

Winston Churchill Memorial Trust Travelling Fellowship

Nov - Dec 2012

**Balancing service provision:  
research and best practice in  
healthcare**

**Mr Nima Heidari**, MBBS, MRCS(Eng), MSc, FRCS(Tr&Orth)

Consultant Foot & Ankle and Limb Reconstruction Surgeon

St Bartholomew's and Royal London Hospital

Queen Mary, University of London

*Churchill Fellow 2012*

## **Content**

1. Aims and Objectives
2. Itinerary
3. The visits
  - i. Prof Stuart Gold - Harbor UCLA Medical Center*
  - ii. Prof Charles Saltzman – University of Utah Orthopaedic Center*
  - iii. Dr Bassam Masri – University of British Columbia, Dept of Adult Reconstruction*
  - iv. Prof Javad Parvizi – The Rothman Institute*
  - v. Dr Robert Rozbruch – Hospital for Special Surgery*
4. Conclusions and Recommendations
5. Acknowledgements

## **1. Aims and Objectives**

Musculoskeletal diseases & trauma affect hundreds of millions of people. In England and Wales 1.75 million people are affected by arthritis. This has a profound impact on the quality of life for sufferers. The economic burden of these conditions accounts for upto 2.5% of our gross national product. This requires a pragmatic approach to generating funding from a variety of sources for research whilst maintaining integrity and providing the best patient care in the current economic climate.

In these austere times and with the ongoing reorganisation of the NHS, resources are scarce and their efficient use is of utmost importance. Many world renowned institutions produce the best scientific research and provide world class care. I am interested in understanding the infrastructure that allows this. I embarked on my fellowship with the aim to return with the knowledge of how to best combine clinical and basic science research with the provision of the best care for orthopaedic and trauma patients.

With this in mind I planned to visit several centres of excellence in North America both public and private institutions to learn from their approach and infrastructure as well as making contacts that will make will pave the way for future collaborative work.

This knowledge and experience will be invaluable in guiding me as I embark on my consultant career in Orthopaedic and Trauma Surgery and will be an asset to the Royal London Hospital and the local community that I will serve.

## 2. Itinerary

Surgeons Visited	Institution	Travel Dates
<b>Prof Stuart Gold</b>	Harbor UCLA Medical Center <i>Long Beach, California</i>	5 <sup>th</sup> - 9 <sup>th</sup> Nov 2012
<b>Prof Charles Saltzman</b>	University of Utah Orthopaedic Center <i>Saltlake City, Utah</i>	12 <sup>th</sup> - 16 <sup>th</sup> Nov 2012
<b>Dr Bassam Masri</b>	University of British Columbia, Dept of Adult Reconstruction <i>Vancouver, British Columbia</i>	19 <sup>th</sup> - 23 <sup>rd</sup> Nov 2012
<b>Prof Javad Parvizi</b>	The Rothman Institute <i>Philadelphia, Pennsylvania</i>	26 <sup>th</sup> - 30 <sup>th</sup> Nov 2012
<b>Dr Robert Rozbruch</b>	Hospital for Special Surgery <i>Manhattan, New York</i>	10 <sup>th</sup> - 14 <sup>th</sup> Dec 2012

### **3. The visits:**

#### *i. Prof Stuart Gold - Harbor-UCLA Medical Center*

My fellowship started in Long Beach, California where I had arranged to spend a few days with Prof Gold. I stayed at the Queen Mary, a famously haunted ocean liner moored at Long Beach. She was built in Clydebank, Scotland in 1936 and was considered the grandest ocean liner of its time. It was put up for sale and bought by the City of Long Beach, CA in 1967 and transformed to a floating hotel by 1971. It has a fantastic restaurant on board (Sir Winston) aptly named after Sir Winston Churchill.

