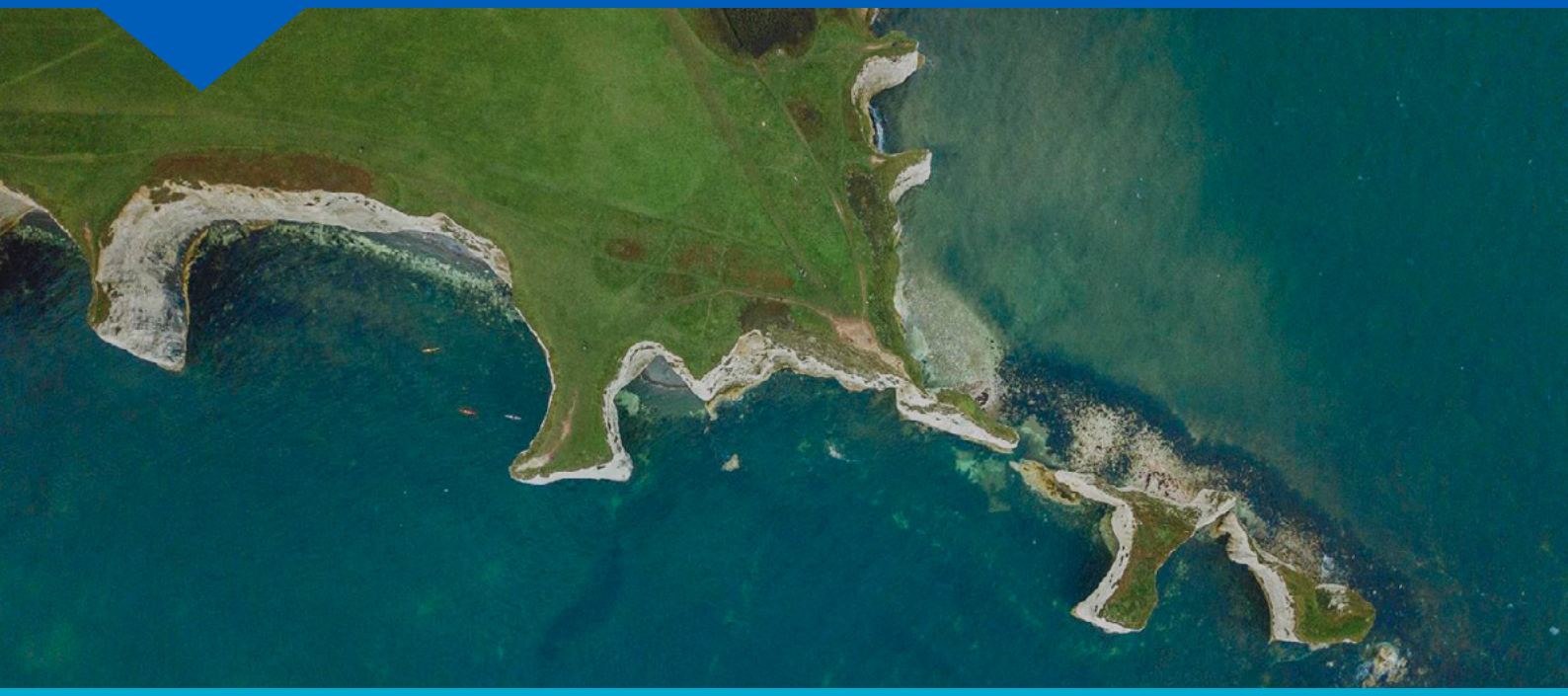
Health Education England

Rural & Coastal Transformation:

Developing health, care and communities through workforce, education, and training in small places.



A discussion paper for NHS Health Education England

Authors: Adrian Tams, Patrick Mitchell & Andrew Dickenson

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Executive summary

> "The most successful model of education and training for local comprehensive Public Health Care is socially accountable, immersive community-engaged education woven into a facilitated education and training pathway starting with recruiting local students from rural and underserved communities."
>
> Strasser, Roger; Strasser, Sarah. 2020. Reimaging Primary Health Care Workforce in Rural and Underserved Settings. Health, Nutrition and Population Discussion Paper; World Bank, Washington, DC.

- This report is about addressing health inequalities for public and patients within rural and coastal settings.
- Patient-related health outcomes in rural communities can be improved through a stable and well-trained local workforce. However, to ensure a sustainable rural healthcare system demands workforce models that have been designed in, and for, these settings.
- Regional workforce planning must reflect unique rural place-based solutions.
- Successful rural workforce transformation requires:
  - Commonality, as rural communities identify more with similar communities in other countries than their own urban centres.
  - Delivering education and training within rural communities increases the quality and cultural relevance of services through a lived experience.
  - Investing in targeted training of rural residents increases recruitment and stability of services in rural locations.
  - Initiatives must be co-produced with the local population to be successful.
- The disproportionate rural workforce shortages, especially amongst professionally qualified clinical groups, is being addressed within the Medical Education Reform Programme, Future Doctor Programme, Generalist Schools and Dental Programmes, but requires more creative place-based solutions.
- This paper sets out an ambition to target a suite of evidence-based programmes within four specific rural-coastal ICSs (laid out in page 17). While these pilots will be place-based, HEE will take the good practice and learning emerging from them to inform future HEE investment and direction.
- This will require HEE to continue to work with partners and span organisational and service boundaries to address wider determinants of health.

Introduction

This discussion paper highlights global, national, and local research on workforce, education, and training in rural and coastal communities. In line with HEE Business Plans, it sets out an ambition to build a defined programme offer in these areas, helping to reduce ill health and health inequalities in rural areas through educating, training and digitally enabling the health and care workforces.

The aim of this paper is to open a conversation within HEE about interventions that could drive more positive outcomes for rural and coastal communities. It builds on what HEE is already developing rather than containing a formed or finalised set of recommendations.

The paper sets out:

1. Global health research on workforce and digital approaches in rural and coastal areas and the learning and practice that can be taken from global initiatives.
2. To define the challenges to rural and coastal areas, through exploring data on the wider determinants of health and workforce levels and why these communities are often overlooked within UK health policy.
3. To identify HEE programmes that can support rural and coastal ICSs.
4. A case for increasing the proportion of medical students who come from a rural background, providing positive rural learning experiences in medical schools and creating specific rural training programmes to increase the number of doctors with the interest, knowledge and skills for rural practice[1].
5. A proposal to pilot transformation programmes across four ICS areas (Lincolnshire, Norfolk & Waveney, Suffolk & North East Essex, and Kent & Medway). The learning from these pilots will be shared with other ICS / rural and coastal areas in England and with our global partners.

This paper aligns to the same issues highlighted in the Chief Medical Officer's Annual Report 2021[2] which concentrated on health in coastal communities. The central argument of the report is that the health challenges of coastal towns, cities and other communities are serious and that if we do not tackle their health problems vigorously and systematically there will be a long tail of preventable ill health which will get worse as current populations age. HEE contributed a chapter to this report, which included analysis on the medical workforce and how HEE programmes could support a programme of reform to overcome some of these challenges.

Defining rural and coastal places is core to workforce design. The Rural Urban Classification is a national statistic used to distinguish between urban and rural areas. The Centre for Subnational Analysis at the Office for National Statistics (ONS) has produced a series of articles on towns, and the 2021 CMO's 'Health in Coastal Communities' report, has focussed on coastal areas although rural remains overlooked within UK health policy.

Deprivation indices have been widely used in health care planning. Existing indices, however, are dominated by characteristics of urban populations that may be less relevant in capturing the nature of rural and coastal deprivation. Combining 4 of the domains in the Index of Multiple Deprivation (IMD) with access to services and demography data reveals how rural and coastal areas have concentrations of deprivation and ill health.

Local NHS organisations are seen as 'anchor institutions[3]' as they are unlikely to relocate and have a significant stake in a geographical area. They have assets that can be used to reduce widening health inequalities and pressures on health care services including workforce and training. HEE is already supporting this work in seeking to build enhanced training, education, and digital learning opportunities in rural and coastal areas.

Attracting graduates into rural areas is critical. Compelling data from Canada, North America and Australia highlight the need to train and retain medical students who have followed a rural track programme. Strasser demonstrated that 30% of students from the Northern Ontario School of Medicine continue into speciality training[4], making training in rural areas an essential aspect of this offer. It is necessary to establish a pathway preferencing students from rural backgrounds onto medical courses[5].

In terms of current policy that are opportunities to position solutions within the Levelling Up agenda as well as in relation to mainstream health funding. As part of the Government's plan to level-up regions, the Towns Fund[6] is a £3.6 billion fund investing in selected towns across England. Each Town establishes a Board and produces a Town Investment Plan of priorities and projects to unlock the investment. Many of these Plans are considering how their interventions will impact and improve the health and wellbeing of the population. For example, Skegness and Mablethorpe secured their Town Deals in March 2021 – and their Plan includes the development of a 'Campus for Future Living'. HEE has identified several workforce transformation programmes which could be piloted from the Campus.

Global Context

HEE supports the NHS to engage in global activity to attract and retain staff and strengthen workforce development. While examples from other countries are always context, place, and community specific; they offer insights into the factors related to workforce and digital approaches in other rural and coastal areas.

Globally, the population density of medical practitioners tends to be higher in urban areas compared to rural and remote settings (Organisation for Economic Co-operation and Development 2019[7]). Recruiting and retaining a skilled health workforce is a recurrent global challenge for remote and rural communities, negatively impacting access to services and directly on health. The research literature demonstrates how different factors facilitate or hinder recruitment and retention of healthcare workers in remote and rural areas; however, there are few practical tools to guide local healthcare organisations in their issues. It was highlighted in a Nuffield Trust (2018) report that smaller hospitals are burdened with workforce shortages, spiralling costs, and increasingly complex models of care for acutely ill patients[8]. Detailed examples of global good practice and insights are set out at Annex 1.

The development of a rural and coastal programme will allow HEE to explore innovative solutions to identified chronic issues by learning from global research. There are three globally identified factors that are viewed as crucial in securing the right workforce in rural areas: (1) a rural upbringing, (2) positive clinical and educational experiences in rural settings as part of undergraduate medical & clinical education and (3) targeted training for rural practice at the postgraduate level.

Classifying rural and coastal communities

The Rural Urban Classification[9] is a national statistic used to distinguish between urban and rural areas. Using this classification, 9.6 million people, or 17.1% of the population, lived in rural areas in 2019[10].

- Rural areas have a higher proportion of older people compared with urban areas. In 2019, the most prominent age groups in rural areas were 50-54 years and 55-59 years (comprising 7.9% of the rural population); while the most prominent age groups in urban areas were those aged 25-29 years and 30-34 years (comprising 7.2% of the population).
- The average age in rural areas has increased faster than in urban areas. In 2019, the average age in rural areas was 44.9 years, 5.7 years older than in urban areas. The average age in England increased by 1.5 years between 2002 and 2019, but by 3.1 years in Rural Town and Fringe areas and 3.8 years in Rural Villages.
- Generally, people living in rural settlements have lower overall levels of accessibility to key services compared to people living in urban areas. 80.9% of people living in rural areas have access to a GP within half an hour's travel using public transport and walking, compared to 99.5% of people living in urban areas.

