



# Allied Health Professionals making an impact in cardiovascular and respiratory disease

## Case Studies

Cardiovascular disease (CVD) affects 7 million people in England and is the highest cause of premature death. It disproportionately affects the most deprived communities as people living in social deprivation are more likely to be exposed to disease risk factors and are twice as likely to die from CVD. It is therefore no surprise that The NHS Long Term Plan (LTP) prioritises a wide range of actions to deliver improvement.

AHPs have a wide-ranging role within CVD pathways – delivering population-based strategies in primary prevention, diagnostic services enabling early intervention, crisis management, and being part of the multidisciplinary team working to improve outcomes through the delivery of high-quality intervention.

There are many opportunities to strengthen AHPs' contribution in CVD, delivering innovative and impactful interventions. These case studies demonstrate evidence-based interventions which we know are not universally available across the country, but that could make a real difference to people's lives, wellbeing and ultimately survival rates. The case studies are arranged in chapters according to their impacts – prevention and early identification (pages 2-6); supporting people to live well (pages 7-13); and boosting out of hospital care (page 14-19).

These case studies are not an exhaustive list of AHPs' contribution to CVD prevention and management but illustrate a range of the opportunities for spread of adoption, supporting people to stay well and live well, and boosting out-of-hospital care.

Suzanne Rastrick,  
Chief Allied Health Professions Officer (England)



## Impact 1: prevention and early identification

### Case study 1: Musculoskeletal (MSK) physiotherapy led NHS health checks and diabetes prevention screening.

#### Salford Royal NHS Foundation Trust

Located in one of the most deprived and areas in England, the MSK service is used by approximately 9000 people annually. It provides an opportunity to engage with those who do not attend routine health checks and tackle inequalities. NICE<sup>3,4</sup> recommends physical activity advice is included in MSK management, indicating physiotherapists are in the ideal position to support people to reduce their risk of CVD and respiratory disease. Physiotherapists integrate opportunistic health checks within their MSK assessment and treatment service, by adopting a Making Every Contact Count (MECC) approach<sup>1</sup>. Behaviour change conversations are encouraged, putting people's health and lifestyle central to their care. The team are integrated across multiple referral pathways, including third sector organisations, to signpost support services, such as: weight management, treating tobacco dependency, alcohol use, mental health, diabetes prevention and management (NDPP), active lifestyles and the falls service.

An NHS tariff is received for every full [NHS Health Check](#)<sup>2</sup> completed. A routine health assessment is given to everyone who accesses the service not eligible for the NHS Health Check and includes; body mass index (BMI), blood pressure, pulse rate, waist measurement, alcohol score, activity guideline achieved, diabetes risk score. Between April 2018- September 2019 the service completed 6942 health checks and 315 full NHS Health Checks. Raised blood pressure was identified in 1219 people (16.8%). Diabetic screening of 1662 people identified 88 people (5.3%) with diabetes (n=23) or prediabetes (n=65). Of those that had a full NHS Health Check the cardiovascular risk score was raised in 30 people (9.5%), indicating a 10% risk of a CVD event within 10 years. Raised cholesterol was identified in 89 people (28%).

People who use the service are now more informed and feel more empowered. This service conducts routine health assessment resulting in earlier detection of CVD risk factors. It also contributes to reduced inappropriate secondary care referrals for people unfit for surgery, such as those with poorly controlled diabetes. This service redirected 17 people (0.24%) to their GP for diabetes management, saving resources both in pre-op and secondary care services.

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## Case Study 2: Save a life, stop a stroke. Carrying out opportunistic AF screening

### County Durham & Darlington NHS Foundation Trust's (CDDFT)

Untreated or sub-optimally treated Atrial Fibrillation (AF) puts people at higher risk of developing a stroke and heart failure<sup>1</sup>. It is estimated that 2.4% of the population in England have AF and without treatment 1 in 20 will have a stroke, estimated to cost £23,315<sup>2</sup>. AF can be asymptomatic and there are currently no nationally recognised screening programmes in England. [NICE](#)<sup>3</sup> recommends carrying out opportunistic screening of irregular pulses during annual diabetic foot checks, placing podiatrists in an ideal position to detect AF.

Podiatrists & Footcare Technicians in CDDFT use doppler machines to check pedal pulses, which gives an audible pulse sound. The approach requires staff training to listen to the regularity and quality of the pulse for at least 30 seconds. If an irregular pulse is detected the team communicate with GPs and request a 2 lead ECG to confirm AF. A 3-month pilot study during people's annual diabetic foot screening identified 10 people with AF out of 5000 people screened. This has potentially saved them from a life changing or threatening stroke or heart failure.

Since the pilot the AF screening pathway has been adopted as standard clinical practice and shared with the North East Diabetic Foot Network. To standardise screening and upskill the profession a protocol has been developed for podiatrists, in collaboration with the College of Podiatry, to identify irregular pulses during pedal pulse checks. A standardised approach may help improve the identification of AF of which podiatrists can play a crucial role.

