# Health Inequalities Horizon Scan

## Yorkshire and Humber AHSN and Wessex AHSN

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# Horizon Scan Background

Health inequalities are unfair and avoidable differences in health across the population and between different groups within society. They arise because of the conditions in which we are born, grow, live, work and age. These conditions influence how we think, feel and act and can impact both our physical and mental health and wellbeing. Within this wider context, healthcare inequalities are about the access people have to health services and their experience and outcomes.

Health inequalities can be tackled. They are not permanently baked into healthcare. There are solutions in many pathways that are impacted by health inequalities. Could we solve every problem in every area? Possibly not. Could we make dramatic differences in many areas? Probably, yes.

This horizon scan, produced by the Wessex Academic Health Science Network (Wessex AHSN) and Yorkshire and Humber AHSN (YHAHSN), looks for innovations which address the key inequalities identified by the Core20PLUS5 including the clinical areas of maternity, severe mental illness, chronic respiratory disease (COPD focus), early cancer diagnosis and hypertension. We have also included a section on innovations which fall outside of these criteria but could be of value to health and care providers. This horizon scan seeks to compliment the Accelerated Access Collaborative (AAC) InHIP programme to promote the adoption of innovations to address health inequalities which meet the Core20PLUS5.

# Horizon Scan Background

This horizon scan has looked across the AHSN networks pipeline of innovation, Wessex AHSN and YHAHSN company databases, NICE briefings, search engines and other sources and for innovations to compliment technologies supported by the InHIP programme. This horizon scan is a non-exhaustive shortlist of medical technologies which we believe may be of value to health and care providers in addressing inequalities. The products highlighted in this report should be seen as illustrative. In many or most cases there are alternative competing solutions which are not included for space. We hope to illustrate that there are solutions to reduce inequalities in many pathways.

We hope this report will show you what is possible, and inspire you to explore further. Things can change. One pathway at a time.

Please contact Wessex or Yorkshire and Humber AHSNs for questions or any further discussion.

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# REDUCING HEALTHCARE INEQUALITIES

NHS

The **Core20PLUS5** approach is designed to support Integrated Care Systems to drive targeted action in healthcare inequalities improvement

**CORE20**
The most deprived **20%** of the national population as identified by the Index of Multiple Deprivation


**PLUS**
ICS-chosen population groups experiencing poorer-than-average health access, experience and/or outcomes, who may not be captured within the Core20 alone and would benefit from a tailored healthcare approach e.g. inclusion health groups

## Target population

# CORE20 PLUS 5

## Key clinical areas of health inequalities

1. **MATERNITY**
ensuring continuity of care for **75%** of women from BAME communities and from the most deprived groups

2. **SEVERE MENTAL ILLNESS (SMI)**
ensuring annual health checks for **60%** of those living with SMI (bringing SMI in line with the success seen in Learning Disabilities)

3. **CHRONIC RESPIRATORY DISEASE**
a clear focus on Chronic Obstructive Pulmonary Disease (COPD), driving up uptake of Covid, Flu and Pneumonia vaccines to reduce infective exacerbations and emergency hospital admissions due to those exacerbations

4. **EARLY CANCER DIAGNOSIS**
**75%** of cases diagnosed at stage 1 or 2 by 2028

5. **HYPERTENSION CASE-FINDING**
and optimal management and lipid optimal management

**SMOKING CESSATION**
positively impacts all 5 key clinical areas

# Early Cancer Diagnosis

# Overview – Early Cancer Diagnosis

Technologies which can support 75% of cases being diagnosed at stage or 2 by 2028.

| Innovation | Company | Setting and Priority Area | Description |
|---|---|---|---|
| Red Dot | Behold | Diagnosis, Prioritisation, Secondary Care | Red Dot is a Class IIa medical device which is able to identify chest X-rays as normal or not normal and assign prioritisation. Where cancer is suspected it can support clinicians in their decision making. |
| Pinpoint | Pinpoint Data Science Ltd | Diagnosis, Prioritisation, Secondary Care | Pinpoint is a blood sample analysis tool which is able to interpret blood results to provide cancer likelihood and risk stratification. |
| Derm | Skin Analytics | Primary Care, Prioritisation, Diagnosis | DERM by Skin Analytics is a software package able to recognise the most common malignant, pre malignant and benign skin conditions, including melanoma from radiology images. |
| C the Signs | C the Signs | Diagnosis, Primary Care | C the Signs is a multi-platform digital tool that collates patient information through standardised cloud-based forms, identifies patients at risk of cancer and rapidly assigns them to the correct pathway by analysing their patient data. |
| Veye Chest | Aidence | Diagnosis, Lung | Veye Chest optimises oncology pathways by using AI to automate early-stage lung cancer detection, classification, measurement and growth of solid and sub-pulmonary nodules. |
| Dermicus | Gnosco | Diagnosis, Dermatology, Primary Care | Dermicus is a teledermatology solution for rapid and secure diagnosis of skin cancer and wounds. |
| Cytosponge | Cytosponge | Diagnosis, Oseophageyal | Cytosponge (Medtronic) is a single-use device used to collect cells from the lining of the oesophagus in a minimally invasive manner. |
| Caddie | Odin Vision | Diagnosis, Colorectal, endoscopy, Secondary Care | Caddie is a cloud-based AI which supports clinicians in identifying and characterising polyps and colorectal features in real time. |

# Red Dot - Behold

**About**

Red Dot in medical device which supports the radiology workforce uses existing radiology information systems (RIS) and integrates into the normal clinical pathway. Red Dot processes chest X- Rays (CXRs) and within 30 seconds can determine whether the X-ray is normal or not and is able to provide a diagnostic report. This approach allows radiologists to prioritise patients and manage work lists, with those most at need fast tracked for CT scans to facilitate earlier diagnosis.

**NHS Use, Evaluation and Case Studies**

In a recent 30-month evaluation (publication pending) 3700 images were analysed and the system identified 14.8% of chest imagesas High Confidence Normal - ruling out a cancer diagnosis for 562 patients. It also flagged images for 147 patients (3.9% of all images) with Suspected Lung Cancer with a negative predictive value of 97.7% and a false negative rate of 0.34%. This resulted in the faster diagnosis of 19 lung cancers and reduced the time from chest x-ray to CT scan from 7 days to 3 days for urgent cases.

**Published Evidence**

**Dyer et al** 3,887 chest x-rays were analysed with 15% of images identified as being high confidence normal. From this 15% Red Dot demonstrated a 97.7% precision. Red Dot had a false negative rate of 0.33%, although 84.6% of these false negatives were identified as borderline cases by a radiologist. 13.5% of chest x-rays contained an abnormality missed by a radiologist. **Tam et al** showed that Red Dot was equivalent to a radiologist, but that when used in combination with a radiologist reduced missed cancers by 60%. **Hussein et al** reviewed GP x-rays, from 1513 cases, from which 40 were reported as potentially positive. Red Dot identified 6 of these as negative, all were confirmed as negative (15%). From the 36 which were alerted for further investigation 53% were positive following CT +/- histology.

**Regulatory**

Red Dot is CE marked Class II a medical device, ISO13485, Cyber Essentials Plus, FDA approved and CQC regulated.

**Resource Requirements**

£60,000 annual license fee (excl VAT) per Trust. £10,000 setup fee.

**Similar Technologies**

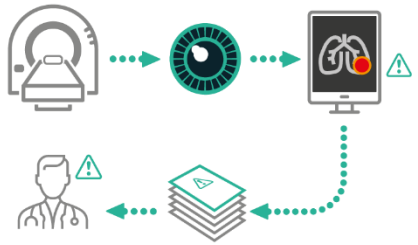
qXR and Lunit INSIGHT CXR are other similar technologies for chest X-ray analysis. Payment structure is slightly different with both opting pay per scan models of £1-2, with lower to no setup fees.

**Pathway**

Diagnosis and prioritisation

**Website and links**

- Behold Website
- NICE briefing
- Hussein et al 2020
- Dyer et al 2021
- Tam et al 2021



# Pinpoint Test– Pinpoint Data Science Ltd

**About**

The 'PinPoint test' is a blood test, which is then analysed across a wide range of variables to provide improved cancer risk stratification on a two week wait pathway. The principal use-case for the Pinpoint test is as a support tool for clinicians enabling triage of patients into High, Medium and Low Risk. This allows clinicians to red-flag those patients who most urgently require further investigation and reduces the number of hospital visits required to achieve a diagnosis.

**NHS Use, Evaluation and Case Studies**

An evaluation, led by the WY&H Cancer Alliance, is currently being undertaken in the West Yorkshire and Harrogate region with results expected by the end of 2022.

**Published Evidence**

**Savage et al** The Pinpoint algorithm was trained on 24,669 patient referrals between 2011 and 2016 and then tested against a similar population sample from 2017-2019. Pinpoint was able to identify 20% of patients without cancer and highlight 90% of highly probable cancer cases with the future use case of prioritising these patients for review.

**Regulatory**

Pinpoint is CE marked as an IVD for the nine most populous 2WW pathways, representing over 98% of all referrals: Breast, Gynaecological, Haematological, Head & Neck, Lower GI, Lung, Skin, Upper GI and Urological.

**Resource Requirements**

The PinPoint Test costs £23.17 with additional NHS costs relating to blood biomarker testing and logistics bringing this to ~£50 per test.

A system which has 500 referrals with a capacity for 400 could expect to have only one cancer detected outside of a two week wait – compared to six in the current pathway. However, more importantly it would triage 114 patients as green low risk

**Pathway**

Clinical Support tool

**Website and Links**

- Pinpoint Website
- WY&H Cancer Alliance Evaluation
- Savage et al 2022

pinpoint

# DERM - Skin Analytics

**About**

DERM by Skin Analytics is a software package able to recognise the most common malignant, pre-malignant and benign skin conditions, including melanoma from radiology images. By enabling rapid screening of skin cancer in Primary Care within appointment times and without the need for expensive equipment more rapid diagnosis is facilitated. GP practices are provided with a dermascope and image capture device. This can be used during a consultation to capture an image of any pigmented lesions a GP would select for referral. DERM also enables local dermatologists to review referred cases remotely, allowing them to direct patients to the best assessment or treatment option.

