

# Bart's and The London NHS Trust

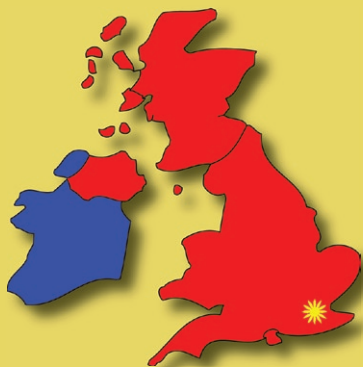
## ADDRESS

St Bartholomew's Hospital  
(Barts)  
West Smithfield  
London EC1A 7BE  
United Kingdom

## FAST FACTS

- Internationally recognised teaching hospital.
- Trust comprised of 3 hospitals.
- Hansen EP Robotic System
- Dedicated Arrhythmia Research department.

## MAP



### Size of the hospital and department:

Bart's and The London NHS Trust (BLT) is comprised of three hospitals over three sites: The Royal London, Whitechapel (with a major Accident and Emergency and other walk in centres and specialities on site); The London Chest Hospital, Bethnal Green; and Saint Bartholomew's Hospital (Bart's), West Smithfield. The total bed capacity for the three hospitals is 1310.

The London Chest Hospital has 242 beds, of which there are 49 dedicated Cardiology



Cath Lab Team at Bart's Hospital

**Front Row:** (right to left) Susan Joseph (Cath lab nurse), Joanne Whitehead (Senior Radiographer), Clarice Bonifacio (Nurse Assistant), Joice Jose (Cath lab nurse), Celestine Lepcha (Cath lab nurse)

**Second Row:** Sarah Way (Sister), Alfa Ali (Cardiac Physiologist), Victoria Muller (Cardiac Physiologist), Maegan Williams (Chief Cardiac Physiologist), Mizanur Rashid (Senior Cardiac Physiologist).

**Back Row:** Ben Tiongo (Cardiac Physiologist), Dr S Schilling (EP Consultant), Cameron Pfeffer (Cardiac Physiologist), and Dr S Sporton (EP Consultant).

beds including 10 as a part of the Angio Day Case ward. The London Chest Hospital also offers a 24-hour acute myocardial infarction service.

Of Saint Bartholomew's Hospitals' 400 beds, Cardiology has 15 situated on the Cardiology ward, nine on the Coronary Care Unit, and a further ten on the Angio Day Ward.

### Staff Numbers and the Departmental Hierarchy Structure:

We have six electrophysiology (EP) Consultants and six Specialist Registrars, all of whom work in the Catheter Labs. Nursing falls under the overall jurisdiction of a

Divisional Nurse, who has a Head Nurse to oversee the Cardiology Wards at The London Chest and Saint Bartholomew's Hospitals. The Catheter Labs are the responsibility of the Clinical Operations Manager, who again is the lead for The London Chest and Bart's Cath Labs, and each site has a Cath Lab Manager (Band 7 Senior Sister or Charge Nurse). The Catheter Labs at Saint Bartholomew's has established posts of four Band 6, 10 Band 5 nurses, and four Band 3 nursing assistants. We have a team of 10 radiographers on rotation, with usually 4-5 in the department at one given time. Cardiac Physiologists also rotate between pacing / echo / invasive and non-invasive cardiac clinics.

### New Developments at Barts:

A reconfiguration of services has seen all coronary intervention work being redirected to the London Chest Hospital; this was completed on September 1st 2008.

Bart's has recently expanded from two dedicated EP labs to 2.8 in order to accommodate the increase in EP-related work. This enables the EP team to have two full time labs capable of undertaking all forms of electrophysiological work, with the other 0.8 lab per week to meet pacing demands. The remaining 0.2 lab is used by the Radiology department for procedures such as venous samplings. This lab is also being considered for upgrade to permit Gamma-knife procedures, with further considerations for increasing radiology procedures.

New developments at Bart's include the establishment of London's only 24-hour, seven-day-a-week ventricular tachycardia (VT) referral service. The London VT Centre is primarily focused on providing catheter ablation of VT, and is aimed at Implantable Cardioverter Defibrillator (ICD) patients who experience a 'VT storm', or any patient suffering an episode of a suspected ventricular arrhythmia. The VT service is available to any patient within the United Kingdom. As a result of this, we now have a rapid ICD access service to ensure patients receive an ICD implant within 48 hours.

We have established a Congenital and Inherited Arrhythmia Clinic, designed specifically for patients with arrhythmia associated with congenital heart disease and prior cardiac surgery, and also patients with arrhythmic syndromes such as Long Q-T and Brugada syndrome, catecholaminergic polymorphic ventricular tachycardia and arrhythmic right ventricular cardiomyopathy. As the arrhythmic syndromes are inherited and run within families, we perform cascade screening in the family members of affected individuals to allow for early disease detection and treatment.