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### **Case study 3: Diagnostic Radiographers generating efficiency with immediate reporting of general practice chest X-rays for people referred to a lung cancer pathway**

**Homerton University Hospital NHS Foundation Trust in collaboration with Canterbury Christ Church University**

Diagnostic capacity and suboptimal logistics are consistently identified as barriers to timely diagnosis of cancer, especially lung cancer. Immediate chest X-ray (CXR) reporting for people referred from general practice is advocated in the [national optimal lung cancer pathway](#), to improve time to diagnosis of lung cancer and to reduce inappropriate 2 week wait referrals. The objective of the initiative was to examine the impact of immediate reporting of CXR by radiographers for people on lung cancer pathways, who were referred by general practice.

A 12 month block randomised trial was conducted at a single centre in London. Half of the sessions (half day, 4 hours) per week (5) were randomised to an immediate or routine chest X-ray (CXR) report by a reporting radiographer, with an immediate CT where indicated. Time taken to diagnosis of lung cancer or discharge from the lung cancer pathway was determined. The initiative was funded by Cancer Research UK Early Diagnosis Advisory Group.

Over 9,000 CXRs were performed during the evaluation with a total of 49 lung cancers diagnosed. Homerton had already invested in rapid CXR reporting, with most CXRs reported on the same day. Providing people with an immediate CXR report (while in the department) produced a significantly quicker confirmed lung cancer diagnosis. The biggest improvement was for people with a suspicious CXR who were diagnosed 14 days sooner (median 18 days compared to 32 days; statistically significant  $p=0.0375$ ). Reporting the CXR while the person was still in the department also reduced the number of people who had an urgent referral to respiratory medicine by 35% (149 vs. 231). It was also associated with more appropriate referrals (26 (17.9%) cancer detection rate vs. 23 (9.9%) for routine).

The lung cancer project sits between primary care and respiratory medicine, supporting the right care, right time initiative. It led to significant improvements in appointment capacity for respiratory services, fewer people were referred to secondary care with an immediate report, and an immediate report was more likely to have an appropriate referral (more cancers diagnosed). Reporting radiographers can provide much needed increase in radiology reporting capacity, facilitating streamlined and rapid pathways. This has significant implications for outcome and adherence to new cancer targets. Homerton University Hospital is working with Health Education England to deliver additional CXR reporting radiographers as part of the Cancer Workforce Plan. This will increase diagnostic capacity and opportunity for reporting radiographers to contribute to rapid lung cancer diagnostic pathways.

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## Case study 4: AHPs delivering very brief advice (VBA) on smoking to enable more people to take steps to quit

### Royal Free London NHS Foundation Trust

In 2018, the prevalence of smoking in the Royal Free Hospitals main catchment areas; Camden, Barnet, Islington and Haringey, was higher than the national average. The Royal Free Hospital is a specialist centre for Vascular Surgery and many people receiving care are smokers and often continue to smoke throughout their illness. Smoking can have a devastating impact on vascular health by increasing the risk of disease progression, limb amputation and premature death<sup>1</sup>. Treating tobacco dependency while in hospital is recommended in [NICE guidelines](#)<sup>2</sup> and is one of the most effective treatments for vascular disease<sup>1</sup>. However, a survey of AHPs (physiotherapists and occupational therapists) on the vascular ward revealed that most did not discuss smoking, offer a referral to local Stop Smoking Services and were not confident to give advice on quitting.

All AHPs on the vascular ward were trained on how to give VBA on smoking and how to refer people to access nicotine replacement therapy while in hospital, and specialist stop smoking services in the community. AHPs were encouraged to “Make Every Contact Count” by routinely delivering VBA to smokers using the [3A’s approach](#)<sup>3</sup>: Ask, Advise, Act. Assessment forms were updated to: prompt the conversation, record smoking status, document the advice and outcome.

Between March and August 2018, 195 people were seen by AHPs on the vascular ward and 43 (22%) were identified as smokers. VBA was given to 36 (83%) people, 12 (33%) accepted a referral to stop smoking services and 6 (17%) for nicotine replacement therapy. Stop smoking referrals by the ward increased by 52%.