DERM was added to the NHS Innovation Accelerator programme in 2019. The programme supports evidence-based solutions with adoption and spread. Implementation can be done in as quickly as 2 weeks subject to ICS and PCN agreement.

**NHS Use, Evaluation and Case Studies**

Skin Analytics are currently working with Chelsea and Westminster NHS Foundation Trust to evaluate the impact of DERM on their 2 week wait.

**Published Evidence**

**Phillips et al 2019a** DERM was trained against 7,102 images of melanoma and benign pigmented lesions and then evaluated against a library of 32,226 benign lesions and 3277 melenomas. The evaluation demonstrated that Skin Analytics can provide recommendations equivalent to those of a dermatologist. **Phillips 2019b** 1550 images of suspicious and benign lesions were analysed by DERM. When set to 100% sensitivity, DERM achieved specificity of 64.8% compared to clinicians with 69.9%.

**Regulatory**

DERM is a Class II UKCA marked technology

**Resource Requirements**

Capital cost of £400 per hardware with a per patient costs of £35 for triage and an additional £45 for device to be sent to patient. Minimum license term of 12-24 months, a block contract model can be offered.

**Pathway**

Diagnosis – Dermatology
Primary Care

**Website and Links**

- Skin Analytics Website
- Phillips et al 2019a
- Phillips et al 20209b

# C The Signs

**About**

C the Signs is a multi-platform digital tool that ensures patients are referred correctly, patients at a high risk of cancer are identified and rapidly assigned to the correct pathway through analysis of the patient data. Using cloud-based forms with mandatory fields ensures that referrals are appropriate and that the correct information is available. Patient resources, available in multiple languages and ease of reading options, are embedded into referral forms and sent to the patients in multiple formats.

Patient data is stratified against symptoms, demographic data, risk factors and other clinical markers. Covering the entire spectrum of cancer and cross-referencing multiple diagnostic pathways, C the Signs can identify which cancer or cancers a patient is at risk of and the most appropriate next step – all in less than 30 seconds. Particular value may be derived from analysis of vague symptoms which could trigger multiple referrals, C the Signs is able to optimise this pathway for faster diagnosis. C the signs claims an increase in cancers detected of 12.5 % for healthcare providers who use their technology.

C the signs has been implemented by 25 CCGs and 1 ICS and is used by more than 10,000 healthcare professionals. C The Signs is compatible with EMIS, Vision and SystmOne. Relevant to this horizon scan is the planned development of a health inequalities dashboard, to be delivered in autumn 2022.

**NHS Use, Evaluation and Case Studies**

Sommerset ICS introduced C the signs. Prior to introduction 8 trusts were using 8 different referral forms, with poor version control, 6-8 month lead times for new forms to be introduced. Diagnoses were delayed by missing tests and inappropriate referrals. C the signs met this challenge with a standardised, cloud based set of forms which could be updated within 48 hours. Clinical referrals were improved as C the signs ensured that referrals appropriately triaged and that the right information was collected. Vague symptoms were also better managed and diagnosed.

**Published Evidence**

No peer reviewed journal articles identified.

**Regulatory**

C The Signs is a UKCA class I medical device.

**Resource Requirements**

Costs on request from supplier dependant on patient volume and the complexity of the systems to be integrated.

**Pathway**

Diagnosis
Primary Care

**Website and Links**

- C The Signs Website
- York Health Economics Consortium paper
- Short video case study from Sommerset ICS on their implementation of this technology

# Veye Lung Nodules (Formerly Veye Chest) - Aidence

**About**
Veye Lung Nodules (VLD) optimises oncology pathways by using AI to automate early-stage lung cancer detection, classification, measurement and growth of solid and sub-pulmonary nodules. Use of VLD lowers the risk of misdiagnosis, supports workflow integration, and soon to support treatment response assessment. The device is intended to assist physicians in their review of CT-chest scans in the detection of solid and sub-solid (part-solid and ground glass opacities) pulmonary nodules using low-dose or standard-dose CT scans.

Aidence has won an AI in Health and Care Award to support the UK's National Health Service (NHS) plans to reduce lung cancer mortality. The award is supporting multiple NHS sites in evaluating the solution's efficiency and performance in clinical use. The expectation is that VLD will positively impact patient outcomes while contributing to cost reduction.

**NHS Use, Evaluation and Case Studies**
Currently in use across 60 hospitals across Europe. VLD has also been selected for use in the NHS Targetted Health Check Programme and the European PINPOINT early cancer detection project.

**Published Evidence**
**Hempel et al 2022** two radiologists independently reviewed 50 patients, both aided and unaided by VLD with a 6 month gap between readings. With VLD support, the clinicians were able to review images faster and with a higher degree of agreement between the radiologists. **Murchison et al 2022** use of VLD significantly increased the detection of actionable nodules, but was also associated with a slight increase in false positives.

**Regulatory**
Veye Chest is a CE marked class IIb medical device.

**Resource Requirements**
Setup costs of £8500, annual fees of £4000-£9000 with per scan costs of £5-7.50 depending on the volume of scans.

**Similar Technologies**
icolung and Veolity are other similar technologies for pulmonary nodule analysis with differing cost models, e.g. Veolity does not charge any per scan costs.

**Pathway**

Diagnosis - Oncology

**Website and Links**

- Aidence Website
- Nice Briefing
- AI in Health and Care Award
- Hempel et al 2022
- Murchison et al 2022

# Cytosponge - Medtronic

**About**

Cytosponge is an innovation which can help to detect Barrett's Oseophagus. Cytosponge, is a single-use device used to collect cells from the lining of the oesophagus in a minimally invasive manner. It is known as a 'sponge on a string' pill test. Cytosponge consists of a spherical sponge in a dissolvable capsule, which is attached to a thread. When the capsule is swallowed, it expands into a small, rough-textured sponge in a person's stomach. After around 5 to 7 minutes, the sponge is pulled back up, collecting some of the cells lining the oesophagus. Cells are then set for laboratory analysis, haematoxylin and eosin staining is carried out to detect cell morphology abnormalities alongside an anti body test (TFF3) to detect precancerous cells, particularly oesophageal cancer, leading to earlier diagnosis.

The use of Cytosponge procedure avoids the typical need for sedation and endoscopy and is comparable to similar tests in detection rate. However, Cytosponge does not detect other oesophageal, gastric or duodenal abnormalities and so is not a complete replacement for endoscopy.

**NHS Use, Evaluation and Case Studies**

Cytosponge has been used in several clinical trials, however a formal evaluation of the innovation within the NHS was not identified.

**Published Evidence**

Several systematic reviews and abstracts were written and a summary of these can be found within the Nice briefing. **Fitzgerald et al 2020**: This clinical trial was carried out with patients from across 109 GPs. In this study Cytosponge demonstrated the capability to increase the detection rate of oesophageal cancers. **Pilonis et al 2022** describes the use of a further biomarker panel which with further validation could reduce the need for endoscopies and allow greater stratification of patients to risk groups, however this will require further investigation. **Maroni et al 2022** found a high level of user acceptance for Cytosponge with 80% prepared to have the procedure again, despite 60% reporting gagging and the common side effect of a sore throat.

**Regulatory**

Cytosponge is a CE-marked class I medical device, the CE mark covers the cell collection device, laboratory processing and the staining.

**Resource Requirements**

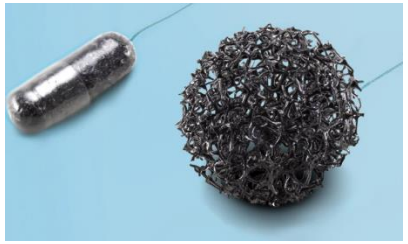
£280 (Excl VAT) which includes the device, assay and haematoxylin and eosin stains.

**Pathway**

Diagnosis

**Website and Links**

- Medtronic Website
- Nice briefing
- Fitzgerald et al 2020
- Pilonis et al 2022
- Maroni et al 2022



# Caddie - Odin Vision

**About**

Caddie is a cloud-based AI which supports clinicians in identifying and characterising polyps in real time. During endoscopy procedures, endoscopists are alerted to polyps which are then highlighted with a green box around features of interest which may indicate cancer. CADDIE analyses images and displays relevant information and supports endoscopists are then supported in clinical decision making. This approach can facilitate same day diagnosis, reducing waiting times.

CADDIE also supports quantification of bowel cleanliness through the percentage of visible mucosa. Identification of the appendiceal orifice is also supported.

**Pathway**

Diagnosis, Support Tool

**Website and Links**

- Odin Vision Website
- AI Funding Award
- Case study

**NHS Use, Evaluation and Case Studies**

CADDIE is currently being rolled out for evaluation and health economics assessment of 1000 patients across 10 hospitals. The linked case study illustrates how CADDIE is able to highlight potential abnormalities which could be missed by a clinician.

**Published Evidence**

No publicly available peer reviewed evidence was identified.