- Rural communities are ageing more rapidly than urban areas.
- Younger population tends to decline the more rural the settlement type.
- Older people experience worse health and have greater need of health and care services.
- Access to health and care services is often poorer than in urban settings.

- One of the key contributors to health disparities in rural areas is inadequate staffing of rural health services (Malatzy et al. 2020[11]).
- A recent review prepared for the Cavendish Coalition (NIESR 2018[12]), identified that of the 44 Sustainability and Transformation Partnerships in England (ICS), 22 have a rural population greater than or equal to the national average (17%).
- The review highlighted how connections between 'rural' issues and 'workforce' were lacking across ICS's. It is an ambition of the rural and coastal programme within HEE to bring together these issues.
- Within the review, data revealed an overall difference of 45% in the ratio of NHS staff per head of population in the 11 most rural ICS areas compared to England as a whole, meaning that compared to the national average rural areas have 45% fewer workers per head of population.
- The review identified key staff groups with significant workforce shortages: professionally qualified clinical staff, doctors, consultants, staff grade, specialty registrar, core training, foundation doctor year 1, dentists, midwives and AHP's.

Health outcomes are also poorer in coastal areas. The pleasant environment attracts older, retired citizens to settle, who inevitably have more and increasing health problems. An oversupply of guest housing has led to Houses of Multiple Occupation which led to concentrations of deprivation and ill health.

There is no nationally agreed upon definition on what constitutes a 'coastal community'. The CMO's Annual Report (2021) takes a broad definition, with the term applied to any settlement along the coast (including villages, towns, and cities). PHE[13] defines a coastal area as 'any coastal settlement within a local authority area whose boundaries include UK foreshore – including local authorities whose boundaries only include estuarine foreshore'. The Centre for Subnational Analysis at the Office for National Statistics (ONS) has identified 169 Coastal Towns in England and Wales[14], and categorises them by size, and according to whether they are seaside or non-seaside towns.

Except for seaside resorts and coastal cities, there has been very little focus on other rural and coastal areas which often remain overlooked within health policy.

Deprivation

A joint PHE LGA case study report[15] unpicked a widely held assumption that people living in rural places are better off, both in monetary terms and in terms of health and wellbeing. The report was prepared against a backdrop of a growing realisation that broad brush indicators can mask pockets of significant deprivation and poorer health outcomes. More Information is provided in Appendix 2. The development of a new index (RDI) by Professor Andy Jones and Amanda Burke at the University of East Anglia set out in more detail in Appendix 2 is particularly important in this context.

Deprivation may take different forms in different contexts:

- The IMD measures relative deprivation and not prevalence.
- The RDI provides a basis for developing and/or weighting deprivation by applying three domains: (1) relative deprivation – IMD domains for income, employment education, health, and disability; (2) locality related deprivation – IMD domain for housing in poor condition and DfT data on average time to travel to 8 essential services; and (3) population – people aged 75 years and over.
- Applying the RDI increases the number of LSOAs in rural and coastal areas that are deprived.

Workforce Agenda

Taking account of deprivation factors, HEE has combined data on rural and coastal workforce distribution with the IMD (Appendix 3). This identified four areas with low workforce levels (doctors less than 0.3/1000; nursing 2.5/1000) with high deprivation levels (>22):

Table 1: Pilot geography IMD Score and workforce/1000 population

Geography	IMD Score	Rank	Drs/1000 capita	Rank	Nurses/ 1000 capita	Rank
Lincolnshire	29.6	6	0.23	2	3.26	14
Norfolk – Kings Lynn	27.1	8	0.25	5	3.17	13
Suffolk – James Paget	27.2	7	0.23	1	2.57	5
East Kent	22.8	15	0.37	13	2.7	6
Medway	22.5	16	0.23	4	2.17	1

The WHO[16] published 16 evidence-based policy recommendations for the design, implementation, and evaluation of initiatives to attract and retain health workers in rural areas, grouped around education, regulation, financial incentives (eg TERS)[17], personal and professional support. It has identified that rural exposure during undergraduate medical training contributes to recruitment and retention in nonurban settings, which should be included in strategies addressing shortage of rural practitioners. International evidence has identified that rural placements during medical education are particularly effective for rural-entry students, indicating that Universities should be encouraging applications from rural students within a widening access and participation initiative[18].

- Rural and coastal areas often struggle to attract, recruit, and retain the right workforce.
- HEE workforce analysis has identified rural and coastal areas that are under-served and highly deprived. Four of these areas are good places to start if we are to reduce disparities.

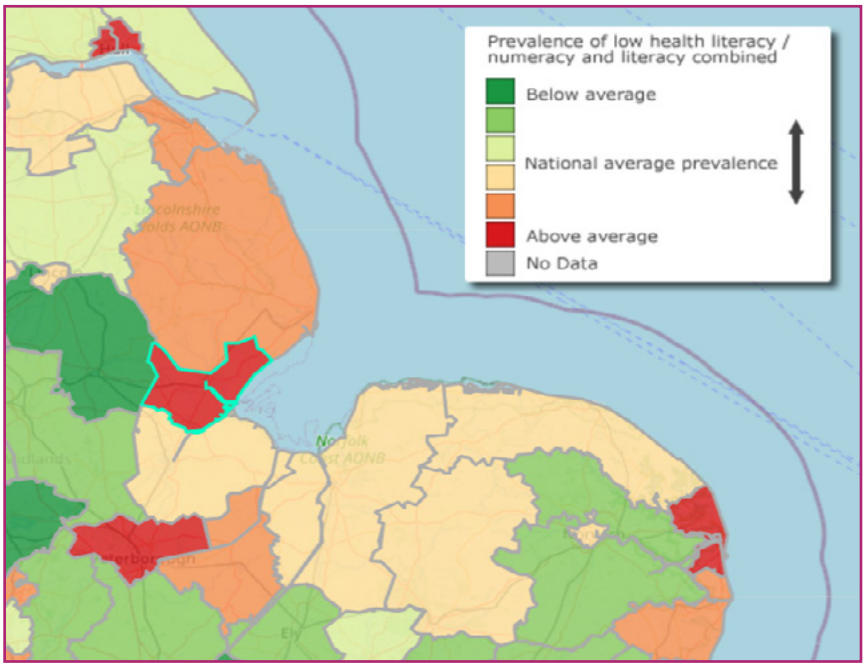
Digital Literacy

The data available on digital literacy suggests that all four pilot areas face considerable challenges with adoption of digital technology arising from their remote settings.

The Go ON UK research (2019) shows that the off-line population [those without access to the internet] are disproportionately rural, low income, older and illiterate:

- 64% of the off-line population live in rural areas.
- 50% of off-line individuals have an income below the poverty line.
- 18% are over 55 years.

Health literacy is the ability to access, assess and use health information. In our digital age, health literacy needs to be underpinned by digital navigation and digital literacy skills, so that individuals can find and evaluate information online as well as access digital health services. This is even more important as healthcare appointments move online. Also, one impact of the pandemic is that the voluntary sector cannot fund printed information materials and is producing materials online. Geodata commissioned by Health Education England shows coastal and rural communities are amongst those that struggle with health literacy an example of the eastern seaboard is set out below.



Source: Skills for Life data from 2011, combined with population projections were for 2016. Analysis commissioned by Health Education England from the University of Southampton.

Full geodata at http://healthliteracy.geodata.uk

Two examples of good practice established to address this issue which can be built on involve East Kent, which was an early adopter (2014) of improving digital literacy within local communitities (see case study). This intitial project and its outcomes has provided a platform for delivery of a similar project in Lincolnshire (see below), where 25% of the population are without basic digital skills:

East Kent: 'Touch a new world' 2014 pilot project

- At the time, 1,415 Home Library Service (HLS) customers were unable to physically visit a library and unable to access digital services and facilities.
- Offered training to customers who had never been online and did not have their own computer equipment, using a web-enabled tablet device lent to them for the period of the training.
- Provided training to HLS customers who already had their own computer equipment but lacked the skills and/or confidence to use it effectively.
- Matched each customer with a dedicated and trained volunteer to deliver 6 x 1 hour weekly sessions covering key aspects of going online.
- 21 volunteers were trained to deliver the programme initially, with expansion plans for the future.
- 91% of participants reported feeling extremely satisfied with the training with a new understanding of IT.

Lincolnshire: A pilot study area for Digital Ambassadors

- A quarter of the population in Lincolnshire do not posses the skills to confidently use technology or digital products in their lives.
- A large proportion that have no motivation to engage with the internet.
- The key area of focus is to increase the motivation to engage with barriers and opportunities within this area.
- This requires a workforce and the public being able to have great conversations about the use of digital products in the provision of care.

HEE National are supporting NHS Lincolnshire Community Health Services to develop a 12 month programme to create 'Digital Ambassadors' across the workforce and communities of the east coast, Lincs.

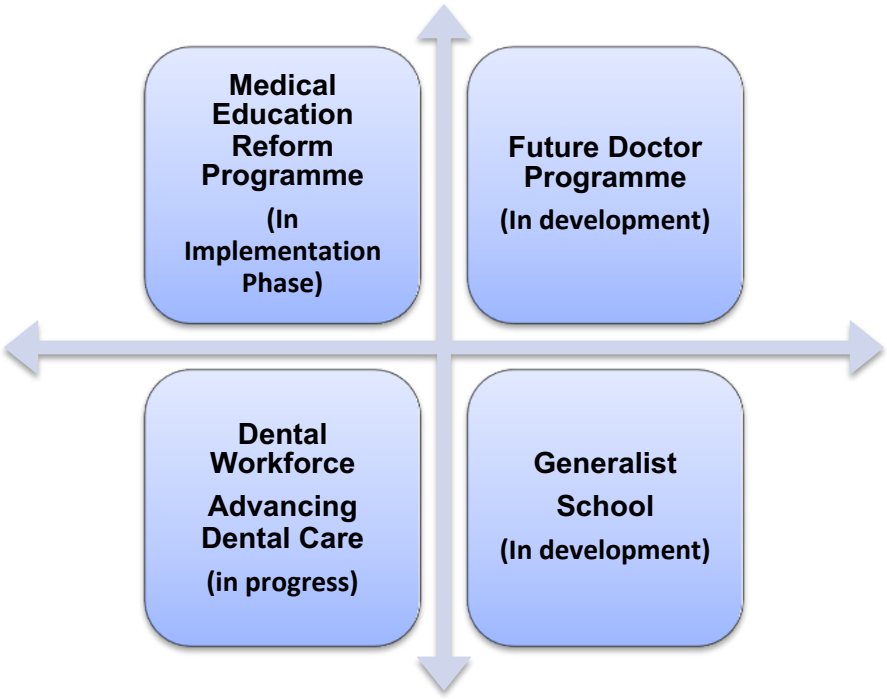
- Health education and training can be enhanced through innovation and the use of existing and emergent technologies.
- Digital literacy is person-centred and staff working in health and care need to be able to identify and develop their digital capabilities.
- To support local ownership of digital literacy and skills development, 'Digital Ambassadors' and an ICS development programme could be supported within the four pilot areas. This is already underway in Lincolnshire.
- Technology and e-enabled solutions have the potential to improve patient access to services, the quality of clinical services they receive and the outcomes they achieve.
- For health professionals, digital technologies provide access to continuing education and professional development, the provision of enhanced local services, networking, and collaboration.
- COVID-19 has increased the usage and adoption of digital technologies in rural and remote coastal settings.