Harbor-UCLA Medical Center is a publically owned teaching hospital in Long Beach. It serves as the Level I Trauma Centre for the South Bay area and has a long history of innovations in the field of trauma. The main two categories of high energy trauma dealt with at this centre are industrial accidents from the docks nearby and gunshot injuries.

Prof Gold graduated from Medical School in Montreal, Canada and then moved to California and has been at the Harbor since. His practice is mainly Limb Reconstruction and arthroplasty for the post-traumatic hip and knee arthritis. He set up the Masters Fracture Forum (MFF) with colleagues some 13 years ago in the US and has been running it in the UK for the past 6 years. This grew out of the need for surgeons treating complex trauma patients to discuss these cases with each other and learn from others' experience. He does not get involved in a lot of research as he finds the patients he treats do not fall into neat categories that allow for trials and randomised studies. In fact the MFF has allowed for much better communication between practitioners in Limb Reconstruction. The MFF is funded by industry, particularly Smith & Nephew. This has grown out of close collaboration between industry and clinicians to spread best practice in treatment of complex limb injuries.

I spent a typical day with Prof Gold: At 6:40 am I was met by Dr Gold and we attended the morning meeting where the week's trauma cases are reviewed and the residents grilled by the attendings. They made a special effort to present their cases in detail and involve me in the discussions. The department had been inundated with trauma over the past 3 - 4 weeks and this necessitated cancellation of elective cases during this time.

They presented 3 teenage patients admitted with gunshot wounds with the last one having been admitted half an hour prior to the morning meeting. A 15 year old male shot through the left buttock. The bullet had traversed his pelvis going through his rectum, causing a subtrochanteric fracture of the right femur. They also have their fair share of high energy RTC and industrial accidents from the docks in California.

At 9am we went to Prof Gold's RFB (real f\*\*\*\*\* bad) clinic where the complex limb reconstruction and salvage patients come to see him. The clinic is run with 4 Physician's Assistants. They are essentially specialist nurse practitioners that review the patients and present them to Prof Gold for final management decisions to be taken. There were several complex limb recon patients that Prof Gold had very kindly brought to this particular clinic for me to see.

In the afternoon we went to the operating theatres where I observed a tibial plateau fracture being fixed and the young man with the gunshot wound and femoral fracture being treated.

Dr Gold invited me to his house in the evening for dinner with his family. It was a real pleasure to meet the family and have the opportunity to chat with Prof Gold's wife and his PA in the private sector. We had some great food cooked by Prof Gold and he gave me a copy of his book "The Patient's Guide to Orthopedic Surgery". This stemmed from his personal experience in Limb Reconstruction. Level of patient understanding and expectation is directly correlated to their outcome and in this short book he tries to give patients the relevant information to be able to ask the right questions and make an informed decision. He has an often frequented and very well setup website:

<http://www.orthopedicsurgerybook.com/>

The residents had very high praise for the programme run at Harbor. The main reason for this is the absence of fellows in the department allowing the residents to gain a lot more hands on experience.

ii. *Prof Charles Saltzman – University of Utah Orthopaedic Center*

University of Utah Orthopaedic Center in Saltlake City is a public hospital.

Prof Saltzman is one of the foremost Foot and Ankle Specialist in the US and very highly regarded across the world. He trained in Iowa and came to the University of Utah Orthopaedic Center as the department chief 12 years ago. He was very welcoming and very open in responding to my questions and queries about the set up of his department. He has successfully improved the clinical and research output of his department to rival any world class centres.

He introduced me to one of the rising stars of his department Dr E Kubiak. He is a trauma specialist and has developed an impressive research portfolio over the past 3 years.

The following are reports of two particular days I spent with Prof Saltzman where I attended their regular departmental audit meeting (QA).

I attended the Quality Assurance (QA) meeting held weekly at the University Hospital. The complications are presented by the fellows or residents in a standard format: History, Peri-Op, Complication, Literature, and Discussion. Once the case had been presented over a 5 minute period the faculty then made comments. Dr Saltzman as the chief of the department makes this a mandatory event and if the faculty do not turn up they can have their pay docked or even be sacked.

