

Global Vascular Companionship



For each person, in every nation, to access equitable vascular care

Needs Assessment Report

Ulaanbaatar, Mongolia: 10 – 14 June 2025





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VASCULAR SURGERY TRAINING WORKSHOP

10-14 June 2025

LEAD SURGEON:

Dr Vikram Iyer



WITH KIND SUPPORT & SPONSORSHIP FROM:

Northern Health

SECTION 1: General Information

1. Country/Region:

Mongolia is a landlocked country in Northeastern Asia, sandwiched between Russia to the north and China to the south. It has a population of 3.5 million, approximately half of whom live in the capital city, Ulaanbaatar. It has a rich traditional culture, with 20-30% of the population retaining a nomadic steppe lifestyle. The national language is Mongolian, written in the Cyrillic script. The Mongol people comprise the overwhelming majority of the population, with a minority of Kazakhs forming 5% of the population (mostly in the far west).

2. Healthcare Facility:

- Mongolia-Japan Hospital of MNUMS (Mongolian National University of Medical Sciences)
- Located in Ulaanbaatar, the capital city.
- Tertiary hospital.

MJH is the largest teaching hospital in Mongolia with more than 100 acute beds and plans to expand up to 350 beds in 2027. There are almost 300 doctors working in the MJH system at any time. MJH incorporates the following units:

- Emergency Department
- Orthopaedic Surgery
- Ophthalmology
- Anaesthesia
- General Surgery (including Hepatopancreatobiliary, Gastrointestinal, Urology, Proctology)
- Obstetrics and Gynaecology
- Internal Medicine
- Cardiology
- Gastroenterology
- Endocrinology
- Paediatrics
- Paediatric Surgery
- Nephrology
- Intensive Care Unit
- Endoscopy
- Radiology (including Interventional Radiology)
- Pathology
- Haematology
- Others

The health care system in Mongolia is stratified into primary care (local doctors and health services), secondary care (regional or provincial hospitals, one for each of Mongolia's 23 provinces), and tertiary

care (major hospitals, all in Ulaanbaatar). There exists a parallel private health care system. The major tertiary hospitals in Ulaanbaatar are all independent of one another and collaboration between hospitals is limited. Each major hospital has its own surgical specialties, e.g. State 1st Hospital is the transplantation and neurosurgical centre, State 2nd Hospital is the major laparoscopic centre, State 3rd Hospital is the cardiothoracic and vascular centre, National Cancer Hospital is the major surgical oncology centre etc. MJH aims to incorporate all of these fields into one university / teaching centre.

3. Organisational Strengths

Leadership – MJH has strong leadership and the vision to become the referral centre for complex cases even from the other tertiary centres in Mongolia, as well as being the sole provider of specialist training to Mongolian doctors-in-training.

Teaching – MJH is the only university teaching hospital and so takes registrars / residents and fellows from other hospitals to be trained in advanced surgical techniques. The consultants working at MJH almost all have travelled internationally themselves for advanced fellowships.

Skills advancement – MJH has established collaborations with Japanese, Korean, Australian and American hospitals and universities for ongoing professional development and advancement of skills to ensure that they can provide modern medical services to the people of Mongolia.

4. Report Compilation

This report has been compiled by GVC Mentor and Board Member Mr Vikram Iyer for the purposes of conducting a needs assessment, following his visit to Ulaanbaatar in June 2025. Furthermore, the Director of Surgery at MJH, Dr Baatarsuren Batmunkh, visited Mr Vikram Iyer at the Northern Hospital in Melbourne in November 2025. I would like to acknowledge the time and dedication of all the staff at MJH for their valuable insights, which constitutes the bulk of the report's content, and for their help in preparing it. The following staff deserve specific mention for their involvement in supporting this needs assessment activity:

Dr Baatarsuren Batmunkh

(Head of Department of Surgery, MJH)

Dr Bayasgalan Purevdorj

(CEO, MJH)

Dr Amanda Baric

(Consultant Anaesthetist, Northern Health)

Dr Batbayar Batmunkh

(Surgery Resident, MJH)

SECTION 2: Prevalence and Burden of Vascular Disease

5. Prevalence of Vascular Diseases in the Region:

- High

Common vascular diseases encountered:

- Venous insufficiency
- End-stage kidney disease
- Diabetic foot
- Mesenteric ischaemia
- Peripheral artery disease
- Cerebrovascular disease

Venous Insufficiency

Like many high-, middle- and low-income countries, advanced venous insufficiency (skin changes, ulceration) is a major health burden in Mongolia. Currently, most venous procedures performed are open ligation and stripping. MJH has purchased a radiofrequency ablation machine though the cost of catheters remains high and local training is lacking in their use.

