

# Chapter 3

## Rehabilitation in the Study Countries

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## Chapter 3

### Rehabilitation in the Study Countries

**Table 1. Background Information on Medical Services and Rehabilitation in Viet Nam, Cambodia, Lao People's Democratic Republic, and Japan**

	Viet Nam	Cambodia	Lao People's Democratic Republic	Japan
Number of doctors (per 10,000 persons) <sup>a</sup>	11.9	1.7	1.8	23
Number of beds (per 10,000 persons) <sup>a</sup>	20	7	15	137
Mean number of persons per household <sup>b</sup>	4.8	4.7	5.9	2.47
Number of physical therapists in the country <sup>b</sup>	4,839	235	1,072	129,942

<sup>a</sup> World Health Organization (2014).

<sup>b</sup> Government of Japan, National Institute of Population and Social Security Research (2005); Government of Cambodia, National Institute of Statistics Ministry of Planning (2008); Government of Japan, Ministry of Foreign Affairs (2009); and Government of Japan Ministry of Health, Labour and Welfare (2016), Ung (2008), and Uchiyama (2016).

**Table 2. Basic Information on Leading Hospitals Accepting Brain Injury Patients in Viet Nam, Cambodia, and Lao People's Democratic Republic; and on Kitahara International Hospital**

	Viet Nam: Viet Duc University Hospital	Cambodia: Kossamak Hospital	Lao People's Democratic Republic: Mittaphab Hospital	Japan: Kitahara International Hospital
Number of beds	1,500	350	150	98
Acceptance of inpatients exceeding officially registered capacity	Yes	Yes	Yes	No
Discharge for financial reasons	Yes	Yes	Yes	Rarely
Rate of stroke patients in severe condition <sup>a</sup> at discharge	Unknown	Unknown	79%	13%

Complete or incomplete nursing care <sup>b</sup>	Incomplete* <sup>2</sup>	Incomplete	Incomplete	Complete
Criteria for rest level according to patient's condition (from bed rest to walking by oneself)	No	No	No	Yes
Criteria for timing to start rehabilitation according to patient's condition	No	Unknown	No	Yes
Rehabilitation staff	PT	PT	PT	PT, OT, ST
Physical therapists	10	5	15	9
Rehabilitation conference* <sup>3</sup>	No	No	Once a week	Once a week
Rehabilitation ward round	No	No	No	Daily
Rehabilitation fee	US\$7–20/40 min	US\$5/30 min	US\$2.5–6/30 min	US\$21–24/20 min
Public medical insurance coverage on rehabilitation	80% covered	Not covered	100% covered for outpatients; coverage is varied for inpatients	70% covered

OT = occupational therapist, PT = physical therapist, ST = speech-language-hearing therapist.

<sup>a</sup> Patients in severe condition are those with a score of 4 or higher on the modified Rankin Scale.

<sup>b</sup> Complete nursing care is the hospital nursing system where only registered nurses or nurse assistants can provide nursing care to patients, including support for daily activities, and hospitals must not depend on care provided by families, relatives, or private caregivers. In Japan, this system is strictly applied to all medical facilities authorised use public medical insurance, whilst in the study countries, hospitals largely depend on non-professional care to support daily activities of patients because of the limited number of professional staff members such as registered nurses.

<sup>\*3</sup> A rehabilitation conference is a discussion amongst staff members of several occupational categories related to rehabilitation, including PTs, nurses, and doctors, on the rehabilitation plan for each patient.

Source: Authors.

### 3.1. Rehabilitation Environment for Patients with Brain Injury in Viet Nam

Viet Nam's population was about 94 million in 2016 (World Health Organization, 2016). In recent years, however, the rural population has decreased notably and the urban population has rapidly increased.

Life expectancy at birth is 76 years. Statistics on cause of death showed a decreasing trend of infectious disease cases and an increasing number of non-infectious disorders, accidents, injuries, and poisoning in 2010 compared with 1986. The most common cause of death is stroke, followed by ischemic heart disease and chronic obstructive pulmonary disease. Cancers and lifestyle diseases are also common causes of death (Government of Japan, Ministry of Economy, Trade and Industry (2016); UNDP Vietnam, 2011).

