14) Set out the business case for investing some resource in engaging potential business angels who have relocated to Marches as part of their retirement plans.
- 15) Consider how to improve access to finance for companies developing and implementing innovations in the health care sector. This could include signposting sources of seed capital for innovators for example through Business Angels based in the region, or requests to relevant research charities which might fund early stage research and development. This could include signposting and providing support in accessing grant finance where there is clear additionality in terms of outcomes for the public purse (i.e. would not achieved the same outcomes without grant finance) or loan guarantees. For example, ensuring companies are aware of relevant funding calls by Innovate UK (e.g. Small Business Research Initiative funds companies to develop solution to specific priorities identified by care commissioners) (see Box 19). Marches LEP may wish to explore with the British Business Bank (BBB) how different funding programmes might be tailored for the sector and work with relevant third parties who deliver programmes on behalf of BBB, as well considering the merits of negotiating a fund that the LEP might directly administer.
- 16) Have in place a system for prioritising support for organisations within the region seeking central government funding. Good applications are resource intensive in terms of bid writing time and require more than supporting letters from local partners. The Marches LEP and/or local authorities need to develop a set of criteria around which to identify and select potential opportunities. The main funding sources are NIHR, Innovate UK, Industrial Strategy Challenge Fund, British Business Bank, some research charities and potentially the Shared Propensity Fund that will replace ERDF funding that currently supports targeted business support in the sector.

Example funding schemes

The SBRI Healthcare programme has been part of NHS England's innovation portfolio since 2013 and has awarded over £80 million to support innovation development. SBRI Healthcare programme runs competitions launched on challenges identified as an unmet need by the NHS. This demand-led and challenge-driven approach is a key aspect and enables industry to respond directly to relevant NHS challenges. It feeds the innovation pipeline with products that have an existing demand from the NHS and so delivers the required technology-pull to enable adoption and spread. SBRI Healthcare is funded by NHS England and supported through engaging with the 15 Academic Health Science Networks (AHSNs) and NHS England's clinical policy teams to develop the challenges.

The 2019/20 Innovation and Technology Payment (ITP) was launched at Expo 2018 on 5 September 2018. This programme supports NHS England's commitment to accelerate the adoption and spread of proven and affordable innovations, as set out in the Five Year Forward View and NHS Long Term Plan. The ITP aims to remove financial and procurement barriers to support the NHS to adopt innovative medical devices, diagnostics, and digital products.

To be selected for the ITP, products needed to meet the following criteria:

- NICE support (through a Medtech Innovation Briefing or Guidance)
- Positive in-year return on investment
- Use in at least three NHS organisations

NHS Test Bed Programme brings NHS organisations and industry partners together to test combinations of digital technologies with pathway redesign in real-world settings. The goal is to use the potential of digital technologies to positively transform the way in which healthcare is delivered for patients and carers.

SME Innovation Fund is accessed through WMASHN (West Midlands Academic Science Network). Mercia Fund Management is collaborating with the WMAHSN to help build and support healthcare start-ups across the West Midlands. It aims to grow spin-outs to improve healthcare services across the NHS, particularly those in line with the WMAHSN's core strategic priorities; advanced diagnostics, genomics and precision medicine; mental health: recovery, crisis and prevention; long-term conditions; and wellness and the prevention of illness. Provide repayable grants of up to £50,000 to at least ten new innovations each year.

Industrial Strategy Challenge Fund (ISCF) Healthy Ageing Trailblazers delivered through the Innovate UK Knowledge Transfer Network aim to encourage businesses and public sector led collaborations, including social enterprises, to develop and demonstrate how products, services and business models, which support people as they age will be adopted at scale. The completion closed on 27th November 2019 and it is unclear whether there will be future funding rounds. It is a 2-stage competition. Stage 1 includes a grant of up to £100,000 to conduct research and develop a business plan. Stage 2 proposals must be collaborative.