### **Research at UUOS**

I spent the day with Dr Saltzman in clinic. His practice is mainly complex foot and ankle tertiary referrals. He has his fellow, a resident and a PA in clinic who see the pts prior to him and present findings and he provides the final management plan.

I met Ami Stuart. She is a research coordinator for Erik Kubiak. She showed me the NIH website (<https://www.assessmentcenter.net/>). Assessment Center<sup>SM</sup> is a free, online research management tool. It enables researchers to create study-specific websites for capturing participant data securely. Studies can include measures within the Assessment Center library as well as custom instruments created or entered by the researcher. PROMIS instruments (short forms, CATs, profiles) are a central feature of the instrument library within Assessment Center. Any PROMIS measure can be downloaded for administration on paper or be included in an online study. Detailed statistical information and development history about PROMIS items and instruments is available for review.

Assessment Center enables customization of items or instruments (e.g., format, randomization, skip patterns), real-time scoring of CATs, storage of protected health information in a separate, secure database, automated accrual reports, real-time data export, graphing of individual CAT or Profile scores, and ability to capture endorsement of online consent forms among many other features.

One of the current issues is the need for validating the CATs. Their analysis also requires some complex statistics and this skill is not readily available! The Main person who deals with this in UUOS is Dr Man Hung ([Psychometrician](#)).

### **Faculty Meeting**

In the evening I was invited to the departmental faculty meeting. At this business meeting the departmental strategy and finances are discussed. Dr Saltzman as the Chief controls the purse string of the department. He decides the pay of each of his attending and he has the power to hire and fire. Each new attending starts on a salary of approx \$300,000 per annum. There are other benefits such as health insurance and also a \$100,000 once off research fund that is set aside for each attending to spend to get themselves set up with a view to succeed in grant applications and gather funding for work thereafter.

One of the most prolific researchers in the department is Erik Kubiak who is currently running some 60 studies, with approx \$6,000,000 grant funds and has his own research assistant/coordinator/grant writer.

A small proportion of the income for the Attendings is held back by Dr Saltzman and then redistributed to the department according to amount of research conducted and other measures of productivity. This bonus can be anywhere from \$0 to \$60,000 per year.

The following day I had the pleasure of sitting down for a long chat with Dr Saltzman and getting to understand how he runs his department.

The flow of money into the department is from the work done by the faculty. The billing is done by the entire faculty (some 40 attending orthopaedic surgeons) directly through him and is then redistributed after overheads are deducted. This system is not the model everywhere in the US but what he has set up to encourage innovation and research has developed over the years.

Coding and collection are two very important parts of the back office function of the department. Residents as part of their training learn how to bill. There are 8 members of full time staff dedicated to coding and billing. They work from the clinical notes and meticulous documentation is constantly encouraged. Up to 40% of bills are rejected in the first instance but the final collection rate is 98% due to diligent follow up and rebilling.



iii. *Dr Bassam Masri – University of British Columbia, Dept of Adult Reconstruction*

Healthcare is set up much like the UK but physicians are not allowed to conduct a private practice. There is currently no provision for expansion of consultant numbers but there is an inexorable rise in the Canadian population. Many of the current trainees will not be able to find jobs and are doing the rounds of multiple fellowships.

Adult Recon service is run by Dr Bas Masri. It is one of the most efficient and well run services with a long running and well established fellowship programme. Places on this fellowship are highly sought after and are given away 3 years in advance. This attracts the best candidates. The department attracts both industry and grant funding for research. The fellows are encouraged to produce research with a well structured programme.

In 2004 Dr Masri was given a 22Million CAD fund by the Canadian Government to set up a unit to perform 1600 primary hip (THR) and knee (TKR) replacements per year. He set this up and after being on target for the first five years they are now exceeding the target comfortably.