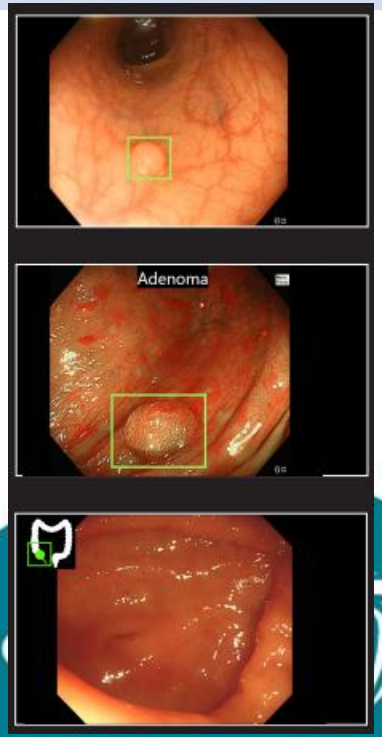
**Regulatory**

CADDIE is CE marked class I medical device

**Resource Requirements**

Pricing on request from supplier

Caddie is system neutral and can be integrated into existing clinical workflows



# Chronic Respiratory Disease

# Overview - Respiratory

A clear focus on Chronic Obstructive Pulmonary Disease (COPD) driving up uptake of COVID, flu and pneumonia vaccines to reduce infective exacerbations and emergency hospital admissions due to those exacerbations. However, the NICE approved list of innovations supports technologies addressing a broader set of respiratory conditions and use cases.

| Innovation | Company | Setting and Priority Area | Description |
|---|---|---|---|
| LENUS COPD Support service | Lenus Health | Management | Lenus COPD Support Service is a remote management service for high-risk COPD sufferers which collates data from several wearables |
| FreeO2 | OxyNov | Management | Free$O_2$ measures oxygen saturation of arterial blood ($SpO_2$) and is able to automatically adjust the flow of oxygen to a person through a nasal cannula or non-occlusive mask to a level set by a health care professional. |
| myAIRVO2 | Fisher and Paykel Healthcare | Treatment | myAIRVO2 system provides patients with warmed and humidified respiratory gases, including at high-flow rates. My AIRVO2 supports both those who can breathe unaided and those with bypassed airways such as tracheostomy. |
| SuperVO2VA | Vyaire Medical | Monitoring | NuvoAir is a package of sensors which facilitate monitoring of patient lung function at home. which can attach to pMDI inhalers. The sensors automatically track when and how patients use their medications while also counting their coughs. |
| VIDAvision | Vida Diagnostics | Diagnostic | VIDAvision is a platform which allows for 3D visualisation of lung anatomy through quantitative CT lung volume analysis. This allows for lung features to be mapped and quantified to support clinical decision making. |
| Feebris | Feebris | Decision support tool | Feebris is a mobile support tool which collects patient data and vital signs vital signs from connected medical devices and analyses health measurements to effectively monitor patients in care home settings |
| Blue Box | Whzan | Monitoring, long term conditions | Whzan's Blue Box contains a platform attached to a range of medical devices which can record and monitor patient vital signs. |

# Lenus COPD Support Service

**About**

Lenus COPD Support Service is a remote management service for high-risk COPD sufferers which aims to reduce hospitalisations. Data collected is collected through a fitbit and home ventilation device with the data held in a cloud-based dashboard which integrates to electronic patient record systems. The dashboard provides data visualisations for healthcare professionals to support greater understanding of exacerbations and when to provide treatment, while also providing a communications platform for patients and clinicians.

Lenus consists of 3 modules which will require a smartphone, tablet or computer to use:

- Patient data collection from a Fitbit and home non-invasive ventilation device.
- Electronic patient record integrated dashboard for healthcare professionals
- A web app for patients to record outcomes and links to further information on pulmonary rehabilitation. The platform also supports messaging between patients and healthcare professionals.

**NHS Use, Evaluation and Case Studies**

Lenus is currently in use in the NHS in Scotland with pilots planned for England.

**Published Evidence**

Data for this technology is limited. **Taylor et al 2021a** and **2021b** claim that there was positive user acceptance of the app and fitbit and that there was an increase in patient reported outcomes and reduced respiratory hospital admissions. **Taylor et al 2022** This preprint shows that use of Lenus continued use after a year, with 3-3.5 uses of the app per week reported. A potential challenge for this innovation is the low level of uptake (7.1%) of those offered, the technology required was put forward as a potential reason for this.

**Regulatory approval**

CE marked class I medical device and DTAC compliant

**Resource Requirements**

£10,000 for initial setup, £30,000 annual fee, £10 per patient with a 20% discount on per patient costs for >1000 patients.

Each user requires a Fitbit, non-invasive v and suitable smart device (laptop, tablet, smartphone) with internet access.

**Pathway**

Management

**Website and Links**

- Lenus Health Website
- NICE briefing
- Taylor et al 2022 - preprint
- Taylor et al 2021a
- Taylor et al 2021b

# FreeO2 - OxyNov

**About**

$FreeO_2$ measures oxygen saturation of arterial blood ($SpO_2$) and can automatically adjust the flow of oxygen to a person through a nasal cannula or non-occlusive mask to a level set by a health care professional. FreeO2 may reduce the chance of oxygen toxicity and support the weaning of patients from O2, thereby reducing hospital stays. The technology operates on a closed loop and continuously adjusts the flow rate administered based on $SpO_2$, to achieve and maintain a target $SpO_2$. The device includes a safety feature that informs the user by an alarm if there is a breakdown or failure of oxygen supply.

The device is intended to be used in a hospital setting for treating chronic obstructive pulmonary disease (COPD) or acute respiratory distress syndrome (ARDS), which may be caused by COVID-19. The $FreeO_2$ aims to reduce the time a person spends in hypoxia or hyperoxia, improving clinical outcomes and reducing hospital stays.

**NHS Use, Evaluation and Case Studies**

**Poder et al** examined the cost effectiveness of $FreeO_2$ and found cost savings of 20.7% (£1,695.31) over a 180-day period in an evaluation of 47 people hospitalised with acute exacerbation of COPD in Quebec, although this was not a statistically significant cost reduction, however incremental cost-effectiveness ratios reported indicate that $FreeO_2$ is more cost effective than manual oxygen titration. Significant differences were observed in increased time at target oxygen saturation, reduced time in hypoxia and severe hypoxaemia.

**Published Evidence**

Nice : The evidence base for the technology is of moderate methodological quality. All studies had standard care comparators. Two used multi-site recruitment and both had good size populations. One study reported upon its use in babies and children. All studies suggest that $FreeO_2$ may increase the time in the target $SpO_2$ range. None of the reported studies are based in the NHS. Although the company reports that the device can be used to treat acute respiratory distress syndrome (ARDs) from COVID-19, none of the summarised evidence includes this indication.

**Regulatory approval**

CE marked class IIb medical device.

**Resource Requirements**

The $FreeO_2$ system is available for purchase at £9,600 per unit (excluding VAT). There are no additional consumable costs related specifically to the use of this system. The expected lifespan of $FreeO_2$ is 5 years, with a yearly preventative maintenance and calibration cost of £450.

**Pathway**

Management

**Website and links**

- FreeO2 Website
- NICE briefing
- Poder et al 2018

# myAIRVO2

**About**

myAIRVO2 system provides patients with warmed and humidified respiratory gases, including at high-flow rates and can reduce acute exacerbations of COPD by 37%. My AIRVO2 supports both those who can breathe unaided and those with bypassed airways.

myAIRVO2 can titrate 10-60 litres/min and oxygen independently from one another and does not need a sealed interface. A range of gas temperatures are supported with the aim of increasing comfort and compliance. An advantage of this innovation over competitors is that it does not require medical grade gasses and can use air directly from its surroundings.

**NHS Use, Evaluation and Case Studies**

In use in several as being in use across several NHS Trusts in England and Scotland.

**Published Evidence**

**Storgaard et al** observed that use of myAIRVO2 resulted in reduced COPD exacerbations and hospital admissions while also showing improved dyspnoea and exercise scores. **McKinstry et al** observed reduced transcutaneous partial pressure of CO2 in a trial of 48 participants with stable COPD when using the myAIRVO2 device.

**Regulatory approval**

CE marked class IIa medical device.

**Resource Requirements**

myAIRVO2 costs £2,475 (including 3 filters) and has a lifespan of 5 years with no additional servicing costs or needs. The consumable components cost £136 per patient per 2-month period and £9 per filter, which needs replacing every 3 months or 1,000 hours of use. Based on these costings, the total device costs of myAIRVO2 are £1,320 per patient in the first year and £1,347 in the remaining 4 years. – Costing taken from the linked NICE paper from 2018.

**Pathway**

Management, Community

**Website and links**

- MyAIRVO2 Website
- NICE briefing
- Storgaard et al 2018
- McKinstry et al 2018

# SuperVO2VA – Vyaire Medical

**About**

SuperNO2VA aims to prevent and relieve upper airway obstruction through positive nasal airway pressure. SuperNO2VA is targeted towards patients with obstructive sleep apnoea throughout deep sedation, or during intubation and postoperatively in the post-anaesthesia care unit for those patients having general anaesthesia. Patients with obstructive sleep apnoea are at higher risk of upper airway obstruction, which could lead to hypoxaemia and other pulmonary complications.

**NHS Use, Evaluation and Case Studies**

The NICE briefing did not identify any formal evaluation of this technology within the NHS.

**Published Evidence**

**Dimou et al** demonstrated that in 29/30 patients the SuperVO2VA device provided sufficient ventilation with average oxygen saturations of 99.6±0.8%.

**Regulatory approval**

SuperNO2VA is a CE marked class IIa medical device.

**Resource Requirements**

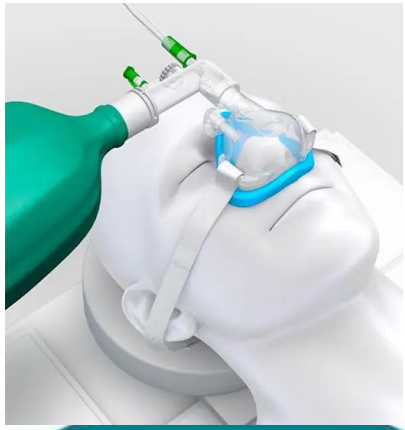
The unit cost for each SuperNO2VA device ranges from £23.25 to £37.75.

