

AOA-ASEAN Traveling Fellowship 2014, 1st June 2014 – 21st June 2014

Fellows:

DR CHIA-LIANG ANG, MBBS, MRCS(Ed), MMed(Ortho), FRCS(Ed)
Singapore General Hospital, Singapore

Presentations:

- Minimally invasive compared with open lumbar laminotomy: No functional benefits at 6 or 24 months after surgery
- Quality of cementation in minimally invasive total knee arthroplasty
- Unconstrained arthroplasty in type II valgus knees: posterior stabilized or cruciate retaining?

Dr Hein Latt Win, MBBS, PhD

Defence Services Orthopaedic Hospital, Yangon, Myanmar

Presentations:

- Chinese experience with metal-on-metal hip resurfacing
- Serum insulin-like growth factor-1 as a reliable diagnostic marker: Myanmar postmenopausal osteoporotic study

Dr Istan Irmansyah Irsan, MD

Saiful Anwar General Hospital, Malang, Indonesia

Presentations:

- Effect of CaCl₂-added platelet rich plasma to the healing time, tensile strength and adhesion degree of the ruptured tendinopathic Achilles tendon in vivo
- Reconstruction of large bone defects using allografts

Dr Azura Mansor, MBBS, MOrthSurg

University of Malaya, Kuala Lumpur, Malaysia

Presentations:

- Plating and cementation for solitary metastatic bone lesion: Our technique
- Dose variation in frozen bone allografts during sterilization by gamma rays
- Elephant-like legs made lighter



Pic 1. From left to right: myself, Dr Azura Mansor (Malaysia), Dr Istan Irmansyah Irsan (Indonesia), Dr Hein Latt Win (Myanmar)

Introduction

The AOA-ASEAN traveling fellowship is a bi-annual programme where a group of up to 6 fellows from Southeast Asian nations would participate in a tour of orthopaedic centres across the United States, concluding with the American Orthopaedic Association (AOA) Annual Meeting. This year, there are 4 fellows, one each from Singapore, Malaysia, Indonesia, and Myanmar. We travelled to 5 cities and 7 centers in the US and concluded with the combined AOA/Canadian Orthopaedic Association (COA) meeting in Montreal.

Table 1. AOA-ASEAN traveling fellowship 2014 itinerary

Institution	Arrival	Departure
University of Iowa Iowa City, IA	Sunday, June 01, 2014	Wednesday, June 04, 2014
University of Minnesota Minneapolis, MN	Wednesday, June 04, 2014	Sunday, June 08, 2014
University of Wisconsin- Madison Madison, WI	Sunday, June 08, 2014	Wednesday, June 11, 2014
Northwestern/Loyola Chicago, IL	Wednesday, June 11, 2014	Saturday, June 14, 2014
University of Nebraska Omaha, NE	Saturday, June 14, 2014	Tuesday, June 17, 2014
AOA/COA Meeting Montreal, QC, Canada	Tuesday, June 17, 2014	Saturday, June 21, 2014

Academic programme

Each of the centres we visited had an academic programme planned for us. It generally consisted of presentations of our papers, visits to the clinic and operating rooms (OR), and tours of their wards and facilities. Some centres had us participate in their conferences or case discussions and others had their faculty or research scientists present their research to us. More details of our academic exchanges at each centre can be found in the travelogue below. I felt that the academic exchanges were very beneficial in increasing my scope of thought.

Table 2. List of fellow presentations given at each centre.

