REPORT ON THE SBNS, ALAN AND DIANA KARTER GLOBAL FUND AWARD FOR THE CLINICAL OBSERVERSHIP AT IMPERIAL COLLEGE HOSPITAL, UK

SUBMITTED BY: DR HADI MOHAMMED ABDULLAH

PERIOD: 28TH JULY- 8TH SEPTEMBER 2025

SUPERVISORS: Mr Arthur Dalton and Mr Nigel Mendoza

BACKGROUND: Ghana, with a population of 33 million (GSE Report, 2024), has 25 neurosurgeons, which implies that the neurosurgeon-to-population ratio is 1:1,320,000. The recommended ratio by the World Federation of Neurosurgeons is 1:200,000. Only 20 of these neurosurgeons are active in the public health facilities. Three are in private practice, and two have retired.

Most of the neurosurgeons in Ghana were trained locally via the West African College of Surgeons program, which has a minimum of 7 years of duration in training. The first 3 years are spent in training as a General surgeon, leading to the award of the Membership of the college (MWACS). The trainee then spends 4 years in neurosurgery and completes with a dissertation that leads to the award of a fellowship of WACS (FWACS). The Ghana College of Physicians and Surgeons was established in 2023, but had it full neurosurgery faculty in 2023. It runs a straight 7-year Neurosurgery program without the mandatory 3 years of General surgery as practiced by the West African College of Surgeons. The major gaps in the current training include Neurovascular. Skull-base and functional Neurosurgery. I had no training in either neurovascular or functional surgery throughout my residency program. The only available service for cerebral aneurysms and other vascular conditions is in a private facility that offers only endovascular coiling. This came at a cost that was far beyond the financial capacity of the patients. Those who required clipping had to travel to either India or Turkey. Patients with Skull-base lesions reported very late with devastating complications.

Korle-bu Teaching Hospital, the main referral hospital in Ghana where I serve, is the major centre for pituitary surgery. During my training, most of the procedures used the microscopic transphenoidal approach. The extent of resection was limited with significant residual tumours. Extended endoscopic transphenoidal approaches, such as transtuberculum and transclival, were not done nor thought. Patients with lesions in these regions either had to undergo open surgeries or travel out of the country. This led to patients spending an extended period in the ICU.

I was inspired to acquire further skills elsewhere to try to bridge the gap during my training. The Imperial NHS hospital in London was recommended to me as a facility where I could do an observership in skull-base and Neurovascular surgeries. I therefore applied for the SBNS, Alan and Diana Karter Global Fund award to enable me to undertake six weeks of observership in skull-base and neurovascular surgery at Imperial NHS Trust Hospital in London under the supervision of Mr. Arthur Dalton and Mr. Nigel Mendoza.

OBJECTIVES

1. Gain insight into how pre-operative and surgical planning are done.
2. Observe intra-operative techniques, including complication prevention
3. Learn the protocols for postoperative care and management of patients with skull base lesions
4. Attend outpatient clinics
5. Actively participate in multidisciplinary meetings
6. Gain insight into new technology deployed to make surgery safer.
7. Gain insight into resource challenges and how to overcome them.

OVERVIEW OF THE INSTITUTION

I was received by the chief Registrar, Hadie Adams, who ushered me into the hospital premises and took me for induction. I was also added to the Neurosurgery WhatsApp platform, which made communication easy to follow. Hadie introduced me to the supervisors, including Mr Dalton and Ramesh.

The clinical observership took place at Charing Cross and St Mary's hospitals. These are part of the Imperial College Healthcare NHS trust, which operates five major hospitals in North West London. The majority of the time was spent at Charing Cross Hospital, which is located in Fulham and serves as the major centre of Neurosciences and oncology care. This is the main centre for both neurovascular and skull base procedures. This centre also offers spine and functional neurosurgical procedures. This was my first experience in minimally invasive spine surgery. The Neurosurgery team is made up of 13 consultants. My supervisors were from the neurovascular and skull base team. These were Mr Arthur Dalton, Mr Mendoza, and Mr Ramesh Nair. I also had the opportunity to participate in minimally invasive spine surgeries, including endoscopic procedures. These services are currently not available in my country. The facilities included 3 dedicated Neurosurgery theatres, ICU, imaging support, intraoperative monitoring, neuronavigation system,

