

成果報告書

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中文姓名	莊登棋
實習國家 (含城市)	美國洛杉磯
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國外自選 一

Alhambra Hospital Medical System (AHMC)



Andy Chuang 莊登棋

臺北醫學大學

海外實習心得報告

系級	醫學系六年級	姓名	莊登棋
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Growing up in a country with a robust government medical insurance system that caters to the need of everybody, I have heard many rumours of the healthcare system across the border. I heard that in the United States, only the rich can afford medical services. I heard that in the United States, the poor people have no choice but to live with their illness. I heard that in the United States, people would be brought to the emergency room by ambulances in urgent situations, only to be denied care because they are not covered by health insurance. Of course, this was all before the advent of Obama's Affordable Care Act (Obamacare). Having heard so much about the good and bad about the healthcare system in the United States, I just had to experience it first hand.

I grew up in Canada, where the history of universal health insurance operated by the government (Medicare) runs for almost half a century. During my time in medical school in Taiwan, I became more informed of how the universal health insurance works in Taiwan and saw many of its strengths and weaknesses. I have experienced these shortcomings firsthand during my time in the hospitals throughout my clerkship and internship. Wanting to expand my perspective on such policies, I chose to visit Japan and Canada for my Medical Elective during my sixth year of medical school. During my time at each respective location, I mingled with the doctors there and learned about how the systems worked from a perspective of a medical personnel. Additionally, I was also able to have a peek into how their medical system worked, both from a clinical as well as an educational point of view. I travelled to the United States for my Medical Elective in my seventh year, hoping to do the same.

Alhambra Hospital Medical Centre (AHMC) was much different than the other institutions I have visited in the past. Unlike the hospitals I have visited in Japan and Canada, AHMC was not an university affiliated hospital. There were no medical students or even resident doctors with whom I could interact with on a regular basis; instead, most of the time, I would be shadowing the attending physicians in their

everyday routine. As some of the attending physicians are affiliated with the Keck School of Medicine, University of Southern California, I had the chance to visit the department weekly conferences as well as the weekly surgical grand rounds courtesy of Dr. Tim Ker. The rest of my time there was spent either in the clinics or operating room.

From the beginning, I noticed that in the United States, hospitals are a lot more stringent regarding their patients' rights and safety. Unlike anywhere else, before observing any surgeries, I was required to acquire the consent of the patient himself (consent by relatives of the patient are not accepted if the patient can do so himself) and the attending physician. The latter is of no issue, but the former drove me up the walls in numerous instances. The nurses in charge of the operating room are extremely austere in terms of enforcing this rule. Without the consent, they will not allow me to even go anywhere near their operating rooms. If the patient was anesthetized already, signatures on behalf of the patient by the patients' relatives are not accepted either, unless the patient was unable to sign by himself when he was awake. This rule and some human error on the nurses' part made me miss a few surgeries I wanted to observe. This was quite frustrating, as when I was in Canada or Japan, observation of the surgery required no consents whatsoever. Though Japan was stricter than Canada in terms of the "hands-off-the-patient" rule (I could actively participate in surgeries and spontaneous vaginal deliveries in Canada), in the United States, even being in the operating room required consent from the patient. Still, one might think that all patients would consent to observation of the surgery. That was not the case. When I was there, there was an open-heart surgery that I had wished to observe. However, the patient's family was adamant that there would be no students allowed in the room, despite the attending physician's explanation that I would be only observing on the side. Though it was their basic right, it was still a rather unpleasant experience, as it was only the patient's son who displayed animosity towards me. Nevertheless, this part of my rotation at AHMC was the most frustrating experience during my medical elective.

I also noticed that hospitals in the United States treat their doctors a lot better than hospitals anywhere else. There are "Physicians' Lounges" in all the hospitals I visited, where food is provided on a regular basis for the doctors. Daily buffets are available with a rich variety of food ranging from prawns to meat loafs. Coffee is also ubiquitous and free of charge. For surgeons and other operating room staff members, the kitchen also provides free food that is brought to the Physicians' Lounge in the operating

room every day at lunch. According to the doctors I met, the doctors only have to pay an annual fee of US\$400 (approximately NT\$12000) to enjoy this privilege. In a place where dining out would easily exceed US\$10 per meal, this was a steal. This also led to a rather interesting phenomenon of doctors from nearby clinics flocking to the hospitals en masse during lunchtime. A few doctors also do “take-outs,” where they would bring a plateful of food from the buffet back to their clinics for dinner.

In terms of spending, hospitals in United States were also a lot more lenient and have a larger variety of equipment compared to anywhere else. This was especially evident regarding the instruments available in the operating rooms. At the scrubbing stations, not only did they have a very smartly designed “anti-fog” mask for those wearing glasses, they also offered a variety of hand-scrubbing brushes with pre-packed



Picture 1 Disposable laryngoscope. Single use only.



Picture 2 Disposable handles of the surgical lights. They are strictly single-use only.

sterilizer. In the operating room, the laryngoscopes that the anesthesiologist uses during intubation are disposable, with varying sizes. During preparation, scrubbing and sterilization of the surgical field is done with disposable brushes with built-in cartridges of pre-loaded chlorhexidine. After sterilization, all the surgical drapes and gowns used on the patient are waterproof and disposable. Even the handle covers for the surgical lights are disposable. Compared to the hospitals in the other countries I have been to, this was quite an astounding sight.

Complementing the amount of disposable equipment is the collection of novel surgical equipment as well as some of the newer technologies that are not yet available widely on a global scale (and especially not in Taiwan due to cost-cutting by the government). For the more general surgical equipment, the suction device is a lot more advanced-looking than the other types of suction I have seen elsewhere. There were also special suction devices that would irrigate the surgical field while suctioning at the same time, effectively clearing the field of blood and other surgical debris. Anatomical positioning systems in three-dimensional space via the infrared technology was also available during one of the neurosurgical

procedures I was observing. Immediate autoclaving of instruments can also be done within 15 minutes by the autoclaves that are readily available in the preparation room right next to the operating rooms. Some equipment such as the machinery used for endoscopic varicose phlebectomy are also exclusive to the United States, as a foreign market has not been found to be sustainable in Taiwan. Another novel but already obsolete technology in the United States that I saw was the laminar air flow system in the operating rooms. Though I have not seen such an operating room in Taiwan, they



Picture 3 Laminar air-flow – *not* coming to an operating theater near you.

were apparently quite popular in the United States until a few years ago when they were rendered obsolete.

Clinics in the United States were also quite different from what I had observed in Taiwan. Much like Canada, in the United States, hospitals usually do not have clinics like in Taiwan or Japan. Clinics are usually done in private practices owned by the physicians, while hospitals are for procedures or surgeries. Clinics are also at a much slower pace than Taiwan, with 30 patients a day already considered a busy day. Also, perhaps due to the increased revenue from the higher medical costs in the United States, many clinics have a large variety of equipment that is usually only seen in larger scaled hospitals in Taiwan. For example, optical coherence tomography (OCT), a rather expensive piece of instrument that is usually only available in larger medical centers in Taiwan, was available at one of the ophthalmology offices I had visited in the United States. Somewhat niche and expensive devices such as a device that resembles a finger pulse oximeter but measures the hemoglobin concentration was also available at a private family medicine practice I visited.

All in all, the various aspects of medicine differ quite substantially from their Taiwanese counterparts. The different policies of each country resulted in their respective strengths and weaknesses. After observing the medical practice in these countries, my conclusion is that there is no “best” medical system. Each has their weaknesses that lead to one party being on the shorter end of the stick. Still, what the policy-makers can do is to constantly try to make the system work better, be it for the medical professionals or the care-receivers.

During my stay at AHMC, one of the main directors of our program, Dr. Ker, assigned to me the task of keeping daily journal entries of what I had learned. My entries provide a detailed insight as well as a fresher impression of what I had observed each day. For the completeness of my report, I shall include my journal entries. They are as follows:

Day 1: 2016/9/19

Today started off nice and early with Dr. Ker at the weekly conference of the Department of Colorectal Surgery at USC. As we were somewhat early, Dr. Ker was able to give me a nice tour around campus. This particular campus is apparently dedicated to the health sciences, as there was an aggregation of hospitals, clinics, and research facilities. The campus was quite sparse, with quite a large number of buildings dedicated to various disciplines. Of course, the most eye-catching of them all would be the old LA county hospital with its unique architecture as well as the sharp contrast between it and the new LA county hospital behind it.



Picture 4 Weekly Colorectal Surgery conferences at USC every Monday morning.



Picture 5 The "new" LA county hospital, where the meetings take place every week.

The layout of the conference was quite interesting, with three "hot seats" located at the main table. These seats were reserved for the presenters, consisting of senior residents and fellows. Seated at the remaining seats were the attending physicians. The presenters mostly discussed pre-operative and post-operative patients. Throughout their presentations, the attending physicians would question the residents and fellows on a wide variety of problems with focus on their decision making. This type of teaching was not too novel for me, as I have seen a few departments in Taiwan that have similarly styled morning meetings, but it was quite a learning experience. The caliber of the teaching was top-notch and I am sure this is something the medical education system can improve upon.

There was also a special occasion today. Apparently, it was the first day for the candidates for the Colorectal Surgery fellowship. The candidates are from all over the United States and from abroad. The director of the Colorectal Surgery fellowship explained about their program extensively and I was lucky enough to listen in on them.

After the conference, Dr. Ker took me to his personal clinic. The clinics here in the United States are just like the clinics in Canada - the patients are lead from the waiting room into an examination room. Their charts are left on the doors, and the physicians would read them before entering. Though this concept is not new to me, it is still quite different than that of Taiwan's clinics.

At Dr. Ker's clinic, he showed me physical examinations as well as a few minor procedures such as rubber band hemorrhoidectomy and rigid colonoscopy. The instruments used were quite different than the ones I have observed during my Colorectal Surgery rotations in Taiwan. For instance, the anoscope used at Dr. Ker's clinic was very different than the ones I have seen in Taiwan. Also, during the rubber band ligation, a suction pump is used instead of a snare in order to grab hold of the hemorrhoids. It was quite interesting to see the difference between the clinics in Taiwan and United States.

After lunch, I was lucky enough to be able to observe Dr. Ho's ERCP. During my rotations in gastroenterology at Shuang Ho Hospital, I was not fortunate enough to see an ERCP, so this was quite new for me. Dr. Ho explained the difference between the instruments for ERCP and EGD and answered my questions regarding the procedure. The procedure went along smoothly, and the impacted CBD stone was removed swiftly without any complications.

