

# Retrospective Analysis of Medical Practice Training in French Public Hospitals of Cambodian Medical Specialists and Pharmacy Professionals and Students Enrolled at the University of Health Sciences of Cambodia Between 1996 And 2016

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## Abstract

**Background:** In the 1970s, the seizure of power by the Khmer Rouge led to a genocide that resulted in the extermination of health academics and professionals in the Kingdom of Cambodia. Since 1991, France has played a major role in the establishment of a functional health system, with significant involvement in medical and pharmaceutical training. France is the only country to offer an internship program that allows foreign medical specialists students or physicians to perform medical acts on patients and thus complete their practical training in hospital units to obtain a Diploma of Specialized Medical Training (DFMS/A). This report evaluates the effectiveness of this training mobility in the reconstruction of human resources for health in Cambodia.

**Methods:** This article is a descriptive analysis of a census database of Cambodian doctors and pharmacists who underwent practical training in France between 1996 and 2016. Another database, provided by the Cambodian Ministry of Health, recorded the current professional situation of Cambodian doctors who carried out part of their specialization in France between 1996 and 2013.

**Findings:** Between 1996 and 2016, among 904 specialist doctors who graduated from the University of Health Sciences of Cambodia, 521 doctors traveled to France through the DFMS/A program. Among 486 specialist doctors who completed an internship in France between 1996 and 2013, 97% returned to practice in their country.

**Interpretation:** The DFMS/A training has proven its usefulness in the reconstruction of a health professional network in the Kingdom of Cambodia. It should now be directed toward new health priorities guided by the rapid country economic growth, in coordination with the training and research programs of other international partners and all private and public training institutions in Cambodia.

**Keywords:** Diploma of Specialized Medical training; University of Health Sciences; Cambodia; France

**Abbreviations:** AFS: Certificate of Specialized Training; CES: Certificate of Specialized Studies; DES: Specialized Studies Diplomas; DFMS: Diploma of Specialized Medical Training; DFMSA: Advanced Diploma of Specialized Medical Training; FFI: Faisant Fonction d'Interne; MCC: MedicalCambodian Council; NGOs: Non Gouvernemental Organisations; UHC: University Hospital Centers; UHSC: University of Health Sciences of Cambodia

At the end of the Pol Pot regime in January 1979, only 40 doctors, 20 pharmacists, 30 dentists, 120 midwives and 2000 nurses remained in the Kingdom of Cambodia [1]. Since the Paris Agreements in 1991, the continued commitment of French cooperation has helped to restructure and revitalize the health sector of Cambodia, supporting training and management activities of the University of Health Sciences (UHSC), while at the same time rehabilitating public hospitals. Over the past 27 years, thanks to the combined efforts of the Kingdom of Cambodia, French and international cooperation, and private Foundations such as Pierre Fabre and Mérieux, health related training has reached a level that now allows UHSC to train a large contingent of health professionals, ensuring quality teaching, evaluation, and autonomy of operation.

## Current Health Status and Human Resources for Health in Cambodia

According to the latest census, the population of the country reached 15 762 370 inhabitants in 2016. The life expectancy rate in 2015 was 68.6 years, a 10-years increase compared to the year 2000. The most noted cause of death is cardiovascular disease, followed by tuberculosis and acute respiratory infection [2,3].

