

2022

British Cardiovascular Society **Emerging Leaders Programme 2021/2022**



Introduction

This programme was established in 2019 with the vision to enable delegates to lead significant service change and importantly to provide professional leadership more widely within cardiology and the NHS. It was designed to help develop senior cardiology trainees and recently appointed consultants. The 2021/22 cohort was successfully extended to include senior Allied Health Professionals and Advanced Nurse Practitioners from the multi-disciplinary cardiology team.

The programme was led by Prof Simon Ray, immediate Past President of the BCS with fellow Course Directors Dr Sarah Clarke, Past President of the BCS, Dr Clive Lewis and Chris Wilkinson. The faculty included a mixture of national and local leaders in health care delivery and cardiology, and colleagues from the American College of Cardiology.



For the 2021/22 ELP the programme was largely delivered using an online platform. While this was not ideal the delegates appreciated being able to engage in the programme during the pandemic and the associated restrictions around face to face events. It was much appreciated when the last few sessions were delivered face to face.

This yearbook provides details of the delegates of the third programme for networking purposes. The abstract for their service improvement project is also included, along with some comments about the programme and what they gained from being involved. The book will be useful for those considering applying for future programmes and will also provide insights for the sponsors who kindly financially supported the 2021 programme.

Professor Simon Ray
Past President of the BCS

We thank so very much the generosity of Bayer, Boehringer Ingelheim and Pfizer for their support: it is noted that they have had no input to the development or delivery of the programme.



Above: Delegates able to attend the Celebration Event on 06 June 2022 with Course Directors and ACC colleagues.

Right: Photograph of the delegates winning prizes for their projects together with Course Directors

Left to right: Sree Kondapally, Anish Bhuvu, Chris Wilkinson (Course Director), Clive Lewis (Course Director), Thomas Treibel and Simon Ray (Course Director)





Abhishek Joshi

Consultant Cardiologist
Bart's NHS Trust: Royal London Hospital
Email: Abhishek.Joshi2@nhs.net

Dr. Joshi is a Locum Consultant Cardiologist at Bart's NHS Trust, in General Cardiology, Echocardiography and Cardiovascular Disease Prevention. He has previously been the President of the BJCA, and is now BCS VP for Professional and Society Ethics. His interest are in using usually-collected data to guide service provision, multi-omics in CVD prevention and education in echocardiography.

Community diagnostic hub planning in North-East London

Objectives:

To improve cardiac diagnostic provision in North East London (NEL) through the provision of cardiac diagnostic hubs.

Plan, Resources and Team:

To identify the predicted requirement for growth using data from national and Trust datasets, build a team to determine the resources and costs required, and submit the bid to NHS London.

Results:

Local growth in echo is predicted at approximately 8% per year. Poorly served populations are not defined solely by geography. Echocardiography will require the greatest proportion of recruitment.

Challenges

Cardiology is a (sub)specialist area of practice with few easily translatable techniques to other medical specialties. This mandates clear description and justification for differences from other standardized workflows.

Conclusions

If correctly configured, diagnostic hubs will meet demand for the coming 5 years.

Attempts to bring diagnostic modalities together can result in over-generalization and loss of quality.



Dr Andrew Morley-Smith

Transplant Cardiologist
Harefield Hospital
Email: a.morley-smith@nhs.net

I was appointed at Harefield in 2021 as a transplant cardiologist. I did PhD research at Imperial College London based at Royal Brompton & Harefield, trained in cardiology in north east London based at Barts Heart Centre, and had transplant training in Harefield and Birmingham.

Developing a pathway for ambulant management of endomyocardial biopsy

Context:

I moved posts halfway through the ELP and much progress with my initial QI project was lost in the move. This report focuses on the early stages of a second project's design and execution.

Background:

Endomyocardial biopsy (EMB) is a standard technique for rejection surveillance after cardiac transplantation and for assessment of aetiology in acute myocarditis. The operator gains access to the right ventricular cavity across the tricuspid valve, positions the biptome against the interventricular septum, and with gentle avulsion withdraws several small fragments of myocardial tissue. These are taken for histopathological analysis for presence of inflammatory infiltrate.

Rationale:

The standard approach for EMB at our institution is biopsy via the femoral vein using a long sheath navigated to the RV septum and through which a long flexible biptome is deployed. Venous access is ultrasound guided and uses either a 7Fr or 9Fr skin sheath. There is good experience with this approach and in our hands a low risk of complication. However, this approach requires patients to be admitted to the day case ward and nursed lying flat for several hours post procedure to reduce the risk of bleeding complication. An alternative technique is the jugular approach, from the right internal jugular vein using a short 7Fr sheath and pre-shaped biptome or from the left internal jugular vein using a hybrid approach akin to the femoral technique. This approach avoids femoral access and there is no requirement for bed rest post procedure.

At Harefield we undertake between 200-250 biopsy procedures per year, of which around 80% are outpatient procedures requiring a day case admission. Capacity on the day unit places a limitation on activity and makes short notice scheduling challenging, and moreover use of a day case bed is associated with facility and staff costs. There is potential to streamline the patient journey, increase flexibility of scheduling to avoid relying on day case availability, and ultimately to save around 150 day case admissions with associated costs

Implementation and progress:

We are introducing the jugular and ambulant approach in a staged manner, recognizing the current practice in the team and building confidence in the alternative approach while monitoring for negative impact (see flow chart). Firstly, we introduced the equipment and technique with catheter lab teams, while continuing to use a standard recovery protocol via the day unit. Secondly, we will move recovery to the radial lounge area and monitor for procedural complications and length of stay. Finally, we plan to move to entirely ambulant pathway with recovery in transplant outpatients.





Dr Anish Bhuvu

NIHR Clinical Lecturer, Consultant
Cardiologist (locum)
Barts Heart Centre and UCL, London
Email: anish.bhuvu@nhs.net

Anish is cardiologist with sub-specialty interest in complex device implantation, and cardiac MRI. He was awarded a PhD translating machine learning for imaging into clinical use, with a current focus on understanding the substrate for ventricular arrhythmia. He works with NHS England Innovations and UCL Institute of Health Informatics to create electronic health records which make patient journeys easier. He founded a campaign to improve MRI-pacemaker services nationally, working at multiple levels (NHS England, patient charities, guidelines, helping individual patients). His long-term goal is to combine digital health, data science and new ways of working to improve care.

A digital pathway to streamline complex care: making MRI available to patients with pacemakers and defibrillators

Dowsing B, Gibbs J, Webb E, Martin S, Vickers J, Mohammed S, Julka P, Smith P, Moon JC, Manisty CH, Bhuvu AN.

Funding: This work is supported by British Heart Foundation Innovations funding (HFHF_016).

Introduction:

Patients are living longer and increasingly have comorbidities which require complex cross-disciplinary care. Half a million people in the UK have a pacemaker or defibrillator and face challenges accessing magnetic resonance imaging (MRI). Whilst devices can undergo MRI, the care pathway requires interaction between patients, referrers (often in other hospitals), cardiology and radiology. Efficient information exchange for shared decision-making is necessary to improve access and manage workflows.

Aim:

(1) To improve the local pathway for MRI access for pacemaker patients requiring cancer, stroke and cardiac care; and (2) To create resources to facilitate the process in other centres.

Method:

Educational resources and a course were designed to reduce referral barriers, provide training, and improve service provision for our centre and across the UK. Resources were developed with seven professional societies (including the British Cardiovascular Society, Royal College of Radiologists) and three patient charities (Arrhythmia Alliance, BHF, Cardiomyopathy UK). A cloud-based referrals platform was built and implemented to save time, protocol scans safely, and facilitate communication. Referral volume, accuracy and time saving six-months before and after implementation were measured. Staff were surveyed for feedback and to estimate time required for service delivery.

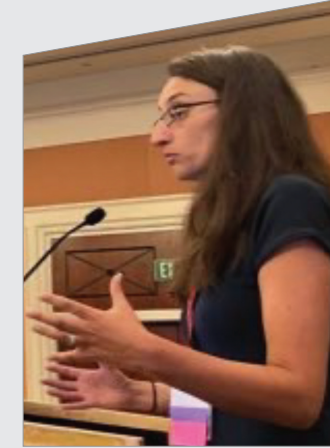
Results:

Education videos and leaflets were peer-reviewed and distributed by societies and charities. A course trained 120 multidisciplinary clinicians in 71 hospitals (7 countries) over 3 years. A cloud-based referrals platform was then developed with automated risk assessment, device and MRI protocolling support; streamlined communication; referrer guidance; and linked to patient information leaflets. This was deployed in one high-volume MRI-pacemaker service in a tertiary cardiac imaging unit (Barts Heart Centre), n=385 referrals (129 scans completed) from 22 centres (Figure 1). There were no MRI related device complications.

Referrals increased from 5.6 ± 1.6 to 6.6 ± 2.2 per week ($p=0.003$) with more external referrals after implementation (53% to 78%, $p<0.05$). Most referrals were from Greater London, increasing from non-cardiology referrers (53% to 64%, $p<0.05$), with 64% urgent and 16% inpatient requests (pre-implementation: 63% and 23% respectively, $p=ns$), Table 1. 29% of scans were requested as part of cancer diagnosis or management (30% pre-implementation, $p=ns$). The median time from referral to scan was 13 days (inter-quartile range [IQR]: 7-20), pre-implementation 15 days (IQR: 8-32, $p=ns$). Referrers identified device MR labelling correctly in 74% of referrals, were unsure of MR labelling in 14% and provided inadequate information in 37% - improved from pre-implementation (37%, 58% and 76% respectively, $p<0.05$).

Multidisciplinary staff (administration, radiologist, radiographer, cardiac physiologist, cardiologist, physicist) previously reported a combined time commitment of ~3/days week, reduced to ~2/days week post implementation. Overall they reported satisfaction with a streamlined process and a reduced administrative and logistical burden.

Conclusions: Implementation of a digital referral platform for patients with cardiac devices improved access to NHS care reliant on MRI in an underserved population and reduced logistical demands on staff. We were able to enhance training locally and across the UK, and increase patient education and referrer awareness. Online referrals and MRI centres can register to use the platform at www.pace-mri.org. Educational resources are available at www.mrimypacemaker.com.



Dr Anna Reid

Consultant Cardiologist
Manchester Heart Institute,
Wythenshawe Hospital
Email: anna.reid@mft.nhs.uk

I was appointed as a consultant cardiologist in 2020, subspecialising in cross-sectional cardiac imaging, and am the current cardiac CT lead for Wythenshawe Hospital. I have a specialist interest in structural heart disease, and imaging pre- and post-intervention.

Prior to this, I completed my Cardiology training in the North West Deanery, and finished my PhD in 'Advanced cardiac Imaging in Left Ventricular Hypertrophy' at the University of Manchester. I also did a cardiac imaging fellowship at the University of British Columbia, Canada. I am also a junior editor for the Journal of Cardiovascular CT, and co-chair their 'Pulse' podcast. I am a member of the BCS's Clinical Standards Committee.

I am heavily involved in education of doctors and allied health professionals locally, nationally and internationally, teaching regularly on virtual and face-to-face courses. Outside of work, I love HIIT and hiking, and learning (and failing!) to cook for my family.

Development of a Single Hospital Service Cardiac Cross Sectional Imaging Department

Reid A.B.¹, Motwani M.¹, Nucifora G.¹, Evans A.¹, Middleton L.¹

¹Manchester Heart Institute. Manchester University NHS Foundations Trust

Background:

Following the merger of two tertiary centres in Manchester, the single Cardiac Division at Manchester University Hospitals NHS Foundation Trust (MFT) represents one of the largest Cardiology tertiary centres in the UK. Combined, the Cardiac Cross-Sectional Imaging (CSI) departments at both hospitals are the biggest providers of local and regional specialised cardiac MR and CT services to Greater Manchester (GM), Cheshire and South Lancashire.

Aims:

This project aims to combine the two disparate Cardiac Cross-Sectional Imaging services running within MFT, to create a single dedicated unit that meets the Trust's vision of a single hospital service for Cardiology, within the GM 'Cardiac Hub' at MFT.

Methods:

Key operational opportunities have served as catalysts for change:

1. The MFT 'HIVE project': the creation of a single integrated electronic patient record (EPR) aiming to amalgamate Trust-wide healthcare informatics. A working group (WG) between the new software analysts, radiologists and cardiologists was created.
2. The requirement to consolidate imaging analysis software that will integrate with the new EPR to standardise and enhance reporting practices across sites, thereby increasing patient safety and workflow efficiency, facilitating cross site working and maximising audit and research opportunities.

