SBNS Undergraduate Elective Bursary Report

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I undertook a four-week elective sub-internship in neurosurgery and interventional neuroradiology (INR) at New York Presbyterian (NYP) Hospital/ Columbia University Irving Medical Centre, under the supervision of Dr. Mandigo and Dr. Lavine. I was drawn to Columbia because of its academic environment, high level of sub-specialisation and breadth and volume of practice. My aims were to (1) deepen my understanding of neurosurgical patient care, (2) broaden my exposure to the allied sub-specialty of INR, (3) strengthen my clinical reasoning and practical skills and (4) experience the culture of an internationally recognised academic neurosurgical centre outside of the UK.

From the very beginning, I was immersed in the daily routine of the department and trusted with the responsibilities of a sub-intern student, taking a more active role in patient care than I had ever previously experienced on placement. Each morning, I joined the residents for didactics or grand rounds and afterwards I worked alongside the INR fellow to review the patients listed for elective procedures. I then joined the attendings in the INR suite, where I scrubbed and assisted in procedures. After the procedure was finished, I handed-over the patients to their parent ward with the fellow and followed them through to discharge. Some days, I had the opportunity to scrub in open vascular cases, which allowed me to appreciate how microsurgical and endovascular approaches complement one another. As the vascular service manages many acute presentations, no two days felt the same and this unpredictability gave me a realistic taste of the intensity and pace involved in acute neurosurgical practice.

The main conditions I encountered in INR were ruptured and un-ruptured aneurysms, stroke, arteriovenous malformations, cranial and spinal dural arteriovenous fistulas, and recurrent epistaxis requiring embolisation. I was able to experience both the diagnostic and the therapeutic aspects of the specialty, including digital subtraction angiography, coiling, embolisation, stenting, fluoroscopy-guided lumbar puncture, intra-operative angiography, WADA testing and pre-operative tumour embolisation. I was also fortunate to observe procedures such as middle meningeal artery embolisation for chronic subdural haematoma

and migraine, venous sinus stenting for pulsatile tinnitus and idiopathic intracranial hypertension and carotid-cavernous fistula embolisation for diplopia and eye redness which I had not previously seen. Seeing this broad range of work helped me appreciate the broad role of INR across multiple neurosurgical subspecialties.

One of the most valuable aspects of the elective was the opportunity to strengthen my clinical reasoning and practical skills. Working closely with the residents, I became more confident in interpreting imaging in a systematic manner, identifying subtle pathology and thinking about how radiological findings contextualise and influence patient management. I also became more familiar with evidence-based tools such as the ASPECTS score for stroke severity and the PHASES score for estimating aneurysm bleeding risk. At the same time, I learned that tools such as the NIHSS and mRS scores, often only form one part of the clinical picture and that decisions such as whether to proceed to thrombectomy, require a broader judgement of the patient's functional baseline, examination findings, potential for recovery and tolerance for risk.

Helping the residents in their daily tasks pushed me to continuously improve my notetaking, examination, task prioritization and case-presentation skills. I also learned to carry out several practical tasks such as preparing the operating room, checking wounds, removing sutures/staples, performing shunt taps and removing and adjusting drains. This gave me a greater sense of responsibility and helped me feel better prepared for foundation training.

One of the key takeaways from this elective was the attitude of the residents. I admired by the ownership they took in patient care. If a patient required imaging overnight and transport was delayed, they would personally take them to the scanner. When there were concerns about neurological deterioration, they reassessed patients frequently and directly, rather than relying on documentation. I also noticed that whenever they moved between jobs on the ward, they briefly stopped to check on their patients as a lot can be gathered through a quick visual assessment or neurological exam.

Being in the INR suite I learned a lot about the importance of teamwork and good communication. As I became more familiar with the procedural workflow, I learned how to assist effectively and gained experience in preparing and handling catheters and guidewires, embolisation devices/agents, stents and closure of the insertion site by holding manual pressure or using closure devices. I came to appreciate that the success of a procedure and mitigation of complications relies on communication and anticipation between the entire team and that strong working relationships can translate into better patient outcomes.

Beyond the clinical experience, I had the opportunity to present some of the research I had previously undertaken in the UK and discuss my findings with the attendings and residents. These conversations encouraged me to think about future directions my research team and I could explore and the potential for collaborative projects. One of the most memorable moments of my elective was participating in the annual neurosurgery charity baseball game hosted by Columbia. It gave me the opportunity to meet neurosurgeons whose work I had been following and connect with several US neurosurgical teams in a relaxed setting. Experiences like this one are what made the placement feel larger than a clinical attachment.

I am really glad for this opportunity and for all the ways it has transformed me as a person and future doctor. Upon returning to the UK and starting my foundation job, I hope to carry on with me the mindset, perseverance, teamwork and willingness to learn I experienced during my time in the US. I am thankful to the Society of British Neurological Surgeons for awarding me the Undergraduate Elective Bursary and making it possible for me to undertake this placement at Columbia, an experience which would have otherwise been considerably more difficult to finance.