**Pathway**

Management, Community

**Website and links**

- Vyaire Medical Website
- NICE Briefing
- Dimou et al 2019



# VIDAvision – Vida Diagnostics

**About**

The VIDAvision platform allows for 3D visualisation of lung anatomy through quantitative CT lung volume analysis. A range of COPD relevant features and parameters an be analysed including fissures, parenchyma, lung density and volume analysis, airway mapping, and a range of CT biomarkers can be analysed through the VIDAvision platform. Of relevance to COPD is the capability to provide air trapping information. These visualisations are then used to assess a patient's suitability for therapies such as lung volume reduction. Visualisations are provided within 72 hours, however typical turn around times are 12 hours.

The company currently appears more focused on the use of their technology within respiratory clinical trials than standard NHS care.

**NHS Use, Evaluation and Case Studies**

VIDAvision has been used in several clinical trials, however a formal evaluation of the innovation within the NHS was not identified.

**Published Evidence**

**Schuhmann et al** showed that for emphysema patients who may be eligible for lung volume reduction surgery, VIDAvision was equivalent to Chartis Pulmonary Assessment System, an invasive technique. **de Oliveira et al** and **Gompelmann et al** both utilised VIDAvision to assess fissure integrity.

**Regulatory approval**

VIDAvision is a CE marked class IIa medical device.

**Resource Requirements**

VIDAvision works with existing CT scanners. Annual costs for VIDAvision vary from £18,000 (for up to 50 scans) to £40,000 per year (for up to 200 scans). The average price per scan would be between £200 and £360, depending on the level of use. The cost of using a CT scan including the cost of reporting for 1 area without contrast is £85.69. The total cost of using VIDAvision would be £285.69 to £445.69. Typical contract terms are for 1-5 year and includes software, maintenance, support and training.

**Pathway**

Management, Community

**Website and links**

- VIDAvision Website
- Nice Briefing
- Schuhmann et al 2015
- de Oliveira et al 2016
- Gompelmann et al 2016

# Feebris

**About**

Feebris is a mobile support tool which collects patient data and vital signs vital signs from connected medical devices and analyses health measurements to effectively monitor patients in care home settings. Through machine learning techniques, Feebris can recommend escalations and decision support should a patient require them. Community and family carers are supported in making more effective care and can allow patients to be more rapidly escalated to GP and hospital admissions. GPs and multi-disciplinary care teams access the same information and can monitor patient's health measurements effectively in real-time. This innovation was initially focussed on COPD and asthma although now has developed broader applications.

**Pathway**

Decision support tool

**Website and links**

- Feebris Website
- AHSN Innovation Exchange

**NHS Use, Evaluation and Case Studies**

Feebris report than in an evaluation with BHR CCG, avoidable GP escalations were reduced from 12% to 2% and 999 escalations were reduced 23%, however we were unable to find a formal publication of this evidence. Through the AHSN Exchange, Feebris is reported as supporting care homes by reducing hospital conveyances by 35%, a 31% reduction in blue calls and 31% reduction in incidents requiring a call to a clinician. 71% of GPs reported improvements in flexible working and allocation of resources and proactive health monitoring increased from 42% to 78%, allowing for earlier detection of deterioration.

**Published Evidence**

No publicly available peer reviewed evidence was identified.

**Regulatory**

Feebris is a CE marked class I medical device

**Resource Requirements**

Price on request from supplier

# Blue Box - WHZAN

**About**

Whzan's blue box is a telehealth toolkit with broad applications supporting people with long term conditions, including COPD. The Blue box contains equipment including a tablet computer which is wirelessly connected to a pulse oximeter, a blood pressure monitor and thermometer with the option to connect further equipment. Data inputs are uploaded to a clinician accessible dashboard where the results can be observed in real time are converted into NEWS2 scores and integrate with patient record systems. Whzan are continuing to develop their equipment offering and now offer wearable ECGs and a watch which records several vital signs.

Whzan also provide a free app to support COPD, asthma and hypertension among other long term conditions. The app allows patients to check their vital signs in a tailored dashboard, receive medication prompts and view relevant health information.

**Pathway**

Monitoring

**Website and links**

- Whzan Website
- Sunderland CCG case study video
- Isle of Wight Trust COPD patient case study video
- Mid and South Essex ICS evaluation
- Hamad et al 2016

**NHS Use, Evaluation and Case Studies**

The Whzan Blue Box is currently in use in approximately 200 NHS Trusts and 3000 care homes across the UK. Whzan claims that Blue Box 71% reduction in A&E attendance, 22% reduction in 999 ambulance requests, 46% reduction in bed days spent in hospital, 33% reduction in emergency admissions, 35% reduction in unplanned GP visits and 50% reduction in 111 calls, however the proportion of these reductions relevant to COPD is unclear. The 'Well Connected Care Homes' report observed eight care homes using Whzan and confirmed first year savings of over £756,000 in ambulance services and A&E. In an evaluation with Mid and South Essex ICS looking at 232 care homes were provided with the Blue Box and additional connected weighing scale, ECG and digital stethoscope. The evaluation found the introduction of Whzan resulted in reduced admissions, shorter patient stays in hospital above and beyond the reductions attributed to COVID during this evaluation. However, the evaluation does not provide direct evidence for COPD related admissions.

Two case study videos of the Blue Box and its use by patients are included in the Website and links box.


**Published Evidence**

**Hamad et al 2016** details the use of the Whzan equipment to run a COPD support service, however this article is descriptive and the cost effectiveness compared to the full Whzan offering and competitors is unclear.

**Regulatory**

Whzan's Blue Box is CE marked as class I medical device.

**Resource**

Costs available on request from supplier depending on use case and scale.

# Severe Mental Illness

# Overview - Severe Mental Illness

Severe mental illness (SMI) aims to ensure annual health checks for 60% of those living with SMI (bringing SMI in line with the success seen in learning disabilities).

| Innovation | Company | Setting and Priority Area | Description |
|---|---|---|---|
| Brain in Hand | Brain in Hand | Self-management | Brain in Hand increases confidence, helping people manage anxiety and achieve their goals; as users progress towards independence, services can more efficiently direct their resources to those who need them at the right time.<br>Brain In Hand is receiving support as a member of the NHS Innovation Accelerator programme – see more information here.<br>See more detailed slide below.<br>https://braininhand.co.uk/ |
| Chat Health | Leicestershire Partnership NHS Trust | Self-management | ChatHealth is a secure and confidential messaging service. It allows service users to easily and anonymously get in touch with a healthcare professional for advice and support. Developed by Leicestershire Partnership NHS Trust, ChatHealth helps to safeguard vulnerable and hard to reach services users.<br>ChatHealth is implemented in 70 NHS organisations across the UK and available to 2 million young people and the parents/carers of 1.5 million children.<br>Chat Health is receiving support as a member of the NHS Innovation Accelerator programme – see more information here.<br>https://chathealth.nhs.uk/ |

# Overview - Severe Mental Illness

| Innovation | Company | Setting and Priority Area | Description |
|---|---|---|---|
| Dr Julian | Dr Julian | Self-management | An innovative mental healthcare platform that aims to increase accessibility of mental healthcare. We connect patients to mental healthcare professionals by secure video/audio/text using a calendar appointment booking system. Can also be used just as platform with trusts own therapists.<br>https://dr-julian.com/ |
| Heyr | Heyr | Self-management | Heyr is an AI-powered app (IOS/Android) that rewards young adult users for their commitment to mental wellbeing goals. Users are navigated to 24/7 mental health support via conversational AI and provide reward incentives to influence long term positive behavioural change.<br>See more detailed slide below.<br>https://www.heyr.app/ |
| MaST (Management & Supervision Tool) | Holmusk | Resource / pathway management | Management and Supervision Tool (MaST) is a powerful and easy to use dashboard which uses predictive analytics to identify those people who are most likely to require crisis services such as A&E, Community Crisis Services or inpatient care. MaST supports improved caseload management. It also ensures decision-making about resource allocation is based on service user needs.<br>MaST is receiving support as a member of the NHS Innovation Accelerator programme – seem more information here.<br>See more detailed slide below.<br>https://holmusk.co.uk/ |

# Overview - Severe Mental Illness

| Innovation | Company | Setting and Priority Area | Description |
|---|---|---|---|
| FREED (First episode and rapid early intervention service for young people with an eating disorder) | South London and Maudsley NHS Foundation Trust | Intervention | A team at South London and Maudsley NHS Foundation Trust has investigated whether a novel first episode and rapid early intervention service for young people with an eating disorder (FREED) can shorten the duration of untreated eating disorders and waiting times, and improve outcomes. The intervention was developed for young people (18–25) who have had an eating disorder for less than three years. The service, which was embedded in a large NHS specialist eating disorder service for adults, involved a rapid screening and assessment protocol, evidence-based guided online and manualised self-help interventions for patients and carers, and an implementation toolkit for staff. FREED patients waited almost 40% less time for an assessment and waiting times for treatment were almost halved. All of the FREED patients took up treatment, compared to 87% from published data. Overall clinical improvement was rapid, with patients' average eating disorder symptom at six months being below the cut-off for a clinical eating disorder. https://www.slam.nhs.uk/ |

A selection of innovations from this list are been expanded upon in the following slides.

# Brain in Hand

**About**

Brain in Hand is a self-management app for people with mental health conditions. It increases confidence, helping people manage anxiety and achieve their goals; as users progress towards independence, services can more efficiently direct their resources to those who need them at the right time. It has been shown to help people manage anxiety, cope with change, manage routines and remember tasks.

| Pathway |
| --- |
| Self-management |

**NHS Use, Evaluation and Case Studies**

Supporting over 6,500 people, and with over 20% of England's local authorities (including 45% of London boroughs) commissioning Brain in Hand, the system has helped to transform lives across a range of settings. Funded by national student finance bodies, BiH supports thousands of students across almost every UK university.

