

Case notes

PATIENT AND REFERRER MAGAZINE, SPRING 2014

RB&HH



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Delivering excellence in heart and lung care

Royal Brompton Hospital Sydney Street, London SW3 6NP

Tel: +44 (0)20 3131 6859 Fax: +44 (0)20 7351 8535

Harefield Hospital Hill End Road, Harefield UB9 6JH

Tel: +44 (0)20 3131 6858 Fax: +44 (0)1895 828 654

www.rbhh-specialistcare.co.uk



Welcome to our Spring 2014 issue

As the weather improves here in the UK, this edition features coverage on our work in overseas markets. The article on page 2 discusses the services we provide to overseas hospitals, whilst the article overleaf contains highlights from our attendance at 'Arab Health' a leading healthcare exhibition in Dubai.

Turn the page, and you will see an article on lung laser surgery and how this innovative technique saved the life of terminally-ill cancer patient, David Busby. Other clinical articles include: 'Interventional Endoscopy', 'Renal Denervation for Hypertension' and the 'Fine Art of Mitral Valve Repair'. Last but not least, read about the amazing progress a double bypass patient made following surgery at Harefield Hospital, under the care of Cardiac Surgeon, Mr Amrani.

We hope you enjoy reading our patient and referrer magazine.


David Shrimpton
 Private Patients' Managing Director



Improving the quality of international heart and lung care

Treating patients for over 160 years, Royal Brompton and Harefield Hospitals have established a worldwide reputation for delivering the very best heart and lung care available. This reputation has been built upon attracting and developing the most talented medical professionals, investing in the most advanced technology and participating in research programmes that lead the way in medical innovation.

As a consequence, our consultants have been responsible for several major medical breakthroughs, including performing the first heart and lung transplant, founding the largest centre for the treatment of cystic fibrosis, and discovering the genetic mutation responsible for dilated cardiomyopathy.

International development programmes

At Royal Brompton and Harefield Specialist Care, our vision is to provide pioneering treatment that is accessible to patients from across the world. As such, we run a range of programmes aimed at disseminating clinical knowledge for improved standards of care.

The **RB&HH Visiting Doctor Programme** sees our consultants

travel to overseas hospitals to work alongside local consultants, sharing expertise and training local teams. Upon occasion, we have been asked to source consultants to undertake **Emergency Visits** – usually to see VIP patients.

For those wishing to develop their expertise in certain interventional specialities, we offer **Intensive Training Fellowships** providing one-to-one mentoring, participation in clinical rounds and lectures; and the potential to assist with surgical procedures.

Conferences and seminars

RB&HH consultants travel far and wide to attend conferences and deliver lectures on their area of speciality, many of whom hold prominent positions on international boards, committees, institutions and professional associations. Please contact us to organise speaking engagements or bespoke lectures.

Overseas engagement

Since a large proportion of our patients come from overseas markets, our team of consultants and senior management executives regularly undertake visits to the Middle East, Europe and Asia to establish relationships with local hospitals,

government agencies and independent healthcare agents.

Bespoke services for international patients

RB&HH prides itself in providing personalised care for its patients, ensuring a comfortable stay and positive healthcare experience. Our dedicated concierge services provide practical support to patients and their families, paying particular attention to their cultural, religious and language needs. In particular, our overseas patients benefit from multi-faith facilities, interpretation services, diverse menu options and assistance with arranging transport, accommodation and medical appointments.

Second opinion service

RB&HH offers a remote second opinion service to overseas patients requiring second opinions from the leading experts in heart and lung disease. Our expert consultants will review the patient's medical reports and diagnostic tests, and provide their medical recommendation that can be shared with the patient's doctor.

For more information on this or any of the other services discussed, please contact **Linsee Richards** on privatepatients@rbht.nhs.uk



Arab Health 2014 in Dubai:

A post show review



Royal Brompton and Harefield Specialist Care recently teamed up with The Royal Marsden and Chelsea and Westminster hospitals to exhibit at Arab Health, the second largest healthcare exhibition in the world.

The show

Based in Dubai, Arab Health is an annual event that started 39 years ago. This year, the show attracted 3,900 exhibitors and 85,000 visitors from 153 countries. There were also 19 CME accredited conferences with 500 speakers and 9,000 conference delegates. It is estimated that each year 30,000 Emiratis travel abroad for treatment, and this demand is rising.

Our partnership

The three hospitals attended Arab Health as part of a new umbrella partnership called 'Chelsea Specialist Hospitals, London'. By collaborating on a number of clinical disciplines, our hospitals can combine specialist research, diagnosis and treatment with integrated care pathways for overseas patients – all in the heart of ever-popular Chelsea.

Seminars and simulations

As part of the show, RB&HH consultants held seminars on their pioneering work at Royal Brompton and Harefield hospitals. Mr Andre Simon, consultant cardiothoracic surgeon at Harefield Hospital

presented on 'End-Stage Heart and Lung Failure', and consultant cardiologist Dr Tom Wong, gave two talks on 'Best Practice techniques for Treating Atrial Fibrillation (AF).'

To support his seminars, Dr Wong performed a series of surgical simulations of 'left atrial appendage occlusion' using the Watchman device.

The WATCHMAN LAA Closure Technology, developed by Boston Scientific Inc., is a plug-shaped device designed to reduce the risk of stroke in AF patients – potentially eliminating the need for long-term Warfarin therapy. (For information on this ground-breaking technique, please refer to Tom Wong's article on page 9).

Summary

Our attendance at the show was a huge success, with visits to the stand by a number of dignitaries and a range of new potential collaborations in the pipeline. Watch this space for attendance at next year's event ...!

Dr Wong performing a surgical simulation of 'left atrial appendage occlusion', at the surgical simulation suite, on the ABHI stand.



A day in the life of Arabic Liaison Officers



Ahmed Kotb



Shimaa Ahmed

the medical terminology that is used during consultations, so that this information can be correctly relayed to the patient in a way that they can understand. You also need to have good communication skills to be able to liaise with health care professionals, patients and their sponsoring health offices. Finally, you need a high level of cultural awareness to be able to adapt the service to the patient's cultural needs.

Can you describe a typical 'day' in the life of an Arabic liaison officer at RB&HH?

Ahmed: We usually distribute the workload between us: Shimaa deals with the daily correspondence from the health offices, whilst I focus on addressing our inpatient and outpatient offices' interpretations needs, through regular visits to patients, and responding to requests from our health care professionals.

What attracted you to the role of Arabic Liaison Officer?