3. The imminent expiry of a managed service contract with a private provider that currently serves the largest of the two departments. A WG of key stakeholders (clinical, managerial, financial, procurement and legal) aimed to:
 - a. Define variable 'gold-standard' models of care (e.g. single site vs. hub-and-spoke) and what resources would be required to create this 'ideal'.
 - b. Assess current scanner capacity, and current and projected demand to predict service expansion resource requirements that would more adequately serve the population of GM (recognising that there is nationwide underprovision of cardiac CSI).
 - c. Develop a business case that underpins this service change.
 - d. Complete a tender process that yields a provider for a large, single cardiac CSI service.

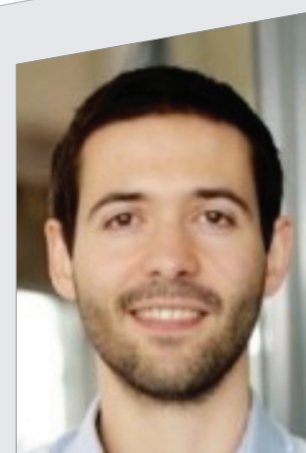
Results:

Through HIVE, there will now be a single portal for referral for cardiac CSI. Referral and vetting forms, and radiographer practices are harmonised. To standardise reporting, an appraisal of existing software assets, including an assessment of their electronic compatibility with the new EPR, their capabilities, and the cost to extend and expand existing licences has been performed. A risk-assessment and options appraisal of current and proposed analysis and reporting practices has formed the basis of a business case in application for funding.

Based on anticipated service growth, we will near-saturate current maximal scanner capacity by 2025 in both modalities, even with 7/7 working, meaning that additional scanners and workforce will be required in the short to medium term. We are currently in the pre-market engagement stage of the tender to further inform our strategic approach and ultimate business case.

Conclusion:

A single-service dedicated cardiac cross-sectional imaging service at MFT would be one of the largest in the UK. Concentrating expertise within the Hub aims to enhance quality, innovation, safety and efficiency, promoting 'patient pathway'-focused care, rather than siloed speciality-focused care, with the patient and their experience at the heart of the service.



Dr Antonio de Marvao

Clinical Lecturer in Cardiology; Senior Fellow in Obstetric Medicine
Imperial College London; Guy's and St Thomas' Foundation Trust

Email: A.demarvao@nhs.net

Dr Antonio de Marvao is a MRC Chair-Florey Clinical Lecturer in Cardiology at Imperial College London, having completed his training in advanced multi-modality cardiac imaging (CT and CMR) and a Fellowship in Inherited Cardiac Conditions at the Royal Brompton Hospital, before taking up his current post as a senior fellow (ST9) in Obstetric Medicine at St Thomas' Hospital.

His research focuses on mathematical modelling of the heart, using cardiovascular MRI and artificial intelligence techniques, to understand the genetic and physiological mechanisms that underpin cardiovascular disease. He has received national and international awards for his work developing artificial intelligence algorithms for medical imaging analysis, computer assisted diagnosis and outcome prediction.

Antonio's clinical and academic interest is in Inherited Cardiac Conditions and Maternal Cardiology, particularly heart failure during pregnancy. He is currently on the board of the British Society of Cardiovascular Magnetic Resonance and is a Medical Director for the Resuscitation Council (UK) advanced life support course.

Maternal Cardiology Networks

Background/Aim:

Maternal morbidity and mortality are increased by diseases that pre-date pregnancy, and by complications that arise during pregnancy. Cardiovascular disease is present in ~4% of all pregnancies and its incidence is rapidly rising. Congenital, inherited and acquired cardiovascular diseases are a major cause of maternal and neonatal morbidity and mortality. The UK Confidential Enquiry into Maternal Deaths reported that 23% (48/203) of maternal deaths between 2015-17, occurred due to heart disease.

Pregnancy induces significant changes in all aspects of physiology and so in treatment, optimal outcomes are achieved where care for pregnant women is guided by consultants with specific pregnancy expertise, with input from relevant physicians, rather than the other way round.

Maternal medicine networks: The recently created maternal medicine networks (MMN) are responsible for ensuring that all women with significant medical problems, within pre-defined geographical areas, have access to and receive expert and timely specialist care and advice before, during and after pregnancy. An overarching principle of the MMNs is that care will always remain as local, as is compatible with the need for timely access to specialised care or facilities.

Risk stratification: The goal is that all pregnant women with cardiac disease will have their condition categorised according to disease severity and referred to the appropriate maternity centre. Conditions are to be classified as A, B or C, depending on complexity: A – conditions that can be managed using local expertise; B – complex cardiac conditions where a maternal cardiology hub provides clinical review and ongoing guidance to a local maternity unit; C – highly complex cardiac conditions where care is to be led by the maternal cardiology hub throughout pregnancy, including delivery. In cardiac disease, categorisation is broadly aligned with the modified World Health Organisation (mWHO) classification of maternal cardiovascular risk.

Aims:

The aims of this project are to: a) standardise "Cardiac Disease in Pregnancy" clinical guidelines across the South East London network; b) design patient pathways across the five maternity units in the network; c) agree key performance indicators such as: equity of access to pre-pregnancy and pregnancy MDT care independently of ethnicity and socio-economic status; clinical outcomes (e.g. maternal emergency admissions and mortality, stillbirths, early neonatal deaths, neonatal unit admissions); d) establish academic collaborations, improving pregnant women's access to research studies and clinical trials; e) establish regular Maternal Cardiology multidisciplinary team (MDT) meetings at the regional cardiac hub – St Thomas' Hospital; f) share expertise from this cardiac hub MDT, through virtual MDTs with the other MMN centres

Progress:

Drafts of proposals for a), b) and c) are currently out for consultation. A Maternal Cardiology hub MDT meeting has been successfully established (e) and virtual, multi-site discussions of complex cases have been piloted (f).

Conclusions:

Maternal Cardiology networks were recently formally established, with the goal of improving outcomes for pregnant women with cardiac disease. At this early stage, new patient pathways, protocols and key performance indicators are being agreed across the network. These will be rolled out within 12 months, alongside ongoing audit and review of performance.

**Dr Diarmaid Cadogan**

**Senior TAVI/Structural Fellow
Liverpool Heart and Chest Hospital**
Email: diarmaid.cadogan@lhch.nhs.uk

I studied medicine in Trinity College Dublin, graduating in 2012. I began Higher Specialist Training in cardiology in 2015 and completed my core training in multiple centres across Ireland including Cork University Hospital, Saint Vincent's University Hospital and Mater Misericordiae University Hospital. In 2019/20, I began sub-specialty training in coronary/structural intervention in Mater Misericordiae University Hospital. I then moved to Liverpool Heart and Chest Hospital and undertook a fellowship in coronary intervention. I was awarded my certificate of completion of specialist training in 2021. I am currently doing a post-CCST fellowship in TAVI/Structural intervention in Liverpool Heart and Chest Hospital.

Implementation of a next day discharge pathway in patients post-Transfemoral Aortic Valve Implantation.**Introduction:**

Transcatheter Aortic Valve Implantation (TAVI) is being used increasingly in patients with severe symptomatic aortic stenosis.¹ The majority of TAVI procedures are being performed in the older population. Prolonged hospital length of stay in this population can increase the risk of hospital acquired infection, physical deconditioning, delirium and falls.² TAVI has become established in recent years, but there remains considerable variability in post-procedure hospital length of stay, with traditional post-TAVI care requiring greater than forty-eight hours of hospital care.³

Aims:

To assess safety and feasibility of a next day discharge pathway in patients post-TAVI.

Methods:

Current evidence and recommendations on the management of patient's post-TAVI were reviewed. Multidisciplinary discussions were undertaken within the cardiology department to determine inclusion criteria for enrolment in the next day discharge pathway. The hospital's electronic database was used to review TAVI procedures undertaken between 01/06/2021 and 31/03/2022, and the regional care database was additionally used to assess discharge outcomes. The next day discharge pathway began implementation in September 2021.

Results:

In the three months prior to implementation of the pathway, 83 patients underwent TAVI with 6 (7.2%) patients being discharged on Day 1 post-TAVI. From 01/09/2021 to 31/03/2022, 175 patients underwent TAVI. 113 were male, 62 female. Median age was 82years (± 7). 51 (29.1%) patients were discharged on Day 1 post-TAVI. There was some variability in the initial phase of implementation. In the final two months of the audit cycle, 47% of patients were discharged on Day 1. 4 (7.8%) patients presented acutely to hospital withing 30 days of discharge. 2 of these patients had presentations for non-cardiac issues unrelated to their TAVI admissions. 1 patient presented with non-cardiac chest pain and 1 patient presented with palpitations with no cause found. No patient discharged in the next day pathway required permanent pacemaker implantation within 30 days post-discharge and no deaths occurred during this time.

Conclusions:

Next day discharge post-TAVI appears feasible and safe in appropriate patient settings and offers reduced length of stay, enhanced bed capacity and resource utilisation. The number of patients discharged in the next day pathway in our centre is expected to rise further in the coming months as we look to further optimise and encourage use of the pathway.

References

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Dr Filip Zemrak

**Consultant Cardiologist
Barts Hhealth NHS Trust**
Email: f.zemrak@nhs.net

I have completed cardiology training in London Deanery in October 2019 and obtained a CCT in heart failure and devices. I am currently working as a Consultant in Heart Failure with a special interest in Adult Congenital Heart Diseases. I received formal training in NHS Leadership and Management and obtained PG Cert in this field during my Darzi Fellowship in 2017-2018. I have a master's degree in health economics at the London School of Economics.

Heart failure service for patients with congenital heart diseases

Filip Zemrak, Anna Dinsdale, Fiona Walker

Background and rationale:

Current recommendations specify that ACHD patients with heart failure should be managed in specialist centres. The heterogeneity of CHD lesions often makes treatment difficult and general adult cardiologists lack experience in managing these complex cases.

Conventional community heart failure services are not accessible to ACHD patients with heart failure.

Objectives

Our aim was to create a dedicated specialised heart failure service for patients with ACHD who are under the care of Barts Heart Centre in London.

Specifically, the service would allow all patients with ACHD who develop heart failure (HF) to benefit from (1) a timely access to expert review with a multidisciplinary (MDT) support from the wider ACHD team, (2) initiation and up-titration of appropriate medical and device therapies, (3) improved access to heart transplant services and (4) improved access to palliative care.

Methods

TEAM

The service was initiated with the appointment of a heart failure consultant with experience in managing ACHD patients. A dedicated ACHD clinical nurse specialist (CNS) with an interest in heart failure was also deployed to the service. The CNS is undergoing training in non-medical prescribing.

The CLINIC

We have established a dedicated "Heart Function" clinic, with consultant and CNS slots providing capacity to review heart failure patients within 2 weeks.

HEART TRANSPLANT

We have strengthened the collaboration with the ACHD Heart Transplant Centre at the Freeman Hospital and established a joint 6-monthly clinics at Barts Heart Centre and ad hoc joint video clinics.

PALLIATIVE CARE

We have secured a rapid access to inpatient and outpatient palliative care multidisciplinary team services.

OUTCOME MEASURES

According to current recommendations to monitor health status and patient reported outcome measures, we have secured a license for and implemented Minnesota Living with Heart Failure Questionnaire (MLHFQ) in a standard clinical assessment of patients in the ACHD Heart Function Clinic.

DATABASE

We are collecting clinical and outcome data of patients in the Heart Function Clinic in a dedicated database and we are working towards better integration of this database with the electronic patient record system at Barts Heart Centre.

Results

Since April 2020 when the service was started, we have reviewed and provided ongoing care to 121 ACHD patients with heart failure.

All patients were reviewed in the clinic within 2 weeks from referral. We have reviewed 10 patients in the joint Heart Transplant Clinic with the Freeman Hospital.

Around 2 in 3 patients (66%) had their management altered at initial review.

The number of Barts patients accepted for heart transplant doubled and the time from referral to a decision shortened to 13 days from previous mean of 188 days.

Six patients were referred to Palliative Care and were reviewed within 5 days of the referral.

Conclusions

We have established a dedicated Heart Failure service for patients with ACHD. The service provides patients with a timely access to specialist HF review, MDT support and appropriate therapy and allows feedback to the wider team on how best to manage these patients.



Dr Fizzah Choudry

**Consultant Interventional Cardiologist
Barts Heart Centre**
Email: fizzah.choudhry@nhs.net

Fizzah is a Consultant Cardiologist at Barts Heart Centre specialising in Intervention and Cardiovascular Prevention. She completed her interventional training at Barts Heart Centre, London. She was awarded a PhD from the University of Cambridge in cardiovascular translational research funded by an MRC Clinical Research Training Fellowship and was subsequently awarded an NIHR Clinical Lectureship at Queen Mary University.

