Medical Elective Scheme Report: Lucas Heeringa

My elective experience:

Thanks to the support from the RCPath/ British Society for Immunology award, I was able to carry out a six-week rotation at the Dr. Robert Reid Cabral Children's Hospital in Santo Domingo, the capital of the Dominican Republic. This is the country's largest and most prominent children's hospital, meaning I was lucky enough to see the most interesting cases referred to them from far and wide. The distinctive healthcare challenges and patient population of the Dominican Republic, particularly among children, presented a unique learning environment in which I was excited to participate. The Dominican Republic's tropical environment and developing healthcare system allowed the opportunity to come across and study infectious and immunological diseases not commonly found in the UK.

The doctors at the hospital were kind enough to allow me to select which departments I wanted to spend time in. I started in cardiology and worked my way through the immunology, emergency, infectious diseases, ENT, and respiratory departments. This allowed me to see a wide range of conditions, sometimes at different stages of severity, and even follow some patients on their journey through the hospital.

Experiencing a healthcare structure that functions around government-provided or private health insurance was new to me. It highlighted the uniqueness of the NHS, as I had never seen a billing department in a hospital before. It was often the most crowded part of the hospital and provided a new appreciation for a system that is free at the point of use.

My learning:

Cardiology:
I started in the cardiology department. This was mainly in the outpatient clinic, with the occasional ward round in the main hospital. Naturally, a majority of the cases were congenital malformations of the heart, including ventricular septal defects, atrial septal defects and patent ductus arteriosus. The doctors in the department were great teachers, and I got better at describing and distinguishing the different murmurs that these children presented with.

I also had the opportunity to see cases of rheumatic heart disease (RHD), the most common acquired heart pathology in the country. I learnt about the screening, prevention, diagnosis, and treatment of RHD and the challenges faced in each step. For example, frequent misdiagnosis of the initial acute rheumatic fever and a lack of compliance with the penicillin prophylactic

injections for RHD. This could be due to financial or access restraints, or simply due to kids fighting having the frequent injections.

Allergy and Immunology:
My time in the allergy and immunology department was spent with the amazing Dra. Rojas, who single-handedly dealt with the immunology cases. The majority of the cases I saw with her were hypogammaglobulinemia patients who would be admitted for immunoglobulin infusions. These children were often flagged due to multiple infections in early childhood and would be sent for genetic testing. There was one family who was familiar to the clinic, as they had a daughter who had died in infancy due to multiple respiratory tract infections and their son, aged three, was now presenting similarly. The genetic testing showed that he had a defect in the CD40LG gene, which generated a premature stop codon in the 5th exon. This followed as the patient had low or absent levels of immunoglobulins apart from IgM. This is due to the defective CD40 ligand, found on activated T cells, which would be unable to activate and mature B-cells into antibody-producing and class-switching B-cells via the CD40 receptor. The child was also suspected of having insufficient neutrophil chemotaxis, typical of hyper-IgM syndromes, as neutrophils also express CD40. It has also been documented that the neutrophils and macrophages of patients with hyper-IgM syndrome may have a reduced capacity for oxidative bursts.

The allergy patients I saw mainly suffered from allergic rhinitis and food allergies. Notably, the Dominican Republic does not have many laws regulating food packaging, which means that components like egg and dairy are often not declared in products. This makes food education an essential aspect of allergy management, as many parents struggle to know what their children can and cannot eat.

Emergency:
The emergency department was unsurprisingly the most intense week out of the six. On the first day, a little boy with profuse hematemesis was brought in by his grandmother. He had recently had an adenoidectomy and had been recovering well until now, the doctors suspected that he had eaten something hard too soon. I was later able to follow this case up in an ENT consultation and the patient was recovering well.

During my time there, burns were a prevalent cause for urgent care admissions. Compared to age-matched patients' records from North America, paediatric burn patients in the Dominican Republic spent almost twice the amount of time in hospital and had a fourfold higher mortality rate. Interestingly, electrical burns make up a tenfold higher proportion of all paediatric burns, possibly due to uninsulated wiring or architectural risks. We were also educated on the dangers of fungal infections of burn wounds, as they recently had such a case, which is more common in immunodeficient patients.

Summary:

In summary, the six weeks spent in the Dominican Republic have been a fantastic learning experience where I have had the opportunity to see unique clinical cases and become a more fluent practitioner. I plan to carry what I have learnt through my future career. I am very grateful to the Royal College of Pathologists and the British Society for Immunology for supporting this experience.