Shimaa: I was first attracted to the role of Arabic Liaison Officer due to the variety of duties it presented. Although we specialise in heart and lung care, each patient case is unique. Using my knowledge and experience, and working closely with clinicians and other support staff, I am able to adapt my approach to the needs of each and every patient.

Ahmed: Coming from a medical background (I trained as a doctor in Egypt), I felt that the role would provide me with the opportunity to work closely with health professionals, and learn more about different heart and lung specialities. My medical knowledge, coupled with my cultural background, enables me to interpret medical information to patients in a way that they understand, whilst attending to their religious and cultural needs.

What do you enjoy most about the role?

Shimaa: I gain a lot of fulfilment in

helping patients throughout their care journey and providing emotional and practical support to families. Coming from the same culture enables me to understand their needs and address any concerns that they may have.

What makes the service at Royal Brompton stand out from other international hospitals?

Ahmed: Royal Brompton and Harefield are world class hospitals for heart and lung diseases. They offer state-of-the-art treatment and use the latest technology to provide the very best health care to patients.

Shimaa: For me, our team of experienced and friendly staff is what makes us stand out. Our consultants are experts in their chosen speciality, travelling from across the world to work at our hospitals, whilst our support staff do everything they can to make the patient's stay as comfortable as possible.

What has been your proudest moment so far in the time that you have spent working at RB&HH?

Shimaa: The proudest moments throughout my time working at RB&HH have been when the patient and their family return home, healthy and happy, having made huge progress since their first visit to Royal Brompton and Harefield hospitals.

One memorable moment was when a family contacted me about the progress made by their baby daughter – a previous patient whose care I had overseen. When she first came to Royal Brompton with respiratory failure and admitted to PICU, she was dependent on mechanical ventilation, preventing her from eating and speaking. With my support and the care of the clinical staff, she was gradually weaned off ventilation, allowing for her to be discharged 4 months later. Since discharge, the one year old girl was able to take her first steps, and has since become a noisy, happy, healthy baby!

Lung laser surgery: life-saving treatment for secondary tumours



By Mr George Ladas, consultant thoracic surgeon and honorary senior lecturer at Imperial College

Royal Brompton Hospital opened its specialist 1318nm lung laser theatre in 2010, and continues to lead the way in this innovative field. The lung laser uses a special wavelength laser beam to remove tumours from patients' lungs, with minimal damage to neighbouring healthy lung tissue.

The lung laser can be used in properly selected patients for tumours of all kinds, including colonic cancers and sarcomas. The system enables surgeons to perform complicated lung surgery with great benefits for patients, by:

- targeting and removing individual tumours, significantly improving the patient's chances of survival.

Contrary to other methods like radio frequency ablation (RFA), the lung laser allows reliable, complete removal of multiple tumours in any location in the lung. Crucially, it also provides tumour specimens for histology.

- enabling the eradication of deep-seated and multiple tumours without the need to remove a major section of the lung, so preserving lung function and quality of life.
- removing multiple tumours faster,

therefore reducing the time that the patient spends under a general anaesthetic.

- removing tumours whilst at the same time sealing the surrounding lung tissue, minimising the risk of internal bleeding or air leak from the operated lung. As a result chest drains are removed very quickly and the hospital stay is dramatically shortened.

Mr George Ladas, senior consultant thoracic surgeon at the Royal Brompton Hospital, who has been leading the Lung Laser program from the outset explains: "Lung laser surgery has transformed the way we treat tumours. It allows us to significantly improve the quality of care we offer to our patients, as well as their quality of life after surgery."

Lung laser for secondary tumours

Lung cancer remains the most common cancer in the world with around 1.3 million new people diagnosed with it annually. In the UK, it is responsible for the most deaths due to cancer in both men and women.

Many of Mr Ladas's patients have developed secondary lung tumours after having primary cancer successfully treated somewhere else in the body previously, such as the bowel or kidney, or in muscles or bones and he has performed more than 700 metastasectomy operations in the last 20 years. If there is no disease elsewhere, they are candidates for the lung laser. Although the laser can be helpful on selected primary tumours, it is most commonly used on secondary lung tumours as surgery on the former usually requires removing a larger part of the lung in any case.

"When you deal with secondary tumours it is usual for a patient to have 5 or more in each lung. The task is to completely remove them all, while saving as much of the healthy lung as possible."

The 1318 nm lung laser makes the operation much quicker which means

patients are under general anaesthetic for about half the time it would take without it, and chest drains are removed much faster, usually within 1-2 days, with patients discharged sooner.

Mr Ladas has already performed more than 150 lung laser procedures, many of these in patients who were previously declared inoperable in the UK and abroad, with excellent results.

International recognition for lung laser results

Royal Brompton's leadership in lung laser surgery has led to considerable international recognition. In 2011, the team presented the excellent results from the first 45 lung laser operations performed to the Annual Meeting of Society of Cardiothoracic Surgeons of Great Britain and Ireland.

Later that year, Mr Ladas was invited to teach lung laser surgery at the Expert Course on Laser Applications in Lung Oncological Surgery at the University Hospital of Valencia, Spain.

More recently, Mr Ladas published his long term results on 82 lung metastasectomy operations for colorectal metastases. This particular cohort of patients was referred to Mr Ladas by consultants at Royal Marsden Hospital, where the patients were receiving their oncological care. There were no operative deaths, minimal morbidity, and the overall five year survival was 72% - amongst the best reported internationally.

More information on these long-term results can be found in the publication: "Peri-operative chemotherapy in the management of resectable colorectal cancer pulmonary metastases" Hawkes EA, Ladas G, Cunningham D, Nicholson AG, Wassilew K, Barbachano, Ratnayake G, Rao S, Chau I. BMC Cancer 2012, 12:326.

In December 2013, Mr Ladas presented his work on Pulmonary and Thoracic Metastasectomy and Combined Hepatic and Pulmonary Colorectal Metastases at the 12th Panhellenic Meeting of Surgical Oncology in Athens.

Lung laser surgery - A case study

A whole new lease of life!

Royal Brompton patient, Mr David Busby, 66 and a father of two, describes his journey:

I first went to the doctor in 2009, after I had experienced great difficulty in swallowing food and drink. My doctor prescribed me with medication and when he did not see improvement, referred me to an ENT specialist for further tests. I was then referred to my local hospital in Coventry with suspected cancer of the tongue, where they found a large tumour at the base of my tongue and secondary tumours in my neck, near my lymph glands.