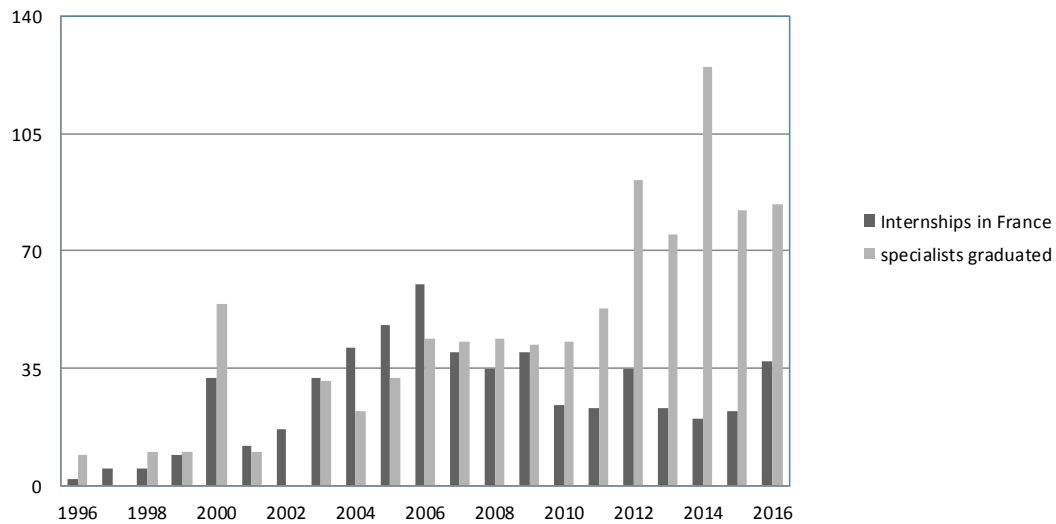
In 2011, a total of 18 596 Health workers were recorded, among them 2144 Generalists (0.152/1000 inhabitants), 351 specialists (0.025/1000 inhabitants), 8649 nurses, and 4050 midwives [4]. At the rural level, the care services are still limited to health care centers and health posts according to the number of inhabitants, under the responsibility of nurses and midwives. In 2012, the Ministry of Health recorded 1024 public health care centers, 121 health posts, 83 district / first level referral hospitals, and 8 specialized hospitals (data on private sector not included) [4]. Calmette Hospital in Phnom Penh is considered as the first reference and training hospital in Cambodia, and work closely with UHSC.

Facing with the country's economic growth, the development of public health care infrastructure is struggling to accompany this accelerated development, and the private sector is continuously expanding, gradually replacing international NGOs.

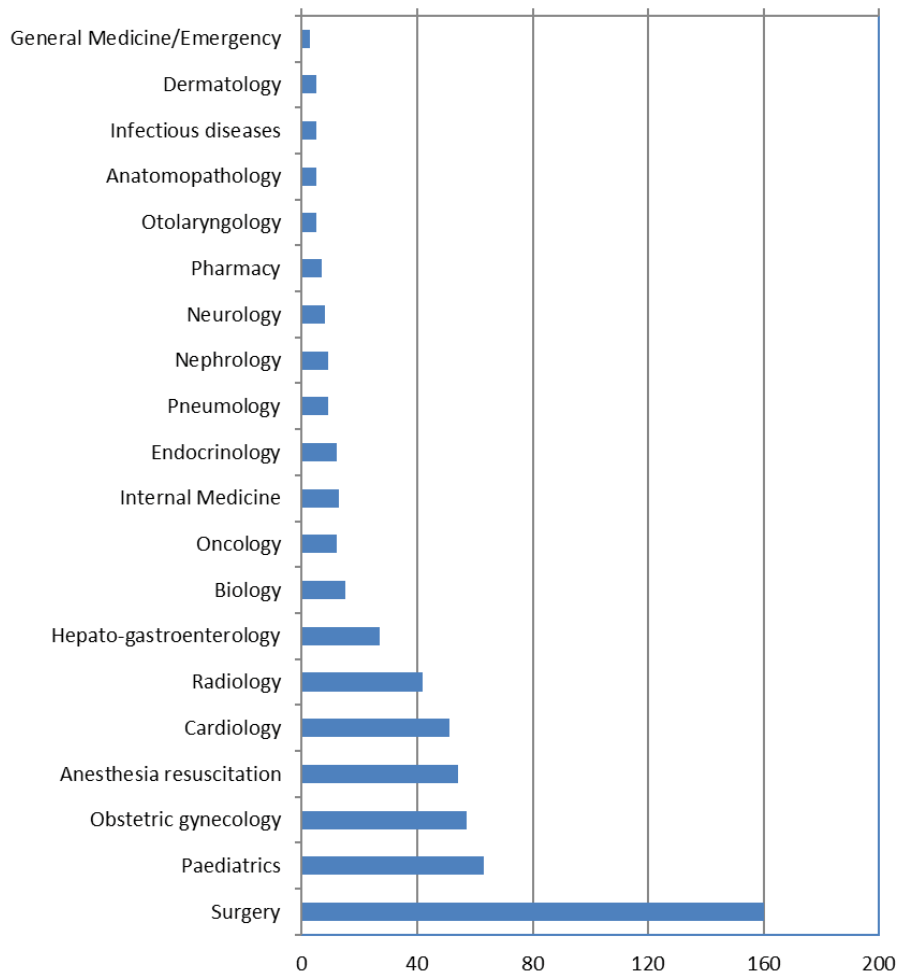
## Medical Specialized Training in Cambodia