Viet Nam introduced a public healthcare referral system, where patients in severe condition are referred and transported to an advanced medical care facility. Medical care, if provided under the referral system, is covered by the public insurance system, making consultation affordable. A remarkable number of patients, however, particularly rich ones, ignore the referral system and directly consult the central medical care institutions without a reference. The Viet Nam Social Security system, founded in 1992 and still effective, is a compulsory universal insurance system and covers about 64 million people (about 70% of the national population, as of 2014). At designated medical institutions, 85%–100% of medical costs are covered by insurance (UNDP Vietnam, 2011). Rehabilitation is covered by insurance (Socialist Republic of Viet Nam, 2011).

Under the 2009 law, the compulsory universal insurance system was to cover all citizens by 2014, but about 27 million people remain uninsured. Employees of formally registered firms and public servants are covered under the compulsory employees' insurance system. Special populations, including low-income people, children under 6 years, and veterans, benefit from social assistance systems that subsidise medical care cost. Other populations, such as people affiliated with companies that are not formally registered or self-employed workers, including farmers, are uninterested in medical insurance and are often uninsured (The Japan Institute for labour Policy and Training, 2017).

As described in the Viet Nam Sustainable Development Strategy for 2011–2020 (Socialist Republic of Viet Nam, 2011), the government aims to reduce the bed occupancy rate in central hospitals and to improve the quality of rehabilitation in all regions.

Viet Nam has 1,087 public hospitals and 102 private hospitals. Bachmai Hospital, Cho Ray Hospital, and Hue Central Hospital are the three major ones (Government of Japan, Ministry of Economy, Trade and Industry, 2016). All urban hospitals have rehabilitation departments and about 90% of provincial general hospitals provide various methods of rehabilitation.

The rehabilitation association was founded in 1991 and has more than 4,000 active members. About 20 volunteer members such as students are affiliated with the society. The members consist of doctors (35%), PTs (55%), and nurses (10%), with a 7:3 ratio of members from the north and the south.

More than 20 non-governmental organisations (NGOs), including Humanity & Inclusion, Viet Health, and Medical Committee Netherlands Vietnam, provide rehabilitation with support from the United States Agency for International Development (USAID).

PTs are attempting to establish a national association. Ho Chi Minh City has a regional association. It had about 800 members as of July 2018 and hosts an academic conference once a year to improve public awareness of physical therapy and improve PTs' knowledge and skills.

### **3.2. Rehabilitation Environment for Patients with Brain Injury in Cambodia**

Cambodia, with a population of about 15 million people, borders Viet Nam, Thailand, and Lao PDR. The potential support ratio – the number of younger people (15–64 years old) per older person (65 years and older) – is 15.6, higher than the world average of 7.9. The reason is that civil wars killed off many people. In 1975–1979, many were massacred under the reign of Pol Pot, whose aim to achieve primitive communism led to the execution of many intellectuals, particularly doctors, teachers, and artists. The following civil war caused an absolute shortage of medical professionals, and medical equipment and pharmaceuticals remain insufficient. The standard of medical care remains low, particularly in rural areas and the outskirts of cities.

Because of the shortage of government funding, Cambodia does not have a national medical insurance system such as Japan's, and patients generally pay the total cost of medical consultation and medications. Wages of medical professionals are not necessarily high, which has led to low morale and the deterioration of the quality of medical care. Many people do not, therefore, trust medical care in the country and more than 200,000 travel abroad each year to seek medical services. Low- and middle-income people head to Viet Nam, whilst high-income people go to Thailand and the richest prefer Singapore (The Japan Institute for Labour Policy and Training, 2017).