Deferred Angiography pathway for COVID positive patients presenting with NSTEMI

Fizzah A Choudry¹, Zhi Teoh¹, Krishnaraj S Rathod¹, Katrina Comer¹, Andreas Baumbach¹, Ajay K Jain¹, Anthony Mathur¹, Daniel A Jones¹
¹Barts Health NHS Trust, London, UK

Introduction:

Current UK recommendations for invasive angiography and percutaneous coronary intervention (PCI) in patients with non-ST elevation myocardial infarction (NSTEMI) is within 72 hours (Cardiology GIRFT). However significantly increased rates of stent thrombosis have been reported in the setting of concurrent COVID-19 infection with worsened outcomes. Therefore, there remains uncertainty as to the safety and

timing of angiography for COVID positive NSTEMI patients. We initiated a novel pathway of deferred angiography at least 10 days from COVID-19 diagnosis in medically stabilised and low risk NSTEMI.

Methods:

Between 2021-2022, 153 COVID positive NSTEMI patients were included on the deferred angiography pathway to receive at Barts Heart Centre London. NSTEMI was diagnosed based on the universal definition of AMI as symptoms and/or ECG changes coupled with elevation in cardiac biomarkers. COVID-19 diagnosis was based on the identification of SARS-CoV-2 on nasal/throat swab or positive serology. Medical stabilisation was guideline-based treatment including aspirin, P2Y12 inhibitor, high dose statin, betablocker and ACE-inhibition. Deferred angiography was carried out at least 10 days post COVID diagnosis. Patients with ongoing symptoms or high-risk features were kept as inpatients while those without were discharged and readmitted for semi-elective angiography. Demographic, procedural and outcome data were collected as part of a national cardiac audit.

Results:

153 COVID positive NSTEMI patients were referred for angiography. 6 patients died from COVID related respiratory complications prior to angiography. 147 patients received deferred angiography median time from COVID diagnosis was 16 days (IQR 12-19). 10% remained as inpatients based on high-risk features with 90% being discharged prior to angiography. The median GRACE score was 122 (IQR 86-133). Troponin levels were significantly elevated on initial COVID diagnosis compared to time of their procedure. 115 patients had a culprit lesion identified with 88 receiving PCI. No patients required early revascularisation for NSTEMI while awaiting deferred angiography. 2 patients had peri-procedural complications: CVA and retroperitoneal haemorrhage. Patients were followed-up for a median of 363 days (IQR 120-485 days) with MACE rates of 4.1% including 1 death from traumatic subdural haematoma, 5 patients with acute coronary

syndromes. This is comparable to the MACE event for NSTEMI patient without COVID at our institution treated during the time period (6.1%).

Conclusions:

This project demonstrates the safety and effectiveness of deferred coronary angiography after a period of medical management for those patients presenting with NSTEMI and concurrent COVID-19 infection. There was no fatality signal associated with the wait for angiography and the group showed similar MACE rates to those in the non-deferred NSTEMI cohort without COVID-19 at our institute. This data has implications for standard care for NSTEMI patients without COVID-19 with the potential to reduce inpatient stay.



Dr Harshil Dhutia

**Consultant cardiologist specialising in inherited cardiac conditions (ICC) and complex cardiac device implantation
Glenfield Hospital, Leicester**

Email: harshil.dhutia@uhl-tr.nhs.uk

I am consultant cardiologist at Glenfield Hospital in Leicester where I lead the adult inherited cardiac conditions service in the region. I am also a complex cardiac device implanter and am formally accredited through the International Board of Heart Rhythm Examiners.

My research interests have focused on the prevention of sudden cardiac death in young individuals, and I have publications in several high impact peer-reviewed journals in this field.

I also have a strong interest in medical education and am the current regional Royal College of Physicians tutor in the East Midlands.

I am an advocate of patient and public engagement in my daily practice and I am the medical lead for the Joe Humphries Memorial Trust, a Leicestershire charity organisation dedicated to raising awareness of sudden cardiac death in the young.

LEADING A COMMUNITY CHARITY IN RAISING AWARENESS OF SUDDEN CARDIAC ARREST IN THE YOUNG

Dr. Harshil Dhutia, on behalf of the Joe Humphries Memorial Trust

I am privileged to represent the Joe Humphries Memorial Trust (JHMT – www.jhmt.org.uk), and the skills and knowledge gained for the BCS Emerging Leaders Programme have afforded me the opportunity to develop as the medical lead for this important charity that is raising awareness of young sudden cardiac death, the leading cause of non-accidental death in this age group.

I have been able to recruit and retain a team of volunteers to form the medical steering group for the charity. The team is multi-skilled and multi-disciplinary and have been crucial in delivering the trust objectives successfully.

The COVID-19 pandemic had been a barrier to delivery of education of recognition of cardiac arrest and AED/CPR training. I have led the charity in overcoming these barriers by embracing technology and digital tools, including hybrid training through SADS awareness week, and developing a UK coaching e-learning toolkit in partnership with UK coaching to successfully train >17,000 coaches as first responders (<https://www.ukcoaching.org/courses/elearning-courses/sudden-cardiac-arrest>).

The charity is continuing to deliver in-person AED and CPR training with lifting of COVID-19 restrictions, with 159 individuals in school, sports clubs and community being trained as CPR providers between February 2022 and June 2022 by BHF accredited trainers, ensuring quality assurance for our clients and providing a duty of care to facilitate safe exercise.

As a clinician and patient and public engagement advocate, I have used my position as a consultant cardiologist to develop a strong alliance between the charity and local NHS services which has been instrumental in the success of developing a regional inherited cardiac condition service, including empowering patients to play a role in service development, improving patient and family care and support the education of healthcare professionals.

Finally, I have worked alongside my steering group in ensuring the charity is established as a key medical stakeholder to strategy planning locally with councillors and ambulance services to ensure equitable and sustainable pre-hospital emergency cardiac care for people in Leicestershire.



Dr Jennifer Peal

Consultant Cardiologist
Freeman Hospital, Newcastle NHS
Foundation Trust

Email: jennifer.peal@nhs.net

Dr Jen Peal is a Consultant Cardiologist specialising in heart failure and devices, with a specialist interest in device infection and extraction. Having trained in the North East, she began working as a device consultant in Sunderland Royal Hospital in 2020, before accepting a substantive device and extraction post in the Freeman Hospital, Newcastle in 2021. Her experience working across two centres during this time made the collaborative device project possible.

She is passionate about medical education, mentorship and coaching, having undertaken a Masters in Medical Education through Newcastle University, and regularly participates with undergraduate and postgraduate education with Sunderland and Newcastle Universities.

Outside of work she enjoys hiking with her dog, gardening, oil painting, and is studying Japanese, with plans to travel to Okinawa and Hokkaido in the future.

Abstract:

Complex devices comprise Internal Cardioverter Defibrillators and Cardiac Resynchronisation Therapy. They are a specialist commissioned service due to high system cost; the complexity of patient selection and follow-up requires appropriately trained staff.

Newcastle NHS Foundation trust (NUTH) is a tertiary centre delivering ~400 complex implants per year. COVID-19 lengthened our electrophysiology (EP) waiting lists. Sunderland District General Hospital (STSFT) is 10 miles South of Newcastle offering; 2 cath labs, 24/7 Coronary Care, Percutaneous Coronary Intervention, and consultant cardiology cover, with several band 7 cardiac physiologists.

A collaboration between trusts to alleviate NUTH waiting lists and facilitate local provision of complex implants to the Sunderland population was developed.

Objectives:

- NUTH to collaborate with STSFT to implant complex devices in Sunderland Hospital
- Deliver device clinic at STSFT with support from EP MDT
- Utilise available regional lab space to tackle tertiary centre EP waiting lists

Method:

The planning phase (June-October 2021) involved identifying resources: 1 lab day per week at STSFT, and 3 NUTH implanters were granted honorary contracts. We established fortnightly planning meetings and counterparts were identified at secretarial, administrative, finance, managerial, physiologist and physician level. Patient care pathways were developed, and the case was presented to North East cardiovascular network and specialist commissioners, who approved the programme as a COVID relief strategy for an initial 6 months; extended to 8 months. The process underwent prospective audit with presentation to stakeholders at 6 months.

A STSFT consultant was mentored to take over the STSFT device clinic, patients were discussed at a virtual MDT and agreed for listing. STSFT was formed as a delivery centre and clinical information was uploaded onto respective patient electronic records. All administrative and patient management pathways were ratified. Industry representatives supported the physiologists.

Results:

The service ran October 2021-May 2022 and over 20 lab sessions we implanted 59 devices with complications within national limits. The NUTH EP Waiting List reduced from Av 78 days to 41 days. The collaboration increased numbers of local patients referred for device therapy (n=40 2020-2021, vs n=59 2021-2022). STSFT physiologists have developed their expertise in complex device management, facilitating more repatriation of device patients from NUTH, relieving some of the tertiary follow-up burden. Patients enjoyed having care and follow-up locally, and cardiology trainees at STSFT were able to have some experience with complex device implantation.

Conclusion:

A collaboration between two centres was possible because of geography, compatible electronic resources and an arrangement that was mutually beneficial. The programme ended when COVID relief funds were no longer available, however, the process has demonstrated that utilising resources across trusts is possible and can be beneficial for staff and patients. This process has improved NUTH waiting lists and upskilled a large DGH making care more equitable for patients across the North East. We hope that setting this precedent will enable further collaboration between centres in the future. This would not have been possible without the dedication and enthusiasm of all parties involved.



Dr Krishnaraj Rathod

Clinical Senior Lecturer at WHRI, NIHR
Academic Clinical Lecturer at QMUL,
Senior Interventional Cardiology
Registrar (Barts Heart Centre)
Barts Heart Centre, St. Bartholomew's
Hospital and Cardiovascular Medicine
and Devices at The William Harvey
Research Institute

Email: k.s.rathod@qmul.ac.uk

Krishnaraj Rathod completed medicine at Barts School of Medicine with two distinctions and an intercalated degree in Molecular Therapeutics (1st Class Hons). He is currently a senior interventional cardiology registrar at Barts Heart Centre and an NIHR Lecturer at Queen Mary University of London. His PhD was funded by a highly prestigious NIHR Doctoral Research Fellowship based on the investigation of the effect of dietary nitrate in patients with stable angina under the supervision of Professors Amrita Ahluwalia and Anthony Mathur.

His primary research interests are based around translational interventional clinical trials, including a phase I & II clinical trials. He is currently completing an MSc in clinical trials. Other interests include the cost-effectiveness of therapies in cardiovascular disease, the treatment of reperfusion injury following myocardial infarction and observational studies of long outcomes following percutaneous coronary intervention.

Digitalisation of Electrocardiograms (ECGs) at Barts Health Care NHS Trust: Service development from online requesting to delivering online ECGs at four large hospitals. "Every ECG – A Digital ECG"

KS Rathod^{1,2}, N Welford², Jones S², Pahuyo T², Radley J², Mills G², Providenciacosta R², Reynolds P², Khan N¹, D Melley², DA Jones^{1,2}, A Wragg²

¹Centre for Cardiovascular Medicine and Devices, The William Harvey Research Institute, Barts and The London School of Medicine and Dentistry, Queen Mary University of London, United Kingdom

²Department of Cardiology, Barts Heart Centre, St. Bartholomew's Hospital, Barts Health NHS Trust, London, United Kingdom

Background:

Being able to have immediate as well as remote access to a patient's electrocardiogram (ECG) in a single integrated digital record for each patient enables clinicians to initiate treatment for patients quicker, therefore improving outcomes. In addition, this improves efficiency for the team treating the patient and therefore improving patient flow and improving patient experiences.

Barts Health NHS Trust performs around 48,000 ECGs every year across the four main sites (Royal London Hospital, Whipps Cross Hospital, Newham University Hospital and St. Bartholomew's Hospital). Integrating and digitalisation this process within our Cerner Millennium electronic patient record (EPR) would be the next step in the digital transformation journey, particularly during times of increased bed pressures from the COVID-19 Pandemic.

Objectives:

1. To assess the trust-wide utilisation of the current paper ECG system via a snapshot audit of paper ECGs performed on each ward within the 4 hospitals.
2. Establish digitalisation of all ECGs performed within the trust using an integrated cardiology management system (Motara highly portable and compact 12-lead Electrocardiograph machine)
3. To provide training for all clinical staff (including nurses, HCPs and doctors) in requesting and performing ECGs via the Motara Cart ECG System)

4. Start a process for all clinicians to review and 'sign off' electronic ECGs to improve the process of approving results for patients.