Fellow	Fellow	Presentation
University of Iowa	Dr Ang Dr Win Dr Irsan Dr Mansor	MIS vs open laminotomy MOM hip resurfacing CaCl ₂ -added PRP for Achilles tendon healing Plating and cementation for solitary metastasis
University of Minnesota	Dr Ang Dr Win Dr Irsan Dr Mansor	Cementation in MIS TKA IGF-1 as marker of osteoporosis CaCl ₂ -added PRP for Achilles tendon healing Plating and cementation for solitary metastasis
University of Wisconsin-Madison	Dr Ang Dr Win Dr Irsan Dr Mansor	Cementation in MIS TKA MOM hip resurfacing Reconstruction of bone defects using allografts Dose variation in frozen bone allograft
Loyola University	Dr Ang Dr Win Dr Irsan Dr Mansor	PS vs CR TKA in valgus knees MOM hip resurfacing Reconstruction of bone defects using allografts Elephant-like legs made lighter
Northwestern Memorial Hospital	Dr Ang Dr Win Dr Irsan Dr Mansor	PS vs CR TKA in valgus knees MOM hip resurfacing Reconstruction of bone defects using allografts Elephant-like legs made lighter
University of Nebraska	Dr Ang Dr Win Dr Irsan Dr Mansor	PS vs CR TKA in valgus knees MOM hip resurfacing Reconstruction of bone defects using allografts Elephant-like legs made lighter



Pic 2. Presenting at Loyola University.

Clinics

I observed several differences in the US clinics/systems compared to our own:

- Each patient is escorted to a room by the nurse and sits inside to wait for consultation, while the doctor goes from room to room, always with a knock on the door first.
- The resident or physician assistant sees the patient first, comes out of the room to report to the attending, and then the attending goes back into the room to see the patient.
- They have much lighter clinic sessions, with perhaps an average day being 40 to 50 patients for the whole day, and this allowed the doctor a lot more time for each patient. This is undoubtedly related to the higher orthopaedic surgeon-to-population ratio, which in the US is about 1:10,830 (27,700 orthopaedic surgeons, 300 million population).
- Medical records are entirely electronic, and each patient encounter is recorded using dictation. Most hospitals use a speech recognition software (eg Dragon by Nuance Communications, Inc.) to translate the verbal record to text, while others use manual translation.

Operating rooms (OR)

OR equipment and facilities in the US are very much similar to Singapore hospitals. A common difference, though, is that their time-out procedure tends to be lengthier and consists of information such as the patient's diagnosis (in addition to surgical procedure), and exact types of implants required. Also, their registered nurses are in charge of catheterising the patient and even surgical cleansing. Scrub nurses as we call them here are termed 'Scrub Techs' there, and these are not registered nurses by training. All the staff in the ORs I have been to have been warm in welcoming my presence despite them being busy.

I observed some surgeries which are less commonly done in Singapore: a total hip replacement through an anterior approach, a hip arthroscopy, and a combined scapula neck and clavicle fracture fixation.

Chronological travelogue:

University of Iowa
Iowa City, Iowa
1/6/14 Sun – 4/6/14 Wed
Host: Dr Phinit Phisitkul (foot and ankle)

The flight to Iowa City took me through Tokyo and Minneapolis. On board the flight from Minneapolis to Iowa City, I recognised Dr Win as I knew that he was supposed to take the same flight to Iowa City as me. But what I didn't realise was that Dr Win was on the same flight as me all the way from Singapore to Tokyo to Minneapolis to Iowa City. Upon arrival, we were taken to our host's house. There, we met Dr J. Lawrence Marsh, chairman of the department and president-elect of the AOA, and Dr Joseph Buckwalter, ex-president of the AOA and American Board of Orthopaedic Surgeons (ABOS) and a famed orthopaedic oncology surgeon. Dinner was delicious Thai food prepared by Dr Phisitkul's wife and his three Thai fellows.

The next day, we visited the University of Iowa campus and presented our papers to the orthopaedic department. I presented the spine paper and there was a good discussion amongst the faculty. University of Iowa is a renowned orthopaedic centre in the United States; Dr Ignacio Ponseti is perhaps the most famous amongst its alumni. Dr Ponseti was born in Spain in 1914 and studied medicine at Barcelona University. He escaped the country during the Spanish civil war, first to Mexico, where he practised family medicine, then to Iowa in 1941, where he subsequently developed the Ponseti Method. Several famous names are currently within the faculty as well, including Stuart Weinstein, John Callaghan, and Charles Clark.