Cambodia has 12 national rehabilitation centres but insufficient rehabilitation specialists, funds, and facility management. Because they lack public medical insurance, many patients return home for financial reasons before they complete rehabilitation. Rehabilitation is not popular because many Cambodians do not trust their country's medical care. Cambodia is still developing a reliable rehabilitation provision system, which requires a multifaceted approach involving providers and users. The issues of facilities, human resources (technical and management), finance, and people's ways of thinking are all associated with rehabilitation services (Cambodia HHRD Project Research Consortium, 2013).

Rehabilitation was first implemented during the 1990s, primarily for victims of mines and people injured during the civil war. Eleven rehabilitation centres were founded with the technical and financial support and cooperation of the Ministry of Social Affairs, Veterans and Youth Rehabilitation. Rehabilitation is gradually being integrated only into the ministry. The rehabilitation centres are mainly staffed with PTs, prosthetists and orthotists, and administrative staff members. Activities include provision of exercise therapy and prosthetic therapy (leg braces, walkers, crutches, sitting trainers, wheelchairs) as well as participation in social activities.

PTs work in diverse facilities, such as national and regional hospitals, schools for PTs, rehabilitation centres, facilities for disabled people, local and international NGOs, private clinics, and soccer teams. Those who graduated from schools of physical therapy must be approved by the Ministry of Health to start their own clinics. PTs are often affiliated with national and prefectural hospitals, but regional hospitals and health centres often have no affiliated PTs.

Challenges of rehabilitation are (i) improvement of the quality and quantity of regional rehabilitation services (there are 3 PTs per 100,000 people); (ii) establishment of provincial education systems for PTs; (iii) economic assistance for students and PT associations; and (iv) raising of awareness of the importance of rehabilitation amongst medical professionals, students in higher education, the public, and the elderly. Although the Ministry of Health strives to provide physical therapy in hospitals, there are no educational courses for OTs and STs. Orthopaedic surgeons and neurosurgeons are scarce.

Social protection measures include provision of medical care and rehabilitation services free of charge for people with disabilities or low-income people holding special identity cards (IDs) that categorise the holder as having poor financial capacity, corporate funding for those who do not hold the special ID, and provision of services under pension funds (membership fee is US\$5 dollars a month, except for people with disabilities or holders of the special ID).

The Cambodian Physical Therapy Association (CPTA) was founded in 1994 and registered with the World Confederation of Physical Therapy in 2007. Of the 465 PTs who graduated from physical therapy school, 150 have joined the association (Many,2018).

### **3.3. Rehabilitation Environment for Patients with Brain Injury in Lao People's Democratic Republic**

Lao PDR has a population of about 6.68 million, and 70% of the land consists of high plains and mountainous areas. Life expectancy is 67.8 years and healthy life expectancy is 57 years. The most common cause of death is lower respiratory tract infections at 11.9%, followed by diarrhoea disorders at 6.0%, ischemic heart disease at 5.8%, congenital anomalies at 5.4%, strokes at 5.2%, complications of premature birth at 4.9%, tuberculosis at 3.8%, traffic accidents at 3.0%, and neonatal encephalopathy at 2.7% (Institute for Health Metrics and Evaluation, 2010). Rehabilitation is provided for a wide range of conditions, such as neurological disorders in adults and children, orthopaedic disorders, respiratory disorders, and amputations, even for those in the very acute phase in intensive care units (ICUs), under the instruction of doctors. The Ministry of Health governs 7 prefectural health departments, 146 district health departments, and 860 health posts (Government of Lao PDR, Ministry of Planning and Investment, 2015). As of 2010, there were 0.8 beds per 1,000 people. Rehabilitation is available at central hospitals, district hospitals, and the national rehabilitation centre. After a patient is discharged, follow-up is performed at vocational training schools or outpatient rehabilitation clinics or by visiting rehabilitation specialists.