Methods:

In January 2021, a trust wide one month audit was performed to look at the utilisation of the paper based ECG system. Between January 2021 and January 2022, I established 70 Motara ECG machines that would integrate seamlessly into the Trust's Millennium EPR, ensuring that results automaticity populate patients' record. This would enable electronic capture of all ECGs performed within the trust (including inpatient, outpatient and A&E). I setup and led a team across the trust to perform training on the Motara Carts (both formal training and creating videos on the Millennium system).

Results:

We found that 68% of ECGs were being performed on paper throughout the trust in January 2021. Through implementation of 70 Motara carts across the 4 hospital sites there was a gradual increase in the use of electronic ECGs being performed. By the end of January 2021, after an re-audit, 80% of all ECGs were performed using the Motara ECG machines across the 4 hospital sites.

There was also a gradual increase in the number of ECGs being reviewed and 'signed' by clinicians across the 4 hospital sites. This study has proven to result in a significant decrease in the use of paper ECGs, improved time from performing an ECG to it being reviewed and enabling remote review of ECGs across the whole of Barts Health NHS Trust and therefore improving patient flow.

Discussion:

The digitalisation of ECGs using the new workflows (and end-to-end process) have enabled staff to quickly order and performed ECGs throughout the trust. In addition, all ECGs can be reviewed immediately on any trust computer from within the EPR system. This has reduced delays in patient management as well as improved flow of patients from all areas of clinical care and also reduced the amount of paper being used enhancing our journey towards a paper-free trust.



Dr Manish Kalla

Consultant Cardiac Electrophysiologist
Queen Elizabeth Hospital, Birmingham

Email: manish.kalla@uhb.nhs.uk

I was appointed to my Consultant post in July 2018 after having completed my Cardiology training in Cardiff, Oxford, and Melbourne. I also took 3 years out for research, and was awarded my DPhil in 2016. My current role is principally in cardiac electrophysiology and inherited arrhythmia syndromes, but I do still have a general cardiology commitment given the multi-speciality nature of the Queen Elizabeth Hospital. I am the lead for our advanced EP fellowship program and was recently appointed the Clinical Lead for Heart Rhythm Pathways in the West Midlands Cardiac Network. My interests are optimising outcomes for patients with AF along their whole treatment journey, and establishing an arrhythmia research program.

I am married to Sunaina, who is a GP, and we have 2 daughters aged 11 and 8. They keep us busy with lots of sports, and of course the latest dance routine! I enjoy road cycling, and would love to get back to playing tennis and cricket.

AF prehabilitation clinics to improve long-term outcomes

Background:

Atrial fibrillation (AF) is the most common heart rhythm condition encountered in clinical practice. The risk of developing AF increases with age but

is significantly increased by the presence of additional upstream risk factors. Obesity is a major driver of the condition, and also contributes to the development of other associated conditions such as hypertension, diabetes, sleep apnoea, and poor cardiometabolic fitness. These conditions all cumulatively reduce the success rate of rhythm control interventions for symptomatic AF.

There is published observational and randomised data demonstrating the benefit of targeting these upstream risk factors in an integrated AF service. Crucially, these programs were also able to reverse the phenotype of AF in some patients, potentially making resource intensive treatments such as catheter ablation unnecessary. The mechanistic basis of these results remains the subject of ongoing research.

Despite these data, there are no formal AF 'prehab' services in the NHS. My hospital already has a track record of establishing these services in liver transplant medicine, where a prehab approach has demonstrated improvements in outcomes and also length of stay in critical care environments. The next step is to move this expertise into the heart rhythm arena.

Objectives:

- Determine the unmet need by audit of our own AF ablation dataset
- Identify key local stakeholders to design the AF prehab program
- Introduce this concept at regional leadership level: Birmingham & Solihull ICS and West Midlands Cardiac Network
- Develop a business case for a hospital-led pilot service
- Engage primary care partners to develop a program that is initiated at time of referral in the community (Primary Care Network based solution)

Results:

- Audit key outcome: approximately 40% of patients undergoing 1st time ablation for AF have a BMI>30kg/m², and those with a BMI>35kg/m² had a 15% higher recurrence rate at one year
- We estimate 50 patients/year would meet criteria for this program
- Service design and costs have been developed with experienced prehab teams at the QEH

Next steps:

- Further stakeholder engagement to acquire funding for this pilot program
- The key objectives meet the criteria for transformational change in how conditions such as AF are treated – CVDprevent and also GIRFT
- Work on primary care prehab pathway once hospital-based clinic is established as the ablation population represent a small proportion of AF patients



Dr Nada Al-Sakini

**ACHD Cardiology Consultant
Southampton University Hospital**
Email: nada.abdulkareem@nhs.net

I am an ACHD Cardiology consultant at University Hospital Southampton with sub-speciality training at the Brompton hospital in Advanced Echocardiography imaging in Adult Congenital Heart Disease (ACHD). After finishing general Cardiology training, I undertook formal ACHD training at St. Bartholomew's and Brompton hospitals, part of the Pan-London Rotation training in ACHD. I did my PhD on BAV and aortic aneurysms at St. George's University of London.

I shall be moving to the Queen Elizabeth Hospital in Birmingham for an ACHD Cardiology Consultant job there starting 01/07/2022.

Increasing Psychology Provisions for Adult Congenital Heart Disease (ACHD) Population at Southampton University Hospital

Background:

One third of ACHD patients have multiple psychological needs, mood or anxiety disorders¹. Patients and families do face emotional and behavioural challenges as a direct result of CHD with often intensive and intrusive medical interventions. The burden of living with an ongoing chronic condition is so grave, that the GUCH Commissioning Guide (2006) stated that a Clinical Psychologist should be part of a Specialist Centre. Moreover, COVID-19 pandemic has added an extra level of

stress especially in the presence of such unprecedented isolation measures. This had a negative impact on clinic DNA rates due to the psychological impact fearing the worse having been through so much in the past (PTSD). At present the Southampton ACHD service has approximately 6000 patients who attend from a wide geographical area. The current psychology provision for ACHD population is 0.2 full time equivalent (one day a week) which is insufficient for the demand. As there are more paediatric patients with CHD surviving into adulthood, there is a predictable increase in psychology need projections.

Aims and Objectives:

To increase psychology provision at UHS to reduce the psychological impact of living with a congenital heart condition and help patients adjust to their diagnosis, managing stresses and cope with health anxieties and depression of future interventions.

Methods:

1. Multiple meetings with ACHD, psychology and management teams took place throughout a 6 months period.
2. We assessed previous Key Performance Indices (KPI) going by the "Improving access to psychological support therapies programme" reiterating the GUCH Service Standards (2009) which stated that Clinical Psychology should be available on a "sessional commitment basis".
3. Compiled data on the number of patients who are current service users.
4. We compiled data on the number of paediatric patients aged 16-18 transitioning to our ACHD services to forecast the service need.

Results:

The current number of patients using the ACHD psychology service was 50. Those patients require varying number of regular sessions. Paediatric patients (between the ages of 16-18) forecasted to transition to the ACHD team in the coming two years was 321. After the joint meetings an increase in psychology provision was accepted from 0.2 to 0.5 WTE. The financial support came from the "Recovery Fund".

Conclusion:

Important and successful increase in psychology provisions for ACHD population at UHS was achieved by appropriately communicating with the management team highlighting its need and impact.

Next steps:

To further increase psychology provision for ACHD population from 0.5 to 1WTE. Moving forward on a bid with a business case using patients outcomes and service evaluation feedback.

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Dr Nang Hnin Nu Nu Kyi

**Consultant Adult Congenital Cardiologist
University Hospital Southampton**

Email: Nang.kyi@uhs.nhs.uk

I graduated from King's College, University of London in 2010. I completed my Cardiology training in East of England Deanery, specialising in Heart Failure and Devices in 2019. After my CCT, I did a fellowship in Adult and Paediatric Congenital Cardiology in University Hospital Southampton. I took up a substantive consultant post in Adult Congenital Heart Disease in December 2020.

My special interest is Heart Failure and Device Therapy. My aim is to develop a clear pathway for heart failure management in adult patients with congenital heart disease including with other specialists including mechanical circulation support, transplantation, supportive and palliative care.

Advance Care Plan (ACP) for Young Persons and Adults Living with Heart Failure

Background:

Although many people living with heart failure are older, there are significant number of younger people with heart failure, including those who have developed the condition as a result of congenital heart disease, inherited cardiomyopathy, and chemotherapy. With the advances in paediatric health care, cancer care, clinical genetic testing, treating heart attack, the prevalence of heart failure patients is predicted to continue to rise. Currently, more than 97% of children who are born with congenital heart disease can be expected to reach adulthood highlighting the need of lifetime management¹. Approximately 80% of people with cardiovascular disease have at least one other health condition highlighting the need of multidisciplinary team input².

Heart failure is a progressive condition with high mortality and morbidity rates. In areas of social deprivation and health inequalities, premature mortality from heart disease is higher. Heart failure can have a significant effect on the quality of life of patients, their families, and carers. The impact of heart failure includes physical limitations, emotional, social, and economic effect on those who live with it. Therefore, alongside health services, psychological support and social support are much needed for heart failure patients. With the right treatment and care, the outcomes and experience of people living with heart failure can be significantly improved, and the cost to the NHS associated with unplanned hospital admissions can also be reduced.

Objective:

My project aims to promote equity of patient access to heart failure and palliative care, to empower patients and their carers to be actively involved in their care plan, and to improve inter-professional collaboration amongst multidisciplinary teams.

Methods:

- **Forming working group:** Young adult cardiac ward sister and staff nurse, consultant in palliative care medicine, clinical nurse specialists (ACHD, Heart Failure, Hospital specialist palliative care), and hospital governance team
- **Gathering materials:** ESC Recommendations for advance care planning in adults with congenital heart disease, ReSPECT – Child and Young Person's Advance Care Plan Collaborative, endorsed by NICE, The Caring Together Programme, One Chance To Get It Right
- **Microsoft Teams meeting:** Delegating job, Contacting Royal Brompton Hospital, UHS cystic fibrosis team's experience in ACP

Results/work in progress:

- Drafting patient information factsheet on Advance care planning for Heart Failure Patients
- Drafting Patient Pathway incorporating triggers for potential ACP discussions
- To raise awareness through charity (Somerville Heart Foundation, British Heart Foundation, social media)

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Dr Peter Wheen

**CMR Fellow
Kings College, London (GSTT)**
Email: peter.wheen@gmail.com

I am an Irish SpR - I spent 5 years training on the Cardiology SpR scheme in Ireland. I moved to London to finish my sub-speciality training in Cardiac CT and CMR in the Royal Brompton Hospital and St Thomas Hospital. I have recently obtained CST, but I am completing another 6 months fellowship in Cardiac MRI. I currently live in Fulham with my wife and 20 month old son, and we particularly enjoy the many parks and green spaces around the area.

Developing a novel imaging technology – a project management first!

My project relates to the development of a novel medical imaging technology, which post processes Cardiac CT images in a manner that provides new clinically relevant diagnostic information. (Analogous to how CT-FFR takes 3D CT data and provides clinically relevant information, an FFR value, that is not readily available without a specialist software package, by merging the 3D anatomical data with an

assumption of various underlying fluid dynamic principles). My project extended from the initial development of my idea, through to the completion of a research study and the submission and award of a patent pending. A prospective trial exploring the use of this technology is currently underway.

The process started with the development of the underlying physics concept and the technique for extracting the raw CT data. Determining how to post-process the raw data required extensive reference to underlying physical principles, that although were present in the basic sciences, had not been applied to CT. I liaised with a physicist who was able to suggest the optimal methods for data transformation. This led to a large amount of post processed data, however there was no literature to determine which data might be clinically relevant! I had developed a basic "algorithm" within Microsoft Excel, and over several months has become an extensive "software programme" that calculates thousands of calculations for each CT scan, also within Excel. Although not ideal as a software programme, it was satisfactory for the purposes of initial research and development.

Determining which clinical questions could be reliably derived from this processed data required a combination of trial and error, with a certain amount of educated guessing to determine the potential clinical relevance of the outputted data, and amending the software to the clinical question. Once the "software" was developed to a point where the raw data produced clinically relevant data; and I knew what clinical question my technology might answer, I commenced a retrospective study, using pre-existing research ethics to allow the comparison of CT images with retrospective clinical information (chart records, lab results, angiogram, echo results etc) obtained within the same hospital.