HEE Programme Offer

There are several HEE education and training programmes and development innovations (see diagram below) that are supporting the rural and coastal agenda.

This proposal would require HEE's regional teams to work in collaboration with the proposed ICS pilot areas, supported by HEE's national teams as appropriate, to establish a targeted and sustained programme over multiple years.

The programme would be designed on a mix of existing proven interventions but be anchored around some key initiatives that internationally have bene proven to be effective in sustaining a local community's recruitment and retention of health professionals. These programmes are at varying stages of implementation but can be adapted to an integrated rural and coastal model as part of the overarching place-based transformation ambition.



It is clear that rural and coastal communities face significant and long-standing challenges in relation to health inequalities. Addressing this requires a new vision for professional practice in rural and coastal places which is locally distributed, community embedded and where education and learning leads to greater collaboration with other partners in health, care, local authorities, and communities. This is not about altering established approaches but building on existing programmes and activities, acknowledging the key drivers in the diagram below:

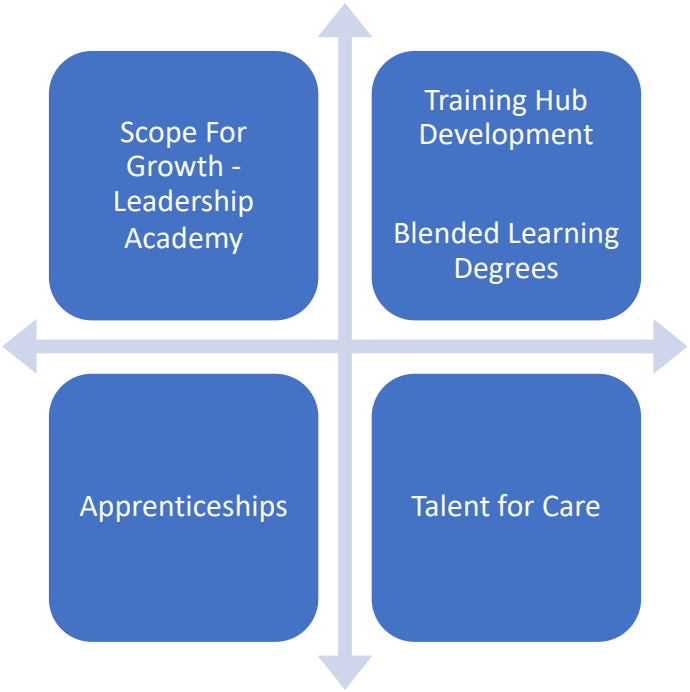
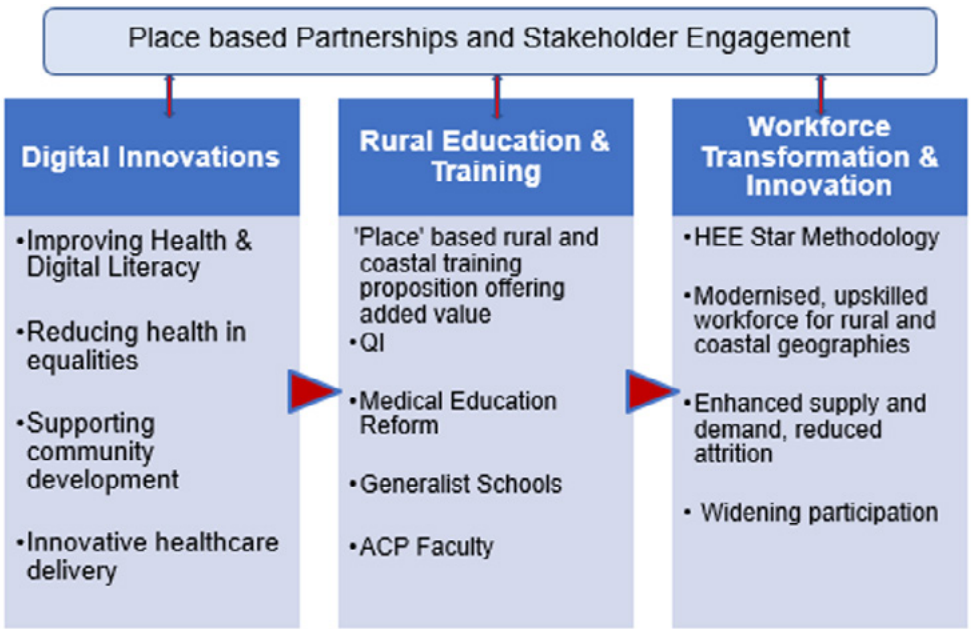


Figure: Proposed drivers for change

The diagram below summarises how these programme areas inform a rural and coastal partnership and stakeholder programme:



More details on the HEE offer are set out in Appendix 4.

Business Plan

The ambitions are aligned to the priorities set out in the 20/21 HEE Business Plan:

- Maximise impact of current education and training delivery.
- Robust QI to ensure continuous improvement using HEE's Quality Framework.
- Review the methods used ways to recruit, train and assess trainees whose skills the NHS will rely upon in future, while fully complying with the government measures needed to combat COVID-19.
- Collaborate with a partnership of organisations to ensure cohesive oversight of education, training and deployment and embedding workforce supply, education, and training principles into routine service delivery, and restoration and recovery work.

Additionally, the HEE annual mandate sets out priority areas and commitments around:

- Making sure the HEE Digital First places customers central in everything we do.
- Increasing the nursing workforce by expanding routes into the profession, attracting more undergraduates, improving support, and changing perceptions
- Building more multidisciplinary teams and a more flexible workforce to meet modern and emerging healthcare needs, launching a national consultation to establish what the NHS, patients, and the public want from 21st-century doctors.
- Supporting targeted action to prevent ill-health, improve patient safety, transform mental health and learning disability services, improve cancer outcomes and transform urgent and emergency care.
- Working more closely with national, regional and system partners to develop a more coherent approach to workforce policy and planning.
- Continue to welcome and support international workers.

- A rural coastal programme aligns to the HEE strategic goals, objectives and foundations of success contained in the Interim Business Plan.
- Rural and coastal areas have been impacted by Covid-19, reflecting the aging populations, pockets of deprivation and economic reliance on tourism and hospitality areas. Investing in these areas will support HEE's work around Recovery and Delivery.
- HEE investment in a rural and coastal programme will ensure education and training can act as a catalyst for change in developing a workforce skilled to meet the health and care needs of these communities.

Delivery plan

Based upon deprivation, workforce and digital data, and current activity across HEE geography, four ICSs with rural coastal areas have been selected as 'test beds' for education, training, and workforce transformation. The identified ICS are Lincolnshire, Norfolk & Waveney, Suffolk & North East Essex, Kent & Medway.

These ICS's face similar challenges in attracting, recruiting, and retaining a workforce needed to deliver the range of health care needs within their populations. At the same time, more work is needed to support, enable, and empower residents in these areas to make informed decisions about their care and wellbeing, self-manage their conditions, and remain active in their communities. Evidence suggests that a joined-up, place-based approach is necessary to tackle the complex causal pathway of inequalities.

Taking the population and workforce health needs into account, along with development of devolved budgets across the health and care system and working in partnership with Integrated Care Systems and CCG's, it is proposed (through a 'place' based approach in partnership with HEI's)[19] that the programme is piloted through several strands:

1. Work with local teams who have knowledge of the context and specific issues of those areas to fully understand the health and workforce issues.
2. Develop a programme of skills development to equip current & future workforce embedded in rural and coastal practice.
3. Support local communities to become centres of rural training excellence, contributing to a strong training programme.
4. Use MERP & Generalist Doctor programmes to influence the approach to medical and clinical training in England, drawing on global evidence.
5. Ensure trainees develop a broad range of skills needed for rural and coastal practice.
6. Ensure the service allows delivery of those skills.
7. Review previous initiatives and reasons for success and failure.

Digital technology will be a 'golden thread' throughout these programmes, driving transformation and innovation.

Ownership for delivery within each locality will be a partnership approach with HEE Transformation teams locally/nationally and ICS People Boards, which will provide governance and financial oversight. Investment is required to achieve successful outcomes and pump-priming HEE investment is recommended for a 2-year period. This is additional to current workforce development and transformation commitments to support and enhance existing ICS investments. However, it is anticipated that systems will also prioritise funding to support delivery against the identified suite of transformation projects.

Next steps

- This paper has sought to explore the definition, data, and insights into these communities; identifying four ICS areas to pilot a rural and coastal programme that will transform education, learning and training within them.
- The proposed pilot ICS systems are Lincolnshire, Norfolk & Waveney, Suffolk & North East Essex, and Kent & Medway.
- The pilot fits within the HEE Interim Business Plan in maximising the impact of education and training and in COVID-19 Delivery and Recovery. It will ensure the NHS is an anchor for co-production of these pilots.
- The suite of HEE support would deliver transformation programmes aligned with core and place-based options:
  - **Core:**
    - » Widening participation and access to medical schools, with ambition to increase applications from rural communities by an additional 20% over 3 years.
    - » Innovative rural and coastal healthcare apprenticeship programmes.
    - » Health literacy programmes eg; digital Ambassadors, to increase digital and health literacy within rural populations.
  - **Place-based:**
    - » To pilot and implement Generalist specialist training programmes, targeted placements, and immersive out-reach experiences.
    - » Dental and Medical Education Reform in line with the HEE emerging national programmes.
    - » Promotion of advanced practice to support the medical workforce eg; ACP/AHP and Pharmacy.
    - » Explore TERS initiatives for primary care attraction and retention within medical and dental training.
    - » Expansion and adoption of technological opportunities in line with the HEE Digital Strategy.
- Existing HEE internal and external relationships and engagement are integral to the delivery of the programme. The findings of the pilot will be shared to deliver transformation in other rural and coastal areas and form part of the evidence base and knowledge exchange with global partners.

Appendices

Appendix 1: Global Context

This section of the report sets out key reference points from a global perspective.

Remote Workforce Stability

Utilising a multi-partnership collaboration of global partners living in northern rural and remote communities across Sweden, Norway, Canada, Iceland, and Scotland, Strasser et al (2018) developed *'The Making it Work: Framework for Rural Remote Workforce Stability'*[20]. This identified factors impacting on workforce recruitment and retention in rural settings, based on nine strategic elements (Figure 1). Although not exclusively related to education and training, the framework identifies how these factors are essential to delivery of rural healthcare and workforce retention.