As I have no other plans afterwards, I stayed behind and observed Dr. Ho's colonoscopy. The procedure itself was not much different than how it is done in Taiwan; the main difference was in the billing and policies. According to Dr. Ho, in the United States, colonoscopies are done for patients older than 50 years old, with the exception of African Americans (who are at higher risk of colon cancer), who can receive colonoscopy starting at the age of 45 years old. The age is the same for Taiwan, where Medicare provides free colonoscopes starting at age 50, unless there is a high familial tendency for colon cancer. However, for Taiwan, this is available for everybody free of charge. The caveat is that in Taiwan, sedation for colonoscopies is a self-paid option, whereas in the United States, sedation is provided with all colonoscopies. This is caused purely by the Medicare system in Taiwan though, and most patients opt for sedation anyways.

The main difference I have learned regarding colonoscopes stemmed from a question I asked Dr. Ho. During my GI rotations, EMR and ESD was one of the mainstays of colonic lesion removals. However, Dr. Ho told me that it is rarely done here in the United States due to perforation risks. Apparently, EMR and ESD is also quite popular in Japan due to gastric cancer, but its application in colorectal cancers are still questionable. This would be a question I will save for the GI doctors in Taiwan in the future.

All in all, today was quite a productive first day, and I hope to see more in the days to come.

Day 2: 2016/9/20

Today, I spent my whole day at Dr. Chen's clinic. Dr. Chen owns a Family Medicine practice in San Gabriel that caters to a Chinese majority population. Most of the patients speak Chinese (either Mandarin

or Cantonese) and are between the age of 50 to 70 years old. Dr. Chen and her staff makes everybody at home by conversing with them in fluent Mandarin or Cantonese.

Family Medicine in the United States is much different than both its Canadian and Taiwanese counterparts. Here in California, there is a significant difference between HMO (Health Maintenance Organization) and PPO (Preferred Provider Organization) medical insurance. This is especially evident in a primary provider's perspective in the case of Dr. Chen's clinic. There were cases where patients were restricted in the medical service they would like to receive as well as the location they would like to receive it, since HMO has a more stringent geographical restriction and is more prone to network confinements. An old couple who was considering receiving medical services in Northern California could not do so because of such restrictions imposed by HMO. Conversely, a younger patient who had PPO coverage could see an orthopedician without any hassle. That is how medical insurance works here. As for the comparison with Canada and Taiwan, I shall save it for another day.

Early in the day, one of Dr. Chen's staff members showed me the workings of the EMR (Electronic Medical Records) system at her clinic. With the trend of computerizing everything, this has become the norm in many places. The EMR system here is quite intriguing. The database apparently is hosted at a third-party company (Harris CareTracker) that is LINUX based to prevent hacking and instability. The company in charge of Harris CareTracker also host a variety of other similar EMR platforms that caters to the individual needs of each practitioner, with the number of different platforms numbering over one hundred. The Harris CareTracker, in this case, contains a thorough medical record for each patient. This information include, the patient's personal profile (with information such as address, contact information, weight/height/BMI, age, ethnicity), complete medical history (including dates and results of any laboratory studies, diagnostic imaging studies, records of any medical procedures both surgical and diagnostic, current and past medication, allergies), complete family history, and even records of every past visit to the doctors'. Additionally, this platform also allows the user to input information gathered from each individual visit, effectively providing an electronic version of the "progress note" for each visit, documenting the chief complaint, present illness, review of systems, physical examinations, diagnoses, and plan. To top it all off, the platform also allows the physician to book future appointments as well as review all the appointments for each day. For every individual, the system would also record the amount of wait time.

In the end though, the whole process is still not paperless. When facing the patient, Dr. Chen still uses a pen and paper to write down the information gathered. Computerization of the prescriptions are also almost fully implemented, but there are still patients who insists on using a hand-written prescription due to their not visiting a specific pharmacy all the time. These are all quite troublesome for the physician, as by writing the prescriptions instead of inputting them on the computer, the government will keep a record of the number of hand-written prescriptions and fine the physicians accordingly, very much like the way the Taiwanese government would fine doctors if they do not do things according to the government's policies.

I guess the bottom line is, no matter where you go and no matter how advanced or well-intended the system has become, the government can still find a "control" their doctors and force them to abide by their will.

Day 3: September 21, 2016

Today started off much like yesterday at Dr. Chen's clinic. However, there was an interesting patient who had come in for a physical check-up.

This patient was a 57-year-old male. He had come in for a routine physical examination. However, before any examinations were done, there was something wrong. His PHQ-9 (Patient Health Questionnaire) survey was abnormal. Though he did not have more severe abnormalities like suicide ideation or similar findings, he was evidently in a depressed mood. He was feeling tired most of the time, experiencing episodes of insomnia, feeling decreased drive in his day to day life, and in a rather depressed mood most of the time. After a brief history taking by Dr. Chen, we soon found out that the patient was a mechanic working with Boeing. He is currently working an evening shift that goes from 3 PM to 1 AM, and he usually experiences poor sleep quality due to this. He also cannot find the opportunity to exercise due to his rather erratic shift. Because of these various stressors, he is feeling rather down. Unfortunately, this is how the corporations work here apparently. They would assign these more stressful shifts to older employees who have not met the age criteria for retirement, forcing them to either live miserably, or quit prematurely before retirement. This way, they would not be liable for their pensions (or something along those lines). Because of this, there is not much to be done for this patient, as he refused Dr. Chen's proposition to speak to his boss.

According to Dr. Chen, mental health is a main focus in the general well-being of all patients here in the United States. Unlike in Taiwan, where there is less emphasis on depression and the overall mental health of patients, all patients here are required to take the PHQ-9 questionnaire mentioned earlier. This questionnaire covers various aspects of life, including sleep quality, mental drive, and overall mood. By evaluating the information gathered from the PHQ, healthcare providers (especially primary providers) can help assess patients who are at risk of suicide and prevent this from happening. This I think is something that is not so common elsewhere and is a rather thoughtful policy that would be quite meaningful in foresight. Suicide prevention is something that is well expected here and I think is something Canada and Taiwan can emulate.

My afternoon was spent with Dr. Ker in surgery. Since I was not fortunate enough to observe any bowel resection during my rotation in Colorectal Surgery back in Taiwan (I only saw small bowel resection and Whipple procedure in General Surgery), this was something new to me.

The patient was a 50-year-old Taiwanese male with underlying type 2 diabetes mellitus. He started experiencing left lower abdominal pain with loose stool and changes in bowel movements 6 months ago. He visited his family doctor, who then referred him to Dr. Ker for a colonoscopy as he had not received one

before. In addition to a few polyps here and there, there was also a rather maglignant lesion 22 cm from the anal verge. Biopsy showed adenocarcinoma of the sigmoid colon. Hence, he was scheduled for laparoscopic LAR (lower anterior resection) today.



Picture 6 Anesthesiologist's kit, with the reusable "light source cartridge" that would be inserted into the previously shown disposable laryngoscope blades.

was reusable, but the blade was disposable. In this case, the patient had a short neck, so direct visualizatin of the patient's laryngx was not possible. Video-assisted endotracheal tube insertion was then used, which was similar to Taiwan except the machine here is much bulkier (the video-assistance device in Taiwan was hand-held and runs on batteries instead of being plugged into the wall). Then, there were the light handles and the gowns. All of them were disposable. Though I am not sure if there is a significant difference between disposable and non-disposable instruments if proper aseptic are done, this was still something that I had noticed.



Picture 7 Video-assisted intubation.



Picture 8 The specimen along with some of the equipment. The EEA stapler is seen on the far right.

The operation itself went along quite smoothly. The ureters were visualized and avoided without trouble, and the distal end of the resected portion of the colon was closed off with staples (the stapler was electronic rather than mechanic, which was something new to me). A pfannenstiel incision was made and a retractor was placed. The proximal end of the colon was then incised, and the resected portion freed from the proximal end. Reanastomosis of the distal and proximal ends of the colon was done expediently with an EEA stapler (end-to-end anastomosis stapler). The incision was then closed layer by layer, and the patient tolerated the procedure well.

According to Dr. Ker, there is a different approach regarding the closure of the incision. For American-trained surgeons, the peritoneum would be closed, while for European-trained surgeons, the peritoneum would be left open. While certain textbooks mentioned that it was not necessary to close the peritoneum, I did notice that almost all the surgeons in Taiwan do close the peritoneum, while the

surgeons I have seen in Canada close the peritoneum some of the time, dependent on the surgeon. This was also something new to me.

In the end, I was lucky enough to stand in on a surgery that I did not see before, and also saw a few new instruments that I did not know existed. All in all, it was a rather enjoyable day to be back in the OR and I rather enjoyed it quite a lot.

Day 4: September 22, 2016

Today, I spent my morning with Dr. Huang at his orthopedic clinic. Dr. Huang is quite an interesting character; he tends to keep an upbeat and engaging attitude when facing his patients. His happy-go-lucky attitude spreads to everybody, from the patient to Dr. Huang himself, and even to me, an observer. He is not afraid to scold or joke with his patients, either, and they seem to enjoy it themselves.

Dr. Huang's patients are Mandarin speakers, with ethnicities ranging from Taiwanese to Thai. They are mostly aged 60 and above, with mostly DJD (degenerative joint diseases). I have seen my share of DJD in Taiwan, but there are a few minor differences between orthopedic practices in Taiwan and those in the United States. For starters, cortisone is used here instead of the trademark white triamcinolone used in Taiwan. Also, patients in Taiwan tend to request a lot of medication (and the physicians would comply) every visit. At the very least, they will go home with acetaminophen (despite its being widely available at pharmacies as an over-the-counter drug). Lastly is the pricing of drugs. In Taiwan, I once asked an attending physician how much the patient has to pay for each intraarticular hyaluronic acid injection of the knee. It was a measly NT\$2000 (approximately US\$60). When I asked Dr. Huang, he told me that it also costs \$2000 here. But for 3 shots. And it's US\$2000, not NT\$2000.

After an interesting and light-hearted morning at Dr. Huang's clinic, I returned to Garfield Medical Centre for the afternoon for observation of a craniotomy.

The patient was a 54-year-old Hispanic male with no significant medical history who presented with face drooping and upper and lower limb weakness and numbness. A brain tumor with central necrosis was observed on CT investigation. The patient was admitted this time for a craniotomy with biopsy.