This research study took several weeks, as the extraction of the raw data is still a manual task; however once the data had been collected, it quickly became apparent that this method of data extraction and transformation reliably predicted certain clinical measurements that have been previously not available from a CT scan.

From the time of the realisation of the potential clinical relevance, a patent was discussed within the research team, leading 6 months later to obtaining a patent pending in early 2022. Subsequent discussions with medical imaging software have been made significantly easier due to the awarding of the patent pending (as well as NDAs).

Further commercial engagement will depend on the outcome of an ongoing research project using this technology in a prospective multicentre trial, but I am optimistic of some level of industry engagement.



Dr Rupert Williams

Consultant Interventional Cardiologist
Kingston and St George's NHS
Foundation Trusts

Email: rupertwilliams@nhs.net

Dr Rupert Williams studied medicine at St George's University of London, graduating with a clinical distinction in 2006. After completing his foundation training in University College Hospital London, he was awarded an Academic Clinical Fellowship in Cardiovascular Diseases at St Thomas' Hospital, leading to completing a PhD in Cardiovascular Physiology in 2016 under Professors Marber and Redwood. This clinical PhD in coronary artery disease patients investigated the physiological adaptations that the heart undergoes during physical exertion: in particular the adverse adaptations that occur during cold air inhalation, and conversely the beneficial adaptations that occur after a period of warm up exercise. His work won the Young Investigator Award at the British Cardiovascular Intervention Society in 2016, and his PhD was nominated for the Elsevier outstanding thesis award. He undertook his Cardiology training at Medway, Worthing, St George's and St Thomas' Hospitals, and was appointed as a Substantive Consultant Cardiologist at St George's and Kingston Hospitals in 2019.

Dr Williams's specialist interest is in coronary angioplasty, including complex PCI and chronic total occlusion PCI, but he has a broad experience of general cardiology and aims to offer holistic care to his patients. He is involved in undergraduate and post-graduate teaching and is co-curricular lead at the Royal Society of Medicine for registrars training in Intervention in London.

Improved risk stratification, management and follow up of High Risk and Low Risk Cardiac Chest Pain Presentations to A&E

Rupert Williams^{1,2}, Matthew Mort¹, Rea-Grace Maamari¹, Lydia Isted¹, Timothy Bagnall¹, Alysha Bhatti¹, Sally Hickford¹, Steve Coe¹, Lindy-Lee Folscher¹, Maxine Gates¹, Vin Majuran¹, Tapesh Pakrashi¹ and David Wilson¹

¹Kingston Hospital NHS Foundation Trust, Kingston, London, United Kingdom; ²St George's University Hospitals NHS Foundation Trust.

Background and Objectives:

Kingston A&E rules out ~20 ACS patients /day and admits ~50 ACS patients per month, but in November 2019 had no visible 0-3hour hs troponin rule out pathway in A&E, nor a low risk chest pain pathway, which were identified as priority by NHS England & NHS Improvement. Our objectives were to: 1) implement high and low risk chest pain pathways incorporating ESC rapid rule out hs troponin pathway (troponins taken at 0 hours +/- 2 hours post admission), with extensive guidance on management of ACS; 2) establish and embed discharge pathways (i.e. GP vs ACS Hot Clinic vs RACPC), based on risk stratification with symptoms & HEART score; and 3) expedite inter-hospital transfers (IHT) to PCI-capable hospitals for patients with/at high risk of ACS, which were hampered by poor HDU ambulance transport and poor communication.

Objective:

To establish an MR imaging service for patients with non-MR conditional cardiac devices, so as to improve the diagnosis and management of additional health conditions in these patients

Progress:

I negotiated a new ambulance provider (Mar '20), and created mobile communication portals between Kingston and tertiary centre cardiac catheter laboratory staff. I oversaw a retrospective audit of acute admissions with ?ACS (Dec '19): demonstrating potential utility of HEART scoring to facilitate safe discharge of low risk ACS patients to an ACS hot clinic. I co-wrote high and low risk chest pain pathways; piloted draft pathway in A&E (Nov '20); presented pathways at clinical effectiveness (July '21) and medicines (Feb '22) committees; laminated and distributed pathways across A&E, Acute Admissions Unit and Cardiology (Feb '22). I co-appointed an ACS nurse (Sept '21). Successful £21k award received for ACS pathway implementation from South London Healthcare Innovation Network (HIN): to fund additional ACS nurse post and data solution to set-up and run an ACS Hot clinic. Additional IHT link with Royal Brompton Hospital negotiated Oct '21. CTCA capacity uplift due May '22 through acquisition of new CT scanner.

Methods:

1. Retrospective audit of A&E admissions: data analysed for 1st 50 patients a month, presenting to A&E with ?ACS and hs troponin measurement (baseline data June '19 & Dec '19); Dec '20; Dec '21; and Mar '22. Patients having their 2nd troponin 1-3 hours after their 1st were classified as following the up-to-date pathway, or classified as 3-8 hours / >8 hours. Length of stay (LOS) in A&E/ in hospital measured, and benchmarked against the LOS and number of patients presenting to A&E for all conditions. Time to follow up and to 1st OP investigation noted.

2. Prospective audit of IHT transfers: data analysed on rolling basis for all patients referred on IHT from April '19. Number of referrals; and median times (days) for admission to referral / referral to procedure / procedure to discharge were noted.

Eligible patient data was analysed in Excel .

Results:

1. 70% (584/834) patients were excluded as A&E clerking did not suspect ACS. Included 250 patients: 56% male, 64±24 years and HEART score 4±3 (median±IQR). Overall LOS (in patients with ?ACS) increased despite ACS pathway implementations, but LOS also significantly increased for all patients presenting to A&E due to COVID and escalation pressures. The % of patients with troponin pathway adherence improved, but this was most notable in Dec '20. Cardiology follow up was arranged in 27% of patients after 29±37 days (median±IQR), and cardiac anatomical / functional stress testing arranged in 14% of patients after 44±30 days (median±IQR).

2. From Apr '19 to Mar '22, 474 IHT referrals were made. % of patients referred within 2 days improved from 56% to ~70%. Median time from referral to procedure has improved (~5 days to ~3.5days), but was adversely affected by volume of referrals in Apr-Sep '21.

Conclusions:

1. Coding of high and low risk chest pain patients needs to be improved to allow easier data monitoring. Regular nurse training needs to be undertaken to embed the importance of hs troponin pathway adherence. Outpatient investigations and follow up were slow, and remain a target: use of HIN £21k award to recruit additional ACS nurse to set up hot clinic to improve this, and improve LOS.

2. Improvements seen in the speed of referring patients on IHT system were encouraging. Recent deterioration in performance likely related to increased IHT referrals, and ward physician associate vacancy since Oct '21. Recruitment to this post, alongside continued IHT training through ACS nurse provision will help improve this.



Dr Sinjini Biswas

**Locum Consultant Cardiologist
Bristol Heart Institute, Bristol Royal
Infirmary**

Email: sinjini@gmail.com

Dr Sinjini Biswas is a locum consultant interventional cardiologist at the Bristol Heart Institute. She graduated in Medicine from The University of Melbourne, having received a prestigious scholarship to study there. She then completed her cardiology training at The Royal Melbourne Hospital, obtaining Fellowship of the Royal College of Physicians (FRACP) in 2017. She then received scholarships from the National Heart Foundation of Australia, National Health and Medical Research Council and the Australian Government Research Training Program to allow her to complete a PhD with Monash University on the use of large datasets to evaluate PCI systems of care.

Sinjini subsequently moved to the UK in August 2019 to undertake a fellowship in PCI and TAVI at the Royal Infirmary of Edinburgh, and then a fellowship in CTO and complex PCI at the Bristol Heart Institute. She has special interests in intravascular imaging, complex PCI and TAVI.

Same-day discharge post TAVI using novel ambulatory ECG monitoring devices

Transcatheter aortic valve implantation (TAVI) has revolutionised the management of severe aortic stenosis in elderly patients at high or prohibitive surgical risk. However, currently due to several factors including backlog created by the COVID-19 pandemic, there are long waiting times across the UK for TAVI procedures, with a major rate-limiting factor being availability of inpatient beds. All patients undergoing TAVI, regardless of procedural complexity, currently require an inpatient bed to be available for them post-procedure to allow for 24-72 hours of ECG monitoring due to the risk of late electrical conduction disturbances post TAVI, that may necessitate permanent pacemaker (PPM) insertion.

Unfortunately, generalised NHS bed pressures, particularly in the winter months and during the COVID-19 pandemic have meant that a post op recovery bed is often not available. This results in last minute cancellation of procedures, causing considerable risk and distress to the patient and their family. At the Bristol Heart Institute, the average wait time for elective TAVI currently exceeds 8 months. This has resulted in a large number of emergency admissions due to decompensated severe AS, as well as some deaths on the waiting list.

Therefore, we believe there is a need to trial a same-day discharge protocol to reduce the rate of elective TAVI cancellations due to bed unavailability, and thereby shorten our current waiting times. Using real-time remote monitoring devices can help us maintain patient safety.

This pilot program will enrol a highly selected group of patients undergoing TAVI – they must have an uncomplicated procedure with no conduction abnormalities during or after the procedure and no issues with valve deployment or vascular access/closure. They will also have to have their procedure completed by 12pm to allow adequate monitoring post-procedure in the day case unit. Finally, they must have adequate social support to allow safe same-day discharge.

While funding for this project as well as approval from local managers have been obtained, we have encountered challenges in sourcing an appropriate device that allows real-time remote ambulatory ECG monitoring. The Zio AT patch which allows remote real-time monitoring and has FDA approval, is unavailable in the UK. We have tried several devices e.g. Cardidata, Zio XT, but they have been unsuccessful in meeting our needs. We are currently investigating whether a new subsidiary company of Boston Scientific may have an appropriate device and hope to start this program in the summer.



Dr Sree Kondapally

**Locum Consultant Cardiologist
St George's University Hospitals NHS
Foundation Trust, London**

Email: sree.kondapally@nhs.net

Sree is an interventional cardiologist at St George's Hospital in London. He completed his medical training in one of the largest teaching hospitals in India, where he developed a passion for both clinical and academic cardiology. This led to a Commonwealth Scholarship and subsequently a Gates Cambridge Scholarship to undertake Masters and PhD training in cardiovascular epidemiology at the University of Cambridge. His research work has been published in top-tier medical journals (like NEJM), and has been highly cited.

He was subsequently appointed as UK's first NIHR Clinical Lecturer in Preventative Cardiology at St George's, University of London, and undertook clinical cardiology training in the London Deanery. This was followed by a post-CCT fellowship in advanced coronary intervention at the Royal Bournemouth Hospital, leading to his current appointment in 2019 as a Locum Consultant Interventional Cardiologist.

Sree's clinical interest is in the management of complex coronary artery disease, and his research activities involve population-based (and data-driven) approaches to understanding and managing a host of chronic disease conditions. He is also very passionate about Clinical Leadership, which he sees as a pivotal force to bring about positive change in the care of individuals and populations.

Developing a unified, clinician-lead, electronic referral pathway for Cardiology outpatient services at a tertiary care centre

Dr Sree Kondapally*, Locum Consultant Interventional Cardiologist and Dr Rajan Sharma, Consultant Cardiologist and Clinical Director, Cardiology and Cardiothoracic Surgery

Background:

Electronic referrals from primary and secondary care constitute the mainstay of accessing tertiary care Cardiology outpatient services at St George's Hospital, one of the largest teaching hospitals in London, catering to ~3.5 million local residents. All such referrals are traditionally scrutinised by the Referral Assessment Service (RAS) before being distributed to individual Consultants.

The Problem:

An existing system of RAS (**e-Triage**) was fraught with multiple risks: (i) it had too many triage queues per service; (ii) some referrals were being missed; (iii) referral documents could not be displayed clearly, and (iv) it was not user-friendly. Furthermore, triaging decisions hitherto were made almost entirely by Administrative Staff rather than Clinicians, posing additional challenges.

Objectives:

We therefore aimed to transition to a: (i) new robust RAS system called **i-Clip triage**, which seamlessly integrated with electronic patient records, and (ii) into a wholly Clinician-lead triaging service.

(My role: Lead Clinician to effect this change)

Upfront challenges:

I entered the change process midway, and it became apparent that there was: (i) no central leadership to guide transition; (ii) a chaotic approach to change management; (iii) lack of communication and coherence between teams; (iv) lack of clearly articulated (and realistic) timelines and goals; (v) little stakeholder engagement and training; (vi) lack of appreciation of the complexity of Cardiology services; (vii) lack of accountability and clarity of roles, and (viii) a degree of blame culture. Besides, the global pandemic made team working particularly challenging.