robotic systems for spine surgery, etc. Most of this equipment is not available in my facility. The value of this equipment to Neurosurgical procedures can not be underestimated. I also had the rare opportunity of taking part in the utilization of virtual reality in surgery. This was deployed in the first aneurysm case I participated in. The workflow is well-coordinated, and an average of 1 elective list is done in the 3 theatres a day. Emergencies are done mostly at St Mary's Hospital. This is a high-volume centre for both spine and cranial trauma. It is a great place for surgical training.

The clinics are operated in 2 forms: In-person and online or telephone consultation. The system ensures that the surgeon has adequate information about the patient before the consultation. This is in contrast to the system we operate in Ghana, where patients are not assigned to a particular consultant and there is weak adherence to appointments. In Ghana, the clinics are packed with patients coming very early in the morning and waiting for long periods.

Unlike in KBTH, in Ghana, the ward rounds are personalized to consultants. At KBTH, the team usually engages in a major ward round on Thursdays to discuss the cases on admission. However, the MDT meetings at Imperial are well attended with active participation of consultants and registrars. It is relatively concise and precise as compared to how we do it in Ghana.

The main emergency service centre is at St Mary's Hospital, which is based in Paddington. Spine traumas that require surgery are fixed within 48 hours. This relatively short duration of fixing spine injury is totally different from what we do in KBTH, where patients spend several weeks at the emergency and neurosurgery wards before they are operated on. The delay is mainly due to the inability of the patients in Ghana to pay for the implants used in the fixation of the spine.

KEY ACTIVITIES AND BENEFITS

Domain	Key activities	Key Learnings
Pre-operative	I observed patient evaluation at the clinic and discussed the imaging findings with my	Importance of accurate imaging, anatomy, risk assessment;

	supervisor. We discussed surgical planning and alternative options with the patients. For Neurovascular, we discussed endovascular coiling as an option. Radiosurgery was discussed for CPA tumours.	decision-making balancing benefit vs risk; how patient comorbidities affect plan.
Operating Theatre	Observed craniotomies, spinal decompressions, tumor resections, possibly endoscopic or minimal access cases; learned about positioning, exposure, hemostasis, suturing, use of microscopes, navigation tools.	Surgical workflow; aseptic technique; instrument handling; role of technology (intraoperative neuro–navigation, monitoring); anatomy in 3D. The use of carotid Doppler was an eye–opener.
Post-operative Care	Joined the consultants and registrars to review the management plan of post–operative patients (pain control, infection risk, neurological monitoring), handling complications, and coordination with ICU / high dependency units.	Post-op complications: edema, seizures, CSF leaks; importance of monitoring; role of multidisciplinary care (nursing, physiotherapy, rehab).
Clinics / Outpatients	Observed follow-ups (e.g. tumor clinic, spine clinic), new referrals, review of imaging, discussion of non-surgical options.	Communication with patients and families; handling expectations; non-operative management; long-term follow-up.

Multidisciplinary Meetings	Tumor board, morbidity & mortality meetings, journal club, anatomical teaching / cadaver labs if available.	Broader view: how cases are reviewed; quality control; learning from complications; keeping up with literature.
Research / Audit (if applicable)	We discussed data collection in Ghana to understand the burden of cerebral aneurysms in Ghana. This is to serve as the background for starting collaboration between Imperial NHS and KBTH. We also explored the development of a population–based study for neurosurgical conditions in Ghana.	Understanding data collection, outcome measures; contribution of research to clinical practice improvement.

KEY WEEKLY ACTIVITIES

Week 1: 29th July – 2nd August

Even though I reported on the 28th of July, it had fallen on the last day of the strike action by doctors. This week set a great tone for my clinical observership as it ushered me into cerebral aneurysm surgery. We utilized virtual reality to plan the surgery. It also offered us greater insight into the configuration of the aneurysm. This remains one of the most significant milestones in neurosurgery. This is because I had the opportunity to observe cerebral aneurysm clipping for the first time.