Specialized medical education began in 1993 at UHSC, in cooperation with French universities, with the Certificate of Specialized Studies (CES) of Anesthesia-resuscitation and Emergency Medicine. In 1995, the Psychiatric CES was added, followed in 1997 by the CES of Internal Medicine, General Surgery, Pediatrics and Gynecology-Obstetrics. In 1999, the CES of Radiology and Medical Imaging was created. In 2003, in agreement with French diplomas, the CESs became Specialized Studies Diplomas (DES). The DES of Ophthalmology opened in 2006, followed by DES of Otorhinolaryngology in 2009. In the meantime, specialized training in Medical Biology was opened at the Faculty of Pharmacy in collaboration with Foundation Mérieux. The specialty of Internal Medicine opened in 2011 with the following sub-specializations: Pneumology, Oncology, Cardiology, Diabetology and Endocrinology, and Hepato-gastroenterology. The surgery opened in 2012 the following sub-specializations: Orthopedic and Traumatic





**Figure 1:** Number of internships in France compared to the number of specialist doctors who graduated from UHSC between 1996 and 2016.



**Figure 2:** Number of French specialized units that hosted Cambodian residents between 1996 and 2016.

(Figure 3). Among the 420 doctors who returned to Cambodia, 3 doctors died and 27 retired. The Ministry of Health identified 357 specialists in Phnom Penh, including 290 in public hospitals and 35 in hospitals dependent on NGOs, 30 of them practicing at Kantha Bopha pediatric Hospital (Figure 4). Of all doctors and pharmacists trained in France, 30% were assigned to Calmette Hospital. In the provinces, 63 doctors practice in different cities, according to the distribution reported in Figures 5.

**Discussion**

The FFI program, which has been renamed DFMS/A since 2010, together with the progressive development of the higher education in medical specialties at UHSC, gradually contributed to improve the training of Cambodian doctors and pharmacists. Given the regulation issues imposed by the practical training of doctors in foreign countries, France is the only country to have surrounded itself with insurance that

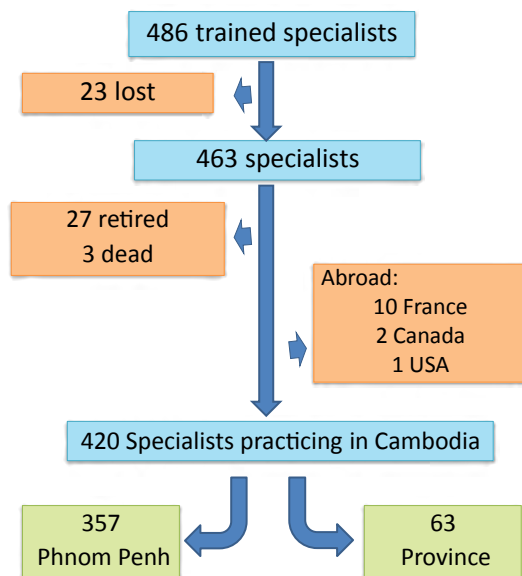
authorizes public hospitals to offer this type of training allowing foreign medical students to perform medical procedures. Other countries offer a status of Medical Observer, during which the foreign doctors can take no responsibility for care.