As of 2017, four public medical care security systems had been established: State Authority for Social Security, Social Security Organization, Community-Based Health Insurance, and Health Equity Funds (World Health Organization, 2014). In 2015, the membership rate was about 30% (Ohara, 2016). The National Socioeconomic Development Plan VIII targets a medical security membership rate of 50% by 2020 and universal insurance coverage by 2025. Total medical expenditure per capita is US\$40/year, of which 49% is public expenditure, 40% is out-of-pocket, and 11% others. Total medical expenditure was 3% of gross domestic

product in 2012 (World Health Organization, 2012b). The fee for a physical therapy session ranges from US\$2.50 to US\$6 and is set according to devices used and services performed.

As of 2018, the country had more than 1,000 doctors and 5,000 nurses and midwives. Every year, about 150 doctors graduate but medical human resources are concentrated in the capital, with 10 times the number of doctors per population than for rural populations (World Health Organization, 2012a). As of 2018, there were 1,072 PTs and 20–30 PT graduates annually. The country has one school for PTs and the qualification is given at graduation. Although there are no schools for OTs and STs, staff members who completed training in Thailand are considered OTs and STs.

Our project helped PTs of several central hospitals in Vientiane organise regular conferences to discuss and share issues. Case studies and learning sessions are held to improve techniques and knowledge.

### 3.4. Institutions Visited by Study Members in Cambodia, Viet Nam, and Lao People's Democratic Republic

**Table 3. Institutions Visited in Viet Nam, Cambodia, and Lao People's Democratic Republic**

Cambodia	(i) Sunrise Japan Hospital, (ii) Preah Kossamak Hospital, (iii) Khema PolyClinic, and (iii) Cambodian Physical Therapy Association Physical Therapy Clinic
Viet Nam	(i) Viet Duc University Hospital, (ii) Hai Duong Medical Technical University, (iii) Ha Noi Rehabilitation Centre, (iv) Thien Duc Care Centre for the Elderly, (v) Nghe An Rehabilitation Centre, (vi) Cho Ray Hospital, and (vii) Ho Chi Minh Medicine and Pharmacy University
Lao People's Democratic Republic	(i) Mittaphab Hospital, (ii) National Rehabilitation Centre, (iii) Sethathirath Hospital, and (iv) Mahosot Hospital

Source: Authors.

#### 3.4.1. Cambodia

##### ***Sunrise Japan Hospital Phnom Penh (Private)***

The hospital opened in October 2016. It was founded and is managed by a joint venture of Japanese companies: JGC Corporation, Innovation Network Corporation of Japan (INCJ), and Kitahara Medical Strategies Institute (KMSI). The hospital has 50 beds and a staff of 146 (as of December 2018). Bed occupancy rate is unknown. Bed capacity is sufficient. The hospital has nine clinical specialties: CT scan, MRI, X-ray, bronchoscope, electrocardiogram, electroencephalograph, endoscope apparatus, angiography apparatus, and two operating rooms available 24/7. The hospital can provide several types of surgery, including chronic subdural hematoma drainage, craniotomy for removal of hematoma, external

decompression, cranioplasty, shunting, intracranial tumour resection, spinal cord tumour resection, cerebral aneurysm clipping, coil embolisation treatment of a cerebral aneurysm, cerebral vascular bypass, carotid stenting, carotid endarterectomy, and removal of cerebral arteriovenous malformation. Average hospital stay is 7 days. Nurses are supposed to provide all the care required, without support from nurse aides and families. A patient referral document for other hospitals is available to transfer medical information summaries. The hospital has an electronic clinical record system.