My Leadership Journey:

My overarching mantra for effective change management was to lead and facilitate greater stakeholder engagement and to create a paradigm shift from a 'diagnostic' to a 'dialogic' model for change. Pragmatically, it involved: (i) considerable background research into how the NHS referral pathways work; (ii) identifying key stakeholders (Clinicians, Administrators, IT teams etc.) and coordinating weekly/bi-weekly MS Teams meetings to drive change; (iii) periodic discussions with the Management to identify bottlenecks and monitor progress; (iv) detailed discussions with different sections of the staff to get their perspective of the problem and incorporate their suggestions; (v) promoting a culture of fact-checking and regular data collection on referral volumes; (vi) engaging with Clinical colleagues to spread awareness and facilitate training, (vii) liaising with the Care Group Lead and Management regarding clinical governance and final sign-off, and (viii) establishing an audit trail for future.

Results:

My journey started in November 2020, and the project had a successful 'Go-Live' in June 2021. We cleared all backlog from e-Triage, obtained excellent engagement from Clinicians, huge support from the Management, and importantly, recorded no patient safety incidents during transition.

Conclusion and reflections:

Despite multiple challenges, we demonstrated the successful implementation of a novel e-referral pathway for our Cardiology outpatient services. An in-depth understanding of the problem, and timely, extensive and repetitive stakeholder engagement proved invaluable to delivering the project at speed and to scale. Learning new things (including new ways of thinking/working), accepting challenges, working with diverse teams, and valuing every member of a multi-disciplinary team enhanced my abilities as a team leader.



Dr Sunita Avinash

Locum Consultant Cardiologist
Lancashire Cardiac Centre, Blackpool

Email: Dr.avinash@nhs.net

I am a medical graduate from India who came to the UK in 2003. I trained in Blackpool, going on to achieve my CCT through CESR in March 2021. I am PCI mad and have also trained in Cardiac CT. I have not worked at any other trust in this country and consider Blackpool my second home. The ELP programme is the biggest feather in my cap to date.

In my free time, I spend time with my 13-year-old daughter watching movies, cooking and relaxing. I am part of an amateur Bollywood dance troupe who perform for charity and school events. Dance makes me happy and keeps me sane.

To establish a one stop checklist system prior to Cardiac CT to further improve patient care pathways.

Background:

Cardiac CT has become the preferred choice of investigation in the last few years. This was due to NICE recommendations in the chest pain pathway and now the GIRFT report. With increasing requests, the waiting list grew. This was exaggerated in Covid, when all activity came to a standstill. To maximise capacity and driven by a huge backlog, we successfully started radiographer led lists and then oral Bisoprolol pre-CTCA. This reduced the waiting times dramatically from 8 months to 4-6 weeks.

Objectives:

To further streamline and improve numbers of scans done in existing sessions. The initial idea was to have a separate clinic room and checklist, but we were faced with lack of space and extra staff. Instead, the suggestion was to have the checklist done by the requesting clinician at the point of referral. This would screen out those unsuitable for CTCA and give the opportunity to supply a pre dispensed pack of oral betablockers with instructions to start 5 days prior. This was pre-arranged with pharmacy and would be audited on a monthly basis.

Methods:

An audit was undertaken of 100 random patients attending for cardiac CT between the months of September 2021 and February 2022 to understand the time taken for the checklist. The time varied depending on how much elaboration was needed and, on some occasions, longer if the patient was elderly or hard of hearing. We found from our information gathering:

5 min-13; 6 min -16; 7 min 2; 8 min-12; 9 min -21; 10 mn-32; 12 min-4.

Results:

The data showed a variation in time taken to get the patient from the point of check in onto the scanner. In addition, some patients had to be sent away due to heart rates, contrast reactions or arrhythmias. On a few occasions, the patient would refuse to undergo the scan due to claustrophobia. By uniform checklist at the point of referral, we would also not miss out those referred from different sources. The key stakeholders were involved, namely the pharmacist, nursing staff, referring doctors and the radiographers. The scan process would then only involve IV access and the study. Unfortunately, we were unable to trial this as the services were mainly through telephone consultations. As clinical practice returns to normal, we intend to run a pilot and audit the effectiveness of this change in practice.

Lesson learned:

By working together in a multi professional team and with the common mindset of improving services for our patients, we developed a radiographer led service for IV betablockade, then a protocol for oral betablockers. This was the next novel idea to further streamline and standardise the cardiac CT service.

What started out as small ideas and then changes suggested, led to a significant decline in waiting times and improved patient care. The department can do more cardiac CTs per session which in turn generates revenue for the department.



Dr Thomas Treibel

**Consultant Cardiologist /
Associate Professor
Barts Health and University
College London**

Email: Thomas.Treibel@nhs.net

Dr Thomas Treibel is an Academic Consultant Cardiologist at Barts Health and Associate Professor in cardiology at University College London. A dedicated clinician with specialist interest in Valvular Heart Disease, Heart Failure and multimodality Imaging. His clinical expertise is supported by sub-specialty training in advanced heart failure, valvular heart disease, and multimodality imaging with Accreditation in cardiovascular magnetic resonance, transthoracic and transoesophageal echocardiography.

Academically, his aim is to improve outcomes for patients with valvular heart disease. His main research work focuses on the mechanisms of excess mortality in patients with aortic stenosis despite successful valve replacement. He investigates myocardial fibrosis in aortic stenosis using cardiovascular magnetic resonance, cardiac CT and myocardial biopsies.

Following his undergraduate training at Cambridge and Imperial, Thomas obtained his medical and cardiology training in north-west and north-east London, respectively. He has a PhD from University College London, more than 120 peer-reviewed publications, over £4 million in grant funding, and national and international prizes. He was recently awarded a British Heart Foundation Intermediate Clinical Fellowship to study outcomes of patients with aortic valve disease.

Improving Access to the Heart Valve Team: Valve Week of Excellence

Prompt expert advice on new referrals and complex cases

Dr Thomas Treibel, Dr Sanjeev Bhattacharyya, Eva Gautam-Aitken, Barts Valve Pathway. Barts Heart Centre, St Bartholomew's Hospital, Barts Health NHS Trust, London, UK.

Background:

Multi-disciplinary Team (MDT) meetings are key for guiding patient care, especially in complex patients. But they are resource intensive and are therefore usually not scheduled on a daily basis. During reviews of our heart valve MDT processes, we identified key challenges associated with a restricted specialist access through a weekly MDT, including patients deterioration while awaiting MDT, essential investigation and / or intervention, all potentially resulting in poorer outcomes and greater cost.

Problem:

Delay in patient care due to decisions making relying on heart team input.

Objectives:

Access daily to multi-disciplinary advice via mini-MDT.

1. To provide rapid review of inpatient heart valve cases on admission/referral.
2. To reduce length of stay to make cost savings and enable increased activity.
3. To improve patient outcomes including survival and quality of life.

Methods:

During a two-week period, access to a daily valve mini-MDTs was communicated to the cardiology consultants-of-the-week at Barts Health and all network sites. Referrals were made via a dedicated email. A virtual list of new inpatient referrals was also reviewed. Mini-MDTs were scheduled for 1pm (Mon-Fri), and constituted of a cardiothoracic surgeon, structural interventionist, imaging cardiologist and specialist valve nurse. Referrals received were

presented by the referrer via Starleaf as the virtual platform. Multi-disciplinary advice and management recommendations were provided, and plans agreed, to ensure patient-centred care and faster turnover. Meetings lasted 10-30 minutes, with outcomes documented electronically. Complex inpatients could be seen straight after the meeting. Time from referral to decision/treatment/listing/transfer/discharge were captured two weeks prior and during the trial. Clinician satisfaction was reported formally via SurveyMonkey.

Results:

During a two week trial, nine mini-MDT occurred. 20 cases were referred discussed for consideration for TAVI (14), mitraclip (4), surgical aortic valve replacement (1) and suitability of intervention due to co-mobiditis (1) from 11 hospitals (Barts, Whipps Cross, Woodbury, Barnet, Basildon Kings, North Middlesex, Southend, Queens, UCLH, Colchester, Ipswich). Three inpatients were reviewed face-to-face after discussion.

The mini-MDT resulted in a significant reduction in time to decision (<24 hours versus 5 days) compared with data from the two-weeks prior, reducing their length of stay and improving outcomes by delivering prompt treatment. Over 9 mini-MDTs, 71 bed days were saved. Clinician feedback was uniformly good/excellent (100%).

Conclusion:

A Heart Team Meeting is an important decision point in many patient journeys, but should not delay care. Easier access to expert advice early during an admission due to heart valve disease is needed. Daily virtual mini-MDTs are just one pathway to provide quicker decision making and management advice with full MDTs available for complex cases. Improving access to the Heart Valve Team should improve outcomes, patient experience and care as well as save money by reducing length of stay.



Dr Tim Cartlidge

Locum Consultant Interventional Cardiologist

Freeman Hospital, Newcastle

Email: t.cartlidge@nhs.net

I graduated from the University of Edinburgh with a BSc(hons) in human physiology and MBChB before progressing to clinical training in South East Scotland. I was supported by a BHF clinical research fellowship to undertake a PhD investigating multi-modality imaging of native and bioprosthetic aortic valve disease. As a result of this work, I am fortunate to have been recognised with a number of research prizes and publications in high impact journals. I completed subspecialty training in coronary and structural intervention at the Royal Infirmary of Edinburgh before securing a post-CCT fellowship in complex coronary intervention at the Freeman Hospital, Newcastle. I am now enjoying my role as a locum interventional cardiologist at the Freeman Hospital.

Development of a Pathway of Early Outpatient Coronary Angiography

Introduction:

NICE recommend that patients with non-ST elevation acute coronary syndrome (NSTEMI-ACS) have access to coronary angiography within 72 hours of admission. Pre-pandemic UK audit data shows this was achieved in 54.8% and that patients admitted to a non-PCI hospital had a median wait of 82.4 hours.¹ The NHS was therefore struggling to meet this NICE target prior to the impact of the COVID-19 pandemic, which has intensified pressure on hospital beds and ambulance services. Newcastle Hospitals provide regional services to over 3 million people. Cardiology inpatient bed capacity has been significantly reduced as a result of reconfiguration due to the COVID-19 pandemic and, in 2021, the mean wait for NSTEMI-ACS patients from admission to angiography was > 96 hours. Randomised trials illustrate that ACS patients with high risk features derive the greatest benefit from early coronary angiography.^{2,3} We therefore explored the development of an early outpatient angiography pathway for selected non-high risk ACS patients as part of an escalation response during periods of service pressure to facilitate appropriate triage and so more timely inpatient treatment of higher risk patients.

Aims:

To provide a safe, efficient service for ACS patients during a period of increased service pressure by developing a pathway for early outpatient coronary angiography within 2-4 weeks post-discharge.

Methods:

A review of current guidelines and evidence base was undertaken. Data was collected on performance of the ACS service over the preceding 12 months and a patient survey was performed. A multi-professional consultation was completed involving interventional and non-interventional consultants across sites, senior nursing staff, management and administrative staff. A proposed pathway was developed over multiple iterations and presented to the Cardiology Departmental meeting. In response to demand, the new pathway was

trialled in small number of carefully selected patients in advance of formal implementation, which was delayed due to the closure of the cathlabs for refurbishment for several months. Formal implementation of a pilot phase is underway, with robust collection of patient feedback, operational and clinical data.

Results:

Data from January to December 2021 identified 1516 NSTEMI-ACS patient episodes. The mean time from admission to inpatient angiography was > 4 days and mean length of inpatient stay > 5 days. There were periods of severe service pressure when this waiting time extended significantly. ~500 patient episodes were deemed potentially suitable for the proposed pathway (based on age, peak Troponin T < 50ng/L and a normal ECG) and the 30 mortality in this subgroup was 0%. The patient survey highlighted strong support for early outpatient angiography if this was felt to be of comparable safety (>95% of respondents), and for approaches to minimise hospital stay in general. During consultation, there was evidence of demand for access to early outpatient angiography for non-ACS patients, for example, patients with significant angina (CCS class 3-4). This demand is likely to reflect and vary with elective waiting list times. The pathway received broad support, though there were some concerns about how this would affect compliance with NICE and ESC guidelines. Full implementation was delayed due to closure of 2 cathlabs for refurbishment, however, the new pathway was successfully trialed in small number of carefully selected patients in advance of formal implementation. Formal implementation of the early outpatient pathway has now begun for a specified 1 month pilot phase, initially limited to the Royal Victoria Infirmary and Freeman Hospital sites.

