Reflections as a Visiting Medical Student at Duke University Hospital, 2013

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It was early April when I arrived at beautiful Durham, to embark on this special learning experience at Duke Hospital. I was excited and nervous, but challenge was what I'd expected. Off we go!

Pediatrics Hematology-Oncology

My first rotation was in Pediatrics Hematology-Oncology, which consisted of three weeks of outpatient service and a week of inpatient service. Clinic worked differently here. Each day, two attending physicians covered the clinic. Patients were scheduled with 20-30 minute slots. A fellow, nurse practitioner, or physician assistant would assess the patients first, report to the attending physician, and after discussion of the plans for the patient, go back to see the patient once more with the attending physician.

On my first day, I noticed that the patient charts were either blue or red in color. Dr. Kreissman, our course director, explained that since many of their patients were sickle-cell disease patients, they made red charts especially for kids with sickle cell disease. Indeed, half our patients were kids with sickle cell disease; the remaining were mainly oncology patients. As a medical student, I was assigned 1-3 patients to assess on my own each day. The rest of the time, I was free to follow residents to see their patients. Some of the kids really touched me, being so considerate and mature: Thomas (names have been changed for confidentiality reasons), a teenager with acute lymphoblastic leukemia, had an anxious mom who worried of him being in public places. I thought he would be bothered by his mom's various restrictions, but he merely smiled and said he didn't mind. Nick, a 14 year-old boy receiving palliative chemotherapy, always brought a sunny smile with him, and shared his experiences of touring around the world. He was living life to the fullest, remaining optimistic but also realistic.

Dr. Thornburg, every kid's second mom!

It was a valuable experience working with many different physicians, watching how each interacted with patients and their families. My favorites were Dr. Thornburg and Dr. Rosoff. Dr. Thornburg was every patient's second mom, treating the kids with an abundance of love and gentleness. I remember being assigned one of her hemophilia regular follow-up patients. As he had no recent symptoms, I finished my assessment in a short period of time. When Dr. Thornburg went in to see him with me, however, she noticed his depressed mood and spent a lot of time just asking him what was bothering him and what he did in his spare time, now that he had graduated and couldn't find a school to pursue study. Although he didn't talk much, she waited patiently with an anticipating look for him to speak. In that instant, I was reminded of the role of a doctor to see beyond physical diseases. Dr. Rosoff could make every kid (and parent) laugh with his humor. His eyes would twinkle with mischief as he deliberately mistook the chief complaint of loose stool for blue stool. He was also very detailed in assessing patients, sneaking in an

exam here and there while playing with the kids.

As it was my first rotation at an unfamiliar clinic environment, I initially had difficulty grasping what was expected of me. But, the attending physicians were encouraging and great teachers. I liked Dr. Rothman's straightforward way of pointing out my mistakes. Dr. Rosoff guided my presentations by asking questions, and often demonstrated comprehensive physical examinations. During the rotation, he also wrote me a long e-mail with suggestions on how I could improve my clinical performance, which was very helpful. Dr. Kreissman summarized the patients she assigned to me prior to me seeing them and gave me hints on the key points of assessment.

Duke Children's Health Center

I enjoyed my time in pediatrics. It was a pleasure to work with kids. The only thing regrettable would be that most of the patients I saw were follow-up patients. I would have liked to see how children are diagnosed with hematologic or oncology diseases, but then again, it depended on which patients we had in clinic.

Pulmonology Clinic and Duke Regional Hospital Consult

During the two-week gap between rotations, I trained with pulmonologist Dr. Tony Huang in Duke Pulmonology Clinic located at the Duke Asthma, Allergy and Airway Center and at Duke Regional Hospital, where we saw consult patients. Clinic worked similar to that of Pediatrics Hematology-Oncology. There were many new patients, and Dr. Huang liked to assign them to me. It was very challenging and exciting to assess patients with yet no established diagnosis! Dr. Huang would ask me my thoughts on the patient's diagnosis and management, then guide me through additional differential diagnosis he had in mind. Often, I learned the details I'd missed out on my history taking by listening to the additional questions Dr. Huang asked the patient.

It was certainly much easier taking history and doing physical exams on adults as compared with children! There were many interesting cases, including patients with diaphragm paralysis, mycobacterial lung infection, amyotrophic lateral sclerosis, sarcoidosis, pulmonary arteriovenous malformation. Even for common diseases such as asthma and chronic obstructive pulmonary disease, patients varied in their presentations, and our management plans were tailored to each individual. It was important to understand each patient's expectations of activity, to decide if our treatments were adequate. The patients were very nice and encouraging. It was an enjoyment talking with them.