This intervention shows that AHPs can be effective at delivering VBA conversations on smoking and encouraging referrals to services that support people with tobacco dependency. VBA on smoking takes just one minute, is simple to embed in many clinical pathways and could have a powerful impact on the health and well-being of people who smoke. This project was part of a National Public Health Collaborative for AHPs in 2018, run by AHPs4PH, NHS improvement and Public Health England

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*‘Thank you for not giving me a lecture about my smoking habit. I do need help to quit. Please go ahead and refer me... Thank you’ A person with vascular disease*



## Case study 5: Nutrition Skills for Life™ Delivering quality assured nutrition training in Wales

### NHS Health Boards in Wales

Diet is a key modifiable risk factor to reduce risk of obesity, cardiovascular disease (CVD) and diabetes, all of which disproportionately affect those in lower socioeconomic groups<sup>1,2</sup>. A lack of knowledge and skills to prepare healthy foods act as barriers to healthy eating<sup>3</sup>. National public health programmes, including [Flying Start](#)<sup>4</sup> and [Families First](#)<sup>5</sup> and the development of the healthcare support worker role, saw increased demand for dietitians to provide nutrition training. In response, public health dietitians across Wales designed and deliver quality assured nutrition programmes to those working and volunteering in health, social care and third sector organisations. The partnership provides the wider workforce with nutrition knowledge and skills and facilitates the delivery of safe, evidence-based and consistent nutrition messages for the groups they work with. The target populations are; the 0-25's, vulnerable older people and lower socioeconomic/hard to reach groups.

Nutrition Skills for Life™ courses for community groups are accredited by the Welsh awarding organisation Agored Cymru, providing a route into further learning or employment by gaining credit for learning. Courses for staff are accessed by community workers such as: nursery nurses, teaching assistants, youth and leisure centre workers, foster carers, substance misuse practitioners, housing association staff, those working with the homeless and carers of vulnerable older people. The expectation is for community workers to competently cascade nutrition messages and develop community food initiatives. This includes supporting community settings to provide healthy/nourishing food and drink options in; nurseries, play groups, after school clubs, residential homes and care settings for older adults.

The programme also co-produces healthy eating initiatives with community groups who may not have the knowledge, skills and confidence to prepare and eat a healthy balanced diet. The programme works with community workers to plan, implement and evaluate healthy eating initiatives, such as: practical cooking skills, nutrition skills or weight management courses. Between April 2017 and March 2018, the team delivered Nutrition Skills training to over 900 community workers who have worked with 1150 members of the community. The impact is as follows:

- **92%** (n=1058) were more confident to prepare healthy foods
- **85%** (n=978) reported more confidence shopping for healthy foods
- **88%** (n= 1012) reported making changes to what they and their family eat
- Over **70%** of individuals reported eating more fruit and vegetables
- Over **80%** of individuals reported eating less fatty/fried/sweet/sugary foods

The Nutrition Skills for Life™ programme has led to people making improvements to their nutritional health by using the knowledge, practical skills and support they have gained. It has supported community groups to make better nutritional choices and reduce their risk of developing long-term conditions including; diabetes and CVD.

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## Impact 2: Supporting people to live well

### Case study 6: A specialist multi-disciplinary service for people with challenging respiratory symptoms

#### Manchester University NHS Foundation Trust (MFT)

Not all respiratory symptoms relate to lung impairment. People with upper airway and/or breathing pattern disorders, often present with complex and challenging respiratory symptoms<sup>1</sup>. Making a secure diagnosis is vital and requires MDT management<sup>2</sup>. Treatment includes therapy interventions, which are often multi-modal, and usually provided by speech and language therapists<sup>3</sup> (SLT) and physiotherapists. National service provision to assess and treat this population is scarce, meaning many people experience extended care pathways, misdiagnosis, long waiting times and are prescribed unnecessary medications. The limited access to specialist care results in poor experience and sub-optimal outcomes.

MFT developed a specialist respiratory MDT service, including; physiotherapists, SLTs, psychologists, nursing and physicians, with the primary aim of providing timely and effective treatment and support. An innovative one-day assessment pathway is in place for a speedy and accurate diagnosis to agree targeted management plans and instigate treatment. On-going treatment is provided in response to individual need and tele-health interventions are offered to people who live at a distance.

In the first year, the number of referrals received was 342 (508% over the original target), illustrating the unmet need. Approximately 68 (20%) referrals come from other regional or national respiratory centres. 267 (78%) people improved post intervention and were discharged in control of their symptoms. The average number of treatment sessions were 3 over 8 weeks.

Satisfaction of 142 people who use the 'one-stop day assessment' service is high. 107 (75%) strongly agreed and everyone agreed they felt involved and informed of decisions regarding their care. Everyone felt the MDT consistently explained information about their care and diagnosis in an accessible manner. 94 (66%) strongly agreed and everyone agreed the visit was useful and they achieved a clear plan for their care.

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*"I have been trying to get this sorted for years, had so many hospital visits and this team helped me in one day – they are amazing!" A person who has accessed the service*

*"Having the treatment from two specialist [AHPs] together helped me understand my different breathing problems and how to manage them – I never did before, thank you so much" A person who has accessed the service*



## Case study 7: **Keep Active Keep Well: increasing physical activity in people who do not attend pulmonary rehabilitation (PR)**

### **Bristol Community Health**

Low physical activity in people with COPD is associated with poor health outcomes, hospital admissions and premature mortality<sup>1</sup>. People living with COPD often fail to meet physical activity recommendations and exacerbations can further reduce activity levels. Uptake to rehabilitation is low and the reasons people do not attend are multifactorial with insufficient evidence to guide how to enhance completion<sup>2</sup>.