Pic 3. The 4 fellows with Dr J. Lawrence Marsh.

We were brought on a tour of the department's biomechanics laboratory and the cell biology laboratory. The staff presented some of the research they were currently working on; they had a good range of innovative topics including 3-dimensional puzzle-solving for comminuted intra-articular fractures and radiosensitisation of sarcomas via inhibition of glucose metabolism. We also attended a foot and ankle conference where we were invited to comment on some of the cases that their surgeons have managed; none of us are foot and ankle surgeons though but we happily managed to construct some sensible comments. In the operating theatre, I saw a primary total knee arthroplasty.

On our last day in Iowa City, Dr Buckwalter took us to the Amana Colonies just outside of Iowa City. The colonies were built and settled in the 1800's by German Pietists who were persecuted in their

own country by the state government. The colonies were largely self-sufficient with very little import from the rest of the industrializing American economy. The present-day colonies were declared a National Historic Landmark in 1965 and maintain their livelihood mainly based on tourism.



Pic 4. Enjoying locally-produced wheat beer at Amana Colonies with Dr Buckwalter.

University of Minnesota
Minneapolis, Minnesota
4/6/14 Wed – 8/6/14 Sun
Host: Dr Scott Marston (adult reconstruction and trauma)

We arrived in Minneapolis on the morning of 4/6/14. In Minneapolis, we visited four centres: Hennepin County Medical Centre, University of Minnesota Fairview Medical Centre, University of Minnesota Children's Hospital, and Regions Hospital (which is a private hospital). The four centres are interlinked in that they share a common pool of residents who rotate through the centres. In the morning we were taken on a tour of HCMC and the Children's Hospital. HCMC is a level 1 trauma and teaching centre and the most famous name to be associated with HCMC is Dr Ramon Gustilo (of the Gustilo classification); more on him later. The Children's Hospital is the first in the world to perform a paediatric bone marrow transplant and has one of the three largest kidney transplant programmes in the world. The hospital atmosphere is entirely directed at helping the child feel comfortable while receiving treatment. Most rooms are single-bedded and have remarkably impressive amenities for the child and the accompanying family, for example a central control keypad to control all electronic equipment within the room.

The same day, we had lunch with Dr Denis Clohisy, the chairman of the Department of Orthopaedics at the University of Minnesota and an orthopaedic oncology surgeon. The afternoon was 'downtime' for us; we had really been quite exhausted due to the jetlag and having had to wake early in the morning. In the evening, we had dinner at Dr Marston's house in the suburbs. If we were to find an equivalent dwelling with a similar amount of land around the house in Singapore, it would probably be called a good class bungalow.

The next day I observed a total hip arthroplasty through an anterior approach. This approach has been catching on in the United States and is beneficial in terms of not violating the abductor mechanism and having a low dislocation rate. The acetabulum is visualised almost end-on but the downside is difficult exposure of the femur. In the evening we presented our papers at a dinner reception; my paper on cementation in minimally invasive knee arthroplasty generated some comments on whether it is truly worthwhile using a smaller incision with the risks associated with less visualisation.



Pic 5. Fellows with the faculty. Dr Denis Clohisy is directly behind Dr Mansor. The gentleman on the extreme right is Dr James House, he is wearing an SGH tie.

On Friday 6/6/14, I observed some surgeries in the morning while the other fellows attended a conference organized by TRIA Orthopaedic Center on adolescent sports injuries. TRIA Orthopaedic Center offers comprehensive orthopaedic care from diagnosis to treatment to rehabilitation at one location. It also offers walk-in care for orthopaedic injuries with no appointment needed. In the afternoon, we were given our own time, so we made a plan to visit Mayo Clinic in Rochester, which is about 83 miles away. It was an impromptu visit but we deemed it worth the effort to visit a world-renowned center made more impressive by the fact that it is not-for-profit. There was an almost palpable atmosphere of deep reverence for the Patient.