The treatment I received for my cancer was very intensive. I had 35 sessions of radiotherapy and two rounds of strong chemotherapy. But the chemotherapy didn't work and after 3 months, I had to have surgery to remove the tumour from my throat. Well at last, I was able to get on with my life as best I could.

However, in May 2010, during a routine check-up, my oncologist found two secondary tumours in my lung. The consultant said that there was nothing he could do as surgical removal was too risky given their proximity to major veins. He provided me with a life expectancy of 6-12 months and referred me to a GP to organise my palliative care.

I was naturally shocked, particularly as I had not been feeling ill, but was determined to keep positive. I continued riding my mountain bike and concentrated on an active fitness regime. In October, my friend spotted an article in the Daily Mail, describing the new lung laser system and the work that Mr George Ladas had undertaken. He had successfully treated a number of patients with similar tumours to me. I contacted Mr Ladas and booked an appointment to see him that month.

I had a range of tests, including MRI,



David Busby in front of Buckingham Palace

CT scan and lung function, during which they detected a third tumour in my other lung. I was told that despite the tumours, my lungs were in very good condition, and there were no tumours elsewhere in my body. This, coupled with my high level of fitness, meant that I was a candidate for lung laser surgery.

I had two operations in November, one in each lung, to treat the tumours using the lung laser system. The operations were successful, with each hospital stay only lasting around five days.

Almost four years on, and I am completely free of cancer. I am very lucky that I found Mr Ladas - he's literally my hero. For two years, I was reliant on a feeding tube, and now I am able to eat again. I would, without a doubt, recommend Mr Ladas to other patients with secondary tumours. He is a highly skilled surgeon, eloquent but also very down to earth. The entire referral process was very well organised and the staff helpful and friendly. I now have a whole new lease of life!

CT scan pre-treatment. Two tumours visible in right lung



CT scan after lung laser removal of tumours in right lung with minimal loss of lung tissue, just before operating to clear tumour visible in left lung

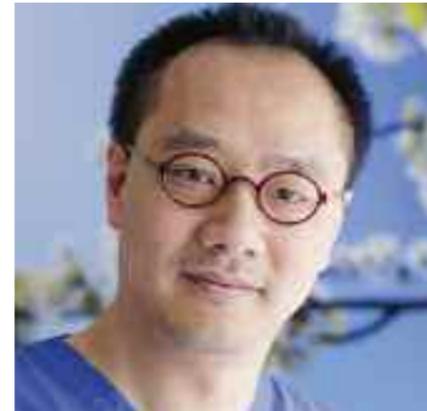


“Left atrial appendage occlusion devices have proven to be as effective as Warfarin in preventing stroke.”



The Watchman™ device

Left atrial appendage occlusion to prevent stroke in patients with arrhythmia



by Dr Tom Wong, consultant cardiologist at Royal Brompton

Atrial fibrillation is not only the most common form of cardiac arrhythmia, affecting approximately 2% of the general population, but also represents a leading cause of stroke. Blood clots can form in the left atrial appendage (LAA) as a result of stagnated circulation and blood pooling in a confined space – this can increase the risk of stroke five-fold.

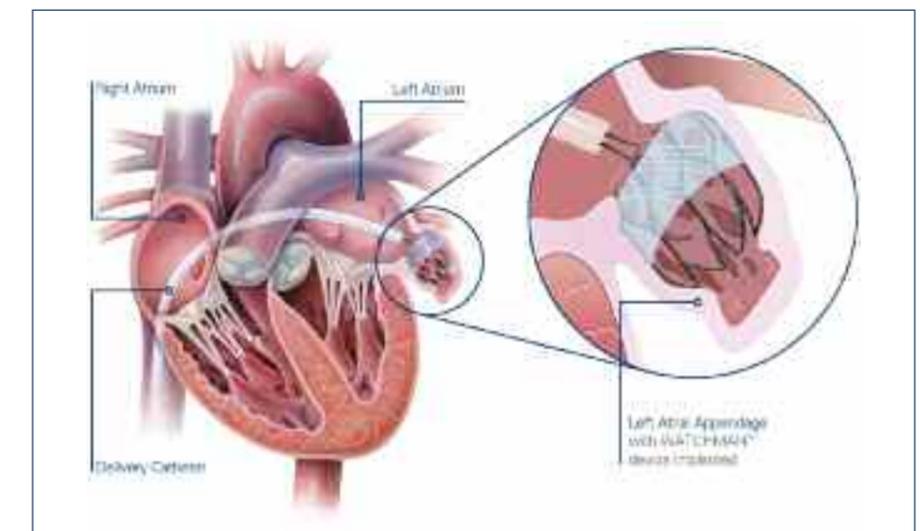
In previous years, the traditional strategy for stroke prevention in AF patients was to prescribe blood-thinning drugs such as warfarin. However, such drugs can cause serious internal bleeding – especially if used over long periods of time. To prevent internal bleeding and avoid the other adverse side effects of blood thinning drugs, a common approach has been to remove the LAA altogether – since this part of the heart is not required for effective heart function.

More recently, a number of devices have been developed to enable a targeted treatment in stroke prevention. Devices such as the ‘Watchman Device™’ are a plug-shaped device used to occlude the left

atrial appendage. The procedure can be performed using a catheter, which is entered through the vein at the top of the thigh. Once in position, the catheter can be withdrawn allowing the plug to expand and fill the LAA. Over the following six weeks, heart tissue will grow over the device, ensuring permanent occlusion of the LAA.

Royal Brompton & Harefield Hospitals were two of the first centres in the world to perform this novel procedure, and have since become the most experienced centres in the UK, training physicians from around Europe.

Dr Tom Wong, a consultant cardiologist at RB&HH, has been performing this procedure for the past four years. He comments: “After years of research, there is now robust evidence to support the benefit of LAA occluding devices in preventing stroke in atrial fibrillation patients. In fact, studies have demonstrated that such devices are just as effective as warfarin in preventing stroke. We recommend this procedure to AF patients deemed to be at high risk of stroke.”



Left Cardiac Sympathetic Denervation (LCSD)

For many years, denervation of the left cardiac sympathetic nerves has been successfully used to decrease the frequency of potentially lethal ventricular arrhythmias in Long QT syndrome; and evidence of this success continues to accumulate. More recently, LCSD has proved effective in other conditions such as catecholaminergic polymorphic ventricular tachycardia (CPVT) and may also be considered in hypertrophic cardiomyopathy or arrhythmogenic cardiomyopathy (where the patient is experiencing ongoing ventricular arrhythmia resistant to all other therapy).