Brain in Hand is currently in use across a number of Local Authorities, including North Kirklees.

Brain in Hand has received support as a fellow of the NHS Innovation Accelerator Programme.

| Website and links |
| --- |
| https://braininhand.co.uk/ |

**Published Evidence**

Information on Brain In Hand's evidence to date may be found here: https://braininhand.co.uk/media/cllnkuhc/research_approach.pdf

**Regulatory**

Brain in Hand is a Tier 2 digital health technology under NICE's Evidence Standards Framework. The app has been top rated by ORCHA.

**Resource**

Available on a rolling 12 month subscription licence, Brain In Hand will hold an initial discussion, to identify the best way to introduce Brain in Hand in a setting. They will then provide a bespoke business proposal including pricing details.

braininhand
personal technology for independent living

# ChatHealth

**About**

ChatHealth is a secure and confidential messaging. ChatHealth allows service users to easily and anonymously get in touch with a healthcare professional for advice and support. Developed by Leicestershire Partnership NHS Trust, ChatHealth helps to safeguard vulnerable and hard to reach services users. ChatHealth has recently won the 'Innovation Spread' and 'Innovation Champion' awards as part of the Innovation Awards.

**NHS Use, Evaluation and Case Studies**

ChatHealth is implemented in 70 NHS organisations across the UK and available to 6 million people, including young people, parents/carers and adults seeking help. It is now used across different NHS services, including school nursing, health visiting, young people's mental health, adult mental health, sexual health and specialist services such as children's diabetes and autism services.

ChatHealth is part of the NHS Innovation Accelerator programme – see more information here.

NICE user assessment of ChatHealth in school nursing services:

- Most staff users find that ChatHealth is beneficial to young people in terms of improved and anonymous access to the school nurse. They indicated that ChatHealth has led to the school nurse service being used by young people who may not have previously used it.
- Staff users also considered that ChatHealth would enable more effective use of staff time, particularly when resources are limited.
- The survey by the patient organisation revealed more negative views, but this was a small group and it is not known exactly what information t had about the ChatHealth service or whether they had access to ChatHealth themselves.

**Published Evidence**

Palmer et al 2022 is details the use and the roll out of Chat Health to enhance access to mental health support. The NICE MedTech briefing is focussed on the provision of ChatHealth for children, with the service rolled out to both school and health care settings across the UK.

**Regulatory**

ChatHealth is not classed as a medical device.

**Resource**

Costings available on request and will depend on the size of the nursing team involved

SMS costs for text messages sent to users are sent at the usual cost.

**Pathway**

Patient messaging

**Website and links**

- ChatHealth Website
- NICE MedTech Briefing
- Palmer et al 2022
- Innovation Awards

ChatHealth

# Heyr

**About**

Heyr is an AI-powered app (IOS/Android) that rewards young adult users for their commitment to mental wellbeing goals. Users are navigated to 24/7 mental health support via conversational AI and provide reward incentives to influence long term positive behavioural change. They provide institutions like NHS with a dashboard that provides real-time behavioural data/trend reporting based on demographics, sentiment or location and provides mental health/wellbeing statuses.

Users can chat anytime and address 20+ mental health challenges with no pressure or judgment. Users can track their mood, motivation and wellbeing scores in the app and use journaling features. All in-app conversations are confidential and their SOS feature supports smart signposting in case of emergency.

| Pathway |
| --- |
| Self-management |

| Website and links |
| --- |
| https://www.heyr.app/ |

**NHS Use, Evaluation and Case Studies**

Heyr is currently being utilised by a number of CCGs, including Bradford.

**Published Evidence**

The solution is currently under evaluation. Details will be available shortly.

**Regulatory**

The app is ISO27001 certified and has been evaluated by ORCHA.

**Resource**

The technology can be implemented in 6 weeks dependent on the size of the implementation. Quotes are available following scoping of the size of the project.

# Holmusk - MaST

**About**

Management and Supervision Tool (MaST) is a powerful and easy to use dashboard which uses predictive analytics to identify those people who are most likely to require crisis services such as A&E, Community Crisis Services or inpatient care. MaST supports improved caseload management and ensures decision-making about resource allocation is based on service user needs. The solution was developed in conjunction with Rethink.

- MaST's analytics translate health record data into Risk of Crisis prediction, identifying the most vulnerable for support
- MaST's dashboards provide a platform for decision making across the MDT so that manual workarounds aren't required
- MaST provides consistent insight, reducing reliance on the presence of individual staff and enabling a joined up approach to care

**Pathway**

Resource / pathway management

**Website and links**

https://holmusk.co.uk/

**NHS Use, Evaluation and Case Studies**

When implemented in Merseyside, admissions halved with a c.£5,000 saving per admission.
MaST is receiving support as a member of the NHS Innovation Accelerator programme.

**Published Evidence**

An economic evaluation of the impact of the use of Management and Supervision Tool in Mersey Care NHS Foundation Trust (published November 2021) may be viewed here.

**Regulatory**

DTAC is in place.

**Resource**

MaST is on the G Cloud 12 framework. Implementation timescales and costs are available on request dependent upon the size of the service.

# Hypertension Case Findings

# Overview – Hypertension Case Findings

| Innovation | Company | Setting and Priority Area | Description |
|---|---|---|---|
| Continuous blood pressure monitor | Aktiia SA | Wearable | Aktiia offer continuous blood pressure monitoring through a wearable worn on the wrist. Data is streamed to a secure cloud, which is then available via smart device. An algorithm provides clinically validated data for systolic and diastolic blood pressure values both day and night, providing an indication of time in range and night time hypertension.<br>https://aktiia.com/ |
| Expert Care | Expert Rx | Medicines optimisation tool | ExpertCare is a medicines optimisation tool which promotes adherence with NICE guidelines on the management of Hypertension and its comorbidities.<br><br>For an average 9,000 patient GP practice ExpertCare can:<br>•Empower prescribing Nurses and Pharmacists to conduct the majority of hypertension consultations with minimal GP input<br>•Reduce GP time spent on hypertension consultations by 328 hours p.a. – an annual saving of £24,000<br>•Contribute to a significant reduction in heart attacks and strokes saving the NHS £14,000 per average practice per annum<br><br>https://expertcarerx.co.uk/ |

# Overview – Hypertension Case Findings

| Innovation | Company | Setting and Priority Area | Description |
|---|---|---|---|
| Florence | Get Florence | Remote monitoring and management | Florence delivers precise, psychology-based, two-way health messaging that engages patients continuously to change their behaviours and create better, sustained outcomes. Their technology has been used in a number of settings to support patients who have recently been diagnosed with hypertension.<br>See more detailed slides below.<br>https://getflorence.net/ |
| Hypertension Plus | Omron | Medicines optimisation | Hypertension Plus generates a tailored medication plan for the patient, which is recommended directly to the clinician, who can then easily and quickly accept or modify plans at their discretion and inform patients immediately over a dedicated mobile app. Recommendations are underpinned by an exclusive algorithm founded on clinically proven medication titration techniques for hypertension, based on current National Institute for Health and Care Excellence (NICE) guidelines.<br>See more detailed slide below.<br>https://www.omron-healthcare.co.uk/ |
| Lifelight | Xim | | |

A selection of innovations from this list are been expanded upon in the following slides.

# Get Florence - Florence

**About**

Florence delivers precise, psychology-based, two-way health messaging that engages patients continuously to change their behaviours and create better, sustained outcomes. Florence interacts by familiar and friendly SMS text messages to the patient's mobile phone. Florence has been used in a number of settings to support patients who have recently been diagnosed with hypertension.

**Pathway**

Remote monitoring and management

**NHS Use, Evaluation and Case Studies**

Florence was formed as a spin out from Stoke-on-Trent hospital, where it's use has been evaluated across a number of clinical pathways. Florence is also used extensively across a number of pathways in the NHS nationally.

An RCT in Stoke-on-Trent showed how the average systolic blood pressure in telemonitored patients dropped by 15% in the first month of intervention. Other results included:

- Average monthly contact time with GPs halved from 1.2x to 0.6x.
- 84% of patients preferred sending BP readings via Florence over attending a clinic.
- 97% of patients reported taking their medication regularly.
- £1,800 cost saving per 100 patients estimated from productivity gains from remote blood pressure monitoring.

**Website and links**

- Get Florence Website
- Independent studies

**Published Evidence**

A summary of evidence from ten independent clinical studies: https://app.hubspot.com/documents/20220064/view/431148697?accessId=cefdc2

Information on Florence's evidence base for other clinical pathways can be found here: https://getflorence.net/evidence

Information on NICE's Shared Learning Database may be viewed here: https://www.nice.org.uk/sharedlearning/interactive-simple-telehealth-for-the-management-of-blood-pressure

florence
Intelligent Health Messaging

**Regulatory**

Class IIa medical device
DTAC compliant

**Resource**

Costs for implementation are available upon request.

# Omron – Hypertension Plus

**About**

Hypertension Plus generates a tailored medication plan for the patient, which is recommended directly to the clinician, who can then easily and quickly accept or modify plans at their discretion and inform patients immediately over a dedicated mobile app. Over time, Hypertension Plus collates the patient's blood pressure readings along with other key health parameters and inform clinicians when it's time for their patients to progress in their treatment plan or if there is any urgent action to be taken.

The platform incorporates a recommended activity programme for patients. As well as providing a regular cadence of readings, patients will be asked to complete a measurement week once per month, during which they will provide readings in the morning and evening each day. From these, the platform is able to determine how the patient is responding to their treatment and recommend personalised plan updates.

**Pathway**

Medicines optimisation

**Website and links**

- Omron Website

**NHS Use, Evaluation and Case Studies**

The design of Hypertension Plus was shaped by the TASMINH home blood pressure trials, a clinical study that proved the potential to reduce blood pressure through self-management and remote adjustment of medications

Recommendations are underpinned by an exclusive algorithm founded on clinically proven medication titration techniques for hypertension, based on current National Institute for Health and Care Excellence (NICE) guidelines.