### Cardiac Physiology Team

The Cardiac Physiology team consists of 17 clinical and two administrative staff across a range of bandings. At each staff grade there are varying depths of experience in one or all of the procedures that are performed within the Cardiology department. The services provided or assisted in include: all non-invasive diagnostic tests, Pacemaker/ICD and Biventricular follow-ups and implants, Echocardiography (including Dyssynchrony studies and Bivent optimisations) and EP studies. Career progression, personal development and the attainment of external postgraduate qualifications are actively supported in this busy, diverse department.

Left: Hansen EP Robotic System



### The Research Team:

The Arrhythmia Research department is a multi-disciplinary team (MDT) who between them share the responsibility for organising and administering all aspects of ethically approved research studies. Some of the current areas of research include catheter ablation for atrial fibrillation (AF), VT and device therapies. The research department is fully self-sufficient, obtaining grants for research from independent sources such as charities and industry.

### Rapid Access Clinic:

The clinic is run by cardiac arrhythmia specialist nurses. Patients presenting with real Brugada arrhythmia syndrome, pre-syncope and fainting episodes are assessed by a Specialist Nurse, with EP Cardiologist input if necessary. Patients seen in this clinic are often referred by General Practitioners, but may be self-referred.

### Pre-Assessment Clinics for EP patients

These clinics are run by two Senior Specialist Nurses, who pre-assess all patients booked for EP procedures. Patients have a full history taken, bloods (where applicable), medication reviewed as some may need to be omitted prior to the procedure, teaching sessions undertaken (i.e. where warfarin is discontinued but there is a need for subcutaneous self-administration of low molecular heparin), general fitness for the procedure, and any other issues worthy of medical attention. There is always a registrar available to write out a prescription, offer advice and/or answer questions the pre-assessment nurse is unable to.

### Types of procedures and Cath Lab workload

Previous to the service reconfiguration, Bart's undertook all forms of coronary intervention and diagnostic work, valvoplasties, rotoblations, IVUS and pressure wire studies, as well as EP work, which included all forms of EP studies and RFA (or other electrical pathway obliteration methods), permanent pacemaker (PPM), ICD and device implantations (including cardiac resynchronisation therapy), box changes and extractions.

## BART'S and THE LONDON NHS TRUST (cont...)

### Types of procedures performed in 2007:

Procedures undertaken and numbers performed by Bart's included:

Diagnostic Coronary Angiography	1403
Coronary Intervention	792
Radiology (e.g. venous sampling etc.)	38
PPM (new system implants)	386
PPM (box changes)	112
Cardiac Resynchronisation Therapy (CRT) pacemaker implants	16
Other pacing	127
ICD (procedures)	256
CRT-D device implants	96
AF radio-frequency ablations	286
EP/ SVT and VT ablations	246
Fontan procedure ablations	1

Bart's does not undertake private work, as the labs are working to capacity fulfilling NHS service requirements. As word of mouth and reputation spreads concerning the types of procedures performed,

and the development of the new services, Bart's is increasingly taking on work from all around the United Kingdom. We have had prospective AF patients ringing up to ask questions about the "new remote technique" (the Hansen robotic catheter navigation system).

The Coronary Care Unit generally attends to acutely ill or unstable patients with associated EP problems, while the Cardiology Ward may have more stable patients, such as those for ICD implants, wound revisions, PPM implants, elective RFA, and stable EP related concerns. Elective RFA would include those who require at least an overnight admission, AF patients, or those who require cardiac resynchronisation therapy.

On top of this daily workload, the EP service has the capacity to provide a 24-hour service for patients requiring emergency device explanation, or those who are referred to the VT Centre for potential VT ablation.

In the rare event of an emergency requiring surgical intervention, Bart's has a full cardiothoracic surgery service on site.

### Day case procedures and alliances with other hospitals:

The Angio Day Unit accommodates all patients suitable for day case procedures, including elective admissions for PPM / ICD implant or device change, stable supra-ventricular tachycardia studies and ablations, EP studies and cardioversions. The Day Ward also admits and receives patients referred from District General Hospitals affiliated with BLT. Included in these referrals are device procedures which require a more advanced level of EP experience (e.g. wound revisions, device extractions, lead repositions).

### Lab equipment:

The labs are fitted with:

- Toshiba Infinix x-ray system – mono-plane (for EP)
- General Electric x-ray system – mono-plane (for EP)
- Siemens x-ray system – monoplane (for pacing and device implantation and radiology procedures).

All Cardiac images are archived via a central GE Centricity system, and there is



Above: During an EP procedure.

work toward developing a PACS Radiology work-station to enable the reviewing of any relevant diagnostic images.