I also observed the excision of a right temporal tumour by Mr Kelvin Oneil and Mr Hadie Adams. I learnt about the use of Neuronvigation, Neuromonitoring, and Calvitron Ultrasonic aspirator in neurosurgery. I picked the transulci approach of excising tumours. This is a key skill that I learned.

The third key observation was Anterior interbody fusion by Dr Kareem. The most notable part of this surgery was the use of a dedicated instrument for this approach as well as the incorporation of neuro–monitoring in the surgical procedure.

Week 2: 4th– 8th August

This week started with the excision of a middle third parafalcine meningioma and ended with an emergency endonasal transphenoidal

hypophysectomy. I was actively involved in this case. The key point of skill acquisition was the extracapsular excision of the pituitary tumour. I was trained to do intratumoral piece–meal excision of such lesions. The role of the carotid Doppler in the prevention of a major vascular injury was emphasized.

Week 3: 11–15th August

I spent this week at both Charing Cross and St Mary's hospitals.

At St Mary, I observed an emergency 360 cervical fusion for a young male who had C4/C5 listhesis and a unilaterally dislocated facet. The patient also had ankylosing spondylitis.

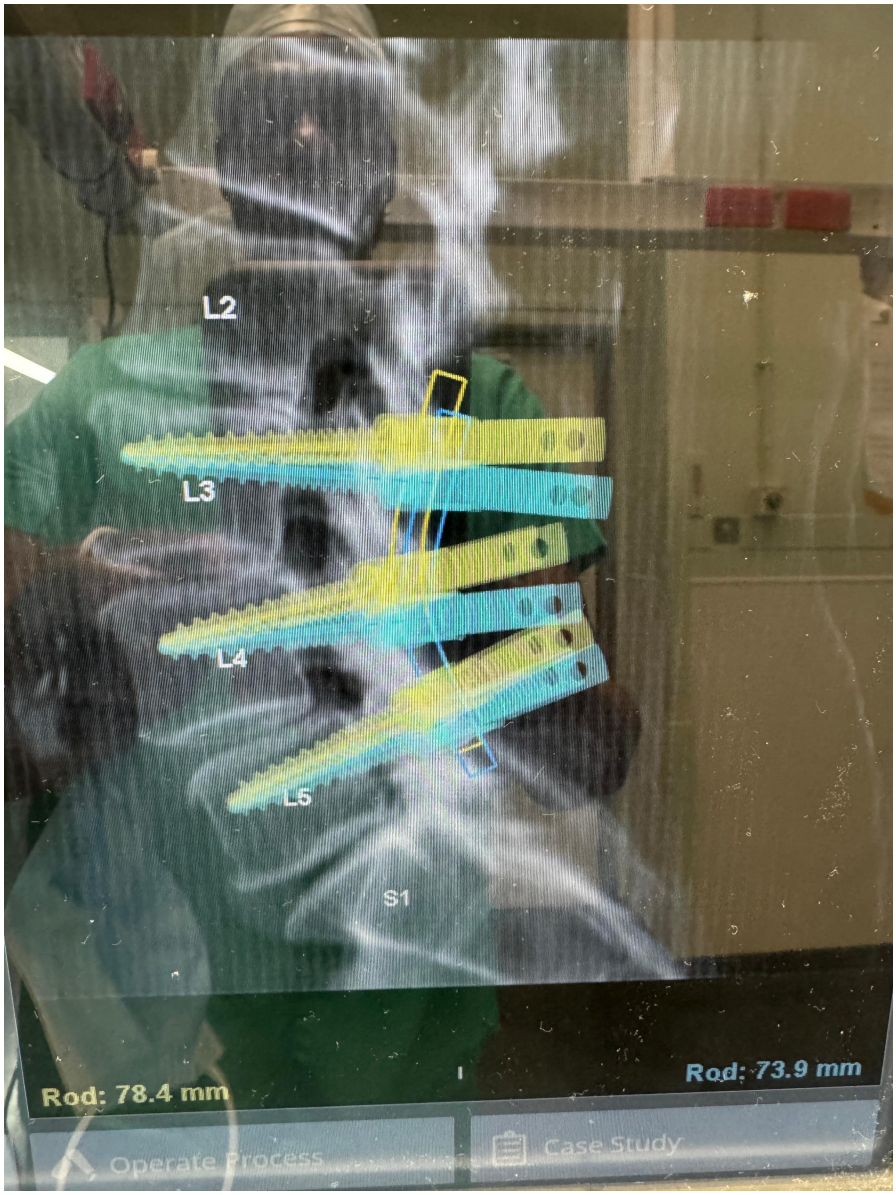
At Charing Cross Hospital, the major case done was an occipital craniotomy for a left occipital lobe in a patient who had a left lobectomy on account of lung cancer. He had high airway pressure when positioned prone. The persistence and resilience of the Anaesthetic team to make sure this surgery was done is quite remarkable. I hardly see this level of dedication and persistence from Anaesthetists. This was impressive. I also had the privilege of observing the use of cortico–visual neuro–monitoring during this surgery.