Conclusions:

Interventional cardiology services should reflect the diverse needs of the population we serve. The introduction of an early outpatient coronary angiography pathway offers key benefits: providing flexibility to respond to patients' wishes, averting borderline admissions where patients need expeditious but not necessarily inpatient care, and allowing us to target timely inpatient intervention to those who will benefit most. Challenges include appropriate patient selection, with safety being paramount, and provision of resources to guarantee the 2-4 week waiting time. Implementation

of the pathway and comprehensive evaluation are ongoing. Future directions include expanding access to other referring centres in the region and setting-up a virtual ward to monitor patients.-

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Professor Martin Stout

**Consultant Cardiac Physiologist
West Heart Centre, Wythenshawe
Hospital, Manchester.**

Email: martin.stout@mft.nhs.uk

Martin is a Consultant Cardiac Physiologist based at Wythenshawe Hospital in Manchester. He specialises in echocardiography and autonomously runs his own clinics for patients discharged from acute medicine with specific cardiac presentations. He is the current Vice-President of the British Society of Echocardiography and also an Honorary Professor at Manchester Metropolitan University where he developed a number of training programmes relating to cardiac science as well as successfully supervising doctoral students.

Martin is regularly invited to deliver talks at national and international conferences and has a keen research interest with over 40 publications to date. He has also provided significant input nationally to the development of academic curricula for cardiac scientist training and is the current lead editor for the MSc in Cardiac Science as part of the Scientist Training Programme.

Development of a novel Cardiac Outreach Service to Acute Medicine: Phase 1 Stable Chest Pain.

Background:

Cardiology medics are under increasing pressure to deliver multiple services despite limited time and resources. Emergency and acute medicine often experience delays in either receiving clinical advice or decision making for patients given the limited availability of Cardiac specialists. As such, patients experience delays to diagnosis and management. We aim to develop a specialist cardiac outreach programme for Emergency and Acute Medicine, led by a non-medical consultant Cardiac Physiologist and a team of advanced clinical practitioners. Chest pain admission to ED has been identified as the most pressing clinical pathway to address and this has formed phase 1 of our pilot programme.

Methods:

Our project involved the development of 'rapid access' to advice and clinical consultation for patients attending the Emergency Department with non-emergent chest pain. Eligible patients were directly referred to the outreach service to be contacted for a telephone clinical assessment within 24 hours during weekdays and on the Monday immediately following any weekend ED visit. Patients were then investigated and managed by the outreach clinic, then either discharged back to general practise or referred urgently to other specialities as needed.

Results:

Prior to the outreach clinic, patients were either directly referred into the current Rapid Access Chest Pain Clinic or back to their GP for further assessment and then referral into the chest pain clinic. Initiation of the outreach service and the ability to directly refer in, resulted in significantly decreased patient wait for clinical assessment and investigation planning (from an average of around 21 days in the current rapid access chest pain clinic to on average 2 days in the outreach clinic). The outreach service also promoted quicker access to the required diagnostic testing and faster management or onward referral when clinically indicated.

Conclusion:

The creation of a novel outreach service to ED and Acute Medicine has resulted in a significantly reduced time to clinical assessment, diagnosis and management of patients with stable or non-emergent chest pain when compared to current pathways. There is also an ability of the clinic to deal more quickly with other cardiac causes of chest pain outside of coronary disease.

Acknowledgements:

I would like to thank Dr Anita Macnab for her clinical guidance and medical supervision for both setting up and the smooth operation of the clinic on a day to day basis.



Amy Dutton

**Expert Lead Cardiac Scientist (Cath Lab
and EP Lead)**

**Wythenshawe Hospital, Manchester
University NHS Foundation Trust**

Email: amy.dutton@mft.nhs.uk

After completing my training in 2007 as a Cardiac Physiologist at Wirral University Teaching Hospitals NHS Foundation Trust, I commenced as a Specialist Cardiac Physiologist specialising in Cardiac Rhythm Management at Manchester University NHS Foundation Trust in September 2009. Over the next few years, I focussed on gaining British Heart Rhythm Society, International Board of Heart Rhythm Examiners and European Heart Rhythm Association accreditations in both Cardiac Devices and Cardiac Electrophysiology. In 2015 I set up the Physiologist led Implantable Loop Recorder Service at Wythenshawe. In March 2017 I became Expert Lead Physiologist for Cath Lab and EP. I have been a Lecturer and Facilitator on Manchester Metropolitan University's Healthcare Science courses at both undergraduate and postgraduate level since 2010. In April 2021 I successfully completed the Academy of Healthcare Science Equivalence process to become a Cardiac Scientist.

Developing a future workforce for a Community Diagnostic Centre.

Introduction:

The Professor Sir Mike Richards Report of the Independent Review of Diagnostics Services for NHS England⁽¹⁾ defined several key actions which would be required to meet the increasing diagnostic activity demand in the years ahead.

One of these actions was the creation of Community Diagnostic Centres established away from acute hospital sites and a second was that diagnostic services should be organised in a manner that where possible patients would only have to attend once to have all their diagnostic tests completed. This has become even more important with the impact COVID-19 to minimise footfall at acute hospitals. The pandemic has seen large outpatient cardiology clinics with all patients requiring an ECG disappear replaced with virtual appointments using telemedicine. The continuation of this practice post pandemic has been recommended both by the GIRFT (Getting It Right First Time) Cardiology report (2) and by Professor Sir Mike Richard's Report (1). This project takes an existing Assistant Practitioner Level (Band 3) workforce who historically would have been performing ECGs in large face to face consultant cardiology clinics and re-trains them to deliver several basic diagnostic tests required by patients, to a high level of accuracy and efficiency for delivery in a one stop Community Diagnostic Centre (CDC).

Methods:

A 13-week training programme was devised to provide both theoretical learning and practical experience. Trainees were required to complete a logbook and undergo competency assessments. An initial meeting was held with key stakeholders from Respiratory to agree training programme for spirometry, FeNo and capillary blood gas testing. Engagement was sought with the Cardiology Outpatient Specialist Nurses to allow completion of the 6-minute walk tests. Engagement of the Assistant Practitioners Line Managers was also sought and an agreement to release them regularly from existing clinical service to undertake training. Regular meetings were held with the Assistant Practitioners to engage and lead them through a change curve, get feedback and check progression. Three Assistant Practitioners commenced the training programme on 20th September 2021, all had an existing background in Cardiology so were already competent and autonomous in performing ECGs and Ambulatory Monitoring hook up.

Results:

Diagnostic Test	Number to be performed	Trainee 1	Trainee 2
Electrocardiography (ECG)	20	Existing Competency Sign Off	Existing Competency Sign Off
Ambulatory Monitoring (ECG and BP)	50*	Existing Competency Sign Off	Existing Competency Sign Off
Spirometry	20	20	20
6-minute walk test	10	2	2
FeNo	20	6	5
Capillary blood gas sampling and analysis	20	5	4
Venepuncture	10	0	0

* Lifecard, R Test and BP

One trainee halted training when permanent job role changed. The table above shows logbook progress as of May 2022. No competency assessments have yet been undertaken. The CDC go live date was pushed back from January 2022 to April 2022 and then again with no clear deadline. It has been 34 weeks since initiation of training programme. This has led to a loss of momentum and the time frame of training to slip. There was difficulty securing practical placements to undertake venepuncture and getting all areas to commit to signing off competency assessments for trainees in the agreed time frame.

Conclusion:

When service demands and methods of delivery change, the workforce must adapt and change too. This project demonstrates how an existing skilled workforce can be given additional training to deliver a range of diagnostic tests. However as with any new initiative requiring collaboration between departments and requiring individuals to change working practices, there are challenges and difficulties to overcome. Not least in keeping everyone on schedule despite a shifting deadline.

References

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Mrs. Delyth Joanne Rucarean

**Advanced Heart Failure Nurse Practitioner
Morrison Hospital, Swansea Bay University
Health Board**

Email: Delyth.rucarean@wales.nhs.uk

Delyth Rucarean is an Advanced Heart Failure Nurse Practitioner in Morrison Hospital, Swansea Bay University Health Board. She completed a BN (Hons) Adult training, MSC in Nursing, Post Graduate Diploma in Advance Practice and Non-Medical Independent prescribing in Swansea University.

Over the last 23 years, she has worked in a variety of different areas within secondary/primary care and internationally, caring for complex patients with diverse acute health issues. She developed an interest in heart failure in 2013 and was involved in running a Community Heart Failure Clinic in Swansea until 2018, when funding received from the pharmaceutical industry, allowed her secondment to Morrison Hospital to set up an acute in-patient heart failure service. She was one of the first ANPs specialising in heart failure in Wales providing an out-reach service to all non-cardiology wards, to improve access to specialist management for patients cared for on all wards across the hospital. The service demonstrated better patient outcomes by facilitating greater access to appropriate treatments, reducing in-patient and post discharge mortality rates and re-admission rates.

Delyth has been a member of the All Wales Heart Failure Nurse Working Group for a couple of years and a member of the BSH Heart Failure Nurse Forum since 2020, recently appointed to the Deputy Chair position, working closely with other members of the team to drive change. She is committed to raising awareness of the condition and support in advising and influencing the provision of heart failure nursing services at a local and national level, striving to provide equitable access to care for people with heart failure.

Delyth lives in Swansea with her husband and two children and enjoys the outdoors, swimming, paddle boarding and mountain walking.

The impact of an inpatient heart failure team at a Tertiary Cardiac Centre in Wales.

Background:

Heart failure (HF) is the leading cause of acute hospital admission in patients over 65 and increasing with our ageing population, with a huge financial burden on the NHS.

Morrison Hospital is a regional tertiary centre; due to restrictive cardiac bed capacity it has not been considered practical to deliver most HF management within the cardiac centre and care has historically been delivered on general wards with limited specialist team input.

In 2018, we introduced a hospital wide heart failure ward round to address this and demonstrated a significant improvement in quality of care and patient outcomes.

The project aims to evaluate the impact of offering additional heart failure specialist input in the form of NT-proBNP testing and an additional nurse, on inpatients with a primary diagnosis of heart failure with reduced ejection fraction with EF ≤40% (HFrEF), irrespective of their location within the hospital

Methods:

We identified all patients discharged from our hospital with a primary diagnosis of HFrEF between September '21 and February '22. We collected data related to the NICE quality standards for management of acute heart failure. We compared our data to previous baseline data collected from September '18 to February '19 to assess the impact of the service changes implemented.

Results:

83 patients were admitted in 2021-22 with a primary diagnosis of HFrEF (53 in 2018-19), mean age 75, 63% male. 66% were on a cardiology ward, 29% medical and 5% on others. Mean length of stay 7.4 days and mean NT-proBNP 13466ng/l.

In 2021-22, 84% were seen by the HF team. 85% had an NT-proBNP measured. This compares favourably to 2018 when 62% were seen by the HF team and 33% had an NT-proBNP measured.

Numerically, more patients seen by the HF team were discharged on B-Blocker, ACE/ARB/ARNI, MRA, SGLT2i or quadruple therapy with lower mortality rates and lower re-admission rates at > 30 days when compared with those not seen by the heart failure team.

There was no change in the number receiving echocardiography within 48hrs (79.3% in 2018-19 v 79.5% in 2021-22). The number of patients reviewed within 2 weeks of discharge remained low at 8.4% in 2021-22.

Conclusion:

The introduction of an additional HF nurse and immediate access to NT-proBNP resulted in a range of improvements in HF outcomes in patients admitted to a regional cardiac centre.



Reinette Hampson

**Research and Education
Physiologist Lead
London North West University Healthcare
NHS Trust, Northwick Park Hospital
Email: rhampson@nhs.net**

After an early career in the South African Airforce serving as a Sport and Recreation Officer, I did a post graduate degree in Sports Rehabilitation at the University of Pretoria where I completed a 2-year internship. During the internship I became involved in Cardiac Rehabilitation, which after my move to the UK, provided an excellent foundation to completing the BSc Cardiac Physiology training. After a long and interesting journey, I now specialise in stress echocardiography and have a special interest in the application of contrast agents in echocardiography, my role encompasses education, teaching, commercial and academic research.

A Novel application of Focused Echocardiography: The Project Management Process

Objective:

To establish a novel echocardiography service where focused echocardiography is used to triage patients, referred for transthoracic echocardiography (TTE) from the Direct Access Cardiology Clinic (DACC). This service is aimed at using handheld echo transducers, while following abbreviated echo protocols, to separate those patients who require a full TTE from those that can be discharged.

