

SBNS Global Fellowships: What can UK trainees learn from Nepal?

Rebecca Hodnett

Introduction

Reducing the burden of surgical diseases worldwide will take global effort; the latest Lancet commission on Global surgery estimated that up to 5 billion people did not have access to safe and affordable surgery of which the burden fell disproportionately within lower-middle income countries (LMIC)(1). Within neurosurgery an estimated 13.8 million essential neurosurgical cases occur annually, of which 80% are concentrated within LMICs, with the greatest unmet need residing in Southeast Asia where approximately 2.5 million cases remain outstanding (2). Not only do neurosurgical diseases contribute significantly to disability and mortality worldwide(3), but they can also lead to disproportionate economic losses within LMICs(4).

Global surgical fellowships offer an opportunity for training within this wider context of public health. Their benefits are numerous including the potential for longitudinal partnerships between LMICs and High-income countries, allowing for transfer of knowledge, resources and long-term mentorship. Furthermore there is a growing trend across different surgical disciplines for such fellowships within training; in 2021, 69 fellowships were identified worldwide, both sending from and receiving trainees to LMICs(5).

The SBNS global fellowships offer a short-term opportunity for UK neurosurgical trainees to travel to twinned institutions situated in LMIC settings. These include the Caribbean fellowship hosted across multiple institutions in Kingston, Jamaica and most recently, the Nepal fellowship based at the National Academy of Medical Sciences Bir Hospital in Kathmandu, Nepal. The latter has concluded its first year of fellowships and here we describe our experiences and lessons learnt.

Healthcare in Nepal

According to the World Bank, Nepal remains a Low income country though with its current trends of economic growth, it is expected to graduate to a LMIC status by 2027(6). Nepal's healthcare expenditure equates to 5.3-6.66% of its GDP with an average of \$88.27 spending per person(7). Despite incremental increases in government spending from 0.49% in 2000 to 2.11% in 2022, it is estimated that 60% of total healthcare expenditure will be covered by the patients themselves (7). By comparison, the UK spends 11.1% of its GDP on healthcare with an estimated \$6747 spending per

person(8). 83% of total healthcare expenditure is covered by the government in the UK(8).

The National Academy of Medical Sciences Bir Hospital

The National Academy of Medical Sciences (NAMS) Bir Hospital is located centrally within Kathmandu and serves as the nation's main government-funded centre for neurosurgery, with its catchment area extending beyond the boundaries of Kathmandu. Bir hospital itself was established in 1889; its historical value within Nepalese neurosurgery should not be underestimated. The first neurosurgical procedure in Nepal was performed here in 1962 in the form of a bifrontal craniotomy for traumatic brain injury by Dr. Dinesh Nath Gongal. Though a general surgeon himself, he mentored the Nepalese father of neurosurgery Dr Upendra Devkota(9). Following his British council scholarship with neurosurgical training in both Glasgow and London, Dr Devkota returned to establish the country's first neurosurgical unit in 1988 at the Bir hospital which is now known as the National Neurosurgical Referral Centre (NNRC). He was also the founding president of the Nepalese Society of Neurosurgeons (NESON) in 2008, which was later incorporated into the World Federation of Neurosurgical Societies (WFNS) in 2010(10).

Neurosurgical training was formalised with university affiliation from Kathmandu University in 2002, allowing trainees to complete residency with a Master of Chirurgiae (M.Ch.) in Neurosurgery(11). Due to the formalisation of neurosurgical training, by 2023, the total number of neurosurgeons in Nepal had expanded to 114, of which 46% are based in Kathmandu(9). Only 17% of Nepalese neurosurgeons work within government hospitals(9).

Today the NNRC is led by Professor Rajiv Jha, the current president of NESON. It has expanded to house 7 full time consultants and 6 registrars.

Across a 6-day working week, the department runs daily outpatient clinics which are based on a daily ticketing scheme whereby patients have direct access to tertiary specialties. Within these outpatient clinics approximately 40-60 patients are reviewed per day. Alongside providing 24hour emergency care, elective operating is performed Monday to Friday across two theatres, totalling an average of 5 cases per day. In 2025, 491 emergency cases and 742 elective cranial and spinal cases were performed. These span a broad variety of cases, including both paediatric and adult pathologies.

The SBNS Nepal fellowship provides a unique insight into Nepal's public healthcare system. Fellows are brought to work alongside local doctors within a senior registrar capacity, thereby playing a significant role in the delivery of education and operative supervision to the department. By being placed on the oncall rota, fellows could experience first-hand both the impact of socio-economic limitations and the adaptations used to compensate for them with the neurosurgical department.



Figure 1. The National Academy of Medical Sciences Bir Hospital Surgical building. The outpatient department is featured to the right

The Socio-economic Burden of Neurosurgery in Nepal

At NAMS Bir Hospital, a significant portion of care is subsidised with free meals provided four times a day, 6 days a week. Despite this, the cost of care remained a substantial barrier, delaying admissions and surgeries. Patients are charged from the point of admission, including the total number of days spent as an inpatient along with consumables used during their stay. Pre-operatively relatives would be asked to purchase individual items required for surgery, including essential medications, blood products and devices (such as ventriculoperitoneal shunt valves). This posed a significant challenge during on calls when patients requiring life-saving operations would refuse treatment and leave against medical advice based on their financial constraints.