Clinic set up: all patients receive questionnaires prior to their appointment by post. They are expected to fill this in and return it prior to their OPA. These are collected and the data entered by a dedicated clerk. This essentially reduces the time for taking history to a minimum allowing for a final tweak at the appointment. The clinical findings are similarly entered into a database/form. A clinic letter is generated according to a proforma from the info above and the surgeon can do a 1 min edit and finalise the document. This has allowed for an efficient 40 pt clinic from the previous 12 pt clinic.

Operating theatres: 2 theatres run side by side. Each theatre has its own team consisting of: anaesthetist, scrub nurse, runner, fellow or registrar, company rep (required to attend every single case to check stocks and provide implants intraoperatively). Dr Masri and a 2<sup>nd</sup> assistant then move between theatres.

Instruments for the operation are rationalised for convenience and large trolleys are used for ease of laying up. Dedicated drapes are used to reduce draping time.

Theatres have a first brief at 7:45 and a 2<sup>nd</sup> brief at 8:00am with the first patient on table. The position is checked and the patient's limb cleaned and draped. Prior to the next pt in Theatre 2 being draped Dr Masri is informed. He personally checks the position for THR and is happy for the Reg or Fellow to drape TKRs. Dr Masri leaves the first case as the final layer of wound is about to be closed and goes to Th2. His operative time for THR is 45 min to 1 hr (Uncemented prosthesis) and for TKR 45 min. This way 10 cases are done per day using 2 theatres. These super lists allow for very efficient use of resources and provide a high volume and good service for the patients.

The Rothman Institute (RI) was founded by Dr Richard H. Rothman in 1970. It is a private institution with close links to the Jefferson Medical School. They have one of the top residency programmes for training orthopaedic surgeons and Dr Parvizi has developed one of the most prolific research departments in the world.

On my first day I met with Martin Beck. He is the **Operations Manager for Research**. He plays a key role in the day-to-day management of research business activities, with focus on budget & contract negotiations, financial resource allocation, and grants administration.

The clinical research “bread and butter” is the device studies funded by companies. Either companies are approached or they approach the RI to test a device. First an interested PI is identified on the staff and then IRB applications are submitted. The RI charges a per patient rate for the study with an added “TAX” which can be up to 35%. This is to pay for the back office staff which are not specific to the study but are the departmental overheads that need to be serviced.

#### **Infrastructure:**

Dr J Parvizi is the head of clinical research. There is an over research coordinator that supervises 9 study coordinators each of whom are in charge of the day to day running of various studies and keeping the data base updated.

There are a multitude of research fellows. They include students looking for university placements, candidates that have not been matched for their residency, post residency fellows looking for clinical fellowship and foreign fellows from various countries that are here to produce publications. The later are self funded or sponsored are therefore free for the RI.

According to Mr Beck the basic source of income for the department is device studies funded by the companies. This works well for the RI due to the high volume of clinical work and an excellent database.

Mr Beck was very clear to point out the need for well motivated and good staff. The ability to hire and fire various members of the team has meant there is a carrot as well as a stick.

Dr Parvizi has a very active and prominent role in work of all projects. Regular meeting are held to update him on the progress of all projects.

#### **Other streams of funding:**

The department has a wet lab where they keep and then sell discarded tissue for the purposes of research. The money comes directly into the department. The tissues collected include: synovial fluid, cartilage, bone, synovium, etc. This of course has full IRB approval.

I spent a day with Dr Parvizi to observe his clinical work. As well as a busy research schedule which includes regular attendance of international meetings, he has a busy clinical practice. He ran two theatres with fellows and residents completing 8 cases. This is a very similar model to the one I observed in Vancouver.

The system at the Rothman allows for part of the earning of surgeons to be siphoned off into the research fund. This mirrors to some extent the set up in Saltlake City. The other part comes from implant manufacturers, pharma companies and grants.