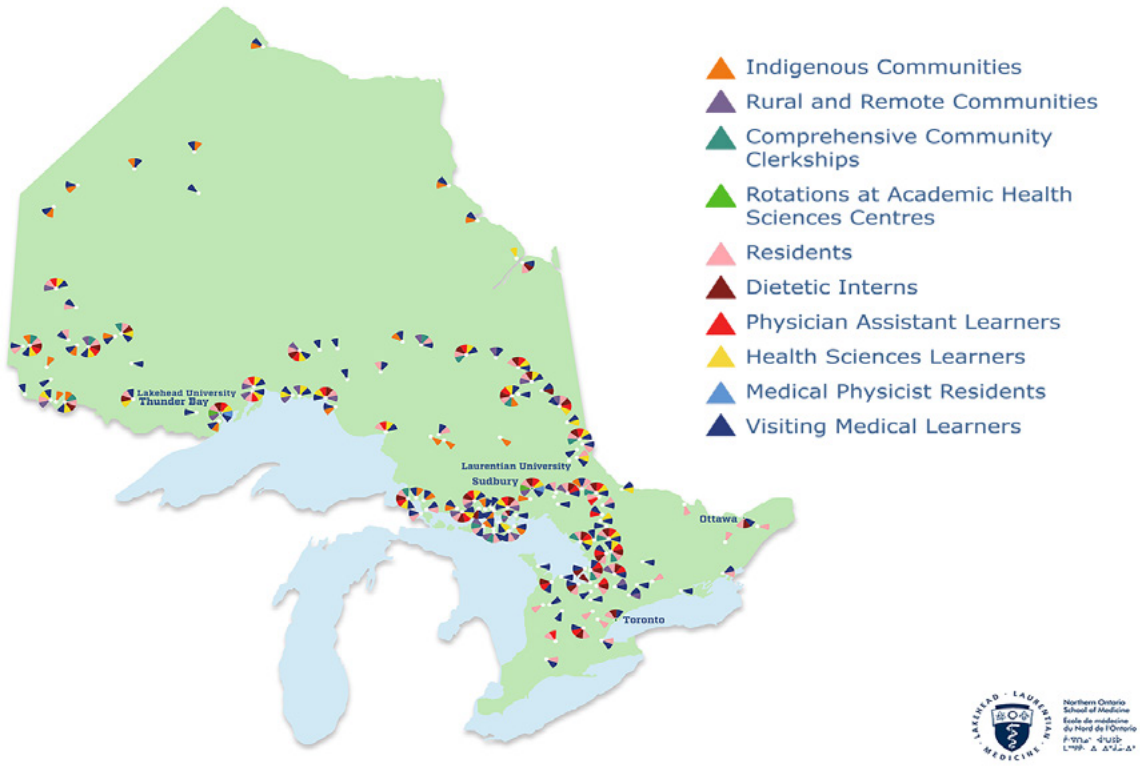
Figure 1: Integrated model for workforce stability

Rural Postgraduates

Applying rurality to postgraduate medical education and training has been exemplified in locally based postgraduate training pathways in rural areas of Australia and Canada, where the importance of this approach to training has led to:

- Increased medical graduate training numbers in rural under-served regions.
- 'Flipped training' - locating full specialty training programs in regional and rural centres, whereby specialty trainees are based in rural or regional clinical settings with some rotations to the cities.
- Increased desire for doctors viewing their regional or rural centre as 'home base' with the city rotations only as necessary to complete their training.
- Increased understanding in medical students of rural/remote community context and its impact on the health of rural/ remote populations.
- Teaching through 'community' rather than 'clinical' placements.

In Canada, the Northern Ontario School of Medicine[21] (NOSM) provides distributed community engaged learning to learners and interns, operating from 90 sites:



The placements have resulted in more generalist doctors, enhanced healthcare access for rural and remote communities, interprofessional cooperation, new health research and broader academic developments.

Rural Roadmap

Responding to rural urban disparities more widely, the Rural Road Map (RRM[22]) was developed by the Advancing Rural Family Medicine Canadian Collaborative Taskforce in 2017 – its work includes a multi-stakeholder rural health-care strategy that seeks to improve the retention of health care professionals in indigenous communities and provide cultural training for all heath care professionals. The Rural Road Map Implementation Committee (RRMIC) was formed in 2018 to support the delivery of the RRM. The RRMIC is seeking to strengthen links between health care providers and rural communities through the creation of networks of care that improve access to care and influence physician retention.

Rural Practitioner Initiatives

In response to the chronic shortage of rural practitioners in Australia, medical schools introduced compulsory rural clinical placements with the expectation that experience in rural settings would encourage a future interest in rural practice. Other countries offering Rural Generalist Medicine (RGM) include the United States. Japan, South Africa, and New Zealand.

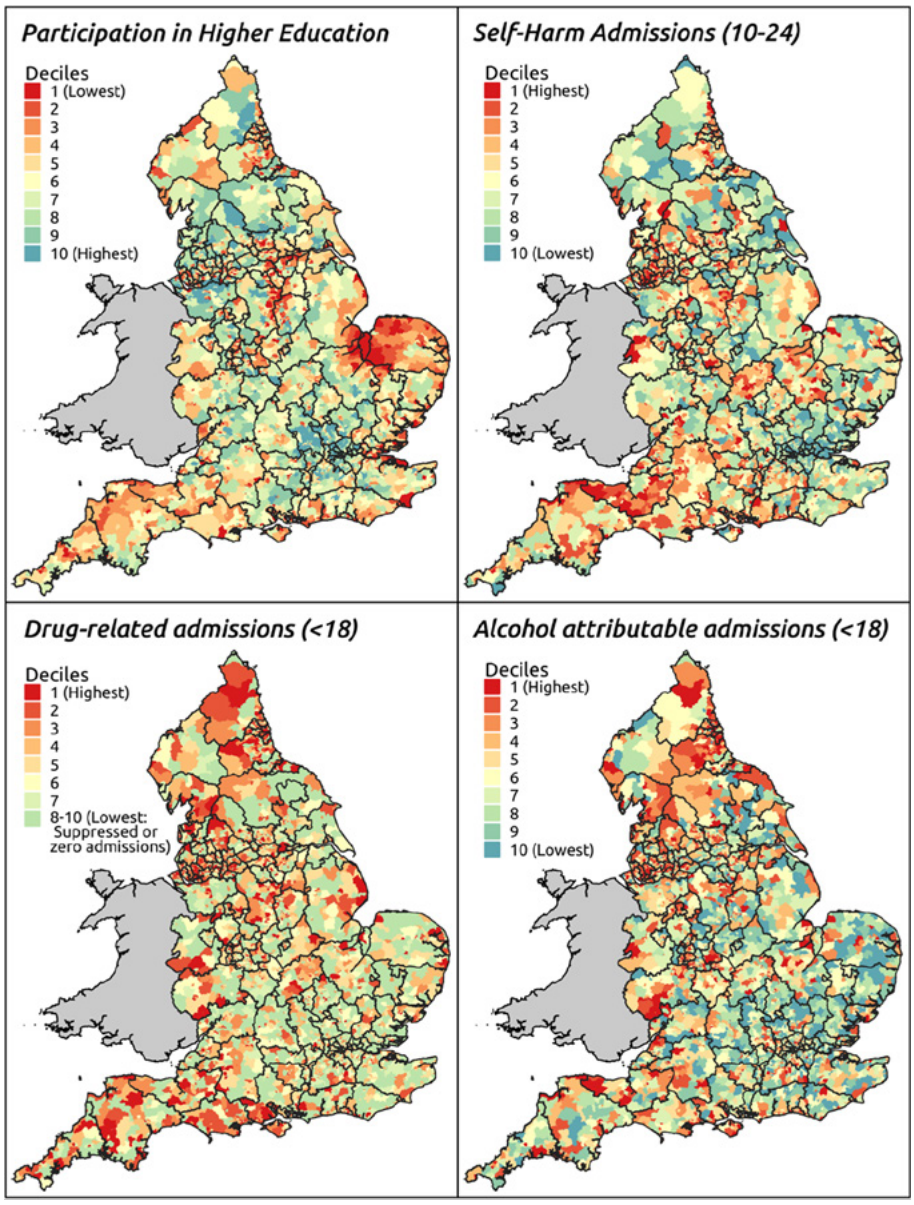
- Research indicates that a stable and well-trained workforce supports access to high-quality services which are responsive to community health needs and result in improved health outcomes for residents.
- Offering rural and remote placements for medical education and training leads to greater retention rates.
- These examples highlight the importance of reducing health inequalities by taking a place-based approach. Focussing on the needs of smaller areas requires designing appropriate responses that are wider than a medical or clinical approach, and that involve communities and stakeholders.
- This focus on localities leads to smart design, which best matches resources to local circumstances.

Telemedicine

Since 2010, several telemedicine programmes have been developed in rural areas in Spain including tele-dermatology, tele-ulcers, and tele-audiometry. Images are taken and attached to the patient's electronic medical record and then reviewed by hospital specialists who propose a treatment or action plan. In Central Catalonia the programme[23] has reduced waiting lists – with dermatology waits reducing from a mean of 30 days to a mean of 16 days when using telemedicine; referrals rates from rural patients increased as they had to make fewer journeys to access care, and for the 52,198 visits recorded between 2011 and 2019 telemedicine saved €780,397. eConsulta[24] is an asynchronous teleconsulting service between GPs and citizens. Introduced in 2015, the platform was already growing at a rate of 24,000 conversations, 44,000 messages, 5500 new users, and 140 new professionals per month before COVID-19 and has been growing exponentially throughout the pandemic.

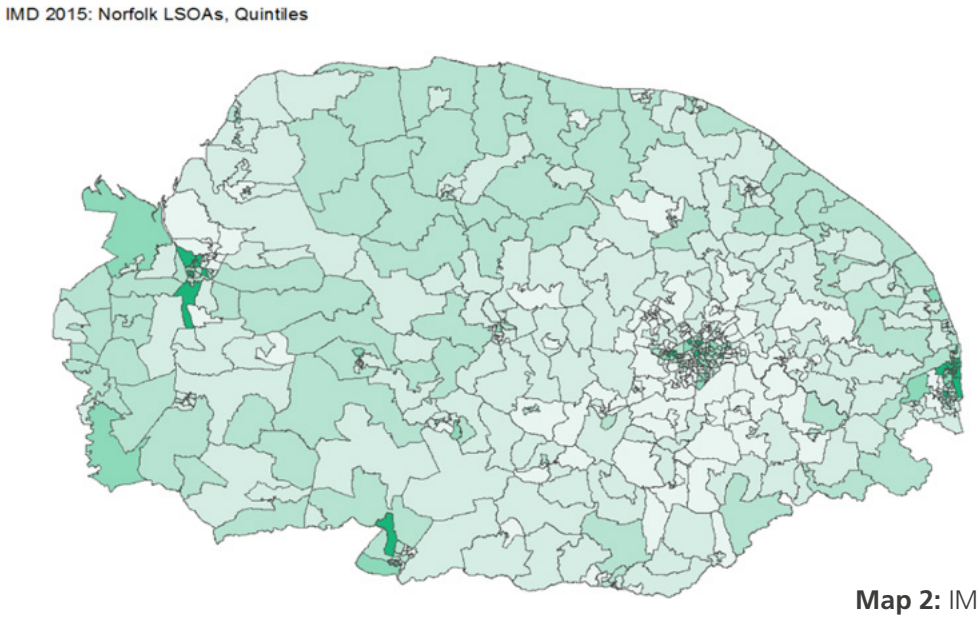
Appendix 2: Deprivation Context

In a coastal context, analysis by Professor Sheena Asthana at the Plymouth Institute of Health and Care Research has sought to use QGIS and ONS boundary data to build up 'coastal LSOAs' which lie within 500 metres of the mean high-water mark (excluding tidal rivers). Around 18.5% of the English population live in coastal LSOAs compared with the 25.4% of people who live within local authorities which include coastal foreshore. Professor Asthana's work cuts across the administrative geography of local authorities and ICSs in making it possible the model data on the prevalence of health risk factors, disease, and public health outcomes at a more granular level (map 1).