The method of biopsy today was an ultrasound-guided needle biopsy. Or it was planned so. There were two sales representatives in the room, along with a technician who was operating the SSEP/EMG (somatosensory electric potential/electromyogram) machine and monitoring the patient's neurological status intra-operatively. In Taiwan, the exact same technology is used during brain surgery. With the exception that the person who is operating the machine is the nurse practitioner. The person in charge of the SSEP/EMG here appears to be an MD though (according to his ID tag), but I could be mistaken. I guess this is one of the luxuries of being abundant in resources.

The two sales representatives were for the 3D spatial positioning system and the needle for the ultrasound-guided biopsy, respectively, both instruments that I have not seen before.

The 3D positioning system was apparently based on infrared positioning and reflective materials acting as a reference in space. Pre-operative imaging (in this case, CT imaging in the sagittal, coronal, and



Picture 9 Intra-operative ultrasound.

transverse planes) were taken, and inputted into the program. A reference point in space is created via the use of a platform with four reflective balls. Infrared signals from a sensor is used to create the reference points in space. Then, a probe with four more reflective balls on it is used. On the monitor, coordinates that reflect the tip of the probe is projected onto the CT images, effectively creating an accurate positioning system. With this, the surgeon can pinpoint the location of the tumor and the craniotomy done without trouble. Per the sale rep, this technology is actually quite aged, with newer sensors utilizing electromagnetic signals.

As for the ultrasound needle biopsy, the concept is like other needle-guided biopsies. The set-up was reminiscent of the renal biopsy I had observed before. The sales rep told me that he had designed the needle himself though. The ultrasound machine used belonged to him, costing him US\$175000 for it. I wonder how much money he makes for each needle, and how long it will take him to break even.

However, not everything goes as well as planned. Murphy's Law always prevails. In the beginning, the surgeon was late by almost an hour. Then, after finally getting enough tissue for the biopsy (along with many hiccups along the way), the pathologist apparently left the hospital already, contrary to what he had promised earlier. We waited for him to return, only for him to us mostly blood clots. The doctor the biopsy again, but this time After another half hour for the



Picture 10 The 3D positioning system, with reflective spheres to utilize the infrared signals.

nearly another hour for that the first specimen was then came back and redid with a bronchoscopy clip. pathology results, the pathologist told us that there was not enough tissue. The neurosurgeon lost his patience and confidence in the ultrasound-guided method,

then

and switched over to microscopic direct biopsy. Finally, at the end of the day, after five and a half hours, the pathologist gave us the diagnosis of GBM (glioblastoma multiforme).

In the end, due to a few technical difficulties (and miscommunication), the surgery was much longer than it should have been, and one sales rep ended up missing his flight, while the other ended up with the surgeon not trusting his product anymore. Still, I have learned of a new technology that I may see in the OR in the future.



Picture 11 Infrared transmitter used to bounce signals off the probe and receive the reflected signals..

Day 5: September 23, 2016

This morning was the Morbidity and Mortality meeting for the Department of Surgery at USC. There were two cases being discussed, both patients at the LA County Hospital.

The first case was of a homeless male with underlying schizophrenia who was diagnosed with advanced stromal malignancy of the stomach. He was admitted for biopsy this time, but about 10 days post-operatively, wound dehiscence was found and he was brought back into the OR for reclosure.

The second case was of a diabetic female who was a Jehovah's Witness, admitted for cholecystitis. In her case, a subtotal cholecystectomy was done. However, after the surgery, large amounts of biliary drainage from the surgical wound/hepatic recess was found. In the end, blockage of the biliary tract was found and corrected.

In both cases, the presenters were more junior residents (if I recalled correctly, they were R2). Regardless, the host of the conference did an excellent job on directing the flow of the conference. Unlike in Taiwan, where these meetings usually consist of the presenter going from the beginning until the end, with a Q&A session at the end, here, the presenter is continuously interrupted after each slide and random attending physicians were being called into the discussion. Various residents were also being called out to join the discussion. This amount of engaging the audience is rarely seen during MM conferences in Taiwan, but some hosts do try to include everybody in the discussion.

After the MM conference, I spent the rest of the morning at Dr. Yip's office. Dr. Yip is an urologist with a very busy clinic; he employs three other physicians to help with their patient load. Just like the Urology clinics in Taiwan though, almost all the patients were old men with prostate hyperplasia. In this aspect, things are pretty much the same everywhere, I guess.

After lunch, I was supposed to observe a CABG, but due to minor mix up, I was not able to get the consent signed, and instead ended up observing a hernia repair and a tracheostomy.

During the hernia repair, Dr. Ker helped me review my anatomy of the region and showed me the mesh they used for the repair. While the concept of the mesh is essentially the same there are still minor differences between the two. Taiwanese meshes tend to be smaller, but more simple in design, while American meshes are larger but shaped to fit various variations in anatomical contours. Still, they are essentially the same. Dr. Ker showed me another type of mesh I have not seen before though. The mesh was shaped like an umbrella, but it still locked into place like the other meshes.

Though I could not observe the CABG today, I did introduce myself to Dr. Huang, the cardiovascular surgeon, and will have another opportunity next week.

Day 6: September 25, 2016

I spent today in the OR with Dr. Yip, the urologist. As he has his surgical days on Sunday, this was my only chance to observe his surgeries. Today's schedule consisted of two pediatric cases, and three cystoscopic/ureteroscopic procedures.

The first two cases were a orchidopexy for an undescended testis in 2-year-old male and circumcision for a 5-year-old male, respectively. I have seen neither cases before, but have read about them before. For the orchidopexy, the patient's left testis was undescended and evidently palpated in the inguinal canal. The surgery was quite successful, but I did ask Dr. Yip regarding the possibility of incorporating a technique like a 2-stage Fowler-Stephen procedure in an inguinal undescended testis, as the spermatic cord was somewhat on the short side in this patient. Dr. Yip said it was not a plausible solution, so they just do what they can, like in this case. As for the circumcision, it was simple and straightforward.

Ureteroscopic laser lithotripsy, cystoscopic biopsy, and a simple cystoscopy were the remaining procedures. As I have seen my share of cystoscopies, that part was nothing new. As for the ureteroscopic laser lithotripsy, it was quite a novel procedure for me. Knowing this, Dr. Yip allowed me to observe through the hard ureteroscope. It was quite a learning experience and I walked away today with knowledge of what ureterolithiasis and laser lithotripsy looks like under direct visualization with a ureteroscope.

Day 7: September 26, 2016

Today was much like last Monday; the morning started off early with the colorectal surgery weekly conference at USC. The format of the meeting was largely the same as last Monday but without the fellowship candidates.

At today's morning conference, I have learned a new concept --- the Clavien Dindo classification. Throughout my rotations, I have never heard of it before. Essentially, it is a classification for post-operative complications, consisting of 5 different severities. Grade I is the least severe, defined as any deviation from the normal post-operative course, not requiring any pharmaceutical interventions. Grade II requires pharmaceutical interventions, but nothing else. Grade III requires surgical or endoscopic intervention, and is further divided into subtype a and b, for patients not requiring general anesthesia (GA) and requiring GA respectively. Grade IV involves life threatening complications is divided into subtype a and b as well, denoting whether it is single-organ in nature or multi-organ in nature, respectively. Lastly, grade V denotes death of the patient post-operatively.

Also, through discussions with Dr. Ker, I learned that with the exception of warfarin, all other anti-coagulants/anti-platelets (such as clopidogrel, heparin, or aspirin) do not affect the bleeding tendency of mucosal blood vessels. However, as they do affect blood clotting elsewhere (e.g. subcutaneous), any procedures involving the skin (e.g. external hemorrhoidectomy) or full-thickness of the gut (e.g. bowel resection) will still require the cessation of these drugs.

The rest of my morning was spent in Dr. Ker's office.

In the afternoon, Dr. Chen took me around to the various hospitals under the administration of AHMC and treated me to ice-cream. She also showed me many offices of other doctors around Monterey Park. All in all, it was another fruitful day.

Day 8: September 27, 2016

I started the morning off at Dr. Chen's clinic, where there was sales representative who had dropped by with pamphlets for her product, Invokana (canagliflozin). According to Dr. Chen, Invokana is of the same drug class as Farxiga (dapagliflozin), but has a better effect. The sales representative was kind enough to show me how the drug works on her tablet computer as well. Essentially, it inhibits the SGLT2 (sodium-glucose cotransporter) on the kidneys' tubules, the main source of glucose reabsorption. With SGLT2 inhibited, glucose reabsorption is decreased, leading to massive loss in the urine. This will ultimately bring down the glucose levels in the blood. As a bonus effect, it can also lead to weight loss due to the glucose loss as opposed to other diabetic medications. There was a prime example of a successful case that showed up who responded better to Invokana than Farxiga. Unfortunately, the drug is not available in Taiwan, due to monetary restrictions of Taiwan's Medicare system.

After lunch, I went to Garfield Medical Centre, expecting a CABG. To my surprise, it was only a POSSIBLE CABG; the main procedure was actually a carotid endarterectomy. As I have never seen an endarterectomy before, this was for the better. After a few hiccups regarding the consent form for observation, I was finally allowed in. Dr. Hodgins, the cardiothoracic surgeon, was the attending physician for this case. Strangely enough, the patient and his family does not speak much English, so on the end, I had to act as the translator for Dr. Hodgins.

For this patient, his left carotid artery was partially occluded with severe atherosclerotic plaques. However, the problem does not lie in the occlusion; it is the embolism caused by pieces breaking off. The patient had already suffered from a previous stroke due to dislodged emboli.

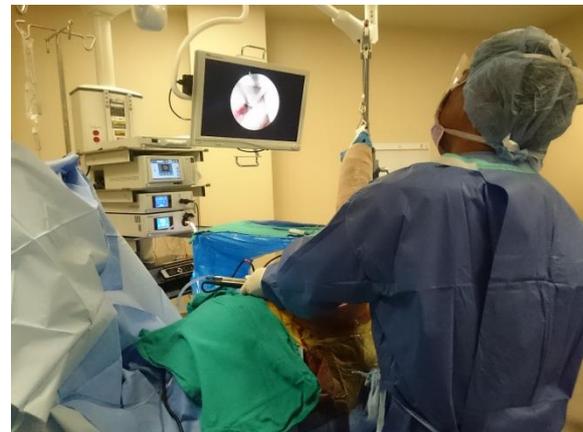
For this surgery, Dr. Hodgins used a carotid balloon shunt that he had never used before. Due to this, the surgery took much longer than usual. Nevertheless, the shunt was successfully placed and the plaque removed in one big piece. It was my first time touching a carotid artery atherosclerotic plaques directly, so it was quite an experience. After removal, Dr. Hodgins repaired the defect using a xenograft made of bovine pericardium. The repair was done beautifully. After Dr. Hodgins had removed the shunt and had closed most of the carotid artery up though, there was suddenly a leakage. As it was arterial circulation (and one of the strongest pulses with significant blood pressure; it is the carotid artery after all), blood splattered everywhere. The operating field rapidly filled with blood and the suction was not effectively clearing it up. Dr. Hodgins quickly put a finger on the distal carotid artery, while sewing up the leak with one hand. Thankfully, hemostasis was achieved. After that fiasco, intraoperative arteriogram was done and the carotid artery was as clear as it can be without any further leakage.