End-stage kidney disease

State 1st Hospital has a 46-bed dialysis unit running 3 sessions a day, 6 days a week. MJH has a 4-bed dialysis unit running the same sessions. Mongolia as a nation has a higher incidence of dialysis-dependent renal failure than the global average, perhaps owing to genetic as well as environmental factors. The majority of patients commence dialysis using lines. There is a predilection to use AV grafts rather than creating autogenous fistulas. Dialysis access maintenance is not routine and rates of infection and access failure remain high.

Diabetic Foot Infection (DFI)

Diabetic foot infections are a leading cause of major limb amputations in Mongolia. These patients often present to the hospital at advanced stages of their condition, resulting in delayed medical intervention, limited treatment options, and consequently, poorer clinical outcomes. The delay in seeking care significantly complicates the clinical management of these patients, leading to prolonged inpatient stays. Some patients undergo primary amputation at high levels owing to the inability to revascularise appropriately.

The diabetes ward at MJH has 12 beds. The outpatient clinic is a more frequent location to encounter patients with diabetic foot problems. Referral to the general surgical teams comes from the endocrinology team as well as surgeons from smaller hospitals.

There is no concept of podiatry in Mongolia and preventative as well as post-operative cares are limited. GVC provided some offloading footwear to MJH but it remains unclear how patients will be appropriately assessed and fitted for these. Additional training is needed for MJH staff in this area.

PAD, Mesenteric, Aneurysm, Cerebrovascular

It is unclear as to the burden of these conditions in Mongolia. State 3rd Hospital performs open abdominal aortic aneurysm repairs but it is rare. One endovascular repair has been performed in Mongolia some years ago but nil since. Peripheral artery disease is more common, with 3 patients being seen on the visit to MJH in June 2025. One underwent primary amputation, one underwent femoropopliteal bypass grafting, and one underwent iliofemoral bypass grafting. Furthermore another 11 patients were discussed in a visit to State 1st Hospital with review of investigations. Hospitals in Mongolia have good access to ultrasound and contrast-enhanced CT scanning. Catheter angiography is selectively performed, either by interventional radiologists or cardiologists. Endovascular limb-salvage interventions remain rare.

There is a need to upskill local surgeons to perform basic endovascular limb-salvage interventions as well as refine their open surgical technique to reduce the burden of chronic limb-threatening ischaemia in Mongolia.

Mesenteric ischaemic patients are rarely revascularized and usually undergo laparotomy and bowel resection as their sole procedure. As a result, mortality remains high. Cerebrovascular disease is common in Mongolia but there is insufficient knowledge and investigation of the potential for carotid embolic sources; as such carotid endarterectomy is rarely performed.

6. Availability of Screening and Diagnostic Services:

Diagnostic services:

- Limited vascular ultrasound
- Procedural ultrasound available
- CT angiography available
- Limited catheter angiography

7. Availability of diabetic foot wound care, including vascular assessment

- Limited in both inpatient and outpatient settings

SECTION 3: Availability of Vascular Surgical Services

8. Number of Vascular Surgeons in the Region/Facility:

- No dedicated vascular surgeons
- Some cardiac surgeons perform limited open peripheral vascular interventions
- Some cardiologists and interventional radiologists perform limited endovascular interventions
- Some general surgeons perform limited haemodialysis access procedures
- No vascular training program