Pic 6. Inside Mayo Clinic's Gonda Building.

Friday night's dinner was the highlight of this segment of the trip. My fellow fellows had met Dr Gustilo at the TRIA conference and he had invited all of us for dinner at a private club just outside Minneapolis. Dr Gustilo received his medical education at the University of the Philippines. Upon graduation, he went to the United States for further training and was accepted into the residency programme. Later in his career he was the chairman of the orthopaedic department at HCMC for 25 years. His name is most famously associated with the Gustilo classification for open fractures, but he is also involved in the design of hip and knee arthroplasty systems (including Genesis and Genesis II), and he also has his own company in the Philippines, Orthopaedic International Inc., involved in development and manufacture of orthopaedic implants. From the dinner, the quality which was immediately apparent from Dr Gustilo was his genuine interest and sincerity towards people, especially younger surgeons. It was a great privilege for all four of us to meet with Dr Gustilo.



Pic 7. Dr and Mrs Ramon Gustilo with us.

On the last day of our Minnesota stop Dr Marston brought us to a baseball game, it was the Minnesota Twins versus the Houston Astros. I had remembrances of throwing and catching some balls during physical education softball classes, but I needed a refresher on the rules of the game from Dr Mansor. After that, it was quite enjoyable watching the game, being able to participate in the occasional exhilaration when a good hit is made.



Pic 8. At the Target Field baseball stadium in Minneapolis.

University of Wisconsin-Madison
Madison, Wisconsin
8/6/14 Sun – 11/6/14 Wed
Host: Dr Paul Anderson (spine)

We arrived in Madison on Sunday 8/6/2014. Madison is a smallish-sized city of 240,000 but it is beautifully located in the midst of 4 great lakes named using Native American names (Mendota, Monona, Waubesa, Kegonsa), and downtown Madison is located on an isthmus between Mendota and Monona. The city has an alluring atmosphere about it contributed to by the beautiful city-scaping, culture of harmonious balance between work and play, and genuine hospitality. We were received by Dr Mark Winston who is the department's chief resident. Our first meal consisted of cheese curds, burgers and beer, reportedly said to be the archetypical Wisconsin diet. We then spent a part of the afternoon at the Terrace along Lake Mendota, where young people and families can be seen having a relaxing afternoon. On the first night we had dinner with Dr Thomas A. Zdeblick, the chairman of the department, and some of the faculty. Dr Zdeblick is a prominent spine surgeon and has been involved in the design of spine implants for Medtronic.



Pic 9. At the Terrace along Lake Mendota



Pic 10. Us at dinner with Dr Zdeblick (pink shirt), Dr Seth K. Williams (farthest) and Dr Warren R. Dunn (nearest).

On Monday 9/6/2014 we visited the hospital and attended both the clinics and the operating room (OR). In Dr Zdeblick's clinic, I saw a case of lumbar isthmic grade 2 spondylolisthesis in a 50-year old, and his recommended treatment was reduction of the slippage and interbody fusion through an anterior approach supplemented with percutaneous posterior pedicle screw fixation. The afternoon was an academic session for our presentations, which were interspersed with presentations from the faculty. Dr Richard L. Illgen II is an arthroplasty surgeon and he presented his experience with robotic-assisted total hip arthroplasty, which in his series was shown to markedly reduce variations in cup version and inclination, coupled with improvements in the patient's functional scores. Dinner was with Dr John P. Heiner, an oncology and arthroplasty surgeon.

The next day we saw the department's biomechanics and cell biology laboratories. We were also given a tour of the University of Wisconsin-Madison football stadium. This was an 80,000-seater stadium built for the varsity's football team. The facilities included sports physician clinics, physical therapy, hydrotherapy/aqua-training, gait laboratory for run and strength analysis and a sprawling weights room. Football is a big thing in American universities. In the afternoon we attended another academic session where the other fellows presented their papers on basic science research (I didn't have any) and we heard from the laboratory scientists on their research. We had dinner with Dr Paul A. Anderson, a spine surgeon, and we heard about his development of a model using inflated Foley's catheters for practising dural repairs.