In 2011, Royal Brompton consultant thoracic surgeon, Simon Jordan, in partnership with Jim Mcguigan, consultant thoracic surgeon at the

Royal Victoria, Belfast, started a programme of LCSD tackling the most difficult, unstable cases at Royal Brompton hospital. The technique has been adapted from the procedure employed for patients with hyperhidrosis and is performed thoracoscopically. The programme, supported by a multidisciplinary team including Royal Brompton consultant electrophysiologists Jan Till and Ferran Roses, treats both adults and children with excellent results.

A number of patients have been transformed by this approach in that they have received a greatly reduced number of shocks from their defibrillator and some have decreased the drugs they need to take on a daily basis.

The procedure has its greatest effect in children and adults born with Jervell and Lange-Neilsen syndrome and catecholaminergic polymorphic ventricular tachycardia. Both these syndromes can result in early childhood death and drugs are only partially effective. Defibrillators are inadequate and the patient is often left to live with recurrent shocks which can destroy their quality of life.

Royal Brompton and Harefield Hospitals are some of the few centres in the world that perform Left Cardiac Sympathetic Denervation (LCSD), and the only centres in the UK that offer this procedure for arrhythmia patients. The programme accepts patients from across the world, with one third of patients travelling from overseas to have this procedure.



Simon Jordan (centre), consultant thoracic surgeon at Royal Brompton

Interventional endoscopy at Harefield Hospital



By Dr Andrew Barlow, consultant in respiratory and allergy medicine at Harefield Hospital

Lung cancer remains one of the most common cancers and sadly accounts for more deaths in the UK than any other malignancy. For many years respiratory clinicians have endeavoured to identify suitable patients for curative surgery to decrease morbidity rates and improve quality of life. In the UK, approximately 10-15% of lung cancer cases are deemed eligible for radical (curative) treatment of some sort. Our aim is to accurately and quickly identify these patients so they can get on with their lives.

Endobronchial ultrasound (EBUS) and esophageal ultrasound (EUS) are common techniques used to assess the spread of cancer and the stage that it has reached. This helps determine whether or not patients are eligible for curative surgery, whilst at the same time reducing the number of futile thoractomies performed.

Dr Barlow initiated the Harefield EBUS service in January 2009, which now offers both EBUS and EUS-guided biopsy. These non-invasive procedures allow access to all the common sites to which lung cancers usually spread. Previously, patients required a surgical intervention called 'mediastinoscopy', but this involves a general anaesthetic and often requires a hospital stay of more than 24 hours.

The recently published ASTER trial demonstrated that EBUS and EUS techniques are just as effective at 'staging' the mediastinum as the previously used mediastinoscopy. As an EBUS bronchoscopist, of course I'm biased! EBUS/EUS can definitely reach the parts that mediastinoscopy can't reach (the 'Heineken effect'), leaving no scars and without the need for a full anaesthetic. An added benefit is that EBUS/EUS is a day-case procedure. EBUS and EUS are also establishing clinical roles in other disease areas including sarcoid and tuberculosis, and this list of clinical indications is likely to grow with the advent of new needle technology enabling mini-histology core biopsies.

As with all aspects of medicine, it's about patient preference and the combined skills of the clinician. There are times when a surgical approach is absolutely mandatory, but as a clinical centre of excellence, Harefield Hospital offers a full range of techniques to ensure patients have access to the very latest technology and can then make an informed choice. Furthermore, with a five year track record, Dr Barlow has built a substantial case series.

For more information please contact Dr Andrew Barlow, Lead Clinician for EBUS and EUS at Harefield Hospital. Call **020 3131 6858** or email: privatepatients@rbht.nhs.uk





Carcinoid Tumours - A case study

A successful outcome for mother and baby

31 year old Katherine Barrett had an episode of haemoptysis in May 2012 when she was 28 weeks pregnant. Over the previous five years, Katherine had experienced three or four episodes of small volume haemoptysis, coughing up around a teaspoon of blood on each occasion. A non-smoker, and otherwise fit and healthy, she sought advice for her most recent episode due to the fact she was pregnant.

Although Katherine had not suffered from symptoms such as breathlessness, chest pain or chest infection, a CT pulmonary angiogram (CTPA) was performed to rule out pulmonary emboli – a number of potentially fatal blockages in the blood vessels supplying blood to the lungs.

Fortunately, when the results came back, emboli were excluded. However, the scan did reveal a large tumour in the right upper lobe. Katherine subsequently underwent a bronchoscopy and biopsy, but the results were felt to be non-diagnostic. As such, her consultant advised her to have her baby delivered at 32 weeks so that the right lung lesion could be investigated and definitively treated, probably with a pneumonectomy.

Understandably, Mr and Mrs Barrett were both very worried and sought a second opinion. They came across Harefield Hospital when researching the condition online, and booked an appointment as a private patient with Ms Emma Beddow, Consultant Thoracic Surgeon.

Ms Beddow organised for a CT-guided biopsy of the lung mass which confirmed her suspicions of carcinoid tumour. She allowed Katherine to wait until she was full term to deliver her unborn baby, shortly after which

she performed lung sparing surgery in the form of a ‘right upper lobe sleeve resection’.

The surgery involved disconnecting the entire right lung, and removing the upper lobe containing the carcinoid tumour, along with part of the main airway to the right side. The remaining middle and lower lobes were then reconnected to the origin of the right main airway. Katherine made an excellent post-operative recovery and was discharged home five days following surgery. Surveillance 16 months post-operatively shows no evidence of recurrence of tumour and in fact Katherine is currently pregnant with her second child.

Speaking of her treatment, Katherine says: “Words cannot express how lucky I have been to benefit from the clinical expertise of Ms Beddow. Her calm and confident approach to my complex case was a great relief at an extremely stressful time. I am delighted with the outcome of my treatment. My reduced lung function has very minimal impact on my daily life, allowing me to enjoy raising a healthy little boy and return to part-time work.”

Ms Beddow said: “I was delighted to be able to help Katherine and her husband with decision-making and treatment at this very difficult time. A sensible approach helped this young lady to deliver her baby at full-term and undergo successful lung sparing surgery, an excellent outcome for all.”



Large tumour in upper lobe involving proximal left main bronchus



Emma Beddow, consultant thoracic surgeon at Harefield Hospital

Renal denervation, a novel therapy for hypertension



Therefore uncontrolled blood pressure has huge implications for this group of patients. This often silent condition is generally under diagnosed and is therefore by definition difficult to treat.