In the beginning of the surgery, Dr. Hodgins was questioning me on the regional anatomy of the neck, while asking me a few questions regarding the procedure. This was quite reminiscent of how surgery was back in Taiwan, and I learned a lot. The patient is going back to the OR on Thursday for his CABG and I hope to learn more from Dr. Hodgins if given the chance to do so on Thursday.

Day 9: September 28, 2016

This morning, I observed a shoulder and a knee arthroscopy. I have seen the former many times before (and even assisted in them) during my Orthopedic rotations in my internship, but it was my first time seeing a knee arthroscopy.

For the shoulder case, the supposed procedure today was to repair a supraspinatus tendon rupture. The shoulder arthroscopy was very much different from the ones I have seen before. Right from the start, the patient was positioned differently. In Taiwan, the doctor I was shadowing would have his patient in the "beach-chair" (lying supine with a mild elevation of his upper body), while here, Dr. Tam had his patient lie in lateral decubitus. Still, traction was applied to the arm to open up the joint space and the procedure began.



Picture 12 Left decubitus orientation of patient during right shoulder arthroscopy. Different from What I had seen in Taiwan.



Picture 13 A pressure of 40 mmHg! No wonder hemostasis was not as well achieved as the arthroscopies in Taiwan. Shoulder was less swollen though.

The positioning of the camera and the trocars are largely the same as the arthroscopies I have seen before. However, the pressure of the irrigation is much different. To my recollection, the doctor in Taiwan would have the pressure of the irrigation as high as 100 mmHg for both irrigation and hemostasis. Here, Dr. Tam had the pressure at 40 mmHg almost throughout the whole procedure. When I asked him why, he said that 40 mmHg is sufficient, and he does not want too much swelling in the shoulder post-operatively. This is true, because for the cases I have seen in Taiwan, the patients' shoulders would be grossly swollen with edema post-operatively, but would resolve in the next day or two.

For this case, the tendon rupture was not as severe as Dr. Tam had initially anticipated. Conversely, the tendon of the biceps long head was frayed along with the superior labrum (SLAP lesion, grade I). So, Dr. Tam shaved off the frayed labrum and decided to do a tenodesis. After performing the tenotomy though, he could not locate the tendon in the humeral groove. After attempting to do so for almost an hour and a half, the procedure ended with



just the tenotomy. The patient will return again another day for another attempt at tenodesis.



The knee arthroscopy was very fast though, ending in about half an hour. It was a simple meniscectomy due to a bucket handle tear of the lateral meniscus. The patient was a 21-year-old male and apparently, he injured himself by crossing his legs... which was quite an interesting injury mechanism. What was interesting though, was that there was no support for the patient's lower leg throughout the procedure. The doctor had to use his body to prop the patient's leg up and manipulate it himself.

Picture 14 Good old-fashioned manual leg support.

In the afternoon, I spent my time in Dr. Huang's clinic. There was an intriguing case of a 14-year-old male with chronic on-and-off hip pain. During his previous visit, autoimmune arthritis was suspected, but blood works were negative. This time, the pain was in his contralateral side. Physical examination revealed pain upon internal rotation of the thigh while the FABER test was negative. Hence, Dr. Huang ordered a hip x-ray. Immediately upon

Picture 15 The culprit.

seeing the hip x-ray, Dr. Huang ordered x-ray of the patient's L-spine and T-spine. The reason was patient's hips towards the Huang, this is highly successive was a mild (a Cobb's angle of compensated scoliosis of the Dr. Huang taught me to look at patients, there will be a pedicles of the same vertebra. in the position of the spine, a word of advice, Dr. Huang also scoliosis, suspect malignancy



Picture 16 Note the differently sized pedicles in this KUB.

ordered x-ray of the patient's L-spine here had noticed a slight tilting of the contralateral side. According to Dr. of scoliosis. True to his words, there approximately 10 degrees) patient's lumbar and thoracic spine. the pedicles for symmetry; in scoliotic noticeable difference in the size of the This is indicative of rotational change common finding on scoliosis. As a final told me that in cases of painful until proven otherwise.

Day 10: September 29, 2016

Today was the first time I have been to San Gabriel Valley Medical Centre. The surgery was supposed to start at 7:30 AM, but there was significant delay lately at San Gabriel Valley Medical Centre due to a recent incident. Apparently, there was a recent hospital evaluation, and there was something wrong with the sterilization process at the hospital, leading to their requiring to dispose most of their surgical instruments. Also because of the hospital evaluation, the security at the hospital has been under close scrutiny and many changes in policy implemented. Hence, I had to go through a meddlesome and meticulous process of running back and forth between the risk management department and human

resources department before I was finally given clearance and allowed to enter the operating room to simply observe the surgery. The whole process took about an hour, and the surgery had already started by the time I entered the operating theatre.

After all the fiasco, I was finally able to enter the operating theatre. Right off the bat, I was surprised at the strong positive pressure as I opened the doors. At the back of the room, the whole wall was replaced with air vents that were constantly blowing air across the room. As the sales representative later told me, it was laminar air flow, designed to blow any air-borne particles away from the operating field. Hence, non-sterilized objects and people not scrubbed in are not allowed to be "up-stream" to the air flow.

For this specific case, the patient was a 46-year-old morbidly obese Caucasian male who weighs 270 pounds. The knee x-ray showed significant joint space narrowing of the medial knee, leading to a mild varus deformity. There was also significant bony spurs of the femur and tibia, as well as the patella. Though Dr. Yang, the attending physician in charge of this case, did not specify the cause of the patient's joint degeneration, I strongly suspect that it was most likely the fact that he was so much overweight and possibly in combination with a previous injury (despite the lack of evidence of healed fractures) based on his young age.



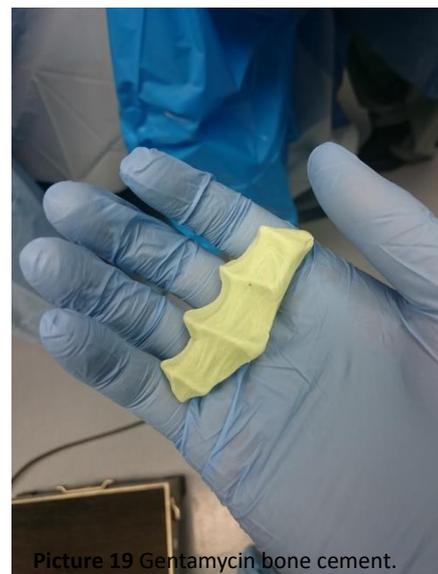
Picture 17 Severe joint space narrowing.



Picture 18 Electro-cauterization tool and irrigation-suction tool..

As the knee was already opened and Dr. Yang was already hammering away, I was only able to see the surgery starting from the sawing of the femoral condyles and tibial plateau. However, the surgery was largely the same as the TKA (total knee arthroplasty) I have seen in Taiwan. The only exception was in some of the equipment used. There was an electro-cauterization tool that was interestingly shaped that functioned as a bi-polar. However, this specific instrument has an irrigation system built into it, so it is not purely an electro-cauterization tool. Also, there was a suction device that has simultaneous irrigation built into it, allowing instantaneous suction as one irrigates the surgical field.

The other major difference is that while in Taiwan, the TKAs I have seen is either done by two attending physicians (in the case of Shuang Ho Hospital) or by an attending physician and a resident doctor (in the case of Wanfang Hospital), here, TKA is done by an attending physician and a physician's assistant alone. The sale representative was also there and he helped guide the surgery along, giving suggestions throughout.



Picture 19 Gentamycin bone cement.

The sale representative for the instruments as well as the implants was very kind and chatted with me on a few occasions. In the end, when Dr. Yang was applying the bone cement, the sale representative told the scrub nurse to give some of the cement to me to play around with. It was a putty-like substance that was surprisingly exothermic, reaching a substantial temperature while it was settling in my hand. The composition was polymethyl acrylate (a polymer) and zirconium dioxide (diamond simulant), giving it a strong hold. The bone cement also had antibiotics infused (in this case, gentamycin), which according to Dr. Huang can last for up to half a month post-OP. The choice of using bone cement as opposed to a porous implant was most peculiar as well, since the patient is of such a young age. However, the sale representative said that there is no strong evidence showing any difference between the two methods, and it was mostly surgeon preference that determines whether or not bone cement or porous implants were used. Apparently, some surgeons use bone cement exclusively, while some use them selectively. Regardless, the sale representative claimed that their product will last for at least 30 years under normal use.

After the TKA, I went to Dr. Huang's office to observe the rest of his morning clinic. There were many cases of age-related DJD (degenerative joint disease) of the knee. Since we were on the subject already, we had a nice discussion regarding DJD of the knee and TKA.

For the afternoon, I returned to Garfield Medical Centre in anticipation of a CABG by Dr. Huang. However, when I visited the patient to explain my desire to observe her surgery, her son vehemently rejected me before the patient even responded, saying that they "do not want any students involved." While I tried my best to explain that I would only be watching from the side and will not be touching the patient at all, he still rebuffed me. I waited for Dr. Huang to arrive, hoping he would be able to convince the son to change his mind. However, even Dr. Huang could not convince him otherwise. Without anywhere else to go (there were no other interesting surgeries; Dr. Chu and Dr. Fan did not have clinics today; Dr. Lo wanted me to do some designated reading before going to his clinic), I ended my day.

Day 11: September 30, 2016

The meaning of life is to have purpose. This sense of purpose is what drives us forward. This is the topic of the speaker, Peter Crookes, of the presentation during grand rounds today.

True to Dr. Ker's words, Dr. Crookes is a historian. He started off by throwing this question at the audience - what is the meaning of a good life? Is it living in a good house? Driving a good car? Having a beautiful wife? Having wonderful children? When it comes to the meaning of life though, it really all boils down to whether or not we serve a purpose in the big picture. This is especially so among surgeons. In general, surgeons tend to emphasize on the "purpose" of things as they tend to have a more tangible and readily grasp on the results of their actions. With this as his opening, Dr. Crookes dove right into the life of Dr. William Stewart Halsted.