In the face of financial barriers, extended families and communities played a crucial role in the delivery of healthcare. Within the outpatient settings, consultations were at times conducted “by proxy”, whereby second opinion for a relative was sought by either a direct or extended family member. Outside of the intensive care unit, families would stay with their admitted relatives in the hospital, often acting as the main carers responsible for feeding, cleaning and mobilising the patients. Early rehabilitations were often driven by families. In a system with little to no formalised government social care, the burden of care would fall on the family on discharge bearing further economic consequences.

Alongside financial constraints, the geographical landscape of Nepal poses a unique challenge to accessing neurosurgical care. Though 46% of Nepal’s neurosurgical workforce is concentrated in Kathmandu, almost 77% of Nepalis live in rural regions(12). Roads and transport are often under-developed, with efforts for improvement hampered by natural disasters, resulting in long and arduous travel to access healthcare and ultimately delays in presentations(13).

It was not uncommon to encounter patients in extremis that would be rarely seen in the NHS; such cases included a 12month history of complete visual loss secondary to a giant pituitary macroadenoma, profound cerebellar mutism in posterior fossa medulloblastomas or an occipital encephalocele with hydrocephalus in a 2-year-old. Delayed presentations presented significant clinical challenges, often limiting both the extent of resections in tumour as well the long term functional recovery(14).

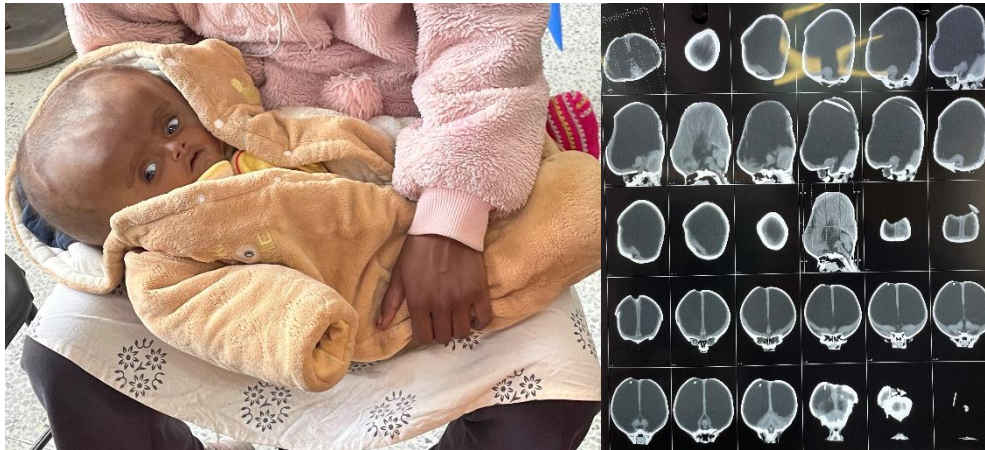


Figure 2. A delayed presentation of Hydranencephaly with hydrocephalus managed 2 months prior with the insertion of a right ventriculoperitoneal shunt

As the SBNS fellow, these cases provided an invaluable insight into clinical management and rich operative experience in challenging cases. Within the resource limited setting, routine adjuncts seen within the NHS, such as neuro-navigation were not always available, reinforcing the need to master neuro-anatomy in surgery. Furthermore, limitations in surgical equipment would be compensated by adopting alternative surgical approaches; for example a sublabial approach for the resection of a pituitary adenoma was used in the absence of an endoscopy set.

Resourcefulness and Sustainability

Though motivated by financial need rather than that of ecological preservation, the principles of sustainability were strictly adhered to in the clinical settings. Within theatres, not only were drapes and gowns reused, but empty medication bottles were autoclaved and recycled to serve as specimen containers or lumbar drains. Greater consideration was given prior to the use of single use items; haemostatic agents or dural substitutes that would be considered commonplace within the NHS were exchanged for autologous alternatives. Surgical patties were made in-house by nursing staff to reduce surgical costs.

Furthermore, very little equipment was disposed of; In a country where power cuts were commonplace, the use of Hudson drills and jiggly saws were invaluable and routinely used for simple procedures. These observations raise an important point in addressing the barriers to adopting sustainable practices back within the NHS.



Figure 3. Hand-sewn patties produced by theatre nursing staff

Education and Research

Emphasis was placed on continued educational development through twice weekly academic meetings and registrar led teachings which covered a range of topics from basic neurosciences to surgical approaches. There was also rich opportunity for research despite the challenges of data collection in a predominantly paper-based system.

The National Brain Tumour Registry was founded at NAMS Bir hospital in 2023 and holds electronic records of all operated brain tumour cases across the country. Such a database could become an important tool to shape public health policy and therefore the future of neurosurgical care in Nepal. Healthcare is nuanced and must serve the patients within their cultural, political and economic contexts; as seen in India, the establishment of a Traumatic Brain Injury registry providing country specific data on the health burden of road traffic accidents, policy change advocating for road safety was made possible (15,16).