After we finished seeing the day's patients, Dr. Huang would look over and correct my clinic notes. Initially, he practically re-wrote them. But, he explained reasons for the changes he made, and it was this instant feedback that helped me quickly improve. I learned to be succinct and to present my thoughts in an organized way so that other physicians caring for the patient could understand our thinking process (and learn some pulmonology through the process—notes can be educational!). I learned how choice of words, however subtle, made a difference in the meanings implied. For example, 'given his smoking history' is different from 'due to

his smoking history' in the sense that 'given' means a condition, and 'due to' implies a causal relationship. Also, our degrees of suspicion for diagnosis are different with our choice to use 'likely', 'probable', 'possible', or 'cannot exclude'. In addition to correcting notes, Dr. Huang and I would interpret and discuss the pulmonary function tests of the day. I would look over the test results, write down my interpretations, and Dr. Huang would correct them, explaining to me why his assessments differed from mine. I learned an amazing amount from the clinic experience, and all at a relaxed pace.

Duke Regional Hospital is a community hospital in collaboration with the Duke University Health System. In addition to clinic, we were also on the consult service for this hospital during the two weeks. Consult service basically followed the same format as clinic whereas I would assess the patients first, present the case to Dr. Huang, and we would see the patient again. Consult differed from clinic in that the problems we were tackling were merely from the pulmonology aspect, whereas in clinic, we assessed the patient's whole health condition. The notes in Duke Regional Hospital were all dictated, and I had the chance to listen to Dr. Huang dictate a full note. Dr. Huang said that dictation was presentation, and presentation was one of the most important things of medical training. One could not make a good clinical presentation without having organized the history and made good assessments. In addition to training one's clinical thinking, dictation saved time. Many residents, fellows, attending physicians at Duke completed their notes via dictation. Regrettably, medical students in Taiwan are not trained in making medical presentations much and seldom have the chance to do so.

Neurology Clerkship

For my last rotation, I was in Neurology, which I absolutely loved! My initial two weeks were in General Neurology, and latter two in Stroke Service, both inpatient services. As medical students, we were assigned several patients to follow and present during rounds each morning. In the afternoon, we picked up new patients and tended to things for the patients we followed. Each team consisted of an attending physician, neurology resident, internal medicine intern, pharmacist, and two second-year Duke medical students. In addition to rounds, there was neurology noon conference every day, case discussion every Tuesday, medical student classes every Thursday, and neuroradiology conference every Friday.

My first week was with Dr. Skeene, a kind and humble physician. I remember vividly when one of our patients had two family members visiting, both with a long list of questions. Dr. Skeene answered each question thoughtfully and clearly, without any display of impatience. I felt much respect for Dr. Skeene during that half hour we spent in the room. The patients in General Neurology had a wide variety of diagnosis, including headache, seizure, myoclonus, encephalopathy, multiple sclerosis, Susac's syndrome, multiple acyl-CoA dehydrogenase deficiency. In the afternoon, our neurology resident, Ambica would have us students pick a topic, and she

General Neurology Team!

would give us a half-hour lecture.

My second week was with Dr. Hartsell, a multiple sclerosis specialist who's wife is from Taiwan! In the mornings, our team sat down to discuss the patients before starting rounds. It was helpful watching Dr. Hartsell perform neurologic exams at the bedside. He once flicked a patient's middle finger and asked me if I knew what it was. It was to test for Hoffman's sign and he held out his hand for me to try it on him. His was negative, however mine was positive. He explained that there was a proportion of the female population that had a physiologic Hoffman's sign, whereas it would be more concerning if it were asymmetric. I felt excited learning a new neurologic exam that day. During my initial week in neurology, I had found it slightly difficult to keep up, having abandoned neuroanatomy and comprehensive neurologic exams for some time. Also, I was rounding with second year medical students who were into their fourth (and last) week of Neurology. But through the second week, as I gained more practice of neurologic exams on patients, got more acquainted with neurology topics, much of the things I'd learned began coming back, and I was learning comfortably. It was a most wonderful and happy learning experience, anticipating work every day.

My last two weeks were on Stroke Service with Dr. Graffagnino, who was the best! He possessed a wealth of knowledge not only in neurology but also internal medicine, having trained in both fields. During rounds, he challenged us with questions which ranged from stroke localization and Plavix mechanism to serum osmolality calculation and arterial blood gas interpretation. When a student could not answer the most basic question, he backed up and started teaching from the basics, with no prejudices. When a student got the right answers, he would ask harder ones. As he tells us, 'Teachers always start with easy questions. When you start noticing your attending is giving you hard questions, it means you already know the answers to the easy ones.' I also learned from his neurologic exams. He was able to test for a lot of things even in a globally aphasic patient. He helped us tie neurologic exam findings with a precise neurologic presentation: It was after his hinting that we realized we were evaluating a patient with motor apraxia and another with Anton syndrome. Some of our patients had smoking habits or substance abuse, and I learned from watching how he coped with them. He was firm and strong in urging them to quit, stating the health risks and serious consequences undiminished, but he also made it feel as if he was extending a hand to the patient, that he was working alongside him and wished just as much that the patient could turn his life around. He really did see the good in our patients. We would hear him comment about our cocaine abuse patient who had hemorrhagic stroke: 'He's a smart guy. He's doing something with his life.'