Over 150 GP practices in the UK have been involved in the rollout phase. Estimated case savings from the implementation at Cheshire CCG, for example, amount to £3.6m.

**Published Evidence**

The TASMINH-4 study demonstrated a 4.7mmHg population blood pressure reduction after 12 months, know-how from Tasmin-H4 has been incorporated in Hypertension Plus under license from Oxford University Innovations. Information can be viewed here.

**Regulatory**

Class IIa medical device.

**Resource**

Costs for implementation are available upon request from the company, and information is on Digital Marketplace.

Examples of potential cost finding may be viewed here.

Available through the G-Cloud 12 framework.

# AHSN Programmes:
# Blood Pressure Optimisation Programme

The newly launched national Blood Pressure Optimisation Programme has a big ambition – to prevent heart attacks and strokes at scale by helping primary care to do things differently. As we emerge from the latest wave of the pandemic and focus our energies on recovery and transformation of healthcare, England's 15 Academic Health Science Networks (AHSNs) will be supporting integrated care systems (ICSs) and primary care networks (PCNs) to innovate in the diagnosis and management of hypertension.

The Blood Pressure Optimisation Programme will focus on improving the management of hypertension, case finding for the undiagnosed and targeting health inequalities, in addition to support for remote monitoring. It will do this by helping primary care to do things differently using the Proactive Care Frameworks developed by UCLPartners.

The frameworks cover six conditions including hypertension and have three elements:

- systematic risk stratification
- prioritisation of those at highest risk for treatment optimisation
- deployment of the wider workforce to support education, self-management and behaviour change.

A practice or PCN runs the automated searches in EMIS or SystmOne and this produces lists of patients in four priority groups. This approach helps practices to manage workflow at a time when capacity is so limited, it provides reassurance that we are reaching the patients who most need treatment optimisation while providing appropriate care to all, and it helps GPs meet QOF and other quality improvement targets.

https://www.ahsnnetwork.com/about-academic-health-science-networks/national-programmes-priorities/blood-pressure-optimisation-programme

# Shared Learning Examples:
# West Yorkshire & Harrogate Healthy Hearts

Phase One of the Healthy Hearts project helped local GPs to identify patients already registered with them who have undiagnosed high blood pressure (hypertension), which can often be an indicator of cardiovascular disease. There was an aim to help increase the detection of 18,000 more people with undiagnosed hypertension across the region.

By equipping local GPs with new coding, which allowed them to search their patient databases more effectively, along with the latest advice and guidance on the most effective treatments, they expected to be able to reduce the number of local people suffering from heart attacks and strokes. The project also aimed to support 40,000 more patients across West Yorkshire and Harrogate already diagnosed with hypertension who would benefit from simple improvements to their existing medication.

Phase one of the project aimed to **prevent 285 heart attacks and 421 strokes** across West Yorkshire and Harrogate, **saving** the local NHS **more than £8m**.

https://www.westyorkshireandharrogatehealthyhearts.co.uk/professionals55/phase-one-hypertension

# Shared Learning Examples:
# East Berkshire CCG – Systematic case finding of people with hypertension

It was identified within East Berkshire that there were a large number of people with undiagnosed hypertension. In order to reach a diagnosis rate comparable to the best in England, a total of 13,069 people would need to be found and diagnosed.

The CCG Medicines Optimisation Team (MOT) developed a strategy to support practices in finding people who either had hypertension or were at risk of developing hypertension through systematic audit. Over 12 months the audit was delivered in all 48 practices in East Berkshire. MOT Pharmacists then added people with hypertension to disease registers or referred people not yet diagnosed for diagnosis as set out in CG127 and QRISK assessment as set out in CG181.

After 12 months, there was an increase in 6,167 people recorded as having hypertension in East Berkshire.

**https://www.nice.org.uk/sharedlearning/systematic-case-finding-of-people-with-hypertension**

# Lifelight - Xim

**About**
Lifelight is a digital platform which supports the collection of vital signs including pulse, respiration, blood pressure and blood oxygen through a camera. These camera devices can include a patient smartphone or similar device or a health kiosk set up and can take these readings in 40 seconds. The technology works by shining light through the users skin to blood vessels and capturing the reflected light which is then analysed to gather vital signs information.

In the context of this horizon scan the collected vital signs measurements may be most relevant to hypertension, however this approach may also support patient monitoring, triage activities, remote consultations and reduce the time for these measurements to be taken in primary care. Lifelight may also have value as a hypertension screening tool in public spaces. The use of Lifelight removes the need for physical equipment but is less accurate if the user moves or takes the measurement in changeable lighting conditions.

**NHS Use, Evaluation and Case Studies**
Lifelight has been used in clinical trials and pilots in several NHS settings including both primary and secondary care.

**Published Evidence**
Jones et al details the large clinical trial carried out at the Portsmouth Hospitals University NHS Trust 8,500 patient clinical study found Lifelight to be useful with a positive response from both patients and clinicians.

**Regulatory**
Lifelight is a CE marked Class I medical device

**Resource**
Costs for implementation are available upon request.

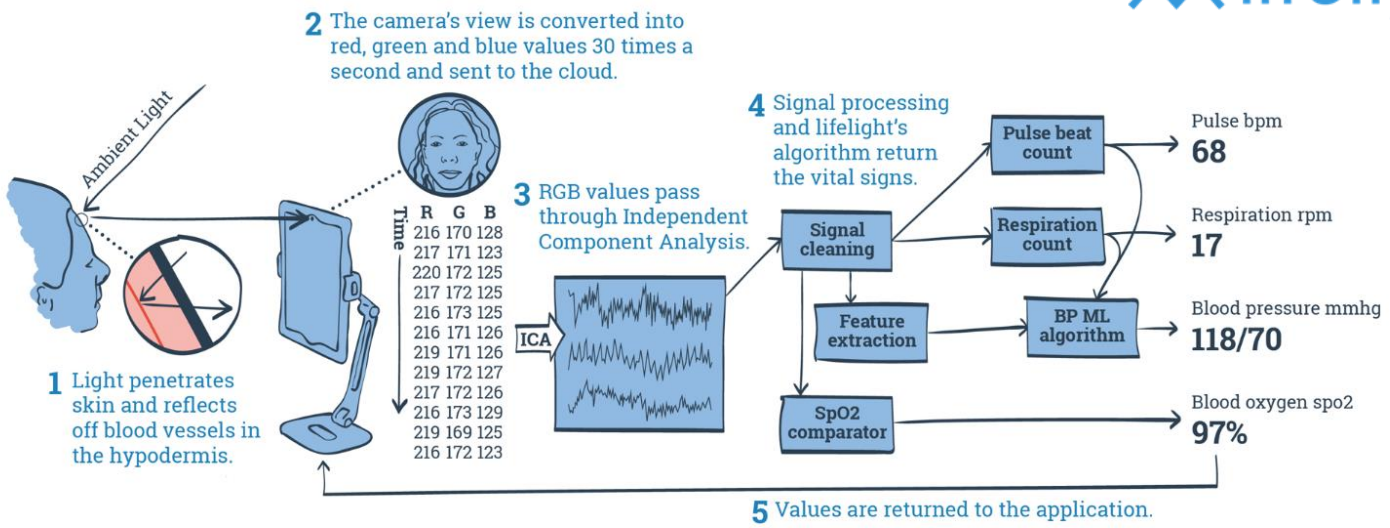
**Pathway**

Screening, vital signs collection

**Website and links**

- Lifelight Website
- NICE MedTech Briefing
- Jones et al 2021

lifelight®



# Maternity Case Findings

# Plus5 - Maternity

The Long Term Plan and the MBRRACE-UK reports highlight the significant differences in maternal mortality between different ethnic groups and those from the most deprived areas. Black and Asian mothers are more likely to die as a result of childbirth than their white counterparts and this gap has widened since 2010.

Evidence suggests that mothers who receive continuity of carer are less likely to lose their baby or experience preterm birth. Their experience of care during pregnancy and birth also improves.

Ensuring continuity of carer for 75% of Black, Asian and Mixed ethnicity women and those living in deprived areas by 2024 will help to meet the government's national maternity safety strategy ambition, which includes halving rates of stillbirths, neonatal deaths and reducing the rate of preterm births from 8% to 6% by 2025.