He started at the very beginning, right when Halsted was born. Every minute detail was covered, from the social positions of his parents, to the city he was born in, and even the neighbourhood he used to live in. Dr. Crookes put special emphasis on Halsted's medical career above all else. His slow rise to prominence after graduating from Columbia University, until he was at the pinnacle of his career as one of New York's most established physicians - Halsted seemed invulnerable. That is, until he started experimenting with cocaine as a topical anesthesia. And his subsequent addiction to cocaine (and later one, morphine). After falling from grace, his good friend Dr. William H. Welch decided to ask him to assist in the establishment of his new medical school - Johns Hopkins School of Medicine. As one of the "Big Four" founding fathers of Johns Hopkins School of Medicine, Halsted went on to becoming the first Chief of Surgery, developing numerous surgical concepts that we take for granted today, such as stringent sterility, surgical glove wearing of all members of the surgical crew, meticulous anatomical dissection, vigorous hemostasis, and many other surgeries such as the radical mastectomy. Unfortunately, he never really got over his addiction to cocaine; he only managed to keep his addiction in check by using morphine. A man with almost no emotions, he married one of the nurses, but died without any heirs.

After the story of Halsted, Dr. Crookes finished his presentation by telling us about his success with using pneumoperitoneum at the floor pre-operatively to help decrease the amount of adhesions (especially massive adhesions) intra-abdominally.

After returning Garfield Medical Centre, I observed a laparoscopic hernia repair. All of the hernia repairs I have seen previously were done in the open fashion, and there were various types of meshes used. This time, for the laparoscopic hernia repair of an indirect inguinal hernia, a special type of mesh was used. The surgery was initiated like any other laparoscopic surgery; pneumoperitoneum was established, trocars were placed, and the instruments inserted.

The incarcerated bowel and peritoneum was freed from the inguinal canal. Then, Dr. Lee, the attending physician, used a special kind of spray-on hemostasis solution. The sales representative introduced her product to me. It was Evicel by Ethicon, a human derived fibrin extract that can help induce clotting at the site of application, even in patients with poor coagulation status. This type of clotting can stay intact for 7-14 days.

After spraying on Evicel, a mesh with teeth on one side and smooth on the other was introduced into the abdomen. The teathed side stuck very well onto the tissue and maintained a strong grip. Hence, it stuck very well over the inguinal ring, preventing further falling of the bowel into the canal. The mesh was stapled for extra anchoring, and the surgery was done.

In the afternoon, I finally got to observe Dr. Huang's CABG. The patient was an 84-year-old male with underlying CAD, HTN, DM, and had presented with ventricular fibrillation. CPR was done with defibrillation, and he was successfully resuscitated. Cardiology found severe stenosis in the LAD and LCX, along with a complete stenosis of his RCA. They placed 3 stents into the LAD, but it was not enough, warranting the CABG today.

Dr. Huang chose to do a 4-vein CABG today with the bilateral saphenous veins, instead of using the LIMA due to the previous history of stenting. He explained to me that this is due to a phenomenon called "competitive steal" of the vessels, where if an artery is used (e.g. LIMA) but there is still adequate flow from the existing coronary artery, the grafted artery will actually shrivel up from the competitive flow of the existing coronary artery.

The surgery started by harvesting the bilateral saphenous veins. This was done completely differently than what I had been accustomed to. First, there was a dedicated vascular surgeon who was in charge of doing it, as opposed to the cardiovascular surgeon doing it himself. Also, the vascular surgeon was doing it with a hard scope, limiting the wound to a small incision on the knee. Lastly, instead of using clips for all of the branches of the saphenous vein, the vascular surgeon used a combination of electrocauterization, suture ties, and surgical clips.

Despite my having observed a CABG during clerkship and another during internship, they were both off-pump bypasses, meaning the heart was beating throughout the entire surgery. Today, Dr. Huang is doing an on-pump bypass, meaning the heart will be stopped. What was most interesting was that after the heart was stopped and the pump connected to the patient, the heart shriveled up like a deflated balloon. Dr. Huang also applied a lot of ice into the pericardium, making the heart look like a blood-soaked slushie.

During the procedure, Dr. Huang showed me areas of acute and old myocardial infarction (MI). The swelling and ecchymosis of the fresh MI was easily distinguished from the areas of old MI, which was marked by discolouration of the musculature. Additionally, Dr. Huang also showed me the atherosclerotic change of the coronary arteries, as well as the small bulges of the previously inserted stents. After this, Dr. Huang placed the four grafts into the PDA, LAD, OM1, and RCA and finished the procedure. The patient tolerated the procedure well, and was sent to the ICU.

Dr. Huang left me with a word of advice. He told me that as doctors, we must be sure of every action we take. We must understand all the concepts behind the medicine that we study. We cannot simply rely on just memorizing all that the textbooks tell us. We must implore; we must master the art. His teacher had once told him,

"I could be wrong, but I am never in doubt."

We are all human; it is impossible for us to not err. However, when things do not go the way they should, we as doctors should be fully aware of what is happening, and we must be sure that to the best of our knowledge (and of course, said knowledge must be correct), we had tried our best for the patient.

Day 11.5: October 1, 2016

Today was spent away from the hospital. It was a rather special occasion, as Dr. Ker brought me to the shooting range. Growing up as a Canadian, there are not many shooting ranges in Canada. Firearm control was very strict in Canada and usually only people who go hunting would own guns.

Here in the States, after passing the shotgun safety test (which was pretty straightforward and mostly common sense), I was able to purchase ammunition for the gun, as well as time on the shooting range.

Dr. Ker lent me his shotguns for the shoot. It was a lot more fun than I had thought.

As it was my first time shooting, it took me a short while to get used to the weight and recoil of the gun, but after accustoming myself to the gun, I was on my way. I found that fast reflexes were almost as important as good aim, as shotgun pellets tend to disperse at longer distances. I found that shooting the clay discs as soon as they left the house was the most effective, as waiting any longer for a better aim would paradoxically lead to missing the bird completely. I familiarized myself with the maneuvering of the shotgun, and by the end of the day, I managed to shoot more than half the targets.

Skeet shooting was a really fun experience, and I hope that I will be able to do so again.

Day 12: October 3, 2016

This morning was the last Colorectal Surgery morning conference I attended. Today, there were also many fellowship candidates, much like the first morning conference I had attended. As routine, the morning conference went along without many highlights.

After returning to Garfield Medical Centre, I shadowed Dr. Lin, a vascular surgeon. Dr. Lin was a man of efficiency. Not only does he own a successful private practice, he also manages to author numerous publications, ranging from journal articles to textbook articles. He also acts as co-editors of many journals. He claimed that this is something he enjoys doing.

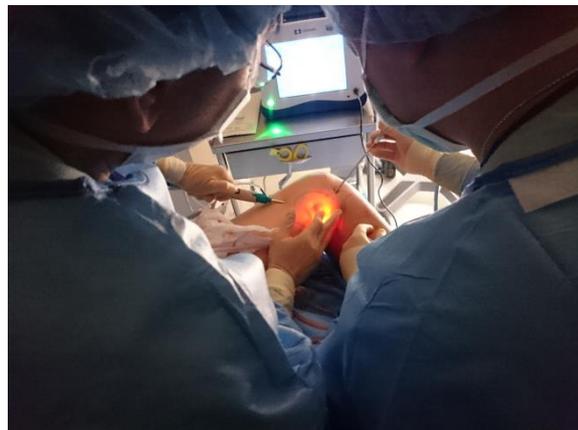
How exactly does he achieve all that in the limited amount of time every day? With the help of technology and personal time management, of course. For starters, he uses a Microsoft Surface Pro as his "office" on the go. He stores all his publication drafts, office documents, and even has his billing documents and forms on it. He simply brings his Surface to a coffee shop or library and he is ready to go.

In addition to using a tablet computer to virtually replace all of his computing needs, he also utilizes Office 365 and its cloud function. He is the first physician I have ever seen to do so. As an avid user of Office 365 and OneDrive, I personally know how convenient such technology is. However, Dr. Lin uses it in such a way that maximizes its usefulness in a clinical setting. Since Dr. Lin has multiple offices, he connects all the computers at the various locations together by uploading all his documents onto OneDrive. Among the various documents include referral letters and prescriptions, all digitally signed and ready to be printed at the different offices by his nurses. Also, the billing software allows him to track all the patients who have visited his offices, effectively allowing him to be on top of everything that happens at any office location he owns.

Dr. Lin also has a "I help you, you help me" relationship with the other staff members at the hospital. He goes back and forth between the catheter room and the operating room, as he has outpatient procedures in the catheter room in addition to his surgeries. In order to maximize the usage of his time,

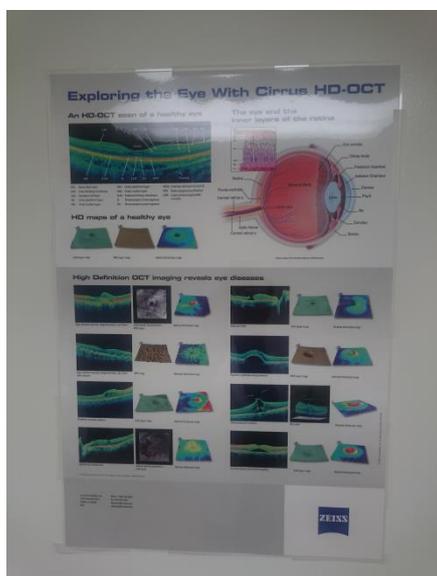
when he goes downstairs to the catheter room, he helps clean up the room and mop the floor in preparation for his case, while allowing the cleaning staff to either have a short break or prepare for the next patient. This way, the cleaning staff always treat Dr. Lin's cases with priority and is always willing to work with him.

In the OR, Dr. Lin only had radiofrequency ablation of varicose veins today. During my rotations in cardiovascular surgery in Taiwan, I had already seen radiofrequency ablation of the great saphenous vein already. However, it is the subsequent phlebectomy that was most interesting. Dr. Lin used an endoscopic approach during the removal of the varicose veins. The surgeon creates only 2 small incisions around an island of varicose veins and inserts 2 instruments. The first instrument is a "light" that essentially illuminates the subcutaneous tissue plane, allowing easy visualization of the varicose veins against the lit background. The second instrument is a burring instrument that is used to remove the varicose veins. All throughout the process, both instruments pump epinephrine and lidocaine infused saline into the dissection plane subcutaneously, inducing an anesthetic and hemostatic effect. According to Dr. Lin, who often visits Asia (and Taiwan as well), this technology is relatively new. Mainland China is due to receive the technology next year, but due to restraints in Medicare and the cost-benefit of the Taiwanese medical industry, this technology will not be introduced to the Taiwanese market any time soon.