Pic 11. From left to right (excluding the fellows): Dr John P. Heiner, Dr Thomas A. Zdeblick, Dr Paul A. Anderson, Dr Richard L. Illgen II, Dr Lee S. Segal.

Northwestern Memorial Hospital/Loyola University/University of Chicago
Chicago, Illinois
11/6/14 Wed – 14/6/14 Sat

We got from Madison to Chicago by ground transport. In Chicago we visited three centers which were in no way affiliated with each other: Northwestern Memorial Hospital (NMH), Loyola University and University of Chicago. On the afternoon we arrived, we were met by Dr Terrance D. Peabody, the chairman of NMH, a past president of the AOA, and an orthopaedic oncology surgeon. He brought us on a walking tour through the hospital and the neighbouring Ann & Robert Lurie Children's Hospital in downtown Chicago, and along the magnificent Lake Michigan. In the evening we were treated to another baseball game, this time between the Chicago White Sox and the Detroit Tigers. For the first time in this trip we had a casual dinner consisting of burgers and Miller Lite beer, something which we greatly appreciated as we had been markedly overfed with good food and wine thus far.



Pic 12. Dr Peabody and myself at the Chicago White Sox game.

We visited Loyola University the next day and gave our presentations. Dr Terry R. Light is the chairman of the department at Loyola and a hand surgeon. When I flashed a slide on chilli crab during my presentation, he raised his arms and proclaimed that chilli crab with beer was the best meal a visitor could have in Singapore. I am truly appreciative of his support of our local delicacy. After the presentations, we witnessed an Indications Conference, which was a presentation by a senior resident on the surgical cases he was about to or had already performed. During the presentation, the resident will be interrupted by faculty who would question him on all aspects of the subject matter from initial clinical evaluation to treatment options to rehabilitation, much like the Boards I was told. I felt this was a very good training method for the resident. In the afternoon, Dr Light brought us on a tour of Frank Lloyd Wright's original self-designed house in Oak Park, Chicago. Frank Lloyd Wright was a talented American architect and interior designer who was a pioneer in the Prairie style of architectural design, which featured expansile low buildings with shallow, sloping roofs, invocative of the wide open spaces of the prairie. Dr Light was a keen history and architectural buff and was involved in the restoration of Wright's original house in the 1970's. Dinner was sumptuous Mexican food at a restaurant called Maya Del Sol.



Pic 13. No Mexican meal would be complete without donning some Mexican hats...

The next day (13/6/14), we gave our presentations at NMH; I spoke on the paper on valgus knees. NMH ranked number 7 on US News' Top-ranked hospitals for orthopaedics in 2013 and the atmosphere was correspondingly more austere. Nonetheless, the faculty and residents appeared reasonably pleased with our presentations. We then had some time to ourselves in the morning before we were brought to the University of Chicago. During that time, Dr Win and myself visited the American College of Surgeons, incidentally located in the exact same building as our hotel itself. We then visited the University of Chicago and we were hosted by Dr Rex Haydon, an orthopaedic oncology surgeon who was extremely well-groomed and exceedingly polite and attentive to us. We were very appreciative of his hospitality. We ended our tour at the University of Chicago with a visit to the Oriental Institute at the University, which housed extensive archaeological exhibits from early Mesopotamian civilizations.



Pic 14. With Dr Rex Haydon at the University of Chicago.