Business Environment

- 17) [Secure greater engagement with the West Midlands Academic Health Science Network \(WMAHSN\) and other regional bodies such as Innovation Midlands \(a consortium of universities across the region interested in the commercialisation of technologies they are development\)](#). Include a stronger complementary focus on social care, in which the Marches can bring its particular expertise in terms of future collaborations to the fore. This includes investigating with the AHSN how it might increase support for within the Marches including outreach events and improved signposting. Practical steps that might be taken include:
 - Identify where the support provided by local providers (e.g. UCS) complements and/or provides a substitute for service provided by WMAHSN and other bodies within the region. This needs to take account of different funding arrangements as these can affect who can receive support. Some aspects of the WMAHSN offer are only available and relevant to NHS Trusts for example.

- Assess whether qualifying organisations with the Marches are taking advantage of the standard offer and what are the barriers to doing so. WMAHSN offers two levels of membership to NHS Trusts and HEI within the region. All NHS organisations, academic and educational institutions, other public bodies, life sciences industry and private sector companies within the West Midlands are automatically enrolled as WMAHSN standard members. The WMAHSN standard membership scheme is currently free for all WMAHSN stakeholders, as it is subsidised by NHS England. WMAHSN intends to continue to deliver this no cost standard membership scheme for all of its stakeholders until the end of its NHS England licence²². RJAH is the only organisation listed as currently having access to premium membership that allows access to additional services (Box 20).

Box 20: Premium Membership services provided by West Midlands Academic Health Science Network

Innovation and Adoption West Midlands – premium version. In addition to the standard version premium members can access an Innovation and Adoption Learning Community, with a series of workshops on a range of topics, and also plans to develop and designate Innovation and Adoption Fellows for each premium member organisation. It also includes the identification of financial support for NHS members, assisting them in finding new sources of public and private sector investment in their organisations in order to support innovation and adoption activities. It also provide enhanced access to Meridian health innovation exchange which, along with all of the standard features, allows premium membership organisations to create their own bespoke innovation exchange environment in which they can manage their own campaigns and interactions.

Industry Innovation Gateway - enhanced industry liaison support function through the Industry Innovation Gateway delivered through Medilink WM, with access to an industry triage service which searches and filters for industry collaborators or suppliers of innovative technologies and services, and provides support and advice on regulation and compliance.

Innovation Pathway includes a suite of practical adoption tools, guides and templates to assist premium member organisations in constructing business cases for the commissioning and procurement of innovation into services.

MidTECH is available to NHS organisations and provides the expertise necessary to turn ideas into tangible products and services that can transform healthcare and have broad impact, providing full intellectual property (IP) evaluation, protection and commercialisation services. MidTECH exists to support innovators and to help individuals and organisations as a whole with innovation across the West Midlands, and works with most of the trusts in the region. MidTECH works with NHS trusts, NHS employees, the Industry Innovation Gateway and industrial partners to make a commercial reality of the countless great ideas that power the daily life within the health service.

- Explore the possibility of clinics, presentation of networking events hosted by the area’s HEIs (UCS, UoW, The Orthopaedic Institute, MiTAC) and innovation parks that have regular WMAHSN presence.
- Draw on the expertise of the R&D unit at RJAH and its links with Keele University and other international partners.

18) **Strengthen the role of NHS R&D units within the Marches area.** There was a view amongst some consultees that links between the sector could be stronger with NHS R&D units. The region has strong R&D unit at RJAH, which is actively involved in clinical studies to support the adoption of new technologies, but outside orthopaedics, there is less R&D activity within the region. This may in part be a function of current NHS geography, which does not neatly map onto the Marches geography, resulting in R&D units being located in neighbouring local authority areas (e.g. Worcestershire and Staffordshire rather than Herefordshire, Shropshire and Telford and Wrekin).

²² AHSN West Midlands website.