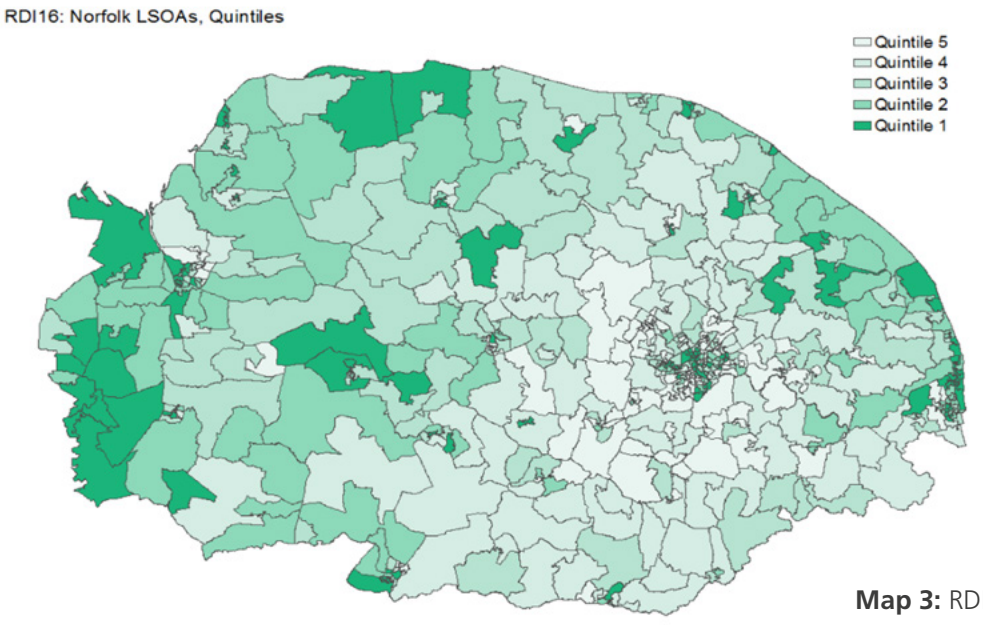


Map 1: Children on the periphery – health risking behaviour and progression into higher education

In a rural context, Professor Andy Jones at Norwich Medical School, University of East Anglia (UEA) is working with PHE to explore the development of a more precise means of measurement for rural deprivation to complement the English Indices of Deprivation (IMD). His approach used Norfolk as a test bed. The analysis includes IMD data sets relevant to rural areas and adds in average travel time to essential services and a population factor – looking at the ONS mid-year estimates of those aged 75 years and over. This has led to the production of a new Rural Deprivation Index[25] (RDI). The resulting RDI has the greatest increase deprived LSOAs in 'Rural town and fringe' [shown in maps 2 and 3]:

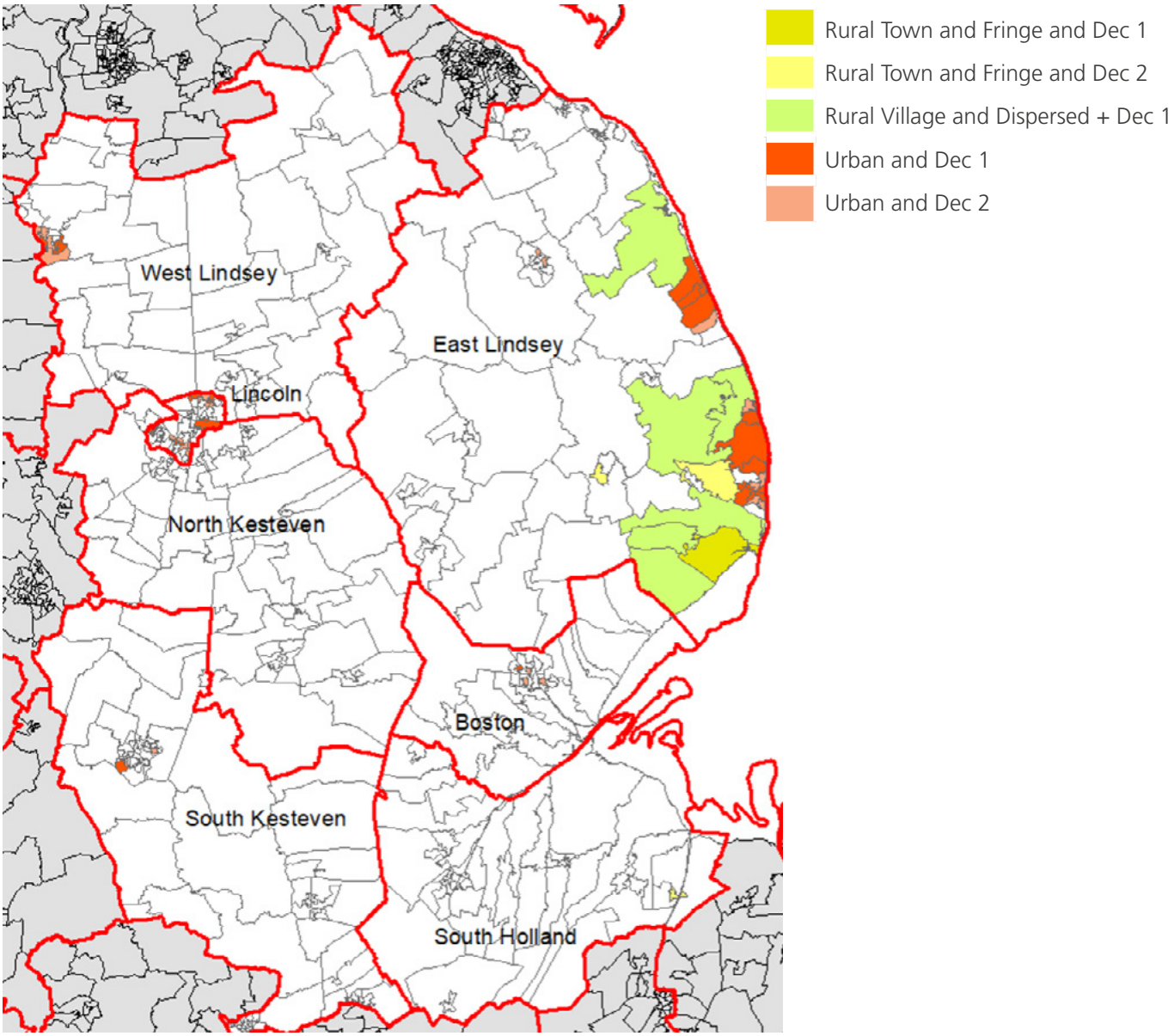


Map 2: IMD data

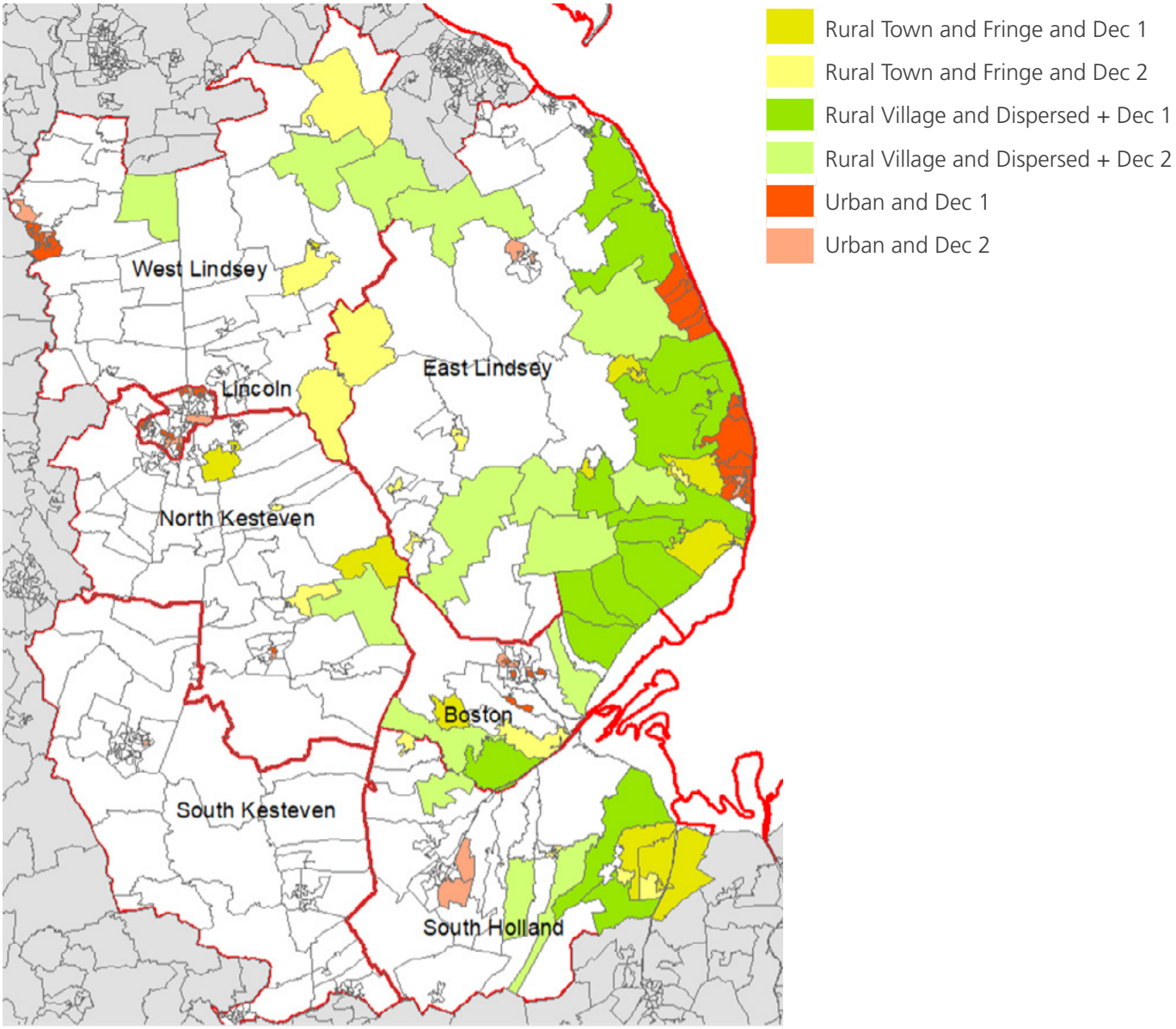


Map 3: RDI data

Professor John Shepherd (Birkbeck, University of London) has applied the IMD 2019 and RDI in Lincolnshire. This also shows a shift in rankings, with an increase in 'deprived' LSOAs when the RDI rather than IMD is applied, particularly for rural town and fringe [shown in maps 4 and 5]:

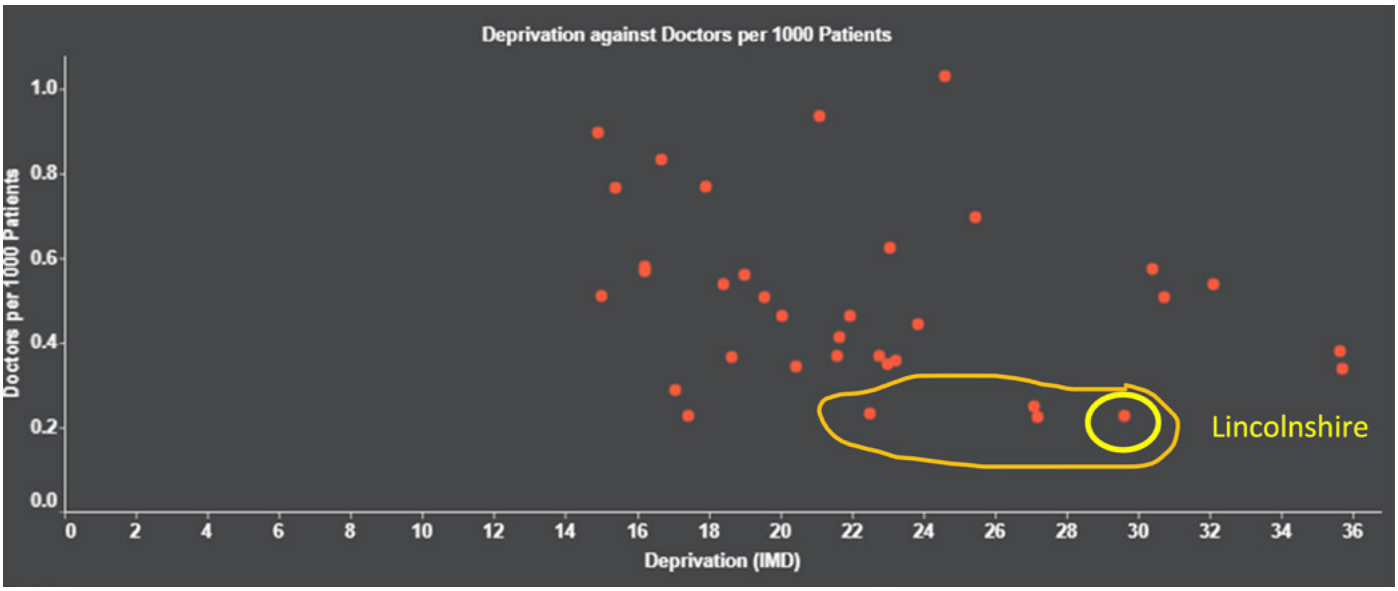


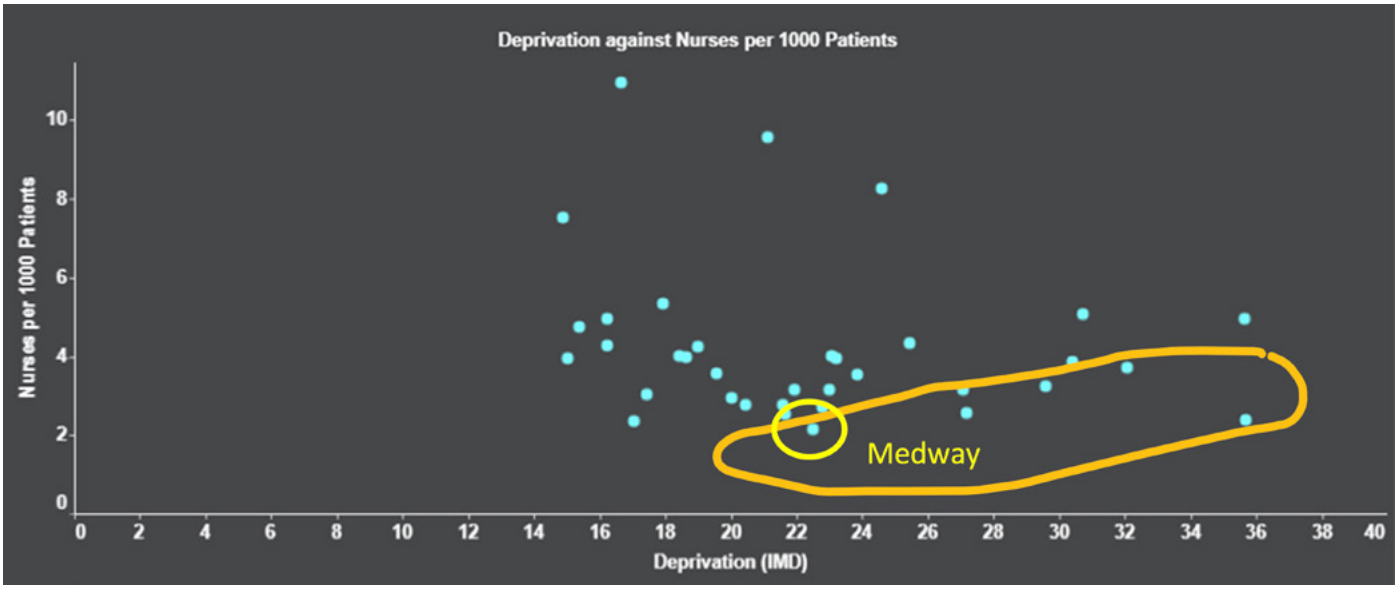
Map 4: Lincolnshire IMD – deciles 1 and 2



Map 5: Lincolnshire RDI – deciles 1 and 2

Appendix 3: Examples of Workforce Distribution





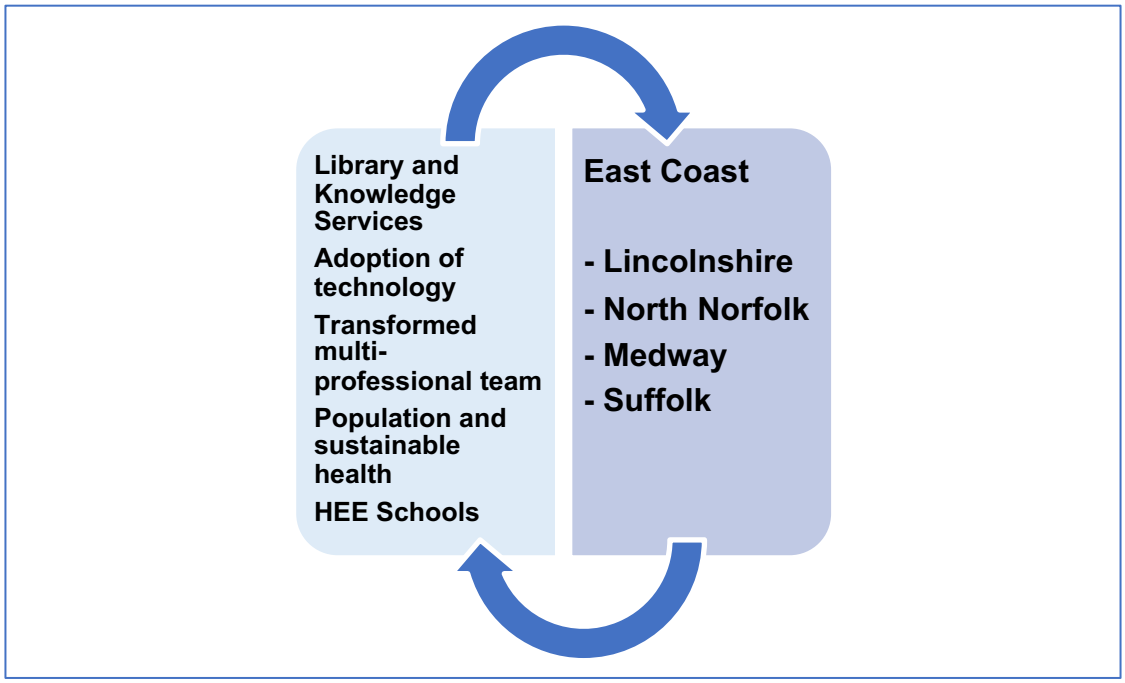
Appendix 4: HEE Offer

1. Medical Education Reform Programme (MERP)

- The MERP Programme will develop an attractive package of education and training for trainees by working with organisations and stakeholders, in rural and coastal settings, prioritising place-based contexts. The programme will highlight the benefits of an extended scope of practice for clinicians in rural places and the impact that these skills can have within a community and their impacts on the social determinants of health.
- The development of a clearly defined programme supports the determination and commitment of HEE to support training in smaller places[26].
- It is anticipated that the rural and coastal programme will support and allow expansion of the ambitions set out earlier in this paper, to ensure that trainees gain access to skill development in a place-based setting, in a 'rural context'.
- Evidence emphasises the need for developing a 'multi skilled professional' and support workforce with generalist skills on the widest practicable basis amongst health and social care workers in rural areas.
- Research commissioned by the National Centre for Rural Health and Care (NCRHC) – "Rural Workforce Issues in Health and Care" led by the University of Birmingham[27] highlighted the need to view workforce development in terms of an employment pathway.
- This innovative approach to education, training and development will help to overcome complexities in the 'attractiveness' of rural training, as evidenced by Vaughan et al., (2020) where smaller and rural hospitals are low on trainees post preferencing.
- The benefits of developing a 'Specialist Generalist' within rural health and care settings is well documented in 'The Making it Work: Framework for Rural Remote Workforce Stability'.
- The Framework is a strategy designed for rural and remote healthcare organisations to ensure the recruitment and retention of vital healthcare personnel. Developmental work is underway through the Future Doctor programme.
- Work is underway to explore the distribution of undergraduate and medical training placements across England. GMC data shows approximately 80% of doctors completing their specialty training settle within 50 miles of the area they trained. Aligning the education and training investment equitably and redistributing training posts to under-doctored areas should provide long-term, sustainable, and cost-effective healthcare for the local population, but must be carefully planned to not destabilise services which lose posts. Where new training opportunities are created, these will be places in areas of need, which will negate the requirement to redistribute posts.
- Employers are working with the support of HEE to establish a Doctor (Medical) Apprenticeship route. There is an opportunity to create apprenticeship opportunities in remote and rural areas most in need.