People commonly reported that pre-existing health beliefs about activity prevent them from participating in PR. Physical inactivity is an important predictor of COPD outcome, including increased risk of exacerbation which can lead to hospitalisation. The Keep Active Keep Well (KAKW) project led by physiotherapists and mental health nurses is an alternative option for people who do not attend PR. KAKW is a 12-week behaviour programme that uses motivational interviewing (MI) techniques to improve the initiation and maintenance of physical activity. Behaviour change techniques can adjust existing behaviours or stimulate new behaviours<sup>3</sup>. Staff training in MI was found to improve programme uptake and physical activity in people that attended. Participants also received teaching and information commonly taught on rehabilitation programmes.

In 2018 to 2019, 173 people who had declined PR were invited to participate. As well as promoting physical activity, KAKW focuses on people's knowledge, skills and confidence to manage their health. Programme impact was measured using the patient activation measure (PAM), which was significantly higher at 6 and 12 months of programme completion compared to baseline. The number of people taking part in at least 30-minutes of moderate intensity physical activity per week increased from 28 people (47%) at baseline to 58 people (97%) at 12 weeks. Significant improvements were found in people's six-minute walk test distance, from 365.7 metres (m) to 420.0 m. There was significant reduction in people's COPD symptoms, measured by the COPD Assessment Tool (CAT). Scores reduced from an average of 19 to 17, which is considered clinically meaningful improvement in health status.

On completion people are encouraged to attend local activity sessions and PR. 24 people (40%) went on to complete PR. All participants were positive about attending the programme and felt more confident to maintain physical activity long term. This is because the MI focused on challenging the barriers preventing people from being active. Activity included home-based activity; walking and the options explored considered people's individual needs. KAKW suits people with complex behaviour change needs such as low motivation to becoming more active. The PR service has now integrated the KAKW programme alongside the traditional programme and allows people to transfer from KAKW to PR programmes.

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## Case study 8: Delivery of an integrated breathlessness rehabilitation programme

### Homerton University Hospital NHS Foundation Trust

NICE (2018)<sup>1</sup> recommends that people with heart failure should be offered a suitable exercise rehabilitation programme. However, many cardiac rehabilitation programmes, until recently, declined access for people with chronic heart failure as they were considered too high risk. If people were suitable this was usually to a hospital-based programme, with restrictions to exercise on referral schemes. People living with heart failure report similar debilitating symptoms as those with respiratory disease, such as breathlessness and fatigue. The Adult Cardiorespiratory Enhanced and Responsive Service (ACERS) integrated the management of chronic respiratory diseases and heart failure across all sectors of care. The cardiorespiratory rehabilitation service is physiotherapy led, however, the MDT; physiotherapists, nurses and therapy assistants are trained to work across both pulmonary, cardiac and the integrated rehabilitation programmes. This provides integrated specialist rehabilitation, aimed at the management of symptoms for those living with a chronic respiratory or cardiac disease. The team collaborates with the local exercise on referral scheme to provide an integrated cardiorespiratory maintenance programme for people who completed rehabilitation.

This redesign has facilitated the delivery of a symptom-based exercise programme to those living with exertional breathlessness. It provides choice and consistency of care for those living with co-existing cardiac and respiratory disease. It also provides a community exercise option for people living with chronic heart failure that was not previously available. Service sustainability has also improved, as clinicians are competent to deliver all 3 programmes.

Outcomes from the group are comparable to those with a chronic respiratory disease. In 2018/19 the average improvement in exercise capacity tests were clinically significant and in line with improvements in health-related quality of life. People who completed the programme reported improved symptom control, exercise tolerance, as well as improvements in anxiety and depression. High satisfaction levels were found, with over 90% reporting they would recommend the programme.

Integrated cardiorespiratory rehabilitation is a safe, effective and an efficient use of resources, meeting the varied needs of different population groups. Integrated rehabilitation can be successfully run in the community with the appropriate support and training. This collaboration of physiotherapists with nursing colleagues has enabled a sustainable cardiorespiratory rehabilitation service. An integrated rehabilitation programme recognises a symptom-based model rather than a disease specific one. It increases the access to specialist rehabilitation for people living with chronic heart failure than ever before, as well as addressing the needs of people with coexisting respiratory and cardiac disease.

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## Case Study 9: Nutritional outcomes for people attending a community based pulmonary rehabilitation programme

### Swansea Bay University Health Board

The effects of COPD increase people's risk of malnutrition, including breathlessness, inflammation, increased nutritional requirements and side effects of medication such as taste changes<sup>1</sup>. Malnutrition prevalence in COPD is at least 20% and contributes to worsening health outcomes such as sarcopenia (loss of skeletal muscle and strength), reduced respiratory muscle, hospital admissions and death<sup>2</sup>. Pulmonary rehabilitation for someone with malnutrition can result in worse outcomes, whereas nutrition support can improve exercise outcome including, muscle and strength status<sup>1,2,3</sup>. However, dietetic input integrated within pulmonary rehabilitation services is limited across England and Wales<sup>4</sup>, resulting in missed opportunities to improve outcomes in this population. Service evaluation has shown that out of 566 people eligible for pulmonary rehabilitation, 119 (21%) were at risk of malnutrition.