19) Modern business professional services have an important role to play in the digitalisation of industrial sectors across the area, including health and social care. The LEP can play two roles. The first being to help businesses navigate current provision and thereby avoid crowding out existing private sector provision. The second being to support the development of new specialist business service providers in the region focusing on the need of the sector (e.g. meeting the needs of regulators, evidence gathering, developing value proposition). This could also include intermediaries between technology companies and care providers who can:

- a. support the adoption of new technologies by care providers by having an understanding of the issues that are likely to emerge and need to be managed;
- b. provide specific support to companies commercialising their technologies;
- c. or foster the development of apps and software that support the planning and management of care provision.

The Marches Growth Hub should play a central role here in supporting businesses in understanding current support available and working with partners to develop new products and services. Marches LEP may wish to consider with the Marches Growth Hub can whether it can tailor its existing offer to the sector's needs and what additional services require development and funding. The Growth Hub is well placed to provide general business support, with more specialised support around the adoption and application of new technology provided by specialist providers, such as Digital Social Care²³, who can provide information, advice and guidance for care providers.

5.3 Recommended next steps to help inform the Local Industrial Strategy for the Marches

1. Expand on the Invest in Shropshire value proposition to cover whole of the Marches and use the Oxford Institute for Population Ageing recommendations for creating an attractive ecosystem for innovation to support healthy ageing are being met.
2. Ensure all partners eligible to be members of WMASHN become members and those that are able to become premium members consider the merits of doing so.
3. Develop a register of opportunities. This might include sources of funding, ideas and potential collaborations.
4. Consider having a named sector champion who is visible to the sector. This could be an existing individual in a partner organisation and would involve investigating potential funding to release their time.
5. Build on the Marches proximity to centres of expertise while investing in local access points (physical and virtual) to this expertise.
6. Development of an initial business case that sets out projected economic and social benefits of investing in the sector.

²³ www.digitalsocialcare.co.uk

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7. Appendix

Stakeholders were asked the following questions:

- 1. What are the main features of the local economy/area that are conducive to supporting an innovative healthcare sector in the Marches?**
 - What might encourage people to set up and grow businesses in the area, to develop new services and products?
 - What existing local assets can they draw on?
 - What, if anything, is missing from that set of existing assets?

- 2. How would you describe the health and social care sector in the Marches?**
 - What does the health and care sector in general look like currently?
 - What does innovative health and care sector look like currently?
 - What is distinctive about the sector in the Marches? (Who are the main players?)
 - What is the sector unique selling proposition for investors?

- 3. Where do see potential opportunities for (further) developing innovative healthcare?**
 - Who within the Marches (and the wider West Midlands region/ nationally) is beginning to recognise and respond to these opportunities?
 - Who are the new specialist providers of services and goods established/ emerging in the Marches?
 - Are there gaps in the sector as it currently exists that, if filled, would help the sector to grow/ become more successful?

- 4. Who needs to be involved in the developing innovative healthcare and how can they contribute?**
 - Nationally
 - Regionally
 - Within the Marches

- 5. Who can developers of innovative healthcare products / services approach for support in the development and application of innovation?**
 - Who are the providers of support in the LEP area? At regional/ national level?
 - What / where are the gaps?
 - How / where should LEP (and other local stakeholders/ partners) intervene?

- 6. What options should be explored for providing support for suppliers and users of innovative healthcare products/ services?**
 - Building on existing provision? Better marketing of existing provision?
 - Is there a need for bespoke support?
 - What support do users/ potential adopters of innovative healthcare products/ services need to utilise such products/ services to best effect?
 - For example does there need to be support for developing digital and coding skills?
 - Who is best placed to offer such support?

- 7. How can the Marches become established as a test bed for new innovation in health and care?**
 - What are the 'hooks' for collaboration – between technology companies and the health and social care sector, between different parts of the health and care sector, and across geographies?
 - What are the benefits, and for whom, could this bring to the Marches?
 - What are the benefits for meeting the strategic objectives, this bring to the Marches?
 - What do you think are the priorities for action in order to realise such benefits?