Renal denervation is a novel therapy that addresses hypertension very effectively. The kidneys have long been known to be a major contributing factor in high blood pressure, causing blood vessel stiffness and salt and water retention. Renal denervation is a technique in which energy is delivered to the nerve supply of the kidneys thus selectively “quietening” the nerve impulses and removing the stimulant for high blood pressure. A thin catheter is inserted into the blood vessels, usually via the groin, and directed to the renal arteries where radiofrequency or ultrasound energy is used to deaden the nerves. Both short term and longer term studies have shown a sustained significant reduction in blood pressure, decreasing the risk of heart attack and stroke.

Doctors Tito Kabir and Rob Smith launched the renal denervation

Dr Robert Smith, consultant interventional cardiologist

Hypertension, and in particular resistant hypertension, is a condition with multiple significant health implications. The World Health Organisation predicts that for every 2mm hg (mercury) of elevated blood pressure, the 10 year risk of heart attack and stroke are increased by 7 and 10 percent respectively. Uncontrolled hypertension has an important role in the development of diseases of the major blood vessels that come out of the heart.



Dr Tito Kabir, consultant cardiologist

programme at Harefield hospital. Armed with extensive experience of second generation denervation systems from both St Jude and Boston Scientific, they offer patients a robust screening service and multi disciplinary team approach to hypertension treatment. They fully expect this novel treatment modality to continue to develop and provide excellent results in appropriate patients.

Double Bypass Surgery - A case study

From bypass to competitive cycling: The ride of my life

By Robert Hobson, double bypass patient treated by cardiac surgeon, Mr Amrani, at Harefield Hospital:

It has been 11 months since I had my double bypass surgery, but I wanted to take this opportunity to thank all the staff at Harefield and to provide an update on the excellent progress I've made.

In short, I walked a kilometre the day I got out of hospital and within four weeks I was running 10km. By the end of week five, I was back out on my road bike and at week eight, I was skiing in the Alps!

As a seasoned cyclist, my goal was to re-gain my pre-surgery fitness and strength, so that I could enter 'Ride London-Surrey 100' - a cycling event that was to take place just 26 weeks after I left Harefield.

Under guidance from my consultant and support from my wonderful wife, I put in many hours of training in preparation for the event.

To celebrate London's Olympic legacy, the race started at the Olympic Park. The crowds were huge and the support along the whole route was very memorable. I had a

good ride and came in at 4 hours and 21 minutes - just 18 minutes behind the winner (who was an ex-professional and previous World Champion).

Out of 16,500 riders, I came in 225th - I was happy with that!

I hope my story is testament that there can be light at the end of the tunnel. I proved that with hard work, dedication and most importantly the care and expertise of the staff at Harefield, it was possible to get my pre-surgery life back.



Rise of the 'Redo': A challenging but routine practice

Despite interventional advances for treating congenital and acquired heart disease, the number of patients requiring re-operation using a repeat sternotomy continues to rise. A 'Redo sternotomy' involves making an incision through existing scar tissue in the chest to separate the sternum (chest bone) and allow access to the heart.

There are a number of reasons that contribute to a rise in redo sternotomies, including overall longevity, as well as a rise in survival rates following cardiac surgery. Other explanatory factors include: the expanding adult population requiring palliation (pain relieving procedures) for complex congenital malformations, the persistence of progressive coronary artery disease, and the ongoing fallibility of bioprosthetic valves.

The risks of Redo

Cardiac reoperations involving resternotomy are technically challenging and have the potential for significant injury when compared to a primary operation. The particular problems are well recognised and include difficulty with access to the heart (due to adhesions, scarring, fibrosis or calcification around the operative site) making dissection and suture placement difficult. This also causes prolonged operation times and increased mortality and morbidity, post operation.

In the UK, redo cardiac surgery accounts for approximately 5% of the surgical workload. The crude mortality rate for redo coronary artery surgery between 1996 and 1999 was 7.4% - compared to 2.5% for first time operations.

Yet, to date, current surgical practices have failed to embrace a universal paradigm for mitigating these risks and the surgeon's surgical experience continue to represent one of the most

important factors affecting a patient's outcome in reoperation.

Our consultant's experience: Mr Mohammed Amrani

In the section below, we present findings from the vast experience of Harefield Cardiac Surgeon, Mr. Mohammed Amrani, in redo cardiac surgery undertaken at Harefield Hospital.

From 2001 to 2013, a total 248 re-operations requiring re-sternotomy were performed. The number of procedures per year increased over the time and as well as the overall surgical risk (expected mortality according to the EuroSCORE) - see Figure 1.

With regards to the original operation undertaken, in 47% of cases, the original operation was isolated valve surgery and in 41% of cases it was coronary artery bypass graft (CABG). The types of re-sternotomy procedure performed are illustrated in Figure 2. Redo coronary artery bypass grafting and redo aortic valve replacement (AVR) were the procedures most frequently performed (77 and 73 cases respectively), whilst 25 patients underwent aortic root replacement.

A total of 17 patients underwent redo

AVR in the context of patent internal mammary artery to left anterior descending artery graft. Looking at the operative results, hospital mortality gradually improved despite the increasing risk profile of the patients referred to surgery over the years. Looking at the result of redo AVR (see Figure 3), the observed mortality in the earlier experience was perfectly comparable to the predicted risk. However, in later experience, the observed 'in hospital' mortality was incredibly lower (0% to 3.8%) than the predicted mortality rate (18% to 20%), achieving an overall risk comparable to that observed in first time AVR.

Excellent results were also observed for redo CABG with an overall hospital mortality of 2.6% despite an expected mortality rate of 8.3%. Of note, this result is largely better than operative mortality reported from UK registries (7.4%) for redo CABG.

In conclusion, despite the increasing overall risk profile in patients referred for reoperation, re-sternotomy can be performed with excellent results. The surgeon's experience represents the single most important contributing factor in performing a safe and effective re-sternotomy.