The third was an excellent collaboration of the Neurosurgery, ENT, and craniofacial surgeons. This was an excision of recurrent fronto–basal meningioma with reconstruction of the left orbital floor and rhinoplasty using radial bone graft.

Week 4:

This week started with a couple of minimally invasive spine procedures in which I participated. These included robot–assisted placement of screws

and rods. This is a technology that is currently not available in my country. It clearly demonstrated it role in the precise placement of implants.



The key case for this week is the endoscopic endonasal excision of a tuberculum sella meningioma. The value of intra-op neuromonitoring and carotid doppler scan was re-stated.

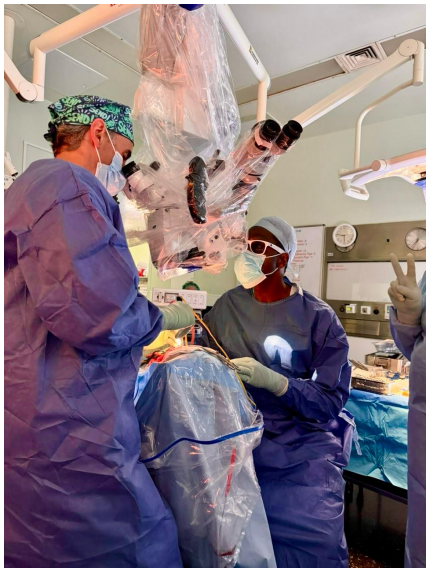
The key lesson drawn from this was how to reconstruct the floor using fascia lata graft and dura substitutes.

Week 5

This was a very exciting week as well

It started with a review of my clinical experience so far. I discussed with Mr Arthur Dalton and Hadie Adams and explored areas that needed attention in my observership. I had never seen the repair of cerebral dura–venous fistula before so excited to note at this meeting about an impending case for my last week. We also explored collaborations and areas where I needed assistance.

The highlight of this week was a case of a left CPA tumour that underwent Rectosigmoid craniotomy and excision. Neuro–monitoring was extensively used in this case. Key nerves monitored included cranial nerves 7 and 8. The importance of nerve monitoring in this surgery was clearly demonstrated. The surgery lasted for 8 hours, and the patient was extubated before being sent to recovery/ICU. The cranial nerves were grossly intact. This is a valuable lesson to be taken home. Currently in Ghana, we do not perform these surgeries with neuro–monitoring, and this greatly affects the immediate and long–term outcomes of these surgeries.



Week 6

I spent part of this week at St Mary's to observe a case of essential tremors of a debilitating nature in a 75-year-old woman. The tremors were bilateral and had a significant impact on her quality of life. I observed the pre-op assessment of the patient by the Neurologist and the Neurosurgery team.
The surgical planning was also discussed with the radiologist.
This patient underwent a High Intensity Focused Ultrasound scan (HIFU) ablation, and the result was instant. There was a dramatic improvement in her tremors. She was able to lift a cup of water, a task that she could not execute prior to this intervention. This service is not currently available in Ghana.