Picture 20 How varicose veins are removed. Endoscopically. With minimal wounds..

In the afternoon, I visited Dr. Fan, the vitreoretinal specialist's office. True to his specialty, Dr. Fan's patients consists mostly of diabetic patients or geriatric patients who are there for routine check-ups of their retinas. What amazed me the most was the amount of instruments and technology Dr. Fan had in his office. The examination rooms of his office all had Fujitsu laptops with stylus support, running a dual monitor set-up. Also, his EMR system is relatively advanced and specially made for ophthalmology.



Picture 21 Yes. This is just a poster. But Dr. Fan had the actual machine in his office.

In addition, he also has a few machines that I had only seen in hospitals. He had an ocular ultrasound machine that was dedicated to intra-ocular ultrasounds. He also had an OCT (optical coherence tomography) machine in his office as well as an OPTOMAP (ultra wide-field retinal imaging), both of which I had only seen in the hospital and most likely costing a hefty sum of money. However, the machines are integrated seamlessly into his examinations and the results are uploaded directly to the computers in his examination rooms.

While at Dr. Fan's office, I also saw a few procedures that I was not fortunate enough to see in Taiwan. The first of these is laser

photocoagulation. Dr. Fan surprisingly also has one of these machines in

his office as well. After the patient signs the consent form in the examination room, they go directly into the next room, where laser photocoagulation can be done on the spot. The other procedure that I was able to observe was intra-vitreous injections of Avastin (bevacizumab), a VEGF (vascular endothelial growth factor) inhibitor. Though it was quite a gruesome sight, seeing the conjunctiva bulge out after the injection of topical anesthetics, the injection of Avastin itself was quite expedient and not as cringe-inducing.

Today, both the physicians I had shadowed had integrated technology relatively well into their respective practices. This is something I hope to emulate in the future, as medicine would only be more dependent on technology.

Day 13: October 4, 2016

Today, I met Dr. Chang, the otolaryngologist. Dr. Chang is a rather senior physician in terms of the number of years he had been practicing in the United States. He too was a graduate of TMU, but he graduated in 1970, long before many of the other TMU graduates I have met.

Dr. Chang has an office walking distance away from Garfield Medical Centre. Apparently, he had been practicing there for 35 years already. The number of patients he sees is rather small; for the afternoon that I was there, he only saw 6. The reason why is because Dr. Chang does not do surgery any more; for cases that require surgical intervention (there was a middle-aged man today who required tympanoplasty for perforated eardrum due to chronic otitis media), Dr. Chang would refer them to another otolaryngologist. Also, he limits the amount of patients he sees by limiting his patient population to PPO patients exclusively.

However, despite the small number of patients he has, Dr. Chang still manages to thoroughly examine each patient. Perhaps it is because there are so few patients that he is able to do so, but Dr. Chang always examines the patient's ears, nose, and mouth, even if the patient only complained about one of them.

Also, Dr. Chang is equipped with instruments otolaryngologists in Taiwan is not normally equipped with in their private offices. The most prominent example would be the fibro-optic endoscope. Dr. Chang used the endoscope to examine one of the patient's throat after not being able to visualize it directly during physical examination. Due to costs, I highly doubt many otolaryngologists in Taiwan will have one of these in their clinics (though interestingly, when I visited a otolaryngologist in Canada for a suspected fish bone stuck in my throat, they also had a fibro-optic endoscope).

Still, despite the small number of patients, I managed to see a few cases I have not seen before (e.g. cerumen impaction).

Day 14: October 5, 2016

Today was a day of relaxation. In the morning, I shadowed Dr. Huang for his morning clinic. There, through discussion with

Dr. Huang, I learned quite a few new concepts regarding orthopedics I have not heard before, with most of these cases pertaining to the spine.

First is dizziness with nausea and vomiting associated with cervical radiculopathy. We were familiarized with the paresthesia and radiating pain caused by compression of the cervical roots, but have never been taught that it could also cause dizziness with nausea and vomiting. According to Dr. Huang, this was caused by compression of the nerves of the autonomic nervous system. A quick search on PubMed turned up a journal article describing a certain "Cervical Syndrome." Apparently, compression of the C2-4 spine would cause dizziness, vertigo, or nausea and vomiting, while compression of the C5-6 spine would cause bradycardia and hypotension. This was a rather novel concept for me, and would definitely help me in the future as a differential diagnosis for these symptoms.

Also, there was a patient who was found to have transitional vertebrae of her lower back. At first glance, it seemed as if she had 6 lumbar vertebrae. Upon closer inspection, it was found that her S1 vertebra was actually detached from her S2 vertebra. Transitional vertebrae can be found in any part along the spine as well, but this was the first time I had ever seen such a case.

While we were on the topic of separated vertebrae that were supposed to be fused together, Dr. Huang also mentioned a "Klippel-Feil Syndrome," which is the complete opposite. In the case of Klippel-Feil Syndrome, the patient would have vertebrae that are fused together when they are supposed to be separate.

In either case, abnormal stress caused by the instability would cause worsening of spinal nerve compression, leading to exacerbating symptoms.

After Dr. Huang's morning clinic, Dr. Chen brought me to Huntington Library. True to its name, Huntington Library is a library with its surrounding grounds previously owned by the railroad magnate Henry Huntington. On its premises, there is a sparse botanical garden with many outdoor gardens ranging from a Chinese garden to a British styled Rose garden. The plant variety here is quite mind-blowing, with tequila and cacti from Mexico to Ginkgo and black pine from Japan. Dr. Chen also specifically pointed out digitalis flowers blooming in the gardens.

Among all of these gardens, there is Mr. Huntington's own residence and the eponymous library. In both of these buildings there is a vast collection of artistic masterpieces and book collection. Of all of these, the most impressive of them all is an original Gutenberg Bible bounded by vellum (animal hide) which apparently is 1 of 12 remaining copies in the world. Of course, there are also a large collection of scientific books, and among them, medical books, including writing by Hippocrates himself.

Unfortunately, we ran out of time so we were forced to leave early, but Huntington library is a place I would definitely visit for a more thorough visit next time.

Day 15: October 6, 2016

This morning at Dr. Huang's office passed by rather uneventfully without seeing any interesting cases, with the exception of a total knee arthroplasty (TKA) patient whom had come for follow-up post-operatively. Interestingly, she had developed a lateral foot drop with preservation of limited dorsiflexion of her foot. This was indicative of a superficial peroneal nerve palsy with the sparing of the deep peroneal nerve and the associated tibialis anterior muscle. According to Dr. Huang, this complication was quite rare, and he had never seen a similar case before. However, it was possible, be it due to ischemic damage due to the use of a tourniquet intra-operatively to decrease blood loss or direct manipulation during retraction of the skin of the knee. Still, the damage was done and the patient is symptomatic, so there is nothing to do other than wait for restoration of the nerve function. Slowly and surely, the nerve will try to recover and there is a chance the patient will be able to move her peroneal muscles again. In the case that she can not, tendon transfer may be required.

In the afternoon, I had plans to observe a mitral valve replacement by Dr. David Huang, but due to the patient having been wheeled in to the OR early, I could not get the consent form signed in time and was refused entry. However, this turned out to be a blessing in disguise. Because I could not observe the surgery, Dr. Chen arranged for me to meet Dr. Chiu (邱文達), the current CEO of the AHMC Medical System.

Dr. Chiu is almost legendary in the TMU system; his name are on posters in both Wanfang Hospital and Shuang Ho Hospital due to the enormous contributions he had made for both during his time there. He was also the President of TMU during the first few years there, and was subsequently whisked away to become the Minister of Health and Welfare.

I remember I had taken one of Dr. Chiu's courses back in second year. It was "Hospital Management" (醫院管理學), and consisted mostly of presenters from outside of school given us presentations. However, today was different. Today, Dr. Chiu gave me a personal one-on-one presentation on the advent of AHMC. Throughout the presentation, Dr. Chiu also told me a few differences between the systems in the United States and Taiwan, such as the fact that American physicians are not tied to a specific hospital (while Taiwan's physicians are) and the fact that payment to the hospital is based on the quality of service it provides (hence smaller hospitals are able to survive better in such a competitive market) as opposed to being based on their hospital ranking.

Dr. Chiu emphasized the importance of management skills and imparted a book to me. He lent me a book titled, "One Minute Manager" and wanted me to give a presentation on my thoughts and reflection next week to him and his staff. He also invited me to observe the hospital evaluations they are conducting on the various hospitals under the AHMC Medical System. With these events to look forward to, I guess I will need to do a lot of homework over the weekend...

Day 16: October 7, 2016

The topic of today's grand round was Rectal Cancer Management by Dr. James Fleshman. Apparently, Dr. Fleshman was the first surgeon to utilize laparoscopes in the treatment of rectal cancer. Surgery for rectal cancer has reached a bottleneck with the open technique, and after the introduction of the laparoscope, new techniques could be developed. Dr. Fleshman conducted a large-scaled study of a few hundred cases and found that the complications, length of hospital stay, and prognosis of the laparoscopic approach was comparable if not better than the open technique. After listening to his presentation, I think the take-home message is to never be afraid of innovation. Try something new. Maybe the next big thing will be credited to you.

After returning to Garfield Medical Centre, I shadowed Dr. Lo, the ophthalmologist for the day. Dr. Lo is a retinal specialist much like Dr. Fan. The only exception is that Dr. Lo predates Dr. Fan by over a decade. Dr. Lo's office is relatively smaller with less instruments than Dr. Fan's. However, that did not stop Dr. Lo from teaching me all about macular degeneration, glaucoma, and cataracts. Since Dr. Lo is semi-retired now, he does not have a lot of patients, allowing him to spend a lot of time teaching me. He also showed me some of the examination results of the patient. For the first time ever, I was able to see something through the indirect ophthalmoscope (I was only able to successfully use a direct ophthalmoscope during my ophthalmology rotations).

Dr. Lo's instruments are more traditional than Dr. Fan's. He does not have a fancy digital machine that takes digital copies of the patients' retinas nor does he have the machinery to do a fluorescein test. He does have a machine that uses a film camera to take pictures of the retina though. As for those patients who need to have an optical coherence tomography (OCT) done, Dr. Lo sends them to Dr. Fan's office for the imaging before returning.