Role model Dr. Graffagnino

In addition, Dr. Graffagnino was very evidence-based in his medical management. He often assigned us trials related to stroke management to present briefly to the team, including JUPITER, SPARKLE, DESTINY II, PREVAIL, FLAME. During our presentations, he helped organize the main conclusion (or as he puts it, the 'punch line') and analyze the limitations of the trial. When we had questions about management of our patients, he often answered with references to clinical trials. He was attentive to each student's learning, giving

us separate feedbacks in the end. He was my role model as a physician and as a teacher.

What I liked most about the neurology rotation was that teaching was everywhere. Interns and residents were keen to let us evaluate patients first, and have us report our neurologic findings and assessments to them. They would grab us when they went to see a new patient, so we wouldn't 'miss anything exciting.' And the neurology chiefs knew everything—we would only mention seeing a patient seize in the morning to earn a discussion about seizure types, management, anti-epileptic drugs. Once, our chief George overheard two medical students and me talking about brachial plexus anatomy. He pulled a chair over and gave us a half hour talk on brachial plexus anatomy, with correlations to clinical presentation. It was amazing how he could do that spontaneously. When Matt, another neurology chief noticed I was patient-less for the day, he began telling me about a transfer patient from the ICU that would be interesting for me to see. And the residents and chiefs themselves were constantly learning: The attending physicians challenged them with harder questions. During neuroradiology conference, the residents presented difficult cases to discuss with a radiologist. Instead of answering questions directly, the radiologist challenged them back with questions, and sometimes to explain his thinking process, would start from the very basics of how an MRI worked. I liked that people didn't assume you were incompetent because you asked the most basic questions—basic foundations were emphasized over and over again in teaching.

Seniors at Neurology: Ahmed, Anastasie, and George

I also enjoyed working with second-year medical students. They certainly were very diverse! They were very comfortable in interacting with patients, which may partly come from them given the responsibility to primary care early into training.

Second year medical students, Jon and Daniel

The Conferences

There were many conferences throughout the week at Duke for every department: Internal medicine grand rounds and neurology conference at noon, pediatrics conference in the morning, just to name a few. What I noticed about these conferences was that many of them were case-based topic discussions and interactive. When discussing tropical emergencies, we weren't bombarded with slide after slide of disease manifestations. Real cases encountered over the years were presented and we were asked for our diagnosis. The lecture on pleural effusion wasn't a recitation of Light's criteria. Instead, we heard cases of different types of pleural effusion and were asked the labs we wanted to obtain. I particularly enjoyed one internal medicine conference on conveying bad news. We were asked to pair up in twos as physician and patient and role-play. The physician followed a hand-out sheet of questions to address in discussing end-of-life care for the patient, a case of glioblastoma refractory to chemotherapy. After the role play, we were asked our reflections on how following the hand-out in order to

make the discussion more structuralized and standardized had helped or not helped with the process. I had played the patient, and it had struck me how different it felt when I really tried putting myself into the patient's shoes. I was able to reflect better on how I would have wanted the doctor to lead our conversation. Conferences weren't all this exciting, of course. There was also the very lecture-type ones. But, there was always an exciting twist at the end—the Q & A. Many hands would rise, and both questions and answers would be very thoughtful.

Angels Among Us/ Rainbow of the Heroes

During two weekends, Lisa (one of the students also from Taiwan via the same program) and I participated in two of the many Duke fundraising events open to the public: Angels Among Us, a run/walk competition fundraising for brain cancer research, and Rainbow of the Heroes, a walk fundraising for bone marrow transplant. More than fundraising, these events were commemorations for patients, and provided opportunities for patients' families to reunite with medical caregivers. Families were welcome to bring pictures and stories of patients to put up on a wall to share with the public.

Rainbow of the Heroes

I remember that day at Rainbow of the Heroes. Everyone had finished rounding the track field, carrying coloured balloons, and gathered in the grassfield to release their balloons into the sky at the same time. After the hurray as the balloons rose to the sky came silence as everyone stood staring at the disappearing balloons, some which held messages for ones so far away. Around me, I saw people's eyes redden. Some burst into tears; some held each other in their arms. It was an event which allowed patient's families to revisit their deepest sorrows, to be weak without conceal, and to realize that a community of people had your back. It also gave patients still fighting their battles hope and strength. And this was of utmost meaning and importance in a world where diseases at times still left us weaponless. For me, it was a calling to contribute to advances in medical treatment.