9. Are vascular surgery services available?

- State 1st Hospital performs haemodialysis access procedures and sporadic maintenance procedures
- State 3rd Hospital performs limited open vascular interventions for carotid, aortic and peripheral arterial pathologies
- MJH performs limited venous insufficiency interventions and occasional peripheral arterial interventions
- Trauma interventions limited to the Military Hospital and National Trauma Centre but no specialist vascular surgeons present – ligation usual as management strategy
- Wound debridement and major/minor amputations available at all centres

10. Types of Vascular Surgical Procedures Performed:

- Open varicose vein surgery
- Limited open peripheral arterial interventions (endarterectomies, bypass)
- Haemodialysis access creation (usually prosthetic grafts)
- Amputations and debridements

11. What is the frequency of vascular surgeries performed per month?

- 0-5 at MJH
- 5-10 at State 3rd Hospital
- 5-10 at State 1st Hospital

12. Surgical Complication Rates: (if available)

- Unknown

There are no formally trained vascular surgeons in Mongolia. The surgeons providing vascular services are usually cardiac surgeons who have had limited exposure to vascular surgery overseas. There is no local training program for vascular surgery. Care is fragmented and largely dependent on individual practitioners' comfort level with dealing with vascular pathology. There is a need to upskill local surgeons to provide more comprehensive vascular care and to train the next generation of Mongolian specialists.

SECTION 4: Healthcare Infrastructure

13. Are appropriate surgical facilities available for vascular surgery (e.g., operating rooms, sterile environments)?

- Partially equipped – open surgical theatre, with limitation of vascular specific instruments, no endovascular suite or consumables
- **Availability of Diagnostic Imaging (e.g., Ultrasound, CT, MRI) at the Facility:** Some imaging modalities available with limited vascular USS and CT angiography
- **Availability of Post-Operative Care Units (e.g., Intensive Care Unit, Recovery Room):** Available but limited – HDU/ICU available, limited experience with caring for vascular patients
- **Availability of Medication for Vascular Conditions (e.g., antiplatelet drugs, statins, anticoagulants):** All common medications available: aspirin, clopidogrel, ticagrelor, apixaban, rivaroxaban, dabigatran, enoxaparin, warfarin, heparin, statins, and thrombolytics are all available.

MJH has 4 operating theatres (planned to increase to 12 with the expansion in 2027) and an angiography suite with a Shimadzu system. State 1st and 3rd Hospitals have more operating theatres. State 1st Hospital has a Philips Azurion system in the angiography suite. The main barrier to provision of vascular interventions is equipment particularly for endovascular interventions – most items are repurposed from cardiology or hepatobiliary interventions.

SECTION 5: Workforce Capacity and Training

14. Are there specialized training programs for vascular surgeons in the country/region?

- No formal training programs

15. Availability of Continuing Medical Education (CME) for Surgeons:

- Not for vascular surgery, would need to seek this outside the region

16. Are there opportunities for international collaboration (e.g., fellowships, exchange programs, workshops)?

- Yes, but limited. GVC could be a major player here.

17. Does the facility employ non-surgical staff (e.g., nurse practitioners, physician assistants, technicians) for vascular care?

- No

Mongolian doctors often travel to Korea and Japan for additional speciality training in the form of short fellowships. Furthermore, Korean, Japanese, Australian and American teams often travel to Mongolia to provide short educational courses to upskill local doctors in specific fields. MJH has strong links to the Japanese government as well as to Northern Health in Melbourne particularly with respect to the anaesthetic department. Presently, specialist surgical training within Mongolia is restricted to 3-6 month mini-fellowships after the completion of a 2-year surgical residency program in general surgery or orthopaedics. As a low-income nation, Mongolian doctors may struggle to fund overseas fellowships to bridge gaps in their knowledge. One additional limitation to Mongolian doctors seeking extended fellowship opportunities overseas is the language requirement. On-site surgical training may provide an opportunity to upskill Mongolian doctors in vascular assessments and procedures bypassing the language requirements for prolonged overseas fellowships.