Despite this, Dr. Lo is meticulous with his examinations. He would spend a good half an hour with each patient. His examinations may take up to 20 minutes, looking at the patient's retinas. With his careful examinations, he unearths findings that are usually hard to recognize through visualization alone. One example was this patient who had a scar membrane on her retina. Under visualization, the membrane should be transparent. The only evidence that would suggest the presence of such a membrane would be the slightest "kinking" of the blood vessels that lie beneath it. Dr. Lo was able to see it and the diagnosis was confirmed with OCT.

After shadowing Dr. Lo for a day, I learned quite a lot. Not only did Dr. Lo confer his knowledge of the most commonly seen ophthalmologic conditions to me, I also learned that with all the advanced technology we see everyday, the most fundamental skills of each specialty are still quite useful.

Day 17: October 11, 2016

Today, I visited Dr. Chang's office once again. Dr. Chang's had told me that he only sees PPO patients now, but from time to time, he still receives HMO patients from referrals. Also, there are patients who he

used to see before Obamacare came into existence. It is through these patients that I see the reason why Dr. Chang made the decision to be minimally involved with HMO.

For starters, there was a patient who had come for a nasal polyp that was constantly bleeding, causing chronic epistaxis that has lasted for over a year. He had come in for chemical cauterization for hemostasis as well as the removal of the polyp. Though the said procedure was supposed to pay out \$70, but the nurse showed Dr. Chang the actual pay-out. For the \$70 procedure, the actual pay-out was \$6.25. This was strongly reminiscent of the Medicare in Taiwan. During my rotations in various departments, I noticed numerous times that the attending physicians were constantly troubled by the possibility of not receiving any payment at all for the work they are doing. They would be hesitant when doing procedures or ordering examinations that carry a possibility of being flagged by the government. The fact that the doctors are further penalized by magnifying the supposed premium and deducting it from their final pay-out further exacerbates the issue. Though HMO is not as insulting to the doctor in this aspect, the fact that the government can cheat the doctor out of work they had already done is still rather unfair.

After the nurse had ranted about this issue, I started chatting with Dr. Chang regarding the shortcomings of HMO. This was when he showed me a stack of letters on his desk. Inside, the letters had stamps on them that reads "Past Due" and "Final Notice." Dr. Chang told me that these patients are those who refused to pay their deductibles. Some patients owe money from before Obamacare had come into effect and simply chose to ignore these notices after being qualified for Obamacare. Some patients owe money from visiting under Obamacare and simply refuse to pay any money. With a deep sigh, Dr. Chang told me this was one of the reasons he decided to look after PPO patients exclusively.

Despite these setbacks, Dr. Chang still maintained his enthusiasm for medicine. He said that despite all this mess, what matters in the end is that he helped these patients when they needed him. He was able to help these patients feel better and that is the most important part of being a doctor.

Day 18: October 12, 2016

Today, I spent my whole day with Dr. Huang, both in his office as well as in the operating room. There were a few hiccups along the way, but at the end of the day, no lasting harm was done.

In the morning at Dr. Huang's office, there were two patients who left an impression on me. First, there was the patient who had successfully received bilateral total knee arthroplasty (TKA) from Dr. Huang; the first one was done 5 years ago, while the second one was done 10 months ago. The patient had such a positive response that she was exhilarated when she saw Dr. Huang, thanking him profusely for helping to alleviate her pain. She could now walk easily and painlessly without a cane (though Dr. Huang still warned her to use one whenever she went). To her, what Dr. Huang did for her was "miraculous" to say the least, according to her own words. Her only regret was that she would no longer be seeing Dr. Huang any longer after.

In contrast, there was a lady in her 70's who had fallen down 2 months ago, and now, though free of pain, she could not abduct her arm. Instinctively, Dr. Huang knew that she had a complete rotator cuff tear. Her forearm flexor and limited arm flexor function were intact, however, and she could still feed herself with mild inconvenience. Dr. Huang explained to the patient and her husband using his brilliant analogies as usual, but for some reason (perhaps it was due to the language barrier due to their speaking Cantonese or the her husband's advanced age with associated senility), the couple seems to be stuck between asking Dr. Huang what are the alternatives to surgery (which Dr. Huang had explained multiple times) and pressing Dr. Huang to make the decision of whether or not to receive the surgery for them. After almost 10 minutes of patiently explaining to them repeatedly, the patients were finally sent home to think about their next course of action. Dr. Huang's management of such potentially problematic patients with patience is something I believe to be worth learning from.

After his morning clinic, the TKA today was scheduled at 12 PM. However, at 11 PM, the hospital called and delayed the surgery to 12:30 PM due to difficulties in the previous surgery. Then it was delayed to 1:00 PM. Then to 1:30 PM. Finally, the time was settled at 2:00 PM. However, the surgery did not start until 3:00 PM due to further delays with preparation of equipment required. Dr. Huang and the PA was able to make up the lost time though, and they were done by 4:20 PM. All this delay was due to the hospital's not being able to prepare all the instruments in time due to sterilization scandal I mentioned earlier in another diary entry. This goes to show how important quality assurance is in the United States and how such violations may lead to catastrophic and dire consequences.

Surgically though, the TKA was mostly similar to the TKA by Dr. Yang I had observed previously. The major difference is Dr. Huang's humorous remarks during the surgery. Also, instead of using the American Zimmer parts, Dr. Huang opted for the Taiwanese United parts. Minor technical differences were also present, such as Dr. Huang's tendency to use "locked" sutures instead of "interrupted" sutures in order to save time. All in all, I was able to observe a rather smooth and speedy TKA.

Day 19: October 13, 2016

Today was my scheduled one-on-one session with Dr. Chiu. In addition to learning about hospital management, I was also tasked with making a short presentation on a book assigned by Dr. Chiu - The New One Minute Manager.

The book itself wasn't too hard to understand; it was an easy read that takes about an hour to finish. However, the concepts behind the book is what mattered most. Coming away from reading the book and preparing the presentation, I learned how to better manage people and increase productivity in a team.

The key to success is in the people you invest in. As a manager, it is very important to help these people succeed in order for the whole corporation to succeed. One of the first concepts the book

introduced was, "People who feel good about themselves produce good results." This essentially meant that if the manager is able to make his employee feel content with his work and his performance, he will be able to continuously and consistently produce good work. This is achieved through what the author called, "the Three Secrets."

The essence of "the Three Secrets" can be paraphrased into three concise sentences.

First, setting goals with a clear and concise content is essential as it creates a common reference point between the managers and those being managed.

Second, praising good performance promptly and specifically explaining to those being managed what they did correctly will boost confidence, resulting in encouragement and enforcement of positive behaviour, ensuring future performance.

Third, if a mistake does happen, also identify it promptly and work it out specifically with those being managed, while at the same time, reassure them that they can do better and reiterate the confidence you have as a manager in them.

Evidently, these three central dogma of the book are covered in more detail in the book itself. The book is meant to help managers who work on a more inter-person level as opposed to managing a whole corporation at once. Nevertheless, as team leaders (which as a physician, will happen many time in the future), these are important things to remember. The Hospitals here in the US put a lot more emphasis on, 1) quality of care, 2) patient satisfaction, 3) patient return, and 4) cost-effectiveness ratio. It is such that in hospital evaluations, they look at four main domains.

Clinical Process of Care is what the hospital does for the patients. It is the smaller component, but includes policies such as influenza immunization numbers and fulfillment of various medical protocols.

Outcome is as its name suggests, the results of the care provided above. Post-operative complications, readmission rate, hospital-acquired comorbidities - these are all included in the outcome section.

Efficiency is also surprisingly one of the domains, as increasing efficiency would also mean decreasing costs and increasing patient satisfaction. Speed is of essence and hospitals are evaluated on how fast yet effective they are at helping patients.

Patient Evaluation is essentially the patients' satisfaction with the hospital. Evaluation of almost all aspects of the care they received at the hospital are recorded.

The hospitals will be evaluated with these four criteria, and the results will eventually impact how much money the hospitals will receive from the government. Hence, it is very important for the hospitals to improve in



Picture 22 After the one-on-one session with Dr. Chiu.

these aspects.

Final Day (Day 20): October 14, 2016

Today's entry will be written in Chinese as per Dr. Ker's request. Due to my English being better than my Chinese, there may be some content or ideas lost in translation.

由柯醫師的要求，今天的紀錄會以中文紀載。由於本人較流利的語言是英文，在當中有可能會有些許不清楚的地方或是跟我本意有所落差之處，請各位諒解。

在開始之前，我必須澄清一些關於我自己的背景。我的 clerkship 大致是在北醫三院系統中度過，只有小兒科有去馬偕一個月，而在我大六末 (clerkship 連接 internship 那段時間) 有機會去了國外見習，去了加拿大 McGill University 合作的 St. Mary's Hospital 的婦產科以及日本東京順天堂大學的乳房外科與心臟血管內科。今年大七 internship 則抽籤抽到了萬芳醫院，而上個月剛好又有機會去美國的 AHMC 系統觀摩。在我去過的地方，我只有直接的體驗到加拿大以及台灣的醫學生的教育。在日本的時候，由於當時剛好是學生們的假期，我只有跟他們那裏的住院醫師有所互動，而在美國的時候，我也只有在每個禮拜的科會以及外科部部會看到住院醫師們的表現以及一小段醫學生們所上的課。

在加拿大的時候，不管是住院醫師還是醫學生，我們都有很多實際操作的機會。那裏的老師把我當成是他們的學生之一，凡是他們學生需要做的，他們都會給我做，甚至從接生到協助剖腹產，主治醫師們都會帶我們做。主治醫師們也非常保護我們學生的權利。雖然大多數的病人都非常樂意讓我們操作，我有一次在做 procedure (cord traction for removal of placenta) 做到一半時，病人問旁邊的主治醫師，可不可以不要一個學生來做。這時，正在指導我的主治醫師便回病人說：「我們的醫學生們是最優秀的，他知道他在做什麼不用擔心。」便讓我繼續。除了實際操作以外，老師們也很注重我們的醫學知識。我們學生在醫院的時候老師們有時就會在討論室開始教我們關於當科的一些概念，