The Differences

There were many differences I noted from the medical environment at Duke in comparison with that in Taiwan. In general, there was less hierarchical distinction between students, residents, and attending physicians. Our seniors extended their hands to introduce themselves to us, many times even before we'd introduced ourselves to them. They were teachers as well as friends. One was less daunted to question a senior about their medical management choice or to express a different opinion, because everyone worked as a team to improve care and to learn from one another.

Medical training emphasized clinical thinking a great deal. Teachers may challenge students starting with a medical knowledge question, but this was often followed by: 'Why is that?', 'Can you explain the mechanism?', or 'What do you think we should do for our patient?' We didn't merely have to know how to treat; we had to know why. Teachers often explained the lines they were thinking along in making medical decisions. This

thinking process was also presented in medical notes. This helped me acquire the ability to reason within myself the reasons for choosing particular treatments and to make decisions based on analyzing pros and cons. Having a firm grasp on pathophysiology and understanding the basis of current managements also allowed me to be able to problem-shoot the reasons for treatments not being effective in a particular patient or reflect upon how treatment may be altered to improve outcome. I remember asking Dr. Graffagnino the basis for using anticoagulant instead of anti-platelet drugs for patients with vertebral dissection. He surprised me by answering there was no trial-evidence for it; it was a general consensus based on a vague hypothesis of blood flow turbulence in vessel dissection. This got me wondering if there were more optimal drug choices.

The duty of a medical student at Duke was to learn. Basically, the team could function fine without students. We didn't perform repetitive procedures or have to write inpatient notes. Many things were done 'for educative purposes'. I once overheard a medical student ask her resident if she needed to write medical notes. Her resident surprised me by answering it was completely up to her. He would be happy to look over and correct her note, but he didn't want to create extra work if she already had that practice. Into the third week of my Pediatrics Hematology/Oncology rotation, I was able to choose if I wanted to stay outpatient or go inpatient. When I asked Dr. Kreissman if I could stay another week in the clinic, she exclaimed, 'Of course! It's for your education.' Residents were often contemplative in choosing patients for students to pick-up. I felt that I was respected as a student to be fulfilling my duty to learn.

I really liked the patient-doctor relationship at Duke. Doctors often took a seat beside the patient when talking with them. And they were patient in making sure patients fully understood their conditions, often explaining repetitively. They had higher expectations for how well a patient should understand. They also strived for transparency. Once, during rounds, our intern closed the patient's door since one of us was presenting his case outside the door. Dr. Graffagnino stopped him and said, 'There is nothing we say that can't be heard by the patient.' It is partly these acts on the physician's part that make the patient population in the States generally better educated medical-wise.

In the hospital, attending physicians, chiefs, residents all knew the patients well, and would often correct us during round presentations when we got the history wrong. It made me feel more at ease working under them, knowing we were not putting patients at risk with our inexperience. This sense of responsibility was everywhere and drove people to work harder, to become back-ups for other people. I liked the hard-working atmosphere and the continuous strive to become better.

This experience at Duke has been very meaningful and rewarding. It opened my eyes to a different medical environment and system. I learned not only medical knowledge, but more importantly, the attitudes of these doctors. And I felt a personal growth having stepped out of my own safe zone.

There is a quote I read on the board in one of the workrooms at Duke Hospital that I particularly liked, which I would like to share and conclude with: 'Be kind. Be calm. And help one another.' May we remind ourselves of this attitude and cherish our patients and the ones we work alongside.

Thank you's

Many thanks to Dr. Andrew Huang for giving us this valuable experience. We were very happy to see you! Many thanks to our teachers at KFSYSCC. I would not have accustomed to the clinical learning here so smoothly had it not been for the solid training I received during clerkship. Many thanks to Karen (our second mom at Duke), Dr. Tony Huang, Dr. Jen-Tsan Chi, Dr. Luke Chen, who took good care of us. Many thanks to my teachers Dr. Chen-Huan Chen and Dr. Ling-Yu Yang for their recommendations. Many thanks to Yu-Mei, who helped with so much of the arrangements. Finally, many thanks to my partners during this trip, Lisa, Joy, Wendy, and Kevin, and our wonderful friends at Duke—Brian, Chien-Kuang, Shih-Han, Howard, Lee, Gary and Patrick.

Orientation with Karen, our second mom at Duke

Weekend at elegant Charleston

Lisa and Durham Bull and I at Angels Among Us

Barbeque at Dr. Tony's sweet home