Links:

- https://digital.nhs.uk/services/digital-maternity-programme
- https://www.england.nhs.uk/wp-content/uploads/2018/11/national-maternity-dma-report.pdf
- https://www.rcm.org.uk/news-views/rcm-opinion/2021/the-digital-possibilities-in-maternity-care/

## Maternity EPR Solutions – Market Leaders

| Innovation | Website | |
|---|---|---|
| Wellbeing Software - Euroking | https://www.wellbeingsoftware.com/solutions/product/euroking/ | 30 NHS Maternity Units |
| SystemC Medway Maternity | https://www.systemc.com/solutions/epr/maternity/ | 23 NHS Maternity Units |
| Clevermed - BadgerNet | https://www.clevermind.com/ | 13 NHS Maternity Units |
| K2 - Athena | https://www.k2ms.com/athena/ | 10 NHS Maternity Units |

# Overview – Maternity Case Findings

| Innovation | Company | Setting and Priority Area | Description |
|---|---|---|---|
| Cardmedic | Cardmedic | Communication | CardMedic is an innovative and multi award-winning website and app designed to improve communication between healthcare staff and patients, across any barrier – whether that's visual, hearing or cognitive impairment, a language barrier, or PPE<br><br>Midwives at University Hospitals Sussex NHS Foundation Trust are supporting non-English speaking expecting parents by using a web-based communications app in their specialised antenatal classes.<br>https://www.cardmedic.com/ |
| Sensyne Health's GdM+ | Sensyne | Home monitoring | Sensyne Health's cloud-based product includes an app that connects to a wireless blood glucose monitor, transmitting data, including measurements or any other notes logged by patients to a web-based clinical dashboard that care teams can access.<br>https://www.sensynehealth.com/training/gdm-health-help-centre/ |
| Hampton for monitoring hypertension | Asma Khalil | Home monitoring | The maternal fetal medicine team at St Georges University Hospitals NHS Trust, in conjunction with the Health foundation designed and implemented and innovative app allowing patients to monitor their blood pressure, urine and symptoms at home. Eliminating unnecessary hospital visits by remote monitoring improves the patient pathway and convenience.<br>https://www.asmakhalil.co.uk/hampton-app-home-bp-monitoring/ |

# Overview – Maternity Case Findings

| Innovation | Company | Setting and Priority Area | NICE listed | Description |
|---|---|---|---|---|
| MaternityPEARLS | University Hospital North Staffs NHS Trust | Practitioner learning and development | | Web-based learning package for practitioners carrying out medical procedures on women with perineal injury sustained during childbirth. It has now been adopted by two royal colleges as part of their online learning programmes. https://www.ilearn.rcm.org.uk |
| SORA App | Syrona | Endometriosis | | Digital women's health platform for endometriosis screening and support. https://syronahealth.com |
| Baby Buddy | Best Beginnings | Parent support | | Free multi-award-winning, interactive pregnancy and parenting app. Baby Buddy has been created to support parents, co-parents and caregivers, and to back-up frontline practitioners' work and communication. Baby Buddy provides trusted, evidence-based information and self-care tools based on the latest research and is NHS-approved. https://www.bestbeginnings.org.uk |
| My Birthplace | Portsmouth Hospitals Trust | Birth planning | | Apps that helps pregnant women and their partner decide where they would rather have their baby, has led to more effective workforce and resource planning as a result of faster decision-making by parents. https://www.mybirthplace.org/tayside/#page-2 |
| LactApp | Lactapp | Breastfeeding | | LactApp is the first app dedicated to breastfeeding and motherhood that solves your questions in a personalised way. https://lactapp.com |

# Overview – Maternity Case Findings

| Innovation | Company | Setting and Priority Area | NICE listed | Description |
|---|---|---|---|---|
| Mutu | Mutu Systems | Pelvic health | | MUTU System is the pioneering, body-positive, medically recommended and proven support programme for all mothers. MUTU provides evidence-based proven techniques to improve pelvic and abdominal symptoms from 'baby belly' or diastasis recti to embarrassing leaks, painful sex or prolapse symptoms. https://mutusystem.com/en-uk/about/ |
| PeppyBaby | PeppyHealth | Parent support | | Peppy Baby gives new and expectant parents in your workplace the opportunity to discuss the issues they face. And always with highly trained and accredited expert practitioners and consultants in areas like infant feeding and baby sleep. https://peppy.health/verticals/baby/ |

A selection of innovations from this list are been expanded upon in the following slides.

# Card Medic

**About**

CardMedic is an innovative and multi award-winning website and app designed to improve communication between healthcare staff and patients, across any barrier – whether that's visual, hearing or cognitive impairment, a language barrier, or PPE (personal protective equipment).

CardMedic encompasses an A-Z collection of digital flashcards accessible via smart phone, tablet or desktop. Written by clinical experts, simply and succinctly, CardMedic replicates conversations around common healthcare topics with simple questions and explanations to guide the clinical interaction.

CardMedic ensures you are able to meet every patient's communication need at the point-of-care. We offer an innovative flexible communication solution with:
Multi-lingual content
Variable-speed read-aloud functionality
Sign language videos
EasyRead with pictures
Adjustable font sizes
Integrated translation tool with speech-to-text / text-to-speech capability, to expand your conversation

**NHS Use, Evaluation and Case Studies**

Midwives at University Hospitals Sussex NHS Foundation Trust are supporting non-English speaking expecting parents by using a web-based communications app in their specialised antenatal classes.

**Published Evidence**

A collaborative service evaluation by the University of Brighton and Brighton and Sussex University Hospitals NHS Trust, demonstrated significantly increased patient confidence to 95%.

**Regulatory**

TBD

**Resource**

Costs for implementation are available upon request.

| Pathway |
| --- |
| Patient Communications |

| Website and links |
| --- |
| CardMedic Website |

# EDAMS: Empowering Digital Access in Maternity Services

**About**

Cambridgeshire and Peterborough ICS, in partnership with local maternity and neonatal system digital midwives, plan to identify what the main barriers and blockers are to accessing digital services within the maternity pathway.

Results from this will be used to inform suitable localised action required to help improve and address these blockers. The project will also look at how accessing digital services is influenced by deprivation and by patient ethnicity.

| Pathway |
| --- |
| Digital access project |

**NHS Use, Evaluation and Case Studies**

Cambridgeshire and Peterborough ICS were awarded funding in October 2021, not further data available as yet.
https://transform.england.nhs.uk/key-tools-and-info/adoption-fund/adoption-fund-award-winners-2021/

| Website and links |
| --- |
| Adoption fund link |

**Published Evidence**

TBD

**Regulatory**

N/A

**Resource**

To be determined in the future.

# Bradford Doulas RIC Project

NICE listed

**About**
Doula project is a service part-funded by the NHS (Reducing Inequalities in Communities Project) which offers support to pregnant women in Bradford from ethnic minorities who might not be aware of the antenatal care on offer.

The doulas, who are a trained companion, come from the same communities as the pregnant mothers and understand their needs.

Support is provided six weeks before birth, during birth and six weeks afterwards, through home visits, over the phone and via video calls.

**NHS Use, Evaluation and Case Studies**
Bradford CCG

Article on the project
Bradford Doulas website

**Published Evidence**
TBD

**Regulatory**
TBD

**Resource**
CCG Commissioned Service

**Pathway**

Digital access project

**Website and links**

Bradford Doulas website

# Health Inequalities for General Innovation

In addition to the Core20PLUS5 areas we also searched for innovations which could target general health inequalities and access to care.

**5 key priorities areas to address:**

1. Restoring NHS services inclusively
2. Mitigating against digital exclusion
3. Ensuring datasets are complete and timely
4. Accelerating preventative programmes'
5. Strengthening leadership and accountability.

# Overview – General Innovation Case Findings

| Innovation | Company | Setting and Priority Area | Description |
|---|---|---|---|
| Written Medicine | Written Medicine | Prescribing | Translated pharmacy labels discharge sheets and clinical information sheets. This innovation facilitates translations of clinical text to a much wider range of languages.<br>https://www.writtenmedicine.com/ |
| Edenbridge | Edenbridge | Population health for GP Practices | Apex is simple to use tool, with clearly presented data that enables Primary Care services to ensure the alignment of current and future needs of their own population.<br>https://www.edenbridgehealthcare.com/products/apex-practice |
| PEP AI | Pep Health | Patient Experience platform | Solution provides NHS trusts, commissioners and those responsible for setting policy the opportunity to listen to their patients, learn from what they have to say and start to measure their experience.<br>Their data reveals that patients are well placed to observe and report episodes of discrimination, racism, ageism, and sexism that they experience.<br>https://www.pephealth.ai/ |
| myGP Engagement Hub | iPlato | Patient Communications/screening | myGP Engagement Hub allows healthcare providers to run large scale and multi-channel patient communication campaigns to help improve screening rates in hard to reach groups.<br>https://www.iplato.com/ |
| Doc Abode | Doc Abode | Workforce Scheduling and demand management | Doc Abode is a multi-award-winning platform, enabling healthcare providers to match the availability, expertise and location of clinicians to the needs of NHS patients who require a home visit.<br>• Reduces risk and minimises unscheduled hospital attendances by matching clinical need to readily available expertise<br>• Takes into consideration the patient's first language when identifying the best possible match with available clinicians<br>• Platform enables healthcare providers to connect clinicians solely to NHS patients<br>https://docabode.com/ |

# Overview – General Innovation Case Findings

| Innovation | Company | Setting and Priority Area | Description |
|---|---|---|---|
| Health Navigator | Health Navigator | Population health Management | The AI-guided clinical coaching intervention that prevents 34% of A&E attendances and significantly reduces health inequalities - link https://www.hn-company.co.uk/ |
| Sign Live | Sign Live | Patient Communications – Deaf community | On demand access to qualified online BSL interpreter for patients being treated in hospital. https://signlive.co.uk/ |
| Optum – Population Health | Optum | Population health Management - ICS | Population health management (PHM) is how we can achieve integrated care at scale. We empower integrated teams with actionable insights that support more coordinated, proactive, and personalised care to drive better outcomes and value for populations. https://www.optum.co.uk/how-we-help/population-health.html |
| Xploro | Xploro | Patient Communications - CYP | Clinically validated health information platform that uses augmented reality, gameplay and artificial intelligence to deliver health information to young patients, in a way which makes them feel empowered, engaged and informed, whilst having fun at the same time. https://xploro.health/ |
| Joy | Pungo | Social prescribing platform | Joy enables organisations to deliver data-led social prescribing. Their easy-to-use Social Prescribing Platform is integrated with EMIS and SystmOne. https://www.thejoyapp.com/about |