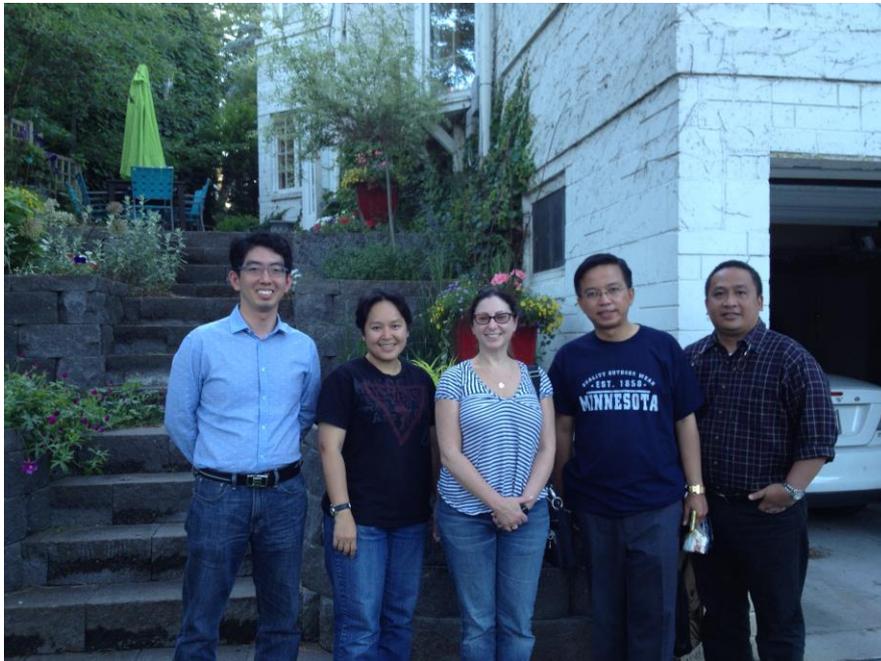


Pic 15. At the American College of Surgeons.

University of Nebraska
Omaha, Nebraska
14/6/14 Sat – 17/6/14 Tue
Host: Dr Susan Scherl (paediatric orthopaedics)

We arrived in Omaha on Saturday and were met at the airport by Dr Susan Scherl, a paediatric orthopaedic surgeon. The College World Series was on-going during our visit to Omaha; it is an annual college baseball tournament held in Omaha every year. As a result, hotel rooms were scarce so Dr Mansor was housed in Dr Scherl's home. Being a Saturday, the first day in Omaha was spent doing some shopping for souvenirs for friends and family at home. For dinner Dr Scherl brought us to a restaurant called The Grey Plume, where all the ingredients are procured from local farms within a 50-mile radius of Omaha. Upon the recommendation of the waiter, Dr Win and myself had rabbit, both of us for the first time. (Apologies to rabbit-lovers.)

The next day being a Sunday, Dr Scherl brought us to Omaha's Henry Doorly Zoo. This zoo was named the best of America's Top 10 zoos by Tripadvisor in 2012. There was truly a wide variety of themed animal exhibits including the Desert Dome, Madagascar, and the world's largest indoor rainforest. The silverback gorillas in the Gorilla Valley, the huge variety of butterflies in the Butterfly and Insect Pavilion, and the luminescent jellyfish in the Aquarium left the deepest impressions on me.



Pic 16. With Dr Scherl at her home.

On 16/6/14 Monday, we gave our final presentations to the faculty and residents of the department. I then visited the OR and the clinic for the rest of the morning. After lunch, we were given a tour of the University's simulation laboratory. This was a truly impressive set-up. They had advanced simulation mannequins which could blink, talk, and respond to pain. Residents can repeatedly practise incisions on the mannequin's abdomen because it was lined with a stretchable and self-healing polymer. Another mannequin could give birth through a vaginal delivery, and the baby can be made to present normally, breech or even with shoulder dystocia. There was a fully equipped operating room where the residents can be tested with different situations in resuscitation and their performance can be observed by examiners through a one-way mirror.