In 2016 a dietetic led nutrition component was integrated into a community rehabilitation programme. The aim was to enhance the effect of physical training, by optimising people's nutritional intake and status. Dietitians delivered nutritional counselling in clinic and also before the nutrition education sessions; "eating well for your lungs" and "nutrition support for exacerbation". Individuals were screened post programme and further dietetic intervention was provided depending on nutritional need and risk. A 3-year service evaluation of 921 people accessing rehabilitation with the integration of the nutritional element showed positive impact. Malnutrition risk, body mass index (BMI), percentage weight change and handgrip strength were measured. Baseline data showed people had wide-ranging BMI's (14-59kg/m<sup>2</sup>) and 133 (14%) were at risk of undernutrition, demonstrating nutritional intervention needs to be individualised.

The approach increased BMI in 90 people (68%) who were underweight and safely reduced BMI in those measured as obese (64% of people). Handgrip strength was measured in 326 people and increased in everyone, especially those at nutritional risk. Improved hand grip strength suggests improvement of muscle mass and strength and is associated with better clinical respiratory outcomes, including; forced expiratory volume<sup>5</sup>, reduced fatigue<sup>6</sup> and disease severity<sup>5</sup>. Additionally, 126 (95%) people who were underweight either maintained or improved their nutritional risk score, which is positive in a population vulnerable to deterioration.

Functional improvements from nutrition support have been found to improve outcomes and reductions in health care use (such as hospital stays and admissions)<sup>7</sup>. Dietitians should work in the prehabilitation phase of respiratory care to support people to maintain long term improvements and maximise function and quality of life for as long as possible. This team now aim to assist weight gain in undernourished people prior to PR in line with Holst et al<sup>3</sup> recommendations.

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## Case study 10: Integrating people with PAD into cardiac rehabilitation for structured exercise to improve pain-free walking

### Salford Royal Foundation NHS Trust / Manchester Local Care Organisation

NICE<sup>1</sup> recommends supervised exercise programmes for people living with peripheral arterial disease (PAD), in order to improve the mobility limiting symptoms of intermittent claudication (angina of the leg). Suboptimal PAD treatment can lead to poor management of intermittent claudication, increased risk of major amputation of the lower limb, CVD events and avoidable 5-year death rates (30% mortality)<sup>2</sup>. Exercise programme outcomes can be comparable to surgical interventions, with additional cardio-protective elements<sup>1</sup>. However, there is limited access nationally to supervised exercise programmes, resulting in few NHS organisations meeting this NICE recommendation. Secondary care vascular clinics are seeing people that could be managed conservatively, if appropriate community services are in place to diagnose and manage the condition early and optimally.

Cardiac rehabilitation programmes are widely available and can also be a life-saving and cost-efficient approach to tackling all arterial disease. Podiatrists had the ambition to reduce avoidable surgical interventions and partnered with the cardiac rehabilitation team to develop a [12-week exercise programme](#)<sup>3</sup> suitable for people with PAD. It is delivered by physiotherapists and involves weekly 2-hour exercise sessions in line with NICE<sup>1</sup>. People are supported to self-manage their lifelong condition, as well as signposting to additional support services. The 12-month pilot was provided at a cost of £50,000. NICE<sup>4</sup> estimates that the cost of a three-month exercise only programme (staffing costs only) for PAD would be £255 per person. This gold standard early intervention service with additional podiatry input costs £477 per person. It aims to prevent temporary interventions including; angioplasty with elective stent costed at £3,687, bypasses and amputations. Results from the pilot demonstrated that everyone accessing the service is now offered the recommended first line treatment for PAD. There was a programme uptake of 89 people (91%) and 54 people (61%) completed the programme. 39 people (72%) reported improvement in intermittent claudication symptoms and 14 people (24%) were stable. Only 9 people (17%) were referred for a surgical opinion as they reported deterioration or no improvement of their intermittent claudication symptoms.

This service has now been recommissioned substantively. The model is simple and transferable and has resulted in a high level of satisfaction amongst people who use the service, staff and commissioners. The model has been replicated in the Manchester Local Care Organisation with comparable results. Securing access to existing cardiac rehabilitation services for all people with intermittent claudication should be a priority for commissioners and providers of PAD treatment. It has the potential to save lives, limbs and prevent unnecessary surgical intervention and reduce the burden on hospitals.