2. Future Doctor Programme/Generalist Schools

- There is already synergy and symbiosis between the emerging Generalist and rural/coastal programmes and the pilot geographies (Appendix 1):

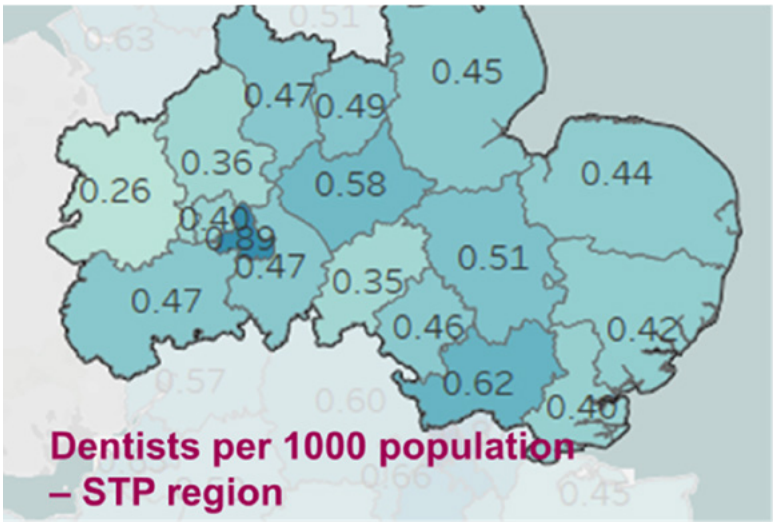


- The Rural and Coastal Programme offers the potential as a catalyst for the adoption of each of the 8 identified 'Generalist' themes within a rural 'place' and context, particularly within the education and training of medical trainees.
- This adoption and spread methodology will be supported through developments such as:
  - Campus for Future Living (Lincolnshire)
  - Breaking Barriers Innovations projects (Medway)
  - Digital Skills Academy (North Cumbria)

3. Dental Education Reform Programme

Dental workforce development is high on the NHSE and HEE agenda, aligned to an on-going national review of dental delivery within the Advancing Dental Care (ADC) review.

The number of dentists and their teams is significantly lower in rural and coastal areas (see illustration). In 2019 England had 24,545 dentists performing NHS primary care activity in 2018-19, equivalent to 0.44 dentists per 1000 population. Comparing the number of dentists to the closest analogous OECD figures for Germany and Italy (those 'licensed to practise'), their figures are 1.18 and 1.02 dentists per 1000, respectively.



Triangulating across sources, therefore, presents a similar message of fewer dentists per head of population than comparable European countries. However, it is also observed that England has fewer NHS primary care dentists per person than the other devolved UK nations. ADC aims to develop an education and training infrastructure that can respond to the changing needs of patients and services, which is encouraging a multi-professional approach and increasing the preventive aspect of healthcare. The ADC Review commenced in April 2018, and the final ADC report will be launched in Autumn 2021.

The dental aim of the programme is to improve population health, which aligns to the HEE health and digital literacy strategy, underpinning a life-course perspective to health. This is impacted by health inequalities, which could be addressed through increased placement capacity for trainees (medical, dental, nursing) on HEE training programmes for example.

Case study: Lincolnshire

'An aspiration of the Rural and Coastal Programme is to enhance the provision of dental services across the region, whilst offering the opportunity to build dental workforce for the future, through existing collaboration with the NHS Lincolnshire Talent Academy 'Future Dentist' programme, but also through the development of the 'Campus for Future Living'.

Within the Midlands Dental Deanery, utilising Lincolnshire as an exemplar through the Campus for Future Living model, affords HEE a unique opportunity to influence and health and care delivery from disease management to disease prevention, through an education and training perspective.

The imbalance can be reduced if postgraduate dental training places are distributed more equitably across England. This will help reduce the geographic disparities in workforce distribution and improve patient access to dental care in the future. In conjunction with NHSE/I, the HEE Dental Reform Programme will explore the training and service provision needs across England to develop a patient-centred approach to future training provision and, where necessary, make the case for new posts.

Dental advanced practice will support the central developments to liberate the treatment skills of dental care professionals and increase the prevention and population health activities within the team, reaching out into community, care homes and schools

To achieve this, workforce ambitions and initiatives include:

- Attract dentists and trainees though provision of (a) training (b) CPD and (c) community network skills.
- Train dentists with a specific programme in rural dentistry, focussing on place-based care.
- Drive technological advances, using telehealth and remote consultations.
- Partnership working with centres of excellence, developing specialist services from major teaching hospitals and institutes that will open access to both face-face and remote consultant clinics.
- Support health and digital literacy with local communities through outreach clinics & community initiatives
- Interdisciplinary working with Neighbourhood Teams
- Ambition to new research projects focussing on the rural challenges of delivering high quality oral and dental care.
- In the UK there has been no established research specifically addressing dental diseases within remote populations
- Migration of the younger population into cities has altered the skills required to practice dentistry in the rural areas.

4. Digital Interventions & Technology Enhanced Learning (TEL)

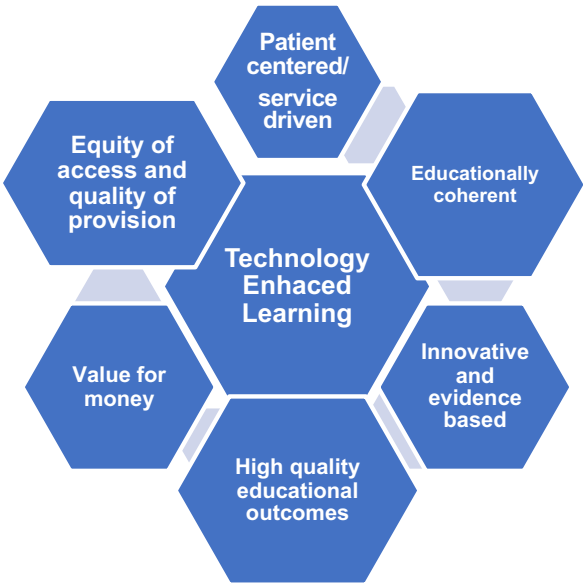
- A rural and coastal programme can support the ambitions of HEE TEL to deliver its ambitions of driving a paradigm shift in the adoption of immersive technologies, particularly within rural contexts, to support the delivery of direct education, simulated clinical practice, patient safety and human factors training.
- Utilising the range of digital interventions and programme already in existence within HEE and in partnership with NHSx and NHSEI, there is an opportunity to deliver a digitally ready, transformed workforce for the 21st Century. This will support digital leadership skills and digital workforce capacity building.
- The four pilot areas are already early adopters of digital technology but require further support to progress digital education and training of workforce and in particular digital literacy skills training.

Technology Enhanced Learning (TEL)

Engaging with the Technology Enhanced Learning (TEL) programme across the four pilot geographies will ensure that technology is used as part of a learning solution for the benefit of patients to:

- Reduce inefficiencies,
- Improve access,
- Reduce costs,
- Increase quality, and.
- Make medicine more personalized for patients.

The diagram below sets out the key facets of the programme:



E-Learning for Health Care

- HEE has an opportunity, via the approaches to medical and clinical education and training within this paper, to enhance education, not only through educational reform and learning in 'place', but to utilise the e-LfH package to further support and enhance the quality of training within rural settings.
- The eLfH hub is has a far and wide reach in its current form, but could utilise the models from Australia and Canada, to develop a suite of rural education programmes, tailored to the needs of rural communities, supported by rural doctors and specialists.

Existing digital resources available from e-LFT which can contribute to reducing health inequalities in rural and coastal areas

The Health Equity Assessment tool has been developed by PHE to enable professionals to systematically identify and address health inequalities and equity in their work programmes or services. This e-learning supports the use of the tool, providing the context and purpose, outlining the benefits of using the tool, and takes the learner step-by-step through each stage of the tool. It also provides a general introduction to health inequalities and equity, as well as examples of good practice.

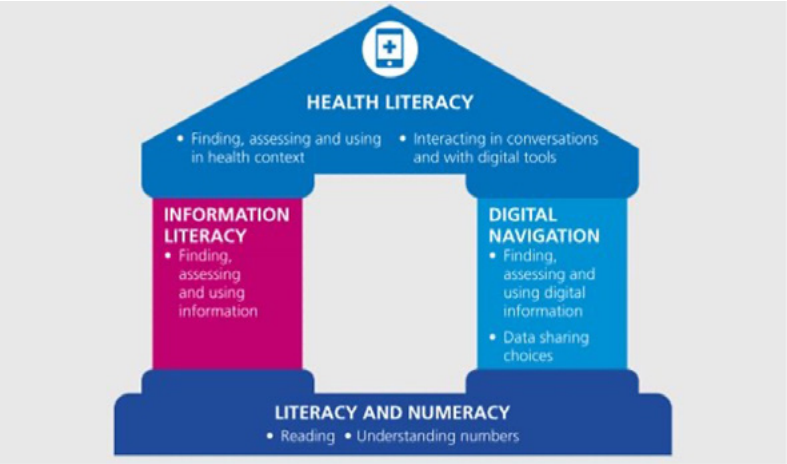
HEE's Population Wellbeing Portal, which is hosted by e-Learning for Healthcare, provides a central location for a curated collection of digital resources to support health and care workforces to improve the health and wellbeing of the public. The contains links to e-learning, toolkits, videos, webinars, and various publications. The portal has a section on health inequalities which signposts to various external resources. The curated content available via the portal will migrate to HEE's Learning Hub in due course.

The All our Health e-learning sessions support PHE's All our Health Framework, a call to action to all health and care professionals to embed prevention into their everyday practice. A new e-learning session on Health Inequalities is currently under development and is expected to be available by the end of the summer.

The embedding public health into clinical practice digital learning resource, developed by PHE aims to support clinicians to embed population health approaches into their clinical practice.

Digital Literacy

In line with Health Education England's Knowledge for Healthcare[28] strategy, the national NHS knowledge and library services team is leading health and digital literacy and patient information activity with local communities. This cross-sectoral initiative is co-ordinated through a national Health and Digital Literacy Partnership comprising the Chartered Institute for Library and Information Professionals, Libraries Connected and Arts Council England. The Partnership is working with multiple organisations.



NHS knowledge specialists share techniques with information providers in other sectors, including public libraries, education, and prisons. Further work is planned with pharmacists, sharing techniques and resources. Librarians and information providers in the community are ideally placed to support citizens to develop health literacy. Health literacy skills build on information literacy and digital navigation skills taught by information workers. The aim is to integrate health and digital literacy skills development into existing infrastructure and create a platform for shared assets to sustain support for citizens' health literacy skills.

5. Population health and prevention initiatives

Population Health

HEE's multi-disciplinary Population Health Fellowship programme is already growing a workforce of clinical professionals who can incorporate population health approaches into their everyday jobs across all of HEE's 7 regions. There is potential for future cohorts of population health fellows to work in tandem with the Rural and Coastal Transformation programme including its pilot geographies.

Alongside the fellowship, HEE has developed a population health curriculum to support the learning programme. This has mapped each curriculum area to free to access digital resources designed to build capability and competence in population health, a digitised version of this curriculum toolkit will be available by the autumn 2021.

Health Inequalities

HEE's national Long -Term Condition and Prevention programme has a range of initiatives and products aimed at strengthening capability in population health and reducing health inequalities. These offers include the Population Health Fellowship, Advanced Clinical Practice framework in public health and various digital resources. A Task and Finish group has been established by the programme and is seeking to develop a strategic position on health inequalities education and training. The Task and Finish group will achieve this by considering what HEE currently offer, what is planned and what can further contribute to action on health inequalities.

NHS Health Checks / CVD Prevention

The NHS health check programme, currently offered to people aged between 40 and 74, is designed to spot the early signs of cardiovascular disease, one of the conditions most associated with health inequalities. There are plans to develop and re-design approaches to the Health Check to improve the effectiveness by targeting deprivation and certain protected characteristic groups, thereby engaging with people with the greatest health needs, actively reducing health inequalities. This will include rural and coastal communities.