同時，住院醫師的學長姐也時常教我們關於當科的知識。這種教學大部分時間並非單向的教學。很多時候，老師或學長們會問我們一些情境，便問我們該怎麼應變，同時也會問一些關於各種疾病的機轉。不管我們怎麼回，老師們都會給我們回饋，便更深入地講解相關的知識。在那裏也很常遇到需要獨當一面的契機。St. Mary's Hospital 有特別給孕婦及產婦的 triage，而當我們在值產科班的時候，我們醫學生的工作就是當第一線，顧著 triage。當我們看完病人，問完病史以及做完理學檢查之後，我們就會找我們上線的住院醫師討論病人的狀況以及之後需要做的處置。當我們討論完後，住院醫師便會跟我們一起回去看病人，並做下一步的處置。當住院醫師也不是很清楚怎麼處置或是值班的主治醫師剛好在討論室的時候，主治醫師也會跟我們一起討論。除了產科的 triage 之外，急診的會診也是我們的責任之一。當急診有婦科或產科的病人時，我們也會先一個人下去看病人，看完以後再回去跟住院醫師或是主治醫師討論。

相較地在台灣，大多數的病人較不會希望學生幫他們做比較侵入性的 procedure。雖然我們還是有很多機會可以接觸到病人並且幫他們做一些較簡單的 procedure，但能做的較有限。比如說在台灣，我相信願意讓醫學生接生的病患應該不存在。很多時候我們甚至都不敢承認我們是學生。雖然如此，但大多數的老師們還是很樂意讓我們做一些比較低風險的 procedure。進醫院後，學術方面的學習也算不少。很多時候，老師們都很忙，沒有辦法給我們太多一對一的教學，但教研部還是很貼心的幫我們安排核心課程以及一些各科的課程，讓我們還是有機會可以上到課。當然，我們也有很多機會可以報科內的晨會之類的報告，從中也可以學習到很多，但跟一對一的學習比起來還是有差別的。除此之外，台灣的教學模式也比較偏向單方面的指導，而比較不像加拿大或是美國的雙向的討論(但有些老師的教學方法也蠻像國外的)。住院醫師們感覺訓練就遠比一學生好多了。也許是因為他們有醫師執照了，做事情比較有說服力，在法律上也比較站得住腳，但是學長姊們的知識以及專業度跟我們簡直是天壤之別。他們的責任相較地也因此較重大，但同時也比較可以腳踏實地學習很多。

在日本的時候，我只有跟當科的住院醫師有較多的互動，但我從中了解了日本他們醫學生的訓練。當我在外科的時候，我發現他們的年輕的住院醫師其實手術方面的技術其實沒有很熟練，有些住院醫師甚至打單手手結的技巧比我們台灣的 clerk 還不熟。相反的，當我在那裏的內科的時候，我發現他們的住院醫師非常了解他們的專科，我問問題時他們都可以回答的很詳細，甚是還會主動找我解釋當科的醫學知識。內外科的共同點則是，當他們在查房的時候，他們的住院醫師都可以很了解他們的主治醫師要什麼，也知道怎麼安撫病人。我問他們為什麼會有這個趨勢時，他們說由於他們學生的時候沒有醫師執照，沒有很多機會可以實際練習外科的技術，卻有很多機會可以唸書。因此，有些住院醫師是當上了 resident 後才實際有機會在實體病人上練習的，但最後當上主治時，他們的各種技能都是一流的。

在美國雖然我只有觀察到他們住院醫師的報告以及些許醫學生的課程，但我覺得他們的教育跟加拿大有所雷同。在美國的科會議，當台上的住院醫師在報 case presentation 的時候，會議的主持人會三不五時打斷演講者，直接質問演講者關於他的處置。主持人也會經常特別針對 case presentation 當中的重點來點名，直接問台下的其他住院醫師他們的意見以及他們的處置。除了住院醫師以外，主持人也會點名資深的主治醫師來講解一些治療方向的概念，以及一些有相關的文獻。由於有時候甚至每一張投影片都花很多時間討論導致最後時間被拖延到，但每次都可以學習到很多相關的醫療知識。除此之外，由於隨時都有可能會被叫回答問題，在台下的每一位醫師都不會不專心在划手機或是睡覺，每一位都很專心地在看報告。這種即時 (real-time) 不只可以讓大家都參與感，同時也可以考驗大家的應變能力。美國的醫學教育跟其他地方差最多的地方其實是在醫學生的限制以及病人的權利。我在美國的 AHMC 系統中，不管哪個手術，都要事先給病人本人簽完同意書才能進去刀房觀看。觀看的時候，什麼都不能做，就只能用雙眼看而已。這個同意書的規定有非常嚴格的執行 -

我有多次因為病人已經麻醉了所以無法簽觀看同意書 (也有一次因為病人拒絕醫學生觀看) 而無法看手術。相較的，其他三個國家都不需要簽屬同意書就可以直接進去看任何的手術或是 procedure。雖然這一點算比較麻煩，但也算是尊重病人的權益。

在這四個國家當中的醫學教育，多多少少都有符合 ACGME (Accreditation Council for Graduate Medical Education) 的六大核心領域。但不同的國家有不同種程度的呈現。

1. Patient Care

我相信每個國家都有達成妥當的 patient care。在我所觀察到的範圍內，醫學生有任何問題的時候，住院醫師們都會幫忙引導我們往正確的方向，而大多數的病人對於他們所受到的醫療處置都算是滿意。絕大多數的醫學生及住院們對於他們的工作都還算是充滿熱忱。唯一的差別是，在台灣上完白班後值大夜班之後又接著白班的規定導致醫學生們對大夜班充滿埋怨。相較的，在加拿大 St. Mary's Hospital 的排班是三班制，所以醫學生們比較沒有對於工作量以及夜間照顧病人的怨言。

2. Medical Knowledge

我覺得教學醫院多多少少都有為他們的學生們安排增廣醫學知識得課程。我在加拿大與美國的時候，都有看到學校為已經進醫院的學生們安排基礎醫學以及臨床醫學得課程。台灣的教學醫院也有安排許多課程讓學生們能夠學習，但這些課程大部分都是純粹的臨床醫學課程。由於大多數的醫學生都有自行讀書的習慣，所以醫學生的程度也會因個人造化有所變異。唯一會比較有差的是語言方面的問題。因為北美得學生們的母語是英文，而比較有參考價值得文獻也大多數是英文，在閱讀以及吸收放面他們算是有絕對的優勢的。即使是這樣，台灣的醫學生的程度也不會略於他們多少。我所認識的同學中也有許多是靠努力而克服這個語言障礙的。但要是跟我在加拿大所認識的醫學生比的話，加拿大的學生的醫學知識真的算是很扎實的。

3. Practice-Based Learning and Improvement

這一點我覺得算是加拿大與台灣都做得不錯。雖然我並沒有機會待在美國的教學醫院中，所以無法觀摩到更多醫院的政策，但我所看到的醫院中，醫學生是除了看以外什麼都不能做的。另一方面，加拿大與台灣的醫院並沒有像美國一樣被“醫學倫理”以及“病人權益”所限。醫學生有許多機會可以實際在病人上學習以及練習一些簡單的 procedure。加拿大做的比台灣還更好的就是有更多種 procedure 可以給醫學生做。這一點我覺得其實是被台灣的社會文化所限。在加拿大的時候，在婦產科時只要跟病人說一聲，很多孕婦都可以接受讓醫學生作指診內診，甚至連接生都願意讓學生做。這種事在台灣是絕對做不到的。除了這一點有些許的差異之外，加拿大與台灣都有的特色就是 OSCE 與模擬病人。雖然我在加拿大的時候，因為我不是他們正是的學生所以無法參與，但他們的學生所敘述的 OSCE 跟我們在台灣所做的算是蠻相似的。

4. Interpersonal and Communication Skills

在交換資訊方面的話，我覺得各地都大同小異。在加拿大和美國，我都有看到跟台灣一樣強調 ISBAR 的海報 (正確來講應該是台灣學習國外的海報吧)。這點大家在交班的時候確實都有做到。唯一的差別是，在台灣有些地方做完 ISBAR 後還需要在系統中點選有做過 ISBAR，而在國外的話，交完班就交完班了，並不需要多做一個點選的動作。至於醫學生與病患或是病患家屬之間的溝通的話，我覺得加拿大的學生大多數都勝於台灣的學生。這點我覺得又很多因素。首先，在國外的教育從小就一直很注重於表達自己與跟別人溝通。在某些時候，也許對台灣學生比較卻步的場景，加拿大的學生卻能夠好好掌控的了 (如在主治醫師到之前，胎兒都已經在 station +3 了)。這種訓練我覺得在台灣醫學生比較難理解。

5. Professionalism

雖然各地的住院醫師的 professionalism 以及態度都很好，但以醫學生來說確實還是有差一點，

而主要的原因有可能是因為他們的醫學生在很早的時候就已經開始接觸臨床了。我聽加拿大那裏的學生說，他們在 Year 2 的時候就已經開始 shadow 一些主治醫師了。由於很多時候，professionalism 是從觀察與模仿而來的，比較早就開始專門 shadow 主治醫師反而可以讓醫學生們更有概念醫學的 professionalism 到底是怎麼一回事。醫療倫理以及專業態度都是培養出來的，但這一塊感覺在台灣反而變成在學校上的課。雖然專心地上這種課程真的會有很大的收穫（我個人就受益良多），但對班上許多同學來說，這種課卻成為大家都不是很重視的課程。

6. Systems-Based Practice

這點我覺得反而是台灣做的不錯。由於醫療的廉價與相關的限制很多，在這種環境下，很多時候住院醫師以及醫學生們都需要知道自己的資源有哪些。從各種抽血項目及各種檢驗到不同科別的會診，台灣的住院醫師及醫學生都很了解在遇到問題時有哪些解決方式。當然，北美以及日本的醫師並不是不知道怎麼用這些資源，但由於台灣的特殊狀況，醫學生們隨時都可以使用各種資源（e.g. 只要病人懷疑是流感就可以直接做 influenza antigen test，雖然是自費但便宜到只需要 300NT）。

當然這些事我自己個人在去過的醫療院所觀察到的，不用說不同國家或不同醫院了，連通一間醫院的不同科別都有不同的教育方式與風格。這些我所看到的也牽扯到很多層面，並非局限於醫療教育的差別。很多時候文化、醫療環境、校風... 這些種種因素都有可能導致不同的解果。最後我想聲明，這些純粹是我個人所觀察到以及推斷的看法，也許觀察者不同就會有不同的結論，但這就是我觀察過加拿大、美國、日本及台灣的醫療教育系統所得到的結論。



Picture 23 Overlooking Los Angeles at Griffith Observatory, from the hills north of Hollywood. The City of Angels.