Back at Charing Cross, I also observed bilateral deep-brain stimulation for epilepsy in a young female with a good outcome.

This week ended with another rectosigmoid craniotomy of an epidermoid cyst of the left cerebellopontine angle. Again, the valuable role of nerve monitoring was demonstrated.

Week 7
I had to stay an extra week to observe the case of a dural venous fistula. This patient underwent craniotomy and excision of it. Again, the role of intraoperative Doppler scan was demonstrated.

Last day: 10th September, 2025

On the last day, I had another meeting with Mr Dalton and Hadie Adams, where we reviewed my experience and discussed collaboration and personal career development.

Skills and competencies developed

1. Enhanced understanding of Neuroanatomy of the skull base, cerebrobasilar vascular anatomy, pituitary, spine, and spinal cord as seen in high–quality imaging and in theatre

2. Improved ability to interpret imaging (MRI, CT, angiography), and to understand how imaging findings guide surgical approach and patient counselling.

3. Exposure to advanced surgical techniques & adjuncts (neuronavigation, micro–neurosurgery, minimally invasive/endoscopic approaches).

4. Observation of a high standard of patient safety, operative checklists, WHO surgical safety protocols, and infection control.

5. Inter–professional communication & teamwork: working with radiologists, oncologists, endocrinologists, theatre staff, nursing, ICU, and allied health.

6. Observed how clinical decisions are made in multidisciplinary teams and how patients are managed holistically, including rehabilitation and follow-up.

7. Professionalism, consent processes, and ethical decision–making, especially in high–risk/complex cases.

Reflections and Personal Growth

This clinical observership has reaffirmed my interest in skull base and neurovascular surgery.
I have been enthralled by the outcome of the procedures and hope to pursue it.
The expansion of minimally invasive spine surgery has also caught my attention, and considering the fact that this service is currently not available in Ghana, I would like to consider it as a second choice for my career development.

Management of ruptured cerebral aneurysm. The prospect of clipping them under emergency remains a mirage in my country. Elective clipping is also not done routinely except for a boot camp organized in a private

facility in Ghana. There is a need to develop the structures for a possible training through boot camps in a public facility such as the Korle–Bu Teaching Hospital. This will increase access and affordability.

Recommendation

I would like to recommend the establishment of a collaboration between Korle–bu Teaching hospital and imperial college NHS trust that would allow both residents and young neurosurgeons to undertake fellowship programs at imperial NHS and a short term visit by a team from London including registrars. Considering the array of equipment at the disposal of surgeons at imperial NHS, the boot camps in Ghana would help build resilience of the young neurosurgeons. A 1 year fellowship for senior registrars or young Neurosurgeons at imperial NHS would help build the capacity of the surgeons in Ghana.

The second recommendation is to encourage a collaboration between the Society of British Neurological Surgeons and the Ghana College of Surgeons through the Ghana Academy of Neurological Surgeons. SBNS can improve the curriculum of the faculty of Neurosurgeons and help in the training of more Neurosurgeons for Ghana. Ghana has inadequate Neurosurgeons, and we need such collaborations to bridge the gap.

Cadaveric dissections or hands–on courses can be organized between these 2 groups.

The culture of inclusion at Imperial NHS trust:
I experience first–hand the beautiful culture of inclusion at Charing Cross and St Mary's hospitals and would recommend they keep it up. It is a

great place for training, and I look forward to coming back for a longer fellowship program.

Conclusion

The six-week observership at **Charing Cross and St Mary's Hospital** provided me with a rich, high-quality exposure to neurovascular, skull–base, minimally invasive spine, and neuro-oncology at a leading academic NHS trust. I saw how complex cases are managed with advanced resources and multidisciplinary collaboration. This experience has advanced my technical understanding, enhanced my clinical reasoning, and shaped expectations for neurosurgical practice. It also gave me an insight into what I may need in training (skills, exposure, decision-making, etc.) to work at such levels.

This was an impactful clinical observership, and I would like to thank my supervisors (Mr Dalton, Mr Mendoza, Ramesh), the executives of SBNS, and the Allan and Diana Karter Global Fund for facilitating this program.