The EP and ablating systems used in the labs are:

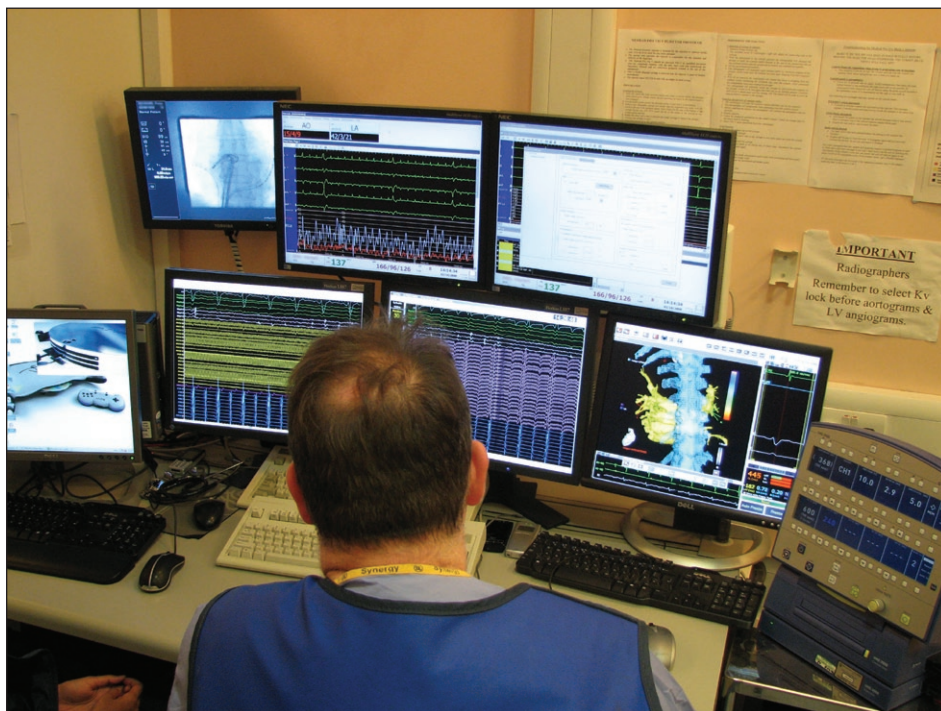
- Hansen EP robot system, integrated with Navx fusion – used for atrial fibrillation cases
- Biosense Webster Carto and St Jude Medical NavX Navigation Systems, which are anatomical 3-dimensional mapping systems capable of merging computerised tomography and magnetic resonance images
- Cryocath ablation technology
- Bard EP recording systems

### Training for new employees, cross training of staff, and continuing education programmes for staff:

New staff who join the team at Bart's receive a Trust induction course and mandatory training (annual manual handling, fire, health and safety etc.), as well as a departmental orientation programme.

The School of Nursing situated at Saint Bartholomew's and The Royal London Hospital is now amalgamated with City University, and offers staff access to professional development programmes, including diploma and degree level courses and pathways. Cardiac degree level courses at City (with funding largely provided to nursing staff who wish to pursue professional development) are available to nurses within the Cardiac Directorate, and every opportunity is taken to encourage nursing staff to maintain and improve their knowledge base. There is also a Clinical Teaching Nurse post-holder who is available to act as a preceptor, assessor and to facilitate learning opportunities.

Each discipline has its own departmental competencies, developed by senior members of the team and generally specific to a procedure - all multi-disciplinary junior staff members are trained by their lead clinicians, and are duly competency assessed. There are 'in-house' BLT run courses available to staff, which range from Knowledge



Above: Terry (Cardiac Physiologist) during an EP procedure.

Skills Framework awareness, managerial, and rhythm recognition courses, as well as short personal development programmes.

The nursing team has developed comprehensive competencies and standards addressing procedures and activities that range from acting as a circulating assistant, femoral sheath removal, to nurse administration of intravenous moderate sedation under verbal prescription – these competencies and standards are recognised by the Trust, and staff must be assessed and deemed competent before they are permitted to work without senior nurse supervision. To ensure objectivity, this assessment is carried out by at least two different senior members of staff, which also offers those being assessed the opportunity to pick a different perspective.

The Catheter Labs at Bart's have developed a competency for nursing assistants to develop their skills to permit them to act as the scrub assistant during PPM / ICD implantation and box reviews. This has proven to be a popular skill with both the medical team and with the nursing assistants, who have found this enhances

their job satisfaction. The competency and standard by which the nursing assistants are assessed requires that a qualified nurse must act as the circulating personnel and the nursing assistant is absolutely not permitted to administer any drugs.