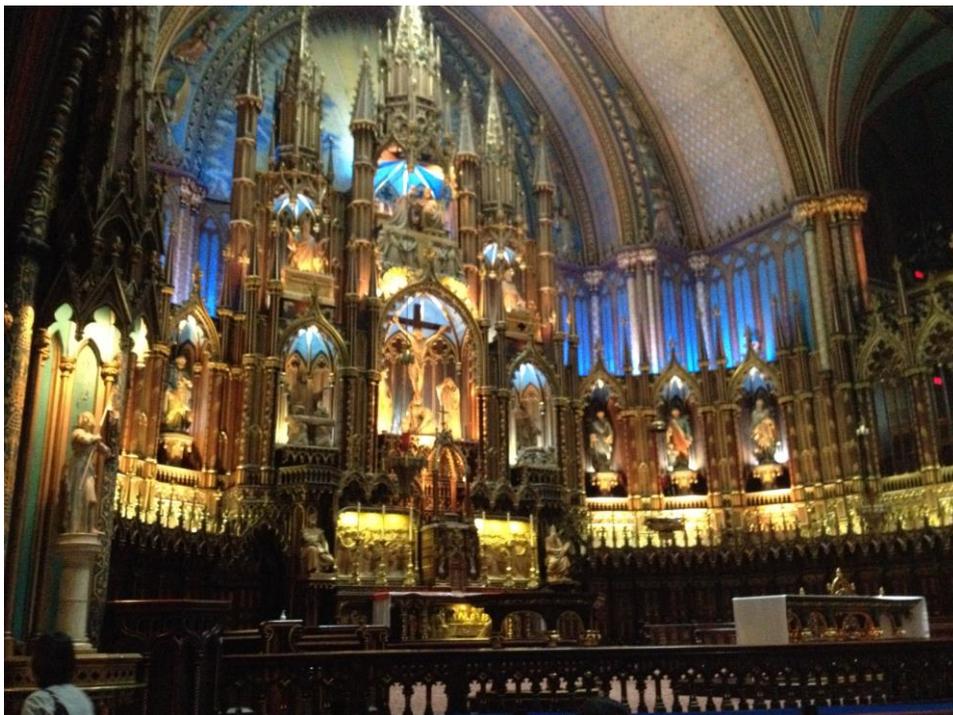
After our visit to the simulation lab, we did yet a little bit more shopping. Along the way, we made a stop at the house of a most famous name associated with Omaha: Warren Buffett. He lives in a modest house (modest for his amount of wealth) in a middle class neighbourhood. When we dropped by, it didn't look like anyone was home. But even if there were someone at home, I'm not sure we had the guts to go ring his doorbell to ask for a picture. So we settled for taking some pictures outside his home.



Pic 17. Outside Warren Buffett's home.

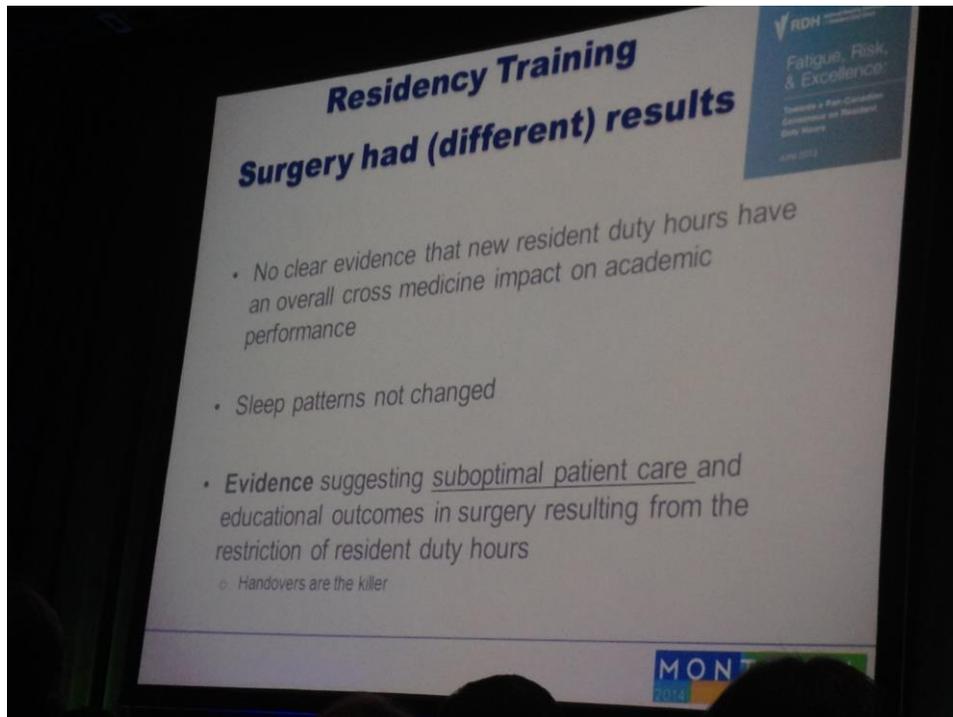
AOA/COA Combined Meeting
Montreal, Quebec, Canada
17/6/14 Tue – 21/6/14 Sat