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## Case study 11: Providing equitable care to people with cardiac devices requiring magnetic resonance scans

### Barts Health NHS Trust

At least half a million people in the UK have a cardiac device (pacemaker or defibrillator) fitted and each has a 50-75% chance of needing an MRI scan in its lifetime<sup>1,2,3</sup>. MRI is essential for the diagnosis and treatment of many serious medical conditions. Historically, having a cardiac device was an absolute contraindication to MRI. However, newly manufactured cardiac devices are 'MRI-conditional' so they can now be scanned safely under strict MRI conditions, while older 'non-MRI conditional' devices can be scanned by following specific protocols.

Despite new technology and greater evidence in this area, people with devices are still 50 times less likely to be referred for an MRI when needed, and approximately half of hospitals in England do not offer this service<sup>4</sup>. The reasons for this include: -, lack of confidence from hospital departments offering MRI scans; primary care and commissioners of services who have historically been taught that all pacemakers are contraindicated to MRI; and limited training and staffing infrastructure to reassure and build confidence in this new approach. The team at Barts Heart Centre at St Bartholomew's Hospital, part of Barts Health NHS Trust, believe people with cardiac devices should have equitable access to MRI scanning and have expanded the radiographer's role to meet this gap in care. The radiographer has an integral role in ensuring devices are screened correctly and that strict protocols are applied. Achieving the best images in this group can be challenging and scanning often requires creative techniques, an advanced level of physics and skill<sup>4</sup>.

Radiographer's also require advanced communication skills to offer people reassurance and confidence in the procedure. People are often nervous because they have been previously told it is dangerous, which risks them declining this important scan. The success of this service is also reliant on collaboration between radiographers and cardiac physiologists, who work together to build knowledge and confidence in scanning. The partnership has resulted in radiographers acquiring in-depth knowledge of device terminology and programming, so much so that they are now providing education on appropriate referrals, developing guidelines and protocols and organising training programmes for teams, including; doctors, physiologists and radiographers, with the aim of increasing scanning rates across all capable UK centres.

Barts Heart Centre has been scanning devices since 2015 and has seen demand increase from 187 scans in 2018 to 370 scans in 2019. Waiting times have reduced from 60days to 15 days. Referrers and people with devices have reported feeling more confident that they are accessing safe care. The educational course has seen healthcare professionals from 71 centres and seven countries receive training and the number of centres scanning cardiac devices has increased too. The service has received significant external recognition including both a [BMJ](#) and [HSJ Value](#) award for its diagnostic Services.

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## Impact 3: Boosting out-of-hospital care

### Case study 12: A physiotherapy led community-based diagnostic spirometry clinic for people with respiratory symptoms

#### Oxleas NHS Foundation Trust

The number of people with a diagnosis of COPD has increased by 27% in the last decade and asthma remains the most common lung condition in the UK<sup>1,2</sup>. A physiotherapy led community clinic in the London borough of Greenwich is addressing this increase by providing diagnostic spirometry (lung function test) to understand what is causing respiratory symptoms. Launched in 2016, the physiotherapist who specialised in respiratory care and is also an independent prescriber, accepts adults referred by both GPs and secondary care.

Up to 100 people are seen every year, within 8 weeks of referral. Two clinics are held each week with 12 people seen, 6 in each clinic. People who attend the clinic have a quality assured ARTP Accredited spirometry test and a full respiratory assessment. The clinic diagnoses, advises and treats people with respiratory symptoms in appointments of up to an hour. The time allows discussion of all aspects of disease management, promoting a personalised care approach. Additionally, titrations of inhaler therapy can be made or onward referrals to appropriate services such as treating tobacco dependency, education and self-management programmes. The findings and diagnosis are discussed with the respiratory consultant weekly and requires 1 hour to discuss up to 12 people.

Only 10% of people who access this clinic are referred for consultant input, whereas, in the absence of this clinic, people would be referred to secondary care to see a respiratory consultant. Service analysis indicates 100% positive experience, with 93% of people attending their appointments. COPD is diagnosed in 40% of cases, 21% asthma, 9% asthma and COPD and 16% of results are normal. People are referred onto secondary care for other diagnosis identified (14%) and include; bronchiectasis, interstitial lung disease and sleep apnoea.

This clinic provides early access and intervention which could prevent lung deterioration. It demonstrates the potential of physiotherapy providing a community based diagnostic clinic in an area which could significantly improve outcomes and has cost-implications for the NHS.

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## Case study 13: Find & treat tuberculosis and beyond in 'hard to reach' populations

### University College London Hospitals NHS Foundation Trust (UCLH)

Tuberculosis (TB) is a disease of poverty and inequality. Populations such as: homeless people, those dependent on tobacco, drug or alcohol, vulnerable migrants and people who have been in prison, have the highest rates of TB and risk of onward transmission<sup>1</sup>. Their lifestyles can often mask the symptoms of TB as well as problems accessing and navigating hospital based diagnostic services or completing a minimum of six months daily drug treatment. The [Find and Treat](#)<sup>2</sup> screening service works across London and supports Public Health England to manage national outbreaks of TB. The aim is to screen 'hard to reach groups' to identify active cases and offer support to get people through treatment. This service finds people have good compliance to treatment.