SECTION 6: Workforce Capacity and Training

18. What are the main barriers to accessing vascular surgery services?

- Lack of trained vascular surgeons
- Lack of trained allied health professions (e.g. podiatrists, vascular nurses)
- Financial barriers (e.g., cost of consumables, dressings, equipment) – particularly for endovascular interventions
- Geographic barriers
- Geopolitical barriers
- Cultural factors (e.g., health awareness/education, stigma of going to hospitals, especially given high major amputation rate)

19. Is there a system in place for referral to specialised vascular care?

- No vascular specific referral system

20. How long is the average waiting time for vascular surgery once referred?

- Unknown

Mongolia has focussed on other areas of service development and not, to date, made a dedicated effort to build vascular surgical capacity. However, MJH has identified vascular surgery as a priority area for its future as a training hub for Mongolian doctors.

One significant stakeholder to engage early will be the Mongolian Health Ministry, who must be convinced of the need for development of vascular surgery services.

Financial barriers will present in the supply and retention of stocks of vascular and endovascular consumables, and a resourceful and well thought out strategy will be required here.

Geographical barriers to accessing specialist vascular surgical care in Mongolia will exist, and this will need to be reconciled in formulating a strategic plan for development of vascular surgical services. Links between existing health professionals and hospitals will need to be improved to consolidate existing vascular knowledge and allow diffusion of new training and skills in the future.

21. Is vascular surgery included in the national or regional health strategy or essential health package?

- Not included

22. Is there government support for vascular disease prevention (e.g., screening programs, public awareness campaigns)?

- No

SECTION 7: Health System Support and Policy

23. What is the funding situation for vascular surgery in your country/region?

- No funding

24. Capacity building activities undertaken during visit



Vascular Surgery

10 patients seen (Mongolia-Japan & State 1st Hospital), 11 patients discussed

4 operations performed (fem-pop bypass, GSV stripping, SSV stripping, ilio-fem bypass)

Meetings : Director of Mongolia-Japan Hospital (Dr Bayasgalan Purevdorj), Director of Surgery at Mongolia-Japan Hospital (Dr Baatarsuren), Cardiovascular Surgeons at Mongolia-Japan Hospital (Dr Altanzul) & State 1st Hospital (Dr Battur), Nephrologists (Dr Saruultuvshin), Interventional Radiologist (Dr Erkhembayar)

2 lectures delivered (contemporary management of the diabetic foot & vascular trauma)

Donation of orthotic footwear to MJH.



SECTION 8: Recommendations for Improvement

25. What are the key needs to improve vascular surgical services in your country/region?

- Local vascular surgeon to build and lead development of vascular surgical services
- Have a reliable stock of vascular consumables
- Build vascular ultrasound services and encourage treating clinicians to appropriately refer for such vascular ultrasound services:
 - a) Have sonographers independently performing lower limb arterial (common femoral artery to tibio-peroneal trunk) and carotid artery scans.
 - b) Expand scans to include tibial, aortoiliac arteries and venous insufficiency
- Optimisation of inpatient management and discharge of high-volume vascular conditions including diabetic foot infection and dialysis access
- Education of medical community and public on vascular pathologies and management, including diabetic foot infection
- Health outcome metrics/measures to evaluate impact of vascular surgical service provision

26. What would be the most effective strategies to address these needs?

- Training pathway to upskill local general surgeons to provide vascular surgical care to people of Mongolia:
 - a) Dedicated vascular surgical training – not available locally, must be initially performed overseas or through multiple on-site visits for specific modules
 - b) Workshops and seminars delivered virtually or in country targeted at immediate needs for which resources are in place or readily acquired.
 - I would propose haemodialysis access creation and maintenance, and management of the patient with diabetic foot ulcers (including podiatry care, perfusion optimisation, surgical debridement, and preventative cares).
- Lobbying by local health department for a steady stream of resources to create a well-stocked vascular angiography suite and open operating theatres
 - a) Some donations of consumables being sought by companies such as Cook and Boston Scientific

CONCLUSION

We humbly submit this Needs Assessment Report for perusal by key stakeholders, including the Mongolian Government and Health Ministry, MJH, State 1st Hospital, State 3rd Hospital, DFAT, RACS and other organisations with an interest in the provision of vascular services to the people of Mongolia. Should a proposal to implement some or all the above recommendations be sought, we would be glad to submit a detailed proposal for consideration.

Needs Assessment conducted by and report prepared by:

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On behalf of Global Vascular Companionship



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