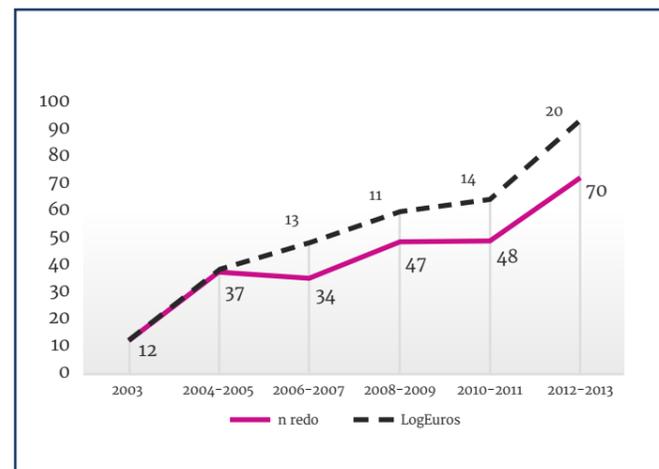


Figure 1: Number of redo-sternotomy performed per year (red, dashed) and relative overall risk profile (grey, dotted)

Figure 2: Redo-sternotomy procedures performed

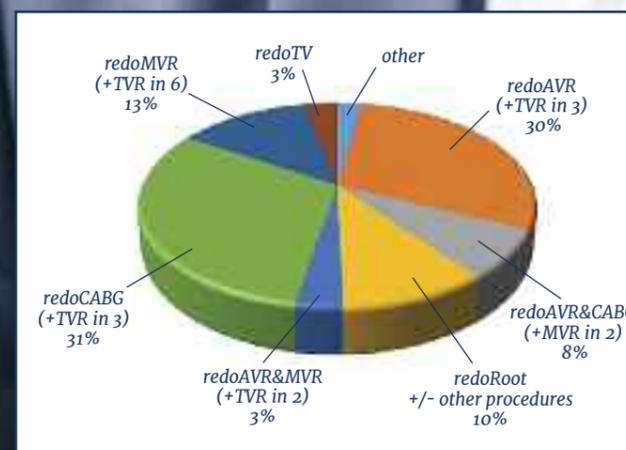


Figure 3: Trends in operative expected (red) and observed (blue) operative mortality in redo aortic valve replacement

Mr Mohamed Amrani,
consultant cardiac and
transplant surgeon at
Harefield Hospital



RB&HH Specialist Care team update

The Royal Brompton & Harefield private patients' team welcomes the following new additions:

- Dr Hans Brendan Lehmkühl, Consultant Cardiologist in Transplant Medicine and Circulatory Support at Harefield Hospital
- Prof. Amulya K. Saxena, General Paediatric Surgeon at Royal Brompton Hospital
- Dr Julian Jarman, Consultant Cardiologist & Electrophysiologist at both Royal Brompton and Harefield Hospitals
- Johanna Gudmundsson, Staff Nurse at the Private Consulting Rooms, Royal Brompton Hospital
- Ben Lincoln, Customer Service Officer in the Private Patients Administration Office

New consultant profile: Dr Julian Jarman



Dr Julian Jarman, consultant cardiologist and electrophysiologist

Dr Jarman is a Consultant Cardiologist & Electrophysiologist specialising in atrial fibrillation and other arrhythmias. Based at the Royal Brompton Hospital, he performs complex ablation and device implantation procedures at both the Royal Brompton and Harefield Hospitals.

In the outpatients clinic he sees patients suffering from palpitations and dizzy spells, as well as performing stroke risk assessments, and managing general cardiology patients with chest pain and breathlessness. His special interest is in atrial fibrillation, including investigation with injectable loop recorders and treatment with catheter ablation. He also sees patients with all types of fast and slow heart rhythm disturbances, as well as those with heart failure requiring implantable device therapy. In the catheter laboratory he specialises in complex ablation therapy for arrhythmias using the latest technologies, and implantation of pacemakers, defibrillators and biventricular cardiac resynchronisation therapy.

Academic background

Dr Jarman trained at Cambridge University, St Mary's Hospital at Imperial College London, and Harvard Medical School, Boston, USA. He undertook further fellowship training in interventional arrhythmia at several leading London teaching hospitals. During his post-graduate doctorate of medicine at the National Heart & Lung Institute he developed novel techniques for ablation of atrial

fibrillation. He was a winner or finalist of multiple prizes, including the Imperial College Innovator of the Year, British Cardiovascular Society Young Investigator of the Year and Young Trainee of the Year. He also won the Royal Society of Medicine's President's Medal, and European Cardiac Arrhythmia Society's Lucienne Dreyfus Award.

He is currently Honorary Clinical Senior Lecturer in Clinical Cardiology at the National Heart & Lung Institute, Imperial College London, and regularly teaches advanced interventional techniques to visiting foreign fellows and consultants. Particular active research interests include understanding the factors determining the outcome of AF ablation, and assessing the latest interventional technologies such as contact force sensing catheters to improve the safety of ablation, and totally subcutaneous defibrillators.

How to make an appointment

If you would like to make an appointment or discuss potential treatment, please contact Dr Jarman's PA on **020 3131 6859** or email: **j.farley@rbht.nhs.uk**

A full profile is available at **www.rbhh-specialistcare.co.uk**

EndoAcab – endoscopic atraumatic coronary artery bypass graft (CABG) A modern minimally invasive approach



by Mr Tony de Souza, consultant cardiac surgeon, Chair of Revascularisation, Royal Brompton Hospital

The first robotic minimally invasive CABG in the UK was performed at the Royal Brompton Hospital in 2000. Over 300 have since been performed on single and multiple vessel coronary disease.

Coronary artery disease is the most commonly acquired heart disease. CABG, the main form of treatment for this disease, involves a median sternotomy (a vertical incision dividing the breastbone) to gain access to the heart which requires a

Richard Trimlett and Tony de Souza with Aesop (voice controlled robotic arm)



three month period of recovery until strength is restored. The EndoAcab procedure avoids this division of the sternum.

What is EndoAcab?

EndoAcab is a minimally invasive approach to coronary artery bypass, avoiding a large incision or division of the sternum, using advanced endoscopic techniques. The procedure involves using a voice control robotic hand telescope to harvest the internal mammary artery from the chest wall through three 5mm holes. A small incision is then made between the ribs and, without any spreading, the bypass is performed to the Left Anterior Descending artery – the main artery supplying the heart. This procedure is performed off pump without the need to stop the heart or use a heart lung machine (cardiopulmonary bypass). Patients experience less pain, minimal scarring and faster recovery times.

Who would benefit from an EndoAcab?

Anyone who has been recommended for a CABG could be considered for an EndoAcab. For patients with just LAD disease, the EndoAcab procedure may be all they require. However, if the patient has multiple narrowings in many arteries, the hybrid procedure (below) may be a more appropriate form of treatment.

The hybrid procedure

The 'hybrid' procedure draws together the benefits of both techniques – EndoAcab and Stenting of the coronary artery – allowing for the most proven treatment of a LIMA to LAD bypass and drug eluting stents of the remaining less important arteries. This is performed at the same hospital stay.