Diagnostic Radiographers offer mobile chest imaging services in the community, this facility enables chest images to be obtained in the places where at risk groups of people live. Radiographers work in partnership with outreach workers who engage and encourage people to participate. Results are given immediately by the radiographer, with support and signposting to services arranged on the spot. Approximately 6000 people a year are screened and a detection rate of around 120 to 130 (2-3%) active TB cases is found. Everyone is offered support through treatment for as long as help is required. Other diseases identified include: COPD, typical infections, cardiomegaly, lung cancer and congestive heart failure and run at around 420 to 600 (7-10%) people. The service spans multiple pathways from detection, to diagnosis and onward care. In the case of TB the service delivers early detection of active cases and supports people to take a full course of treatment and get cured.

[NICE](#)<sup>1</sup> evaluated Find & Treat to be highly cost effective and potentially cost saving. The service improves access to the early identification and management of respiratory concerns, including TB, in populations who have difficulty navigating the health system.

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## Case study 14: Using digital to support self-management in CF

### Royal Brompton and Harefield NHS Foundation Trust (RBHT)

In the United Kingdom people with cystic fibrosis (CF) often travel long distances at least four times/year, to attend specialist CF clinics. In these clinics various clinical indices are measured and health status is discussed with the aim of preventing or slowing down disease progression. Satisfaction results indicate that frequent clinic attendance significantly impacts on quality of life, including needing to take time off work and travel costs. Adult CF outpatient services are busy with a 75% demand increase projected by 2025<sup>1</sup>.

[NICE](#)<sup>2</sup> recommends telehealth as beneficial for routine monitoring in CF and the Royal Brompton Hospital wanted to enable and empower people to monitor their own health from home. The original project was led by a physiotherapist and is being continued by a Pharmacist. A co-design process was adopted to understand how technology could be used by adults with CF and the CF multidisciplinary team (CF-MDT). A smart-phone enabled spirometer and a digital solution (a smart-phone application and web-based portal) was developed allowing home self-monitoring of health measurements and data sharing with the CF-MDT. The CF-MDT provide virtual consultations with a health and wellbeing overview, including weight, activity levels, mood, symptoms and eventually blood glucose levels. The Royal Brompton Hospital has about 600 adults accessing CF services and this digital solution allows them to gain greater awareness of their health and see the impact of lifestyle changes or new medicines. Putting data in their hands creates a partnership between them and the CF-MDT, increasing their knowledge, confidence and skills for self-management. For the Royal Brompton Hospital, one of the largest adult CF centres in Europe, it provides an opportunity to meet patient requests, reduce in-hospital clinic appointments and consider resource allocation in view of growing demands.

During Covid-19 we moved to a fully virtual model, providing spirometers to 580 patients so they could digitally monitor their lung function. For every virtual appointment an average of 3.5 hours travel time with a cost of £38 per person is saved. The cost of providing the self-management and virtual consultation technology is about £300 per year per person, whereas the cost for one person with CF attending clinic is estimated at £409, including staff and clinic facilities. The virtual clinic has reduced the pressure on hospital outpatient clinics and significantly reduced both time and financial costs for people with CF. Patients using the digital platform report that they do not feel disadvantaged and that they would prefer to continue to use the virtual service. Utilising digital tools and technology has allowed an improved partnership between the CF-MDT and adults with CF, it also supports better decision making around health related issues and encourages discussion about care that is right for them.

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## **Case study 15: The regional tracheostomy team: a specialist commissioned community service**

### **Lancashire and South Cumbria Regional Tracheostomy Team**

There are increasing numbers of people requiring a tracheostomy following survival from serious injury or accidents. However, people are often discharged into the community with no follow up and with the assumption the tracheostomy would be permanent. The impact on a person is huge as it requires daily cleaning and dressing changes, regular suction and often nebulised therapy, in addition to a tracheostomy change once a month. Depending on the person it can affect communication, swallow and the ability to live at home or partake in activities. This can lead to poor outcomes, complex needs and costly packages of specialist care.

An initial unfunded pilot investigating the potential of removing long term tracheostomies in the community was undertaken. It demonstrated proof of concept and resulted in the successful tracheostomy removal of six long term 'unweanable' people in the community, showing significant cost benefit. This led to the securement of a 12-month investment by the regional collaborative commissioning board to improve tracheostomy outcomes region-wide. The focus was on community decannulation (removal of tracheostomy) to address an unmet need.

An MDT including a physiotherapist and speech and language therapist (SLT) was established, to provide a holistic community approach to tracheostomy weaning. The team covers a wide geographical distance and its success has required strong partnerships with a range of specialists including ENT surgeons, physiotherapists, SLT, GPs and community nurses, in order to support the complex management of this population. This also includes the people with tracheostomies and their families, who require a personalised and sensitive approach when planning for decannulation.