As well as performing the research there has to be a good structure for regular presentation and publication of the result in peer review literature.

v. *Dr Robert Rozbruch – Hospital for Special Surgery*

I visited the Limb Lengthening and Reconstruction Unit at the Hospital for Special Surgery. Dr S Robert Rozbruch was my host during the last week of my fellowship. HSS is a rich organisation with excellent administrative support and facilitation. It was founded in 1863, and is the United States' oldest orthopaedic hospital.

Dr Rozbruch was appointed as a surgeon to the HSS 10 years ago and has built the unit over this period. He is a charismatic clinician. The main bulk of the work is elective including post traumatic and congenital deformity correction as well as delayed presentation of trauma. The practice of Foot and Ankle is based around joint preservation with distraction arthrolysis forming the bulk of this work.

The work here is a commercial venture and run very much like a business. Most of the patients are well to do and have good insurance. Upto 30% however can be from Medicaide (the NHS equivalent).

The team keep meticulous records of all patients including radiographs, clinical pictures and scores.

Publications are generated from the regular review of various patient subgroups and analysis of their outcome. There is a substantial web presence and marketing with a comprehensive website and YouTube videos.

During my visit I had the good fortune of meeting with Dr James J Hutson Jr, a trauma and Limb Recon surgeon from Miami. As a visiting professor he gave a fantastic lecture detailing his experience and approach in dealing with GA III B-C fractures of the tibia using ring fixators. He has kept meticulous records for many years and has developed a logical and robust technique in dealing with these devastating injuries.

#### **4. Conclusions and Recommendations**

I found my trip across North America very useful and instructive. I was struck by the similarities between the successful individuals and the teams they had brought together around them. In reality when the correct ingredients come together, success follows.

These are essentially: Leader with a vision, Administrators/Facilitators and Money.

The teams all had a driven individual (Surgeon Scientist) who has vision at the helm. He is supported by a group of individuals on the administrative side who act as facilitators and see the vision of the leader as worthwhile. They can be relied upon to make day to day decisions and run projects. The final component is money, without this it is not feasible to run research.

Several other factors also came to light in the two most successful teams I visited. These in my opinion were Prof Saltzman's group in Saltlake City and Prof Parvizi's group in Philadelphia. Both these surgeon scientists are very charismatic and strong characters. They are highly trained and very skilful in their clinical work. Their high level of motivation and engagement with their teams on all levels acts as a source of inspiration and they clearly lead by example. It has taken them both approximately a decade to create their highly successful teams. They are both clearly shrewd businessmen and are in charge of the finances of the team. This gives a very powerful way of influencing the members of their team by rewarding academic output and innovations. They also have the ability to terminate the contract of those who fail to achieve a certain standard.

There are powerful lessons that can be learnt here, but how they can be translated to work in the NHS is a work in progress and can only be accessed in the fullness of time.

The components available within the NHS unfortunately don't include money and the administrators in the NHS are preoccupied with fire fighting and thus do not indulge in long term strategy and development. One thing available in abundance however is highly skilled and motivated clinical staff with a desire to succeed.

I believe the route to success in providing a world class service will be through innovation. This innovation will be in the way we work, acquire funds to run research and improve clinical services, teach our trainees, interact with our commissioning groups and local GPs and interact/serve/involve the local communities that we serve. There is no substitute for the components that I have identified. I feel the presence of all three is essential for the delivery of high quality Orthopaedics (Clinical and Scientific).

## **5. Acknowledgement**

I would like to thank all my hosts for their hospitality, honesty and generosity during my visit. I have learnt a great deal from all of them.

I would like to thank the Winston Churchill Memorial Trust for their generous stipend which allowed me to visit the USA and Canada and meet some of the most prominent and highly respected orthopaedic surgeons of our era.

My never ending gratitude and love for my wife, for her patience and support as I pursue answers to questions that never cease. Without her I could never achieve what I have.