Eight PTs work in the rehabilitation department. Low-frequency electric stimulation system, thermotherapy, ultrasonic therapy, standing table, and therapeutic brace are available. Inpatient rehabilitation is administered in line with criteria that show the schedule of rehabilitation practices, depending on the status of the patient. For a mild stroke case, rehabilitation is started on the day of admission after building a consensus with the doctor in charge. For a severe stroke and postoperative case, rehabilitation starts 1 or 2 days after admission; consensus with the doctor in charge is required to start. Inpatient rehabilitation can be administered after an operation for digestive system disorders and spinal disorders if the doctors in charge recognise its necessity or order rehabilitation during ward rounds. Inpatient rehabilitation is performed 1 hour per session per day and can be provided 365 days a year. Two sessions per day may be applied if the patient or the family requests it. The duration of therapy may be shortened, depending on the patient's finances or general condition. Outpatient rehabilitation is performed 1 hour per session. Reservation is required, but not accepted on Sundays and public holidays. Follow-up rehabilitation sessions are provided 1 or 2 times per week. The frequency may be modified at the request of the patient or depending on severity. Speech and swallowing training are available in addition to physical therapy. The cost is US\$40 for 1 hour and US\$20 for 30 minutes. A rehabilitation conference is organised every week.

#### ***Preah Kossamak Hospital (Public)***

The government hospital in Phnom Penh was founded in 1950. Many patients are low-income earners. Government aid is scarce, and the hospital receives support from foreign governments or private companies in China, Republic of Korea, and Japan. It has 350 beds, which are not enough; 15 clinical specialty areas of practice; and equipment, including CT scan, X-ray, electrocardiogram, and endoscope apparatus. The hospital provides surgery such as craniotomy for removal of hematoma, external decompression, cranioplasty, and intracranial tumour resection. Patients stay an average of 10 days. The lowest-income patients are exempted from co-payment. Discharge is determined by the doctor and the family. The hospital has an electronic clinical record system.

The rehabilitation department has five PTs. Patients might need more than one rehabilitation session per day but the hospital cannot meet all demand. Some patients cannot even have a single session. The cost per session is US\$5.



### ***Khema Polyclinic (Private)***

The hospital cooperates with European hospitals. It accepts private insurance but not social security. An affiliated hospital was established in central Phnom Penh in February 2018. The facility has 14 beds and 96 staff members. Bed occupancy rate is about 70%. The hospital has an operating room, cardiopulmonary exercise testing facilities, and electrocardiography, and can provide orthopaedic, trauma, and gynaecological surgery. Patients stay an average of 7 days. Nurses are expected to provide all the care required, without support of nurse aides and families. The hospital has an electronic clinical record system.

The hospital has one PT. Patients cannot have more than one rehabilitation session per day, and services cannot meet all demand. Some patients cannot even have a single session. The cost per session is US\$25.

### ***Cambodian Physical Therapy Association Physiotherapy Clinic (Private)***

The CPTA was founded in 1994 and accredited by the government in 1997. Its clinic opened in 2013 and focuses on outpatient and visiting care. Inpatients at the neighbouring Vissar Clinic, however, may also be treated at the clinic.

The clinic has two PTs, provides ultrasound therapy, and offers follow-up rehabilitation sessions once a week for patients discharged from acute-care hospitals. The first session costs US\$25 per hour and the second US\$15 per hour.

## **3.4.2. Viet Nam**

### ***Viet Duc University Hospital (Public)***

Originally named Phu Doan Hospital, it was established in 1906. In 1973, supported by East Germany, it was renamed Viet Nam German Friendship Hospital. It has the largest surgical centre in Viet Nam and is directly under the Ministry of Health. The hospital has 2,000–3,000 staff members; over 1,500 beds, with over 100% occupancy; 25 clinical departments; 52 operating rooms; 2 MRIs; 5 CTs; PET; X-ray; ultrasonography; electroencephalography; surgical microscopes; angiography; and neurosurgical microscopes. The hospital can provide several neurosurgical procedures such as chronic subdural hematoma drainage, craniotomy for removal of hematoma, external decompression, cranioplasty, shunting, intracranial tumour resection, spinal cord tumour resection, cerebral aneurysm clipping, coil embolisation treatment of a cerebral aneurysm, and cerebral vascular bypass. Our study did not analyse the average length of hospital stay. Patient referral documents can be issued to transfer medical information summaries when patients move to other hospitals. The public medical insurance system requires accredited hospitals to issue referral documents so that patients remain eligible for public medical insurance after the transfer. The hospital has an electronic clinical record system for accounting and meal orders but uses paper charts for patient records.