The 12-month trial saw 5 people electively decannulated following intensive community weaning (additional to the 6 in the initial pilot). The trial saw total cost savings of £721,574.93. This equates to more than £2.1 million savings when combining savings from the 12-month trial, unfunded pilot and efficiencies over the preceding three years. The saving's include; tracheostomy consumables, specialist care, equipment and admissions avoidance. Decannulation has enabled individuals to relocate closer to their families, as specialist tracheostomy competent care homes were no longer required. Decannulation enabled people to engage with a wider range of therapy, with some individuals being able to vocalise and commence eating and drinking trials. Additional benefits have been seen for continuing healthcare teams who are funding ongoing care.

The service has now achieved substantive recurrent funding for a 'Regional Tracheostomy Team'. It has reduced variation of care and improved the clinical management offered to this highly complex population.

**For further information, please contact**



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## **Case Study 16: Changing course, evidencing uptake of podiatry led lower limb community Vascular Triage.**

### **Central London Community Health Care NHS Trust (CLCH)**

Peripheral arterial disease (PAD) is present in 20% of people aged 60 and over. It is associated with mortality rates of around 30% at 5 years and in its most severe form, amputation rates of 25% at 1 year<sup>1</sup>. Early PAD detection and treatment by podiatrists can save limbs and lives<sup>2</sup>. PAD is under-diagnosed and under-treated, resulting in largely preventable mortality and amputation. People presenting with suspected PAD in primary care are often referred unnecessarily to vascular specialists within secondary care. Up to 80% of referrals for vascular assessments do not usually require surgery and can be triaged to podiatry led services, reducing unnecessary hospital referrals<sup>3,4,5</sup>.

CLCH Podiatry piloted a one-year podiatry vascular triage service which saw 330 people reviewed and 220 diagnosed with PAD. The service provided assessments, diagnosis and clinical management plans for people with suspected non-acute PAD. The podiatry service is now aligned to [NICE](#) guidelines<sup>1</sup> and [NICE](#) Quality Standard<sup>6</sup> to reduce CVD risk and lower limb amputation in its population. To support delivery a vascular training programme for staff was central to guideline implementation.

The Ankle Brachial Pressure reading (ABPI) acts to benchmark the level of cardiovascular intervention required. Historically people with ABPI below 0.9 were transitioned to vascular teams. However, podiatrists are now able to manage people in the community unless they have critical limb ischemia, ulceration or gangrene<sup>7</sup>. Treatment strategies include structured exercise programmes (if claudicant), self-directed exercise programmes, referring those with tobacco dependency for support to quit or recommending medical review and therapy.

All trained podiatrists have now integrated ABPI measurement in their clinical assessments. The pathway provides access to community vascular triage for people with non-diabetic foot ulcerations of PAD origin, which was not previously available. The service is diagnosing PAD in equal numbers of people with diabetes 112 people (51%) and without 108 people (49%). The 3 most common reasons for accessing the service were monophasic/absent foot pulses, PAD risk factors, and pre-operative evaluation prior to nail surgery. The most frequent outcome was referral to GP for medical review/initiation/adjustment of medical therapy. Approximately 15% identified with PAD were referred onto secondary care.

CLCH podiatrists demonstrate an effective community approach. Adopting a similar pathway can support a risk reduction for CVD and lower limb amputation.



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## Case Study 17: Reducing time on scene through the 10-10-10 campaign

### Yorkshire Ambulance Service

The time local ambulance crews spend on scene has increased over the last decade. This is largely due to the complexity of navigating the wider NHS system, delays at hospitals and a drive to reduce avoidable conveyance and instead refer to GPs or alternative services. However, there are cohorts of people who need timely transport to hospital, such as those with: acute stroke, myocardial infarction (MI), cardiac arrest and major trauma.

The 10-10-10 concept encourages quick decision making about the right care in the right place by paramedics, to significantly improve outcomes. This is evidenced in stroke as every minute a stroke is left untreated around 2 million brain cells die<sup>1</sup> and so quick conveyance to hospital can hugely impact on treatment success and recovery. The concept follows the principles:

1. First 10 minutes on scene – arrive, assess and decide
2. Second 10 minutes – communicate, reassure, move
3. Third 10 minutes – prepare to leave scene, pre-alert, reassess

The campaign started in October 2018 with paramedic on-scene time averaging 33 minutes for stroke care. By October 2019 this average had reduced to 31 minutes and, although this is a small improvement, the impact for individuals could be significant. A more detailed analysis of the 10-10-10 campaign's impact for different conditions, such as MI, is required. However, reducing time on scene and expediting transport to a specialist centre or the emergency department means that lifesaving treatment can be commenced earlier. A simple and clear campaign has the potential of reducing death and minimising the life changing impact that can arise from these conditions.

<sup>1</sup> <https://www.stroke.org.uk/news/new-research-suggests-drug-can-reduce-harmful-inflammation-after-stroke>

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