A modern-day incision scar following EndoAcab surgery

The advantages of EndoAcab

In a review of our patients when compared to conventional CABG with sternotomy, the EndoAcab group was ventilated for a shorter time, bled less and stayed a shorter time in hospital. In addition, patients were resuming normal activity quicker with more returning to employment.

Leading consultant cardiac surgeons, Mr Tony De Souza, Mr Richard Trimlett and Ms Rashmi Yadav, perform CABG procedures using Endo Acab at Royal Brompton Hospital. For further information: **e.rasool@rbht.nhs.uk** or call: **+44 (0)20 3131 6859**

Post-operative angiogram demonstrating a good run of EndoAcab LIMA to LAD graft



The fine art of mitral valve repair



Mr Toufan Bahrami, consultant cardiac and transplant surgeon

Mr Toufan Bahrami began working as a consultant in the NHS in 2002 and was appointed to a substantive post at Harefield Hospital in November 2006. Earlier in the same year, *Heart*, the journal of the British Cardiovascular Society, had run an article on the state of mitral valve surgery in the UK, entitled, "Mitral Repair Best Practice: Proposed Standards" in which they suggested that the UK was somewhat lagging behind in mitral valve repair rates. Furthermore, four years later in 2010, the same journal featured an editorial by two well-known American-based surgeons, who implied that the UK's cardiothoracic surgeons were letting patients down by failing to achieve consistently high rates of mitral valve repair. With his impeccable pedigree of training in Paris under Alain Carpentier, the "father" of mitral valve repair surgery, and subsequent work with Professors Sir Magdi Yacoub and Gilles Dreyfus, Mr Bahrami was determined that Harefield's patients should not fall victim to what the article's authors referred to as the UK's "lottery of mitral valve repair".

Nearly four years on, analysis of his surgical data for 2013 shows that in

the first half of the year, Mr Bahrami achieved a repair rate of 100% for first-time mitral surgery for degenerative mitral regurgitation in patients under 75 years of age – significantly higher than the 90% standard required by the Pan-London Surgical Network.

Mr Bahrami explains, "Twenty years ago, when mitral repair surgery was in its infancy, GPs and cardiologists were understandably reluctant to refer patients who were relatively well because there was a high chance that the patient would end up with a failed repair, or mitral valve replacement, with all the subsequent risks, in particular the risk of thromboembolic stroke.

As time went on, research findings have increasingly made it clear that the mitral valve is intimately related to the pumping chamber of the heart, the left ventricle, and that when the native valve and its attachments, the "subvalvular apparatus" is removed, contractile function of the left ventricle deteriorates.

On the other hand, it was also recognised that if the leaking mitral valve is left alone – a strategy commonly termed "watch and wait" – until the heart begins to enlarge and the patient develops symptoms, then even with successful repair surgery, there is no guarantee of complete recovery of cardiac function and hence restoration of normal life expectancy. In other words, if the patient is not referred for surgery early enough, permanent damage to the heart can result".

The timing of referral of minimally-symptomatic or even asymptomatic patients with severe MR to surgical centres is still the subject of considerable debate. However, there is no doubt that it is of prime importance that the surgeon should be able to achieve a successful, durable repair of the mitral valve with a low mortality rate of <1%. American Heart Association guidelines updated in 2008 support mitral repair in asymptomatic patients with normal left ventricular

ejection fraction if there is a very high likelihood of valve repair.

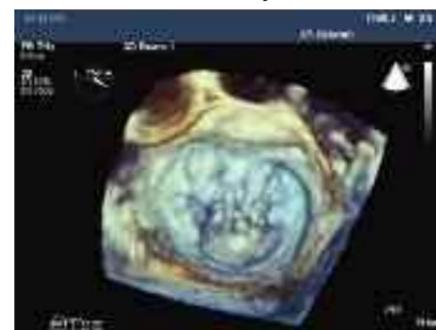
New mitral repair techniques

The heterogeneous aetiology of mitral valve disease means that the specialist mitral surgeon must have at his disposal a considerable armamentarium of repair techniques in order to achieve the highest possible success rates. The traditional approach to repair of the degenerative mitral valve, as described by Carpentier, often involves removal of excess/redundant tissue from the posterior leaflet by quadrangular resection, remodelling of the annulus (sliding plasty) and reinforcement of the annulus with a ring.

Although Mr Bahrami regularly performs this type of surgery with excellent results, he is particularly known for his innovative and even creative approach to mitral repair. As he explains, "Where many good surgeons run into problems, it is because they have only mastered one technique and of course, this does not suit all mitral valves – there is no "one size fits all". He details the variety of techniques he has at his disposal, including the more limited triangular resection, when there is less redundant tissue, and techniques to extend leaflets with pericardial patching, thus increasing their length and flexibility.

Repairs which involve the subvalvular apparatus (the chordae and papillary muscles) present a unique challenge to the mitral surgeon, and over the past two decades, a number of new techniques have emerged including

3D Reconstruction of the mitral valve



the use of GoreTex™ neochordae. In addition to offering this technique routinely, Mr Bahrami also uses the patient's own secondary chordae and "transfers" them to replace ruptured primary chords supporting the edges of the mitral leaflets. This has two benefits: the first is to allow preservation of the native posterior leaflet, which then retains a greater degree of flexibility compared with the more rigid leaflet after resection, and it also reduces the burden of artificial material in the heart which may, in the longer term, reduce the risk of infection although this has yet to be validated.

Mitral regurgitation in patients with Ischaemic heart disease

Damage to the heart as a result of myocardial infarction is a common cause of mitral regurgitation, due to a combination of regional wall motion abnormality, left ventricular dilatation and impaired papillary muscle function. The posterior mitral leaflet is often held down into the ventricle or "restricted". Traditionally, moderate-to-severe MR due to ischaemic damage has

been treated at the time of revascularisation with mitral ring annuloplasty, which has variable results or, if necessary, mitral replacement. Mr Bahrami has developed a new technique of posterior leaflet application which effectively moves the restricted posterior leaflet forward to achieve better coaptation with the anterior leaflet. Results have thus far been extremely encouraging.

Rheumatic mitral valve disease

Repair of the rheumatic mitral valve is not always possible, due to the extensive post-inflammatory changes which often involve not only the leaflet but also the subvalvular apparatus. The current trend is towards attempting repair in valves with more flexible leaflets, because even a few additional years with the native valve in-situ can reduce the patient's risk of infection and thromboembolism. At Harefield, a detailed preoperative assessment with stress echo and 3-dimensional transoesophageal imaging allows the mitral team to carefully select those patients whose rheumatic valves are suitable for repair.