### Challenges at Bart's and the EP centre:

New equipment requires staff training, which company specialists often provide. The introduction of new procedures requires updating departmental competencies, and is a challenge that falls under the responsibility of the Clinical Teaching Charge Nurse. These competencies act as a standard for clinical practice, and the format in which they are produced provides additional guidance for nurses about why and how procedures are performed. Additionally, the competencies explain potential complications and how these may be detected, prevented and/or treated.

We use a number of communication channels to make GPs and District General Hospitals within our catchment area aware of the services and clinics we have devel-



**Above:** Cameron (Cardiac Physiologist) during an EP procedure.

oped. Barts publishes information in its newsletter through its house magazine Link and its specialist publication for GPs entitled 'GP Link' which is available on the website at [www.bartsandthelondon.nhs.uk](http://www.bartsandthelondon.nhs.uk).

### **The challenge of late finishing times:**

AF ablation procedures are notoriously lengthy procedures, which place extra stresses upon staffing issues beyond the normal working day. Late finishes are generally covered by the on-call team, and there is an agreement with all staff that one lab must finish by 17.00, a second by 18.00 thus leaving the on-call team to complete the late finish. To address the potential of two labs running beyond 18.00, the Cath Lab manager introduced a system of working four long days to cover these late finishes, and to assist staff on the Anglo Day Ward. The 'long day shift' starts at 08.00-18.00, although there is a 09.00-19.00 to assist on the Day ward, it also allows staff a day off per week.

On-call differs for each discipline, but nurses cover from Thursday evening to the following Thursday morning, and the European Working Time Directive is adhered to. On rare occasions, such as staffing issues, time owing is taken within the next two weeks.

### **Policy for the company reps within the labs:**

There is a "Code of Conduct" all visit-

ing industry / company representatives or specialists subscribe to. This is to prevent confusion, address Health & Safety and security, and to demonstrate a high standard of respect and dignity toward patients. This Code of Conduct also requires company representatives to ensure they are 'booked' or scheduled to be in the lab for specific sessions. The Catheter Lab Manager ensures they have a record of those present.

### **Managing stock levels and implemented cost-cutting measures:**

Most of our stock is set on a negotiated price every 12 months following standard tender review processes to provide device consumables (e.g. EP equipment, ablation catheters, devices and electrodes etc.), which provides us with a substantial saving when purchasing large quantities of goods. We are conscious of tender processes and the binding nature of these, and also the need for stock control and cost effectiveness, therefore all cardiac consumable stock is maintained at a suitable level by the Catheter Lab Manager and Senior Chief / Chief Cardiac Physiologists.

### **Haemostasis management:**

The vast majority of EP cases require femoral venous access – those which require 'work' in the left atrium are usually undertaken via the femoral venous route with trans-septal punctures. Once the trans-septal puncture has commenced, a bolus of 5,000iu heparin is administered peripherally, with a second bolus of 5,000iu heparin administered once all electrodes / catheters are across the septum – an activated clotting time (ACT) is taken within 15 minutes, and then again every 30 minutes, with an ACT required to exceed 300 seconds, hence there are inevitably subsequent boluses administered to maintain this ACT. Femoral venous sheaths are capped, and secured using a bioclusive™ style dress-

ing. Sheaths are removed when the ACT is below 150 seconds, using manual digital pressure. Bleeding and bruising of the groin post femoral venous sheath removal is an acknowledged risk, and this is explained to patients carefully to enhance compliance with limb immobility, particularly in those patients who have received heparin during their procedures.

Patients who do not receive heparin have their femoral venous sheaths removed in the lab, with a minimum of two hours limb immobility. Femoral arterial punctures are exceptional, and usually sealed using the Angioseal™ device, or if there are circumstances where an Angioseal is not able to be used, manual digital pressure is applied in recovery, where there is readily available assistance in the event of emergency. Haematomas and bleeding issues are seldom reported to the lab staff as they occur so infrequently. The use of Femostop™ is prescribed in the event of ooze without uncontrolled haematoma.

### **The best part of working in our facility:**

Bart's is internationally recognised and highly regarded as a teaching hospital; this means the working environment is conducive to learning, with all members of the MDT participating in both teaching and learning. Barts encourages staff to develop multiple skills. Equally, the department works much more smoothly when each member of the team is aware of the role of others and is able to contribute to the workload.

The work and procedures performed are highly specialised, and the input of the team as a whole is greatly appreciated by all. At Barts, the staff work in a friendly and highly professional environment. Audit days are held regularly to allow members of the team to learn and reflect upon current practice. Support between disciplines makes life easier, and much of the equipment in the department is state of the art. There are research projects reaching completion, others being introduced or formulated, making the overall atmosphere exciting and stimulating.