The hospital has 4 rehabilitation doctors and 10 PTs. Five patient beds are allocated to the rehabilitation department, which has a low-frequency electric stimulation system, thermotherapy, ultrasonic therapy, traction therapy, and phototherapy. The hospital does not have criteria for deciding when patients should start rehabilitation. (In Japan, such criteria are required by the public medical insurance system.) As a result, patients with spinal cord injury (even after fixation), for example, are advised to stay in bed for 1 month without rehabilitation. If the national social security fund agrees that rehabilitation is part of the insurance benefit, co-payment is 0%–40%. Otherwise, patients must pay VND150,000–VND300,000 for 45 minutes.

#### ***Hai Duong Medical Technical University (Public)***

The country's oldest education institute offering PT training, and the only one offering it in northern Viet Nam, the university has courses for nurses, medical technologists, and other health professionals. It was established in 1960 to produce medical professionals, including nurses, radiologists, laboratory technicians, and physiotherapists, through 2-year training courses. The physiotherapy department was established in 1978. Its programme was changed to a 3-year course in 2002 and a 4-year course has been available since 2007. This university has a medical school and eight departments: medicine, medical technology, radiology, physiotherapy, nursing, dental nursing, anaesthetic nursing, and midwifery. The university had 4,500–5,000 students as of 2015, and the physical therapy course had 50–70 students in each grade. The university has a school dormitory, housing about 30% of the students. The university offers 3- and 4-year courses in physiotherapy. Clinical training starts from the second term of the second year. Students are divided into three groups and assigned to practical training at local, provincial, and national hospitals in turn, and to clinical training for 4 months at a national hospital in the final year.

The university has a 1.5-year OT training course. It was established in 2017 with support from India and is provided for active physiotherapists. The physiotherapy department is supported by the World Confederation for Physical Therapy to develop a world standard curriculum.

#### ***Ha Noi Rehabilitation Centre (administered by Ha Noi City)***

The hospital specialises in rehabilitation, is controlled by the Ha Noi Department of Health, has a paediatric ward initially established for child war victims, has an inpatient ward and outpatient services, provides rehabilitation for patients with cerebral palsy or developmental disorders, and has 150 beds and 158 staff members (27 doctors and 68 nurses). As for medical facilities, the hospital has a consultation room, laboratory room, and X-ray room, but no surgery or operating room because the hospital specialises in rehabilitation. The hospital has 2 rehabilitation doctors, 23 PTs, 5 OTs, and 6 speech therapists. Occupational and speech therapists attended courses in their specialty for a few weeks or a few months. The rehabilitation department has a low-frequency electric stimulation system, thermotherapy, ultrasonic therapy, traction therapy, and phototherapy. The hospital provides rehabilitation for inpatients 5 times per week. If the national social security fund agrees that rehabilitation is covered by insurance, co-payment is 0%–40%. Otherwise, patients must pay VND440,000 per session.

### ***Thien Duc Care Centre for the Elderly (Private)***

The centre was established in 2001 by a limited company as Viet Nam's first private nursing home. It provides long-term care and medical care. The company has three other elderly care centres in northern Viet Nam (Dong Ngac, Soc Son, Nhat Tao).

The centre has 90 beds and 68 staff members, including 2 part-time doctors and 30 nurses. The institution has a specialised-care ward for clients with disabilities caused by stroke and can provide oxygenation, suction, and tube feeding. All residents are cared for by nurses. Clients are encouraged to spend a few days at home when their family members are ready to take care of them, and some do so.

The rehabilitation department has one PT and one traditional-medicine practitioner. Clients can have 3–5 sessions per week. The monthly fee was VND6 million–VND20 million as of 2018.

### ***Nghe An Rehabilitation Centre (Public)***

A provincial medical institution, the centre is categorised as a hospital. Patients in the post-acute stage are hospitalised for rehabilitation. The centre has 230 staff members, over 400 beds, and an occupancy rate of 90%. The average hospital stay is 17 days. Patient referral documents can be issued to transfer medical information summaries when patients move to other hospitals.