HEE has a digital offer to support learning around the NHS Health Check service through e-Learning for Healthcare and is working with system stakeholders to explore how this offer can be strengthened.

Maternity programme

The evidence from national confidential enquiries into maternal deaths and morbidity (MBRRACE-UK) and other reports show consistent health inequalities for mothers and babies from black, Asian, and mixed ethnic groups and for those from the most deprived areas. NHSEI has developed an equity strategy for maternity and neonatal services, setting out a programme of work aimed at achieving equity for all those who receive and provide NHS maternity and neonatal care.

HEE is committed to supporting the implementation of the maternity equity strategy in several areas:

- Through a training offer to support the implementation of the Midwifery Continuity of Carer (MCOC) service model that targets mothers at highest risk of poor outcomes
- Through a dashboard available at regional level to support Local Maternity Systems with workforce planning
- Through joint work with appropriate stakeholders to better understand variation in the delivery of maternity and neonatal services in rural areas.

Long Term Conditions

In addition to work on CVD prevention HEE is working with system partners to deliver improvements along the entire patient pathway for three long term conditions, cardiovascular disease, stroke, and respiratory disease. Recent work in this area includes:

- The development of a stroke toolkit
- Six stroke rehabilitation films
- Working at local level through the Integrated Stroke Delivery Networks to enable workforce transformation using the HEE star tool.

Toolkits are in development to support clinicians working across the cardiovascular disease and respiratory pathways.

The Advanced Practice work to streamline rehabilitation, working across systems with local assets e.g., local authority gyms, social prescribing aims to reduce inequalities by maximizing functional recovery and keep people in work.

Allied Health professional (AHP) support in rural areas

Access to AHP services in rural and coastal communities are essential to optimising rehabilitation, functional independence, mental health recovery aiming to keep people in work, in their own homes, socially engaged and fit to care where needed. To minimise health inequalities, we need children with special educational needs to access speech and language therapy and occupational therapy in schools to learn to engage with the national curriculum, speak, write, and move, this offers the option to end school with transferable skills and qualifications, keeping young people out of the criminal justice system due to poor early years therapy support is a primary aim.

Access to professions e.g., prosthetists and orthotists to optimise independent mobility, orthoptists for early years and late years vision support to optimise independence and function are key to reducing health inequalities and maximising life chances but are unseen. To get a job when you cannot walk or see is increasingly challenging system wide immersion in local communities with schools and communities offering work experience, summer internships etc is vital to build community aspiration for roles they didn't even know existed, supported by system based AHP apprenticeships from support workforce to ACP across the AHP professions is vital to build a workforce from and reflective of the community, vested in the people and places.

The highly autonomous skills set of the allied health professions enables flexible and adaptable workforce solutions, as seen in the primary care AHP roles in the new contract enabling redistribution of work around clinical teams by liberating the full trained expert skills et of the professions to support medical colleagues within the team, enable people to receive earlier diagnosis, management, and self-care support to minimise people on waiting lists who do not need to see a medic.

Advanced Clinical Practice (ACP) support in rural areas

ACP offers several workforce solutions, working across multi-professional teams. Advanced roles exist across professions and specialities, supporting developed professional skills and shared skillsets to meet patient needs. This enables the professions to broaden their support to populations and enables intelligent clinicians to be retained in roles where they can meet the needs of their populations expand their skills, champion their professional unique skills, and open career opportunity to consultant roles.

Appendix 5: Case studies' overview: aims and targeted strategic Framework elements

Cases studies		Sweden	Norway	Canada	Iceland	Scotland
Case studies aim		Recruit healthcare personnel to Storuman municipality	Improve recruitment and retention of GPs in three case municipalities	Stabilize the physician workforce in Nunavut	Recruit and retain specialized physicians in Akureyri Hospital	Improve recruitment and retention of rural multidisciplinary teams
Plan	Assess population service needs		All municipalities evaluated their service model and ended up extending their number of GPs with one extra GP to reduce the workload.			Develop marketing strategies; friendly and informative RR communication processes and information packages; and identify appropriate and accessible education and support.
	Align the service model with population needs			Development of the contract model for new physicians.		
	Develop a profile of target recruits			Inuit/northern physicians serving Inuit.		
Recruit	Emphasize information sharing	Establishing an alumnus register to send newsletters with job relevant information to people (approx. 2800) who might be interested in moving back to Storuman.		Development of a cultural orientation app for healthcare providers in Nunavut.	Information meetings with Icelandic medical students in Iceland, Hungary, and Slovakia, and with Icelandic specialists and specialists in training working in Sweden to introduce and promote the hospital.	Accessible user-friendly marketing outlets promoting rural vacancies. Development of an effective template including information on recruit profile, work area, work colleagues, and what rural and remote working in the area is like.
	Community engagement	Establishing a relocation coordination officer in Storuman municipality.			Including a member from the community council in the project group.	Co-designing community information for candidates.
Retain	Supporting spouses/families	Development of a couple recruitment strategy.			Meeting with potential recruits and their families with a member from the municipality to inform of opportunities.	Develop and implement a buddy support system and educational support package.
	Supporting team cohesion					Team approach to developing vacancy adverts.
	Ensure relevant professional development		Establishment of a programme with salaried educational positions for GPs to specialize in family medicine (ALIS-Vest/ALIS-Nord).	Continuing Education and Professional Development (CEPD) events for physicians.	Development of a tailored education programme for new recruits. Some physicians got 3 months extended educational leave to auscultate and do research work.	Piloting of eBook to aid access to evidence-based practice. Development of new Multi-Professional Rural Practitioners Programme and Qualification Pathway
	Training future professionals	Developing a rural education stream as part of the medical school curriculum at Umeå University.		Health careers promotion camp for high school students from around Nunavut.	Work to get accreditation from the Royal College of Physicians to allow Akureyri Hospital to educate specialist in internal medicine and anaesthesia.	Multi-professional partnership package promoting joint training across professions.

Appendix 6: External partners instrumental in working with HEE to deliver projects within the programme

Organisation name	
Breaking Barriers Innovations (BBI)	An independent research programme informing the radical improvement of public services using locality-driven, joined up approaches as opposed to top-down driven blueprints. HEE is working in partnership with BBI across the South-west, Essex, and Kent
National Centre for Rural Health & Care (NCRHC)	NCRHS acts as a governance vehicle for formal collaboration amongst partners interested in the four key drivers of impact in rural health and care, as well as influencing policy and strategy. HEE is working with the NCRHC to support the investment bid – Campus for Future Living, Mablethorpe, Lincs.
Academic Health Science Network (AHSN)	Catalysts that create the right conditions to facilitate change across whole health and social care economies, with a clear focus on improving outcomes for patients. HEE is working with the AHSN to embed the STAR methodology across the regions and in Cumbria to develop the Digital Skills Academy.
Lincoln International Institute for Rural Health	University of Lincoln established, the institute conducts world-class research focusing on the greatest health issues facing rural communities both locally and globally. HEE is working regionally to support health inequalities research.
HEI's	Positive discussions have been undertaken with universities who have or are developing, rural agendas within their research portfolio or who have a rural element to education programmes. Discussions with University of Waitako, New Zealand, Aberystwyth, Lincoln, Chester & Keele. HEE is seeking to establish closer connections with these HEI's to support the education and training agenda for rural activity.
NHSx & NHSEI	Leading the largest digital health and social care transformation programme in the world & will speed up the digital transformation of the NHS and social care. Both organisations are supporting the development of health and digital literacy and health inequality programmes of work in Lincolnshire and across regions.
NHS Lincolnshire Talent Academy	Exemplar of applying best practice to 'Future Workforce', working with health and care organisations, in partnership with local schools, colleges and universities. Successful adoption of a 'Grow our Own' methodology (see Nurse Cadet example in Appendix 2). Successfully implemented local Dr You, Aspiring Medic Dentist & a wide range of trailblazing apprenticeships across Lincolnshire Health & Care system. Widening participation agenda supporting workforce supply along the east coast, Lincs.
Royal Colleges	Support from the 23 Royal Colleges and Faculties will be instrumental in delivery of the programme as it develops, through consultation with DEQ.

Appendix 7: Programmes of work already underway or in development, across rural ICS localities within this paper

A) South-west England

Programme	Partnership / Stakeholders	Activity
Place Based Development of Health & Care Workforce	• Breaking Barriers Innovations • HEE Regional • Local Authority	**Cornwall:** • Ambitions to show the benefits of greater local integration and joint action across health, social care and housing sectors for better health and wellbeing outcomes and to reduce health inequalities. **Somerset:** • Creating a sustainable trainee pipeline at all levels of competency for Health & Social Care services, enabling a consistent approach and career pathway underpinning Apprenticeship opportunities. • Ambition to explore possibilities of Further Education contribution to develop Somerset as a `brand` to attract recruits to entry level H&SC roles.

Appendix 7: Continued

B) Lincolnshire

Programme	Partnership / Stakeholders	Activity
Campus for Future Living	• NCRHC • East Lindsey D.C. • HEI's • NHS Lincolnshire, Social Care • 3rd Sector • HEE Regional & National	• A medical and innovation hub of national significance focusing on attracting and developing healthcare professionals, research, and providing intergenerational future living. • Place based context within a socio-economically deprived locality (Mablethorpe), Lincolnshire east coast. • Expand Clinical & Medical placements, transformation & upskilling of workforce.
Personalisation	• HEE Regional & National • NHSEI • NHSX	• Mablethorpe & Skegness as pilot sites for the 'Empower the Person' programme.
Health & Digital Literacy	• Lincolnshire Community Health Services NHS Trust • HEE Regional & National • Voluntary & 3rd Sector	• 'Digital Ambassadors', to support communities and health/care workforce to improve health & digital literacy across the East Coast, Lincolnshire.
Population Health Management	• University of Lincoln • Lincolnshire NHS Health & Care System • HEE Local	• Engagement with rural and marginalised communities and its focus on research where the health need is rather than in 'traditional' health care settings. • Co-creating with community, a stronger evidence bases around contextual factors that limit the effectiveness (real world implementation) of interventions with known efficacy.
Workforce Development, Education and Training	• NHS Lincolnshire Talent Academy • NHS Lincolnshire Health & Care System • HEI's • HEE Regional	• 'Grow our own' approach to workforce. • Apprenticeship Trailblazing e.g.: Physiotherapy, Occupational Therapy, Pharmacy • Career progression programmes e.g.: nurse cadet to RN/RN(MH) • Widening Participation Programmes (East Coast) e.g.: 'Dr You' Project • Redevelopment of Education & Training Centre, Pilgrim Hospital, Boston • Transformation & Upskilling of workforce

Appendix 7: Continued

B) Cumbria

Programme	Partnership / Stakeholders	Activity
Digital Skills Hub	• Academic Health Science Network • HEE North • NIHR • Royal College of Surgeons • HEI's	• Vision for using alternative technology as a different way to learn, teach and orientate. • Use local NHS to 'test bed' Virtual Reality, Augmented Reality, and Immersive Technology.

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