Minimal access mitral surgery

Mr Bahrami currently uses the thoracoscope regularly to assist him when performing mitral surgery. He has extensive experience with endoscopic techniques and is one of the Trust's two recognised endoscopic experts in the cardiothoracic surgical team. In 2006, he introduced the technique of endoscopic vein harvesting for coronary artery bypass grafting (CABG) and has performed a total of 500 of these procedures, leading to a significant fall in wound infection rates and reduced recovery times. Mr Bahrami is convinced that mitral repair will be increasingly performed using thoracoscopic techniques, and with his considerable experience in this field, he is perfectly placed to develop the technique at Harefield.

He explains, "The trend across the developed world is for cardiac surgery to be performed via minimal access techniques; the patients prefer it because the wound healing and recovery time can be significantly

(continued overleaf)

The fine art of mitral valve repair

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reduced if we do not open the chest completely.”

However, tempering his enthusiasm with caution, he goes on to say, “The endoscopic or minimal access techniques will never be suitable for every patient – we have to weigh the advantages to the patient in terms of rapid recovery time and reduced scarring against the potential disadvantage to the surgeon of operating with a reduced field of view and less direct access to the valve – if the repair is likely to be complicated, I would still advise at the present time that the best result is likely to be achieved with open surgery. This will change with time, technological improvements and also increased experience.”

He emphasises again the role of imaging in the preoperative assessment in order to aid in selecting the patients whose valves would be suitable for minimal access repair techniques.

Mitral repair with concomitant surgical AF ablation

Atrial fibrillation is extremely common in the UK population and the incidence and prevalence increase significantly with each decade of life. The arrhythmia is characterised by a persistently irregular heartbeat and also periods of very fast or slow heart rates which can produce unpleasant, debilitating symptoms, particularly fatigue and shortness of breath, along with palpitation. AF also increases the risk of stroke, due to the formation of thrombus (blood clot) in the atria or their appendages and the majority of patients take warfarin with all its inconveniences, including increased risk of major as well as minor bleeding.

In patients with severe MR, almost 20% will be in AF after five years and almost 50% at 10 years³ (JACC REF 2002 Grigioni). In the case of rheumatic mitral valve disease the association is even stronger. For these patients, Mr Bahrami offers a combined mitral repair plus complex AF ablation. The success rates with this technique are 80% at five years.

Concomitant tricuspid valve repair

There is evidence to suggest that the tricuspid valve should be repaired with a ring annuloplasty at the time of mitral surgery if the annulus exceeds 40mm in diameter. This has been shown to reduce postoperative and long-term problems and to increase the chances of maintaining normal right ventricular function. Mr Bahrami typically performs tricuspid repair in at least 80% of his patients who undergo mitral surgery.

The art of mitral repair

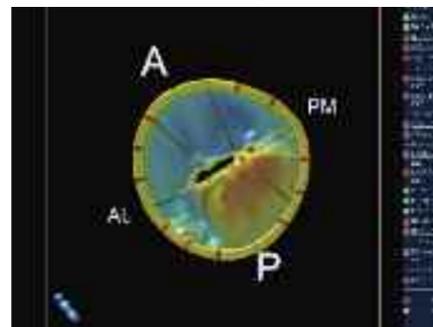
Mr Bahrami credits his superb mentors with helping him to develop his fascination with the mitral valve and his uniquely creative perspective on surgical repair...” I see myself as an artist, in a way,” he told us. “Every patient’s mitral valve is unique, although there will of course be similarities in cases. No two surgeons will approach a valve in exactly the same way”. He goes on to say, “If you were to ask ten different artists to draw the same object, you would find that you ended up with ten very different pictures and although each would have its merits, some might look more realistic than others.”

He also draws attention to the role excellent team working plays in helping to achieve his enviable success rates, “They say a team is only as strong as it’s weakest link”, he says, “But here at Harefield we

don’t really have any weak links in our chain. In 2011 we set up a subspecialist mitral team consisting of two surgeons, two cardiologists with an interest in imaging and two interventional cardiologists. We meet at the start of every week for at least an hour, to go through the cases in great detail, make decisions about the need for and timing of surgery and to talk through the likely technical aspects and challenges of the procedures.” He goes on to explain, “In particular, I depend on our two imaging cardiologists, Drs Rahman Haley and Baltabaeva, who have extensive backgrounds in the assessment of surgical valve disease by imaging techniques, especially 3-dimensional TOE and bicycle stress echo. The team here produce images of superb quality, which combined with their clinical interpretation and assessment of the patient, allows me to plan the operation down to the last technical detail.”

If mitral repair in the UK has indeed been a lottery over the past few decades, then there is no doubt that Mr Bahrami and his team are working to ensure that Harefield’s patients win the jackpot every time!

Bi-dimensional reconstruction of the mitral valve



1 Bridgewater B, Hooper T, Munsch C et al. Mitral repair Best Practice: Proposed Standards. Heart 2006; 92 (7): 939-44
 2 Anyanwu AC, Bridgewater B, Adams DH The Lottery of Mitral Valve Repair Heart 2010;96(24): 1964-7
 3 Grigioni F et al Atrial fibrillation complicating the course of degenerative mitral regurgitation Determinants and long-term outcome J Am Coll Cardiol. 2002;40(1):84-92.

Contact details for the specialist care team



Mr David Shrimpton
 Managing Director
 E. D.Shrimpton@rbht.nhs.uk



Ms Lindsey Condron
 Operations Manager
 E. L.Condron@rbht.nhs.uk



Ms Jayne Cramp
 Marketing Manager
 E. J.Cramp@rbht.nhs.uk



Mrs Linsee Richards
 Business Development Manager
 E. L.Richards@rbht.nhs.uk



Ms Gail Lyons
 Customer Service Manager
 E. G.Lyons@rbht.nhs.uk



Mr Ahmed Kotb
 Arabic Liaison Officer
 E. A.Kotb@rbht.nhs.uk



Ms Shimaa Ahmed
 Arabic Liaison Officer
 E. S.Ahmed2@rbht.nhs.uk



Mrs Mary Michael
 Greek Liaison Officer
 E. M.Michael@rbht.nhs.uk

Contact us on:

020 3131 6859 (Royal Brompton Hospital)
 or 020 3131 6858 (Harefield Hospital)

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