# Overview – General Innovation Case Findings

| Innovation | Company | Setting and Priority Area | Description |
|---|---|---|---|
| VirtTuri | VirtTuri | Clinical Informatics Avatar | Multi language digital assistant avatar technology that can generate an avatar for a human of any age or ethnicity, improving inequalities in communication and can communicate in over 50 languages. Virtturi – Welcome to the world's most advanced digital assistant. |
| LVNDR | LVNDR | Sexual healthcare services for LGBTQ+ | LVNDR is a mission led digital platform which addresses health inequalities by improving the experience and accessibility of sexual healthcare services for LGBTQ+ individuals in the community. This culminates in a remote clinic that empowers patients to take control of their health by accessing tailored services. LVNDR |
| RIX Wiki | RIX | Patient communication, planning and information-sharing tool | RIX Wiki is a software that enables people with learning disabilities to share personal health and care information for effective person-centred support in their communities. The RIX Wiki is an accessible multimedia communication, planning and information-sharing tool developed with and for people with learning disabilities alongside their carers, families and professionals. https://www.rixwiki.org/ |
| Explain My Procedure | Explain My Procedure | Patient Communications - CYP | Explain my Procedure supports shared-decision making in medicine. Animations provide general information and are a starting point for discussion with the healthcare team. By providing animations in multiple languages languages (English, Bengali, Polish, Hindi, Turkish, Arabic and Welsh) Explain my Procedure seeks to be inclusive and empowering. https://www.explainmyprocedure.com/ |
| HEAL-D | HEAK-D | Diabetes education and support programme | HEAL-D is a culturally-tailored diabetes self-management education and support programme that aims to help people living with type 2 diabetes from African and Caribbean communities to achieve evidence-based diet and lifestyle goals through supporting and motivating the development of self-management skills. https://www.heal-d.co.uk/about |
| GoodMaps | GoodMaps | Navigation | GoodMaps is a mapping application which supports people moving around buildings. Their augmented reality technology enables navigation of environments for those who may be blind, deaf, mobility impaired, but particularly those with impaired sight in navigating buildings. |

A selection of innovations from this list are been expanded upon in the following slides.

# Written Medicine

**About**
Pharmacy label and discharge summary translation software, that works across 11 different languages.

Providing a dual language label can reduce the risk of harm to the patient as they can read the instructions and warnings on the label, thereby empowering the patient and making them independent of interpreters/translators. All patients can become confused when brands of medicines are switched. This problem is further compounded for those with a limited ability to read English, hence; translation has obvious benefits in this regard and ensures the continuation of optimal pharmaceutical care.

Medication compliance is essential for effective treatment and patient compliance is integrally linked to the patient's understanding of their medicines. Furthermore, we know that a patient's inability to understand English leads to compliance problems, naturally causing medication errors and adverse drug reactions. Patients that are unable to speak English are also less likely to understand their doctors, pharmacists and written

**NHS Use, Evaluation and Case Studies**
LNWH, Bedfordshire Hospitals NHS Foundation Trust, East London NHS Foundation Trust

**Published Evidence**
https://www.england.nhs.uk/about/equality/equality-hub/case-studies/digitising-pharmacy-bilingual-medication-information-on-pharmacy-dispensing-labels/

London North West Healthcare NHS Trust video

Provision of Bilingual Dispensing Labels to Non-Native English Speakers: An Exploratory Study

**Regulatory**
IG compliant

**Resource**
Costs for implementation are available upon request.

**Pathway**

Prescribing

**Website and links**

Ghalib Khan
Mg.khan@writtenmedicine.com
Written Medicine Website

# Pep AI

**About**

Difficulty for Trust boards and staff to fully understand what is happening to their patient, their experience of treatment, staff and the environment. Understanding this in a timely manner is difficult and benchmarking against other trust.

Pep AI provides NHS trust, commissioners and those responsible for setting policy the opportunity to listen to their patients, learn from what they have to say and start to measure their experience.
The empirically proven platform provides real-time insights about patients' experience of care from millions of public patient comments.
It analyses the comments using tailored algorithms to generate scores which highlight areas for celebration or concern and identify the reasons for improving or declining patient satisfaction.
Analysis reveals national trends and accurately categorises comments according to internationally recognised Picker Principles, region, provider and department. This means we can report variations in patient experience and sate care provision across settings, and benchmark providers and health systems locally, regionally and nationally.

**Pathway**

Patient Experience platform

**Website and links**

Request a demo:
https://www.pephealth.ai/contact-us?reason=demo

https://www.pephealth.ai/

**NHS Use, Evaluation and Case Studies**

Milton Keynes, Royal Surrey, Gloucestershire, NHSe&i

**Published Evidence**

Royal Surrey trust deploys real-time patient feedback system
Is enough being done to ensure people living with obesity receive equal access to care?

**Regulatory**

CyberEssentials accredited by the NCSC in the UK
Stored client data is encrypted at rest and in transit, and access is restricted to relevant employees only
Data is stored in compliance with all GDPR regulations
Only collect publicly-available social media data

**Resource**

Costs for implementation are available upon request.

# HEAL-D - Healthy Eating and Active Lifestyles for Diabetes

**About**

HEAL-D is a culturally-tailored diabetes self-management education and support programme that aims to help people living with type 2 diabetes from African and Caribbean communities to achieve evidence-based diet and lifestyle goals through supporting and motivating the development of self-management skills. HEAL-D integrates evidence-based behaviour change techniques, dietary counselling and exercise classes to achieve evidence-based lifestyle goals.

Working in partnership with people living with type 2 diabetes, healthcare practitioners and community leaders, HEAL-D has been developed using rigorous and innovative co-creation methods. Service user involvement is at the core of HEAL-D. Ultimately aiming to improve healthcare access and engagement amongst our local communities, we have used co-creation methods to identify ways to overcome barriers to healthcare engagement.

We have worked with mosques and churches to foster engagement with our communities. We have connected with community 'gatekeepers' such as faith leaders, to open up communication and foster the trust of patients. Through our community engagement work we have developed a better understanding of how to make the HEAL-D programme more relevant.

**NHS Use, Evaluation and Case Studies**

South-east and south-west London.

**Published Evidence**

Several publications listed here

Developed in partnership with Kings College London

**Regulatory**

TBD

**Resource**

TBD

**Pathway**

Diabetes self-management education and support programme

**Website and links**

Request a demo:
louise.goff@kcl.ac.uk

https://www.heal-d.co.uk/

# CardMedic

**About**

CardMedic is an innovative and multi award-winning website and app designed to improve communication between healthcare staff and patients, across any barrier – whether that's visual, hearing or cognitive impairment, a language barrier, or PPE (personal protective equipment).

CardMedic encompasses an A-Z collection of digital flashcards accessible via smart phone, tablet or desktop. Written by clinical experts, simply and succinctly, CardMedic replicates conversations around common healthcare topics with simple questions and explanations to guide the clinical interaction.

CardMedic ensures you are able to meet every patient's communication need at the point-of-care. We offer an innovative flexible communication solution with:
Multi-lingual content
Variable-speed read-aloud functionality
Sign language videos
EasyRead with pictures
Adjustable font sizes
Integrated translation tool with speech-to-text / text-to-speech capability, to expand your conversation

**Pathway**

Patient Communications

**Website and links**

CardMedic Website

**NHS Use, Evaluation and Case Studies**

Brighton and Sussex University Hospitals NHS Trust

**Published Evidence**

A collaborative service evaluation by the University of Brighton and Brighton and Sussex University Hospitals NHS Trust, demonstrated significantly increased patient confidence to 95%.

**Regulatory**

TBD

**Resource**

Costs for implementation are available upon request.

# Sign Live

**About**
On demand access to qualified online BSL interpreter for patients being treated in hospital.

The UK has 150,000 British Sign Language (BSL) users, many are current or potential customers of yours. Enabling Deaf people to contact you via an interpreter makes your organisation more accessible and opens you up to an underserved segment of the population.

Setup is simple, just tell us which number you'd like customers to be able to call. When they ring via our Community Directory they'll be connected to an interpreter who will relay the call to you. No extra steps necessary.

**Pathway**

Patient Communications – Deaf community

**Website and links**

https://signlive.co.uk/

**NHS Use, Evaluation and Case Studies**
Salford Clinical Commissioning Group (CCG) have partnered with Online BSL Interpreting Service, SignLive, to enable patients to easily contact their Salford GP practice by telephone.

Brighton & Sussex University Hospitals NHS Trust

**Published Evidence**
None identified

**Regulatory**
Not applicable

**Resource**
Available on request

# GoodMaps

**About**
GoodMaps is a mapping application which supports people moving around buildings. Their augmented reality technology enables navigation of environments for those who may be blind, deaf, mobility impaired, but particularly those with impaired sight in navigating buildings. Using LIDAR GoodMaps can position an individual within a few feet of their location without requiring the use of infrastructure or bluetooth connections. Once positioned the GoodMaps app can inform users of the direction and distance of key landmarks such as wards, toilets and services.

**NHS Use, Evaluation and Case Studies**
GoodMaps has yet to be used in an NHS setting but has wide use in public buildings and commercial venues. GoodMaps are looking for health and care partners to trial their technology.

**Published Evidence**
None currently

**Regulatory**
N/A

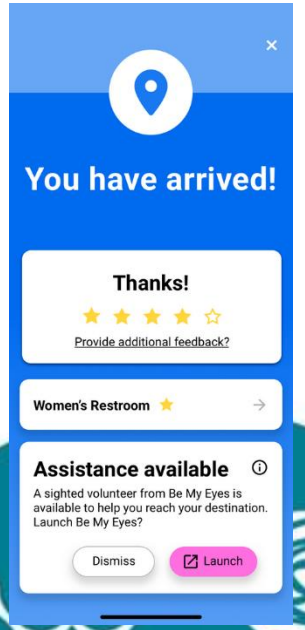
**Resource**
Pricing available on request.

**Pathway**

Navigation

**Website and links**

GoodMaps Website



# Next Steps

The information within this horizon scan provides an indication of some of the technologies available within health inequalities. We would be happy to provide more information about any of the technologies included in this document, or to provide additional information on other areas of focus.

**For further information**

- Speak to Wessex AHSN and YAHSN about any technologies identified in this slide deck which you would like more information about.
- Identify key challenges / pathways / priorities
- The AHSN can arrange demonstrations with solution providers.

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