The rehabilitation department has 30 PTs, a low-frequency electric stimulation system, thermotherapy, ultrasonic therapy, and traction therapy. Patients may undergo one session per day, including on Saturdays and Sundays. More than 80% of patients have orthopaedic disorders, whilst about 10% have a brain injury. If the national social security fund agrees that rehabilitation is covered by insurance, co-payment is 0%–40%. Otherwise, patients must pay VND80,000 per session.

### ***Cho Ray Hospital (National)***

Founded in 1900, the hospital was completely renovated with support from the government of Japan in the 1970s. Technical cooperation with Japan has continued since then. Cho Ray Second Hospital is being built under the Cho Rai Viet Nam–Japan Friendship Hospital Development Project loan and will be completed in 2020 at the earliest. The hospital is improving the quality of medical care to meet the global standard, and is promoting medical safety, clinical pathway, team medical care, infection control, and other measures under a technical cooperation project by the Japan International Cooperation Agency (JICA). The hospital has about 4,000 staff members, including about 1,000 doctors and 2,500 nurses. Bed capacity is over 2,000; the neurology department has 90 beds and the neurosurgery department 200. The bed occupancy rate is over 140%. The hospital has 36 clinical specialty departments, MRI, CT, X-ray, operating rooms, ICU, surgical microscope, angiography, neurosurgical microscopes, and ultrasonography. The average hospital stay is 7 days. Patient referral documents can be issued to transfer medical information summaries when patients move to other hospitals. Electric charts are available but the hospital uses mainly paper charts for patient records.

The rehabilitation department has 29 PTs, 3 OTs, and 3 STs; a low-frequency electric stimulation system; thermotherapy; ultrasonic therapy; traction therapy; and phototherapy. If the national social security fund agrees that rehabilitation is covered by insurance, co-payment is 0%–40%. Otherwise, the patient must pay VND150,000 per session; outpatients in a group session must each pay VND20,000 per session.

#### ***Ho Chi Minh Medicine and Pharmacy University (National)***

Founded in 1941, the university is one of the best educational and medical institutions in Viet Nam and probably the best in southern Viet Nam. It has eight faculties: medicine, pharmacy, basic science, traditional medicine, public health, nursing, medical technology, and dentistry. The university has seven clinical departments and one hospital, about 3,000 staff members, about 1,000 beds, operating rooms, ICU, surgical microscopes, angiography, neurosurgical microscopes, MRI, CT, PET, X-ray, ultrasonography, and electroencephalography. The average hospital stay is 10 days. Patient referral documents can be issued to transfer medical information summaries when patients move to other hospitals.

The rehabilitation department has 1 rehabilitation doctor, 26 PTs, and 1 OT; a low-frequency electric stimulation system; thermotherapy; ultrasonic therapy; traction therapy; and phototherapy. If the national social security fund agrees that rehabilitation is covered by insurance, co-payment is 0%–40%. Otherwise, patients are charged VND150,000 per session.

### **3.4.3. Lao People's Democratic Republic**

#### ***Mittaphab Hospital (National Government)***

The biggest government hospital, it is the only hospital equipped with MRI. All four neurosurgeons in the country are affiliated with the hospital. It is one of two dialysis centres in the country. The hospital is the only one that can treat patients with severe acute respiratory syndrome (SARS). Construction commenced in 1985 and the hospital was opened in 1988. The MRI ward was opened in 2015 and a new ward equipped with CT and angiography rooms in 2018 with a loan from Austria. The hospital has 300 beds, 651 staff members, 18 clinical specialty departments, operating rooms, surgical microscopes, angiography, neurosurgical microscopes, MRI, CT scan, PET, X-ray, ultrasonography, and electroencephalograph. The hospital can provide neurosurgical procedures, including chronic subdural hematoma drainage, craniotomy for removal of hematoma, external decompression, cranioplasty, shunting, intracranial tumour resection, and spinal cord tumour resection. The average hospital stay is 14 days.