Methods and results:

A service improvement project was registered with the Transformation Service at Northwick Park Hospital and the project was managed using stage gates. A digital project tracker tool (TRAKIT) was used to plan, manage, and document each stage. At each stage, details of the expectations were developed and documented, once all the expectations were met, the project moved through a gate onto the next stage. Stage 0 - An idea to acquire handheld echo transducers to perform abbreviated protocols in low-risk patients from the DACC was born, stakeholders were identified and approached, with the need for capital identified (June 2021). Stage L1 - An audit on the patients undergoing TTE from DACC was performed for impact assessment. Capital funding was identified as the source. Digital requirements were identified and a request for approval submitted. The project was registered with Transformation Services and a pathway created on TRAKIT (October 2021). Stage L2 - A business case was submitted to the Capital Review Group to secure £10,000.00. A risk assessment was completed. Data Protection Impact Assessment and Minimum Digital Standard Assessments were completed and digital checks from Clinical Safety, EBME, Information Governance and Integration were received (November 2021). Stage L3- Funding was approved and a purchase order raised, cyber security checks were completed, Mobile Device Management agreement were finalised. A quality impact assessment was completed and approved (December 2021). Stage L4 - Standard Operating Procedures for the new service were developed and ratified. Handheld transducers arrived in the department ready to be used (April 2022). Stage L5 - Process is not complete: benefits will be measured by performing an audit. An impact review will be completed once the service has been in operation for at least 3 months (October 2022).

Conclusion:

A focused echocardiography service, using handheld transducers to perform abbreviated echo protocols, has the potential to reduce the number of full TTE studies required by triaging patients. This in turn has the potential to reduce TTE waiting lists, waiting times and improve patient outcome. Establishing this service was challenging and took an improbable amount of time (12 months), the main challenge was the result of introducing a digital element, not previously used in our cardiology department. The success of a project focussed on introducing new technology depend on identifying which digital checks will be required, who the stakeholders are and what information is needed to complete the checks. This should be the main priority from the outset, for any project with a digital element, to ensure timely completion.

Comments from the Emerging Leaders Programme delegates – 2022

'This is a fascinating programme of lectures, discussions and group work that facilitates a great deal of reflection on your own role as a leader. It allows you to discover important leadership concepts and also relates this to your own development, qualities and experience in leadership roles. The programme has helped me as a leader within my own clinical community and also as a leader within a national society, so can be tailored to your own development'. **Martin Stout**

'I feel privileged to be selected for the BCS Emerging Leaders Programme and want to thank the organisers for the opportunity. Specifically, I would like to highlight the incredible work of Chris Wilkinson in organising the programme!

The coaching received during the programme has been invaluable as I take my first steps in leadership as a clinical consultant and patient group advocate, navigating the challenges faced and develop protocols to improve the quality of care for patients and staff. The programme also afforded me the opportunity to network with colleagues at a similar stage of training from across the country which was enlightening and highly educational'. **Harshil Dhutia**

'This programme has been invaluable for me to gain additional skills within medical leadership, managing teams and developing services. I feel more confident working with my team to implement new projects. I am hugely appreciative of the efforts of the course organisers and those who took the time to deliver such varied and interesting sessions over the year'. **Jennifer Peal**

'Following two years of COVID, which coincided with my first two years as a consultant, the BCS ELP offered the opportunity not only share with similarly minded peers my experiences, but also to learn from their trial and tribulations outside my own institution.

The program organised by Chris offered a broad range of key areas relevant to leadership and management in the NHS with a fantastic array of national and international leaders and academics, to whom we would not be exposed to at local level. The mix of newly qualified consultants, senior SpR and allied healthcare professionals offered a wider perspective key topics like compassionate leadership, NHS finance and difficult conversations.

The BCS ELP is an excellent program which I can recommend to any new consultant or allied health care professional'. **Thomas Treibel**

'I started the ELP programme with some apprehension as I felt I was the most junior. It turned out that it was perfect timing and just what I needed. The programme had insightful and thought-provoking talks from experts in their fields. Each session was well timed for my transition from being a registrar to a consultant, helping me understand key issues needed for interviews. I learned so much by just listening to the other delegates, as friendships formed gradually. I particularly liked the breakout sessions throughout. The ELP programme has been a journey of self-discovery and self-improvement. It has helped me become more confident, proficient and articulate in my communications. A special mention to Chris Wilkinson for all her hard work. I have bombarded her with many questions.

The additional highlights for me personally were the 360 assessment which gave me useful feedback on how to improve on my weak areas and access to (personal) coaching through the programme. I would highly recommend the ELP programme irrespective of the stage of your career'. **Sunita Avinash**

'I feel privileged to have been part of the first cohort of the Emerging Leaders Programme to admit Senior Cardiac Scientists/Physiologists and Cardiac Specialist Nurses. For our professions to have access to high level leadership training such as this, alongside early career Cardiology Consultants allows for an inclusive multidisciplinary team leadership approach in an era of increased diagnostic demand and diminishing workforce. The exposure to the eminent speakers who taught on the programme has been invaluable and I feel empowered by what I have learned along the way. The networking aspect of the programme has provided a wealth of support and advice on this journey as we have all negotiated similar challenges and reflected on our leadership approach'. **Amy Dutton**

'Having arrived as a newcomer to the UK healthcare system from Australia, I was looking for a programme to enhance my understanding of how NHS systems and funding work. I was also looking to enhance my leadership skills as I made the transition from fellow to junior consultant. The BCS Leadership Program has helped me with all of the above and more. It has also given me the opportunity to broaden my network with colleagues at a similar stage of career which has been invaluable. It has truly been a privilege to be a part of the 2021-2022 cohort'. **Sinjini Biswas**

'The programme has been well thought and delivered by experienced leaders. Learning, discussing and simply getting to know the other fellows has been a key formative experience. Cardiology is a long career, and being part of this wider community will make it much more enjoyable'. **Anish Bhuva**

'The BCS ELP has provided a rich experience of inspiration and insights from world-leading experts, practical tools to equip us for the challenges of leadership and service change, and a valuable opportunity to network and share ideas with a dynamic group of colleagues. I would highly recommend the programme and hope that in the near future delegates will benefit from greater face-to-face contact'. **Tim Cartlidge**

'The ELP has been an outstanding process of learning about leadership, teamwork and friendship. The whole programme exceeded my expectations and I have made significant progress in my learning and personal development.

I believe I have gained many experiences and had lots of opportunity to gain skills that are needed for the next stage of my career as a consultant cardiologist.

All of the presentations and discussion points from outstanding leaders in the field of leadership have made this course stand out from any other leadership course that I have attended.

Finally, the enormous support and organisation from Ms. Chris Wilkinson have made this process possible during the difficult times of COVID-19 and her ability to bring our cohort together both virtually and in person have made this process even more enjoyable. Being in my final year to training meant that I was one of the more junior delegates in the programme. By the end of the course, I have gained so much more that I can take forward to the next stage of my career. I would strongly encourage anyone in their final year of training or in the early stages of a consultant post to consider applying for this exceptional programme'. **Krishnaraj Rathod**

'The ELP experience is an important one in terms of the knowledge it imparts and the networking it provides. I really would have loved this program to be integrated into the medical school/early doctors career curriculum. It was such a well organised and enjoyable experience'. **Nada Al-Sakini**

'I was delighted to be awarded a place on the BCS ELP. The organisation and faculty were both outstanding! It was a privilege to listen to renowned experts share their personal story, and their thoughts on leadership skills, emotional intelligence, effective teamworking, and how to write a successful business case. The DiSC profiling sessions, run by the ACC Virginia Chapter lead, were particularly brilliant, building on the above and highlighting the importance of how to assess team member's personalities, and also how to best interact with them: enhancing teamworking, mitigating any conflict and achieving results.

I plan to utilise the skills I have learnt on the BCS ELP, both on a daily basis in meetings and clinical interactions, and in planning large quality improvement and service improvement projects'.

Rupert Williams

'I couldn't believe when I saw the BCS extended the ELP to the rest of the cardiology community last year, it came at a time that I felt my career needed to move into a new direction. The course provided the opportunity to initiate a service improvement project and with the fallout from COVID and services under so much pressure I saw this as an opportunity to get involved in cardiology services in a capacity I would not normally, hoping to ultimately make improvements in my own department. I learned so much about the structure of the NHS/NHS England, finance, leadership, working in teams and all aspects of managing a project. I acquired skills and knowledge, found inspiration and motivation which has translated into project that will hopefully make massive improvements in my own Trust'.

Reinette Hampson

'It was a privilege to have been given the opportunity to be part of the 2021-22 cohort of the 'Emerging Leaders Programme', run by the British Cardiovascular Society in partnership with the American College of Cardiology.

To hear from the experts themselves about leadership and health care delivery was an incredible experience and has given me greater insight into the wider NHS infrastructure and agenda. I particularly enjoyed the session on the DiSC, which enabled me to gain a greater understanding of the different personalities and working styles, which I have found invaluable.

The programme has equipped me with the tools to progress in my career as a leader and to face the challenges ahead. Thank you to Chris Wilkinson, the organisers and sponsors for this incredible programme and for the opportunity to network and learn about the innovation going on across cardiology services in the UK. I would highly recommend this course to the nurse leaders of the future'. **Delyth Rucarean**

'The ELP program is an amazing opportunity to interact with individuals with an overarching ambition to understand healthcare and make things better. I have been able to learn about myself, how I approach challenges, and also how to interact in a productive and positive way with colleagues who may think differently. These skills are immensely helpful in not only navigating the early years as a Consultant, but will allow us to develop the resilience needed to not only be productive, but enjoy doing it.

I found it particularly helpful to understand the processes of NHS service design and development and I am sure this will help me in achieving both personal and team goals. Finally, the opportunity to interact with current NHS leaders is invaluable, not only to ask questions, but also to be inspired by their professional journey'. **Manish Kalla**

'Excellent and enjoyable programme offering valuable insight into healthcare models and leadership skills, as well as an opportunity to form valuable links with colleagues across the NHS'.

Diarmaid Cadogan

'I am deeply indebted to the BCS Emerging Leaders Programme for bringing about a transformational change in the way I can now relate to leadership in general, and clinical leadership in particular. The ELP has provided the much-needed science and structure to my understanding of the entire process of leadership, and I will unhesitatingly recommend this unique and outstanding programme to my peers and colleagues'. **Sree Kondapally**

'The core leadership concepts, and the leadership focussed training was overall a very high standard, and I do feel more confident in taking up a more senior leadership role as a result. As a temporary visitor to the NHS, I did struggle with the more NHS-centric leadership training (for example the NHS funding models) and the many different NHS organisation structures, but many of the core ideas and concepts are somewhat translatable to other health systems. I thought both the online-delivered content, and the face to face delivered content were done to a very high standard'. **Peter Wheen**

'Before I applied for the ELP, I spoke to a former delegate who gave me a strong impression of the advantages of the programme. Even though it was challenging to deliver and engage in the programme fully when delivering via zoom, the programme materials have been very helpful for me who has just started a consultant journey. My personal highlights of the programme include business case sessions, DISC sessions and group projects.

I have learned and developed so much being in the programme in particular my inter-professional skills which play'. **Nang Kyi**

'ELP programme connected me with likeminded people who care about the NHS and want it to thrive'. **Filip Zemrak**

'I applied for the course as I thought it would be a great opportunity to obtain skills necessary to navigate the transition from registrar to consultant. I found it an excellent programme delivering personalised learning and an invaluable opportunity to share experiences and with others in the group'.

Fizzah Choudry

'The programme has been helpful for me; I learned some really important things about team building and motivation of others. Having sight of a typical "medical leader" career structure was informative.

I changed jobs in the middle of this programme, from (very) senior trainee to my first consultant job, as a locum. Having been able to commit to the schedule as a trainee, my change in commitments and the challenges understanding the role often meant I couldn't schedule to attend the sessions, and I think anyone in this position ought to think carefully about how they'd manage the time if they changed jobs in the middle.

I also found the virtual nature of the sessions (although necessary) to mean it was too easy to become distracted by all the other things happening on my laptop. A return to face-to-face obviously solves this'. **Abhishek Joshi**

The ELP taught me so much about myself as a leader and as a member of the team. Having been thrown into the deep end of leadership as a new consultant in a busy, high profile and high volume centre, I have needed every tip and trick provided by the excellent mentors as I've navigated high-level board meetings, written business cases, conducted risk assessments and thought about how public money is going to be spent in my department. Through their experiences and theoretical knowledge, the mentors have provided an accurate reflection of what it takes to progress as a leader in the NHS, and I hope I can mimic this in my own practice. **Anna Reid**

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