And so we have come to the last stop. Montreal is the largest city in French-speaking Quebec province and the second-largest in Canada. The population in the urban area is almost 1.9 million and in the larger metropolitan area about 3.8 million. The city sits upon an island from which it takes its name. Named a UNESCO City of Design, downtown Montreal consists of modern office buildings surrounding an area called Old Montreal, the oldest area in Montreal with buildings dating back to the era of New France. We visited the Notre-Dame Basilica located within Old Montreal, a magnificent and grandiose display of French Gothic architecture. The interior has an unbelievable beauty that evokes deep humility and religious awe. Unfortunately, Dr Win was unable to join us for this segment of the trip as obtaining a Canadian visa required him to travel to Thailand, which he was unable to squeeze time to do. (He went to New York City instead and had an equal or even greater amount of fun.)



Pic 18. The interior of the Notre-Dame Basilica.

At the opening ceremony of the combined AOA/COA meeting, we were introduced to the audience along with the fellows of other traveling fellowship programmes, such as the American-British-Canadian (ABC), the Austria-Swiss-German (ASG), and the Japanese Orthopaedic Association (JOA). The address by the COA president Dr Edward J. Harvey contained an interesting point about resident training: that there is no clear evidence that restricted resident duty hours have an overall positive impact on academic performance but on the other hand, some evidence is available that frequent handovers resulted in suboptimal patient care.



Pic 19. A slide on resident training from Dr Edward J. Harvey's address.

The symposiums at the meeting tackled various important issues. Two of the symposiums caught most of my attention. The first was chaired by Dr Mohit Bhandari and addressed the topic of biomedical informatics, the "field that is concerned with the optimal use of information, often aided by the use of technology and people, to improve individual health, healthcare, public health and biomedical research": what kind of data should we collect and how best should we use it to improve patient care in a way that really matters. The second addressed the issue of risk stratification based on key clinical variables. Appropriate risk adjustment allows patients with severe stages of disease and significant medical co-morbidities to have access to surgical care, as surgeons would then be less likely to avoid operating on such patients due to the anticipated worse outcomes.



Pic 20. At the Combined AOA/COA Meeting with Ms Kathy Sinnen, the AOA fellowship coordinator.

Conclusion

My departure from Montreal was on 21/6/2014. It was a truly fulfilling 3 weeks. I have observed many differences between the American healthcare system and ours, gathered some ideas on potential areas for improvement, and laid the foundation for developing professional relationships with some of the centres I have visited. I would like to thank the AOA, the SOA, my head of department (A/Prof Tan MH), and my colleagues at SGH. My experience at this traveling fellowship would not have been possible without the approval and support from all parties. I would also like to express my appreciation to the 3 fellows for being such excellent travel companions; we have forged strong professional and personal ties through these 3 weeks of being together.