The rehabilitation department has 20 PTS and 4 acupuncturists, a low-frequency electric stimulation system, thermotherapy, ultrasonic therapy, traction therapy, and phototherapy. The hospital has criteria that doctors use to decide to start inpatient rehabilitation, which is provided once a day at most per patient.

### ***National Rehabilitation Centre (National)***

The centre has an outpatient clinic, neurology ward, orthopaedics ward, paediatrics ward, examination department, prosthetics and orthotics department, school for the visually impaired, and sports facility for the disabled. Inpatient facilities accept patients with stroke or spinal cord injury, paediatric patients, and patients who have undergone amputation and have been discharged from acute-care hospital. The centre provides inpatient and outpatient rehabilitation services. It started as a prosthetics production centre, which was founded in 1962. The School of Prosthetics-Orthotics, Physical Therapy was founded in 1968. It became the National Rehabilitation Centre in 1990. It has 100 beds and an occupancy rate of 30%, 191 staff members, an operating room, and X-ray. Only amputation surgery is performed in the operating room. The average hospital stay is 60 days. The centre depends on the families of patients to care for them. It has an electronic clinical record system.

The rehabilitation department has 12 doctors, 45 PTs, 5 OTs, 60 prosthetists and orthotists, a low-frequency electric stimulation system, thermotherapy, ultrasonic therapy, traction therapy, and phototherapy. Inpatient rehabilitation is provided once or twice a day. If the national social security fund covers rehabilitation, the patient is exempted from co-payment. Otherwise, the fee is at least LAK10,000 per session. A rehabilitation conference is held once a week.

### ***Sethathirath Hospital (National Government)***

One of the three major hospitals in Lao PDR, the general hospital has 250 beds and provides clinical and postgraduate education to medical students of the University of Health Sciences. Since 1999, Japan's grant aid project has supported improvement of medical care services and training. In September 2004, the hospital was upgraded from a city hospital to a university hospital. An emergency department is planned with support from Japan.

The hospital has 250 beds and an occupancy rate of 53%, 480 staff members, an operating room, an X-ray room, electrocardiography equipment, and CT scanner. Surgical procedures requiring standard surgical skills and equipment can be carried out in the hospital, including appendectomy, caesarean section, gallstone removal, kidney stone removal, and liver stone extraction. The average hospital stay is 14 days. The hospital depends on families of patients to care for them. The rehabilitation department has 13 PTs, low-frequency electric stimulation system, thermotherapy, ultrasonic therapy, traction therapy, and phototherapy. Doctors order inpatient rehabilitation following certain criteria. It is performed up to once a day. If the national social security fund covers rehabilitation, it is free. Otherwise, the patient must pay LAK40,000–LAK50,000. The hospital does not hold rehabilitation conferences.

### ***Mahosot Hospital (National Government)***

Founded in 1903 in Vientiane by the French, the hospital was the first one to offer modern Western medicine in Lao PDR. The hospital provides 24/7 emergency care and has strengths in treating cardiac and tropical diseases. Patients who have had a stroke are admitted if they do not require surgery.

The hospital has 450 beds and an occupancy rate of 70%, 884 staff members, nine clinical departments, an operating room, CT scanner, X-ray room, and equipment for ultrasonography and electroencephalography. The hospital can provide surgery, including cleft lip, sinus, appendicitis, caesarean section, gallstone removal, kidney stone removal, and liver stone extraction. The average hospital stay is 4 days. The rehabilitation department has 11 PTs, a low-frequency electric stimulation system, thermotherapy, ultrasonic therapy, and traction therapy. If a case meets the criteria, a doctor orders inpatient rehabilitation, which is performed up to once a day. If the national social security fund covers rehabilitation, the patient pays nothing. Otherwise, the patient pays LAK20,000. The hospital does not conduct rehabilitation conferences.