Figure 4. Sustainability in theatres. Operating with reusable sets during an elective cranioplasty

Beyond the Fellowship

The SBNS Nepal fellowship provides an exceptional opportunity for working within a LMIC setting, providing an important insight into the global burden of neurosurgical disease, as well as the need for research and advocacy to eliminate disparities in care. Through this short-term placement, there is ample opportunity for personal development, as well as the establishment of partnerships and mentorships which are needed to sustain long-term educational and developmental programmes in LMICs.

References

1. Meara JG, Leather AJM, Hagander L, Alkire BC, Alonso N, Ameh EA, et al. Global Surgery 2030: evidence and solutions for achieving health, welfare, and economic development. *The Lancet*. 2015 Aug;386(9993):569–624. doi:10.1016/S0140-6736(15)60160-X
2. Dewan MC, Rattani A, Fieggen G, Arraez MA, Servadei F, Boop FA, et al. Global neurosurgery: the current capacity and deficit in the provision of essential neurosurgical care. Executive Summary of the Global Neurosurgery Initiative at the Program in Global Surgery and Social Change. *J Neurosurg*. 2019 Apr;130(4):1055–64. doi:10.3171/2017.11.JNS171500
3. Feigin VL, Nichols E, Alam T, Bannick MS, Beghi E, Blake N, et al. Global, regional, and national burden of neurological disorders, 1990–2016: a systematic analysis for the Global Burden of Disease Study 2016. *Lancet Neurol*. 2019 May;18(5):459–80. doi:10.1016/S1474-4422(18)30499-X
4. Rudolfson N, Dewan MC, Park KB, Shrimel MG, Meara JG, Alkire BC. The economic consequences of neurosurgical disease in low- and middle-income countries. *J Neurosurg*. 2019 Apr;130(4):1149–56. doi:10.3171/2017.12.JNS17281
5. Harfouche M, Krowsoski L, Goldberg A, Maher Z. Global surgical electives in residency: The impact on training and future practice. *Am J Surg*. 2018 Jan;215(1):200–3. doi:10.1016/j.amjsurg.2017.03.040
6. Cosic D, Dahal S, Kitzmuller M. Climbing Higher [Internet]. World Bank, Washington, DC; 2017 [cited 2026 Mar 31]. Available from: <https://hdl.handle.net/10986/27283> doi:10.1596/27283
7. Ministry of Health and Population (MoHP), Government of Nepal. Nepal National Health Accounts 2018/19 – 2019/20. Kathmandu, Nepal.; 2023. Report No.
8. OECD. Health at a Glance 2025: OECD Indicators [Internet]. OECD Publishing; 2025 [cited 2026 Mar 31]. (Health at a Glance). Available from: https://www.oecd.org/en/publications/health-at-a-glance-2025_8f9e3f98-en.html doi:10.1787/8f9e3f98-en

9. Shrestha P. Neurosurgical Workforce of Nepal. *World Neurosurg.* 2024 Sep;189:161–5. doi:10.1016/j.wneu.2024.06.002
10. Marsh H. Professor Upendra Devkota. *Br J Neurosurg.* 2018 Jul 4;32(4):462–462. doi:10.1080/02688697.2018.1507288
11. Chaurasia B, Raut R, Chaurasia R, Thapa A. Neurosurgery training in Nepal: then and now. *Front Surg.* 2023 Jun 23;10:1211722. doi:10.3389/fsurg.2023.1211722
12. MacroTrends. Nepal rural population [Internet]. Available from: <https://www.macrotrends.net/global-metrics/countries/npl/nepal/rural-population>
13. Azad TD, Shrestha RK, Vaca S, Niyaf A, Pradhananga A, Sedain G, et al. Pediatric Central Nervous System Tumors in Nepal: Retrospective Analysis and Literature Review of Low- and Middle-Income Countries. *World Neurosurg.* 2015 Dec;84(6):1832–7. doi:10.1016/j.wneu.2015.07.074
14. Herdell V, Lassarén P, Boop FA, Bartek J, Uche EO, Tisell M. Surgical outcomes of pediatric brain tumors in Sub-Saharan Africa: A systematic review. *Brain Spine.* 2022;2:100912. doi:10.1016/j.bas.2022.100912
15. Ram K, VaraPrasad K, Krishna MK, Kannan N, Sundar V, Joseph M, et al. Prehospital Factors Associated with Discharge Outcomes: Baseline Data from the Andhra Pradesh Traumatic Brain Injury Project. *World Neurosurg X.* 2019 Apr;2:100020. doi:10.1016/j.wnsx.2019.100020
16. Veerappan VR, Gabriel PJ, Shlobin NA, Marks K, Ooi SZY, Aukrust CG, et al. Global Neurosurgery in the Context of Global Public Health Practice—A Literature Review of Case Studies. *World Neurosurg.* 2022 Sep;165:20–6. doi:10.1016/j.wneu.2022.06.022