The limited number of pharmacists enrolled in this training is explained by the priority given by the French organizers of this program to medical training in hospitals. Moreover, 22 pharmacists were able

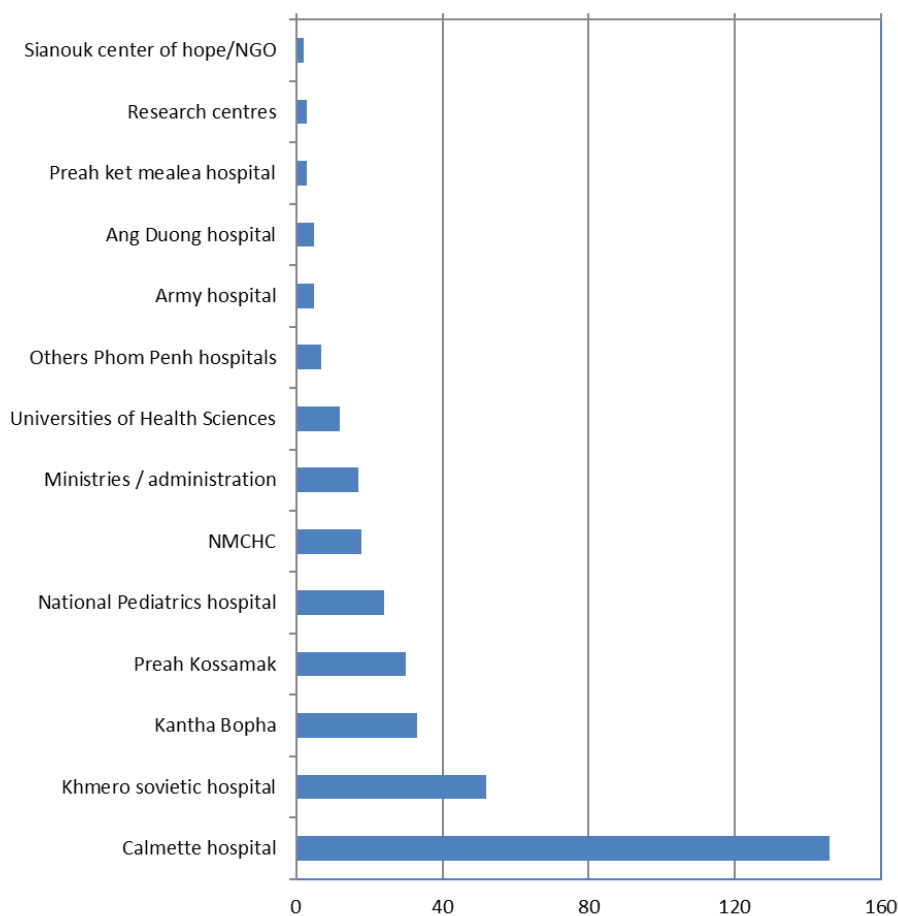
to carry out training in France, under cooperation agreements with Pierre Fabre and Mériex foundations, and the “Amicale des Etudiants Pharmaciens Khmers” (AEPK). In 2012, the Pierre Fabre Foundation and three French universities have invested heavily in the operation of the “Mekong Pharma Master”, to train Vietnamese, Laotian and Cambodian students in hospital and industrial pharmaceutical specialties [8].

The training of general practitioners did not benefit from the mobility program and has not been integrated into French cooperation, since general medicine has been recognized as a medical specialty in France in 2007 and was not included in the FFI program. This exclusion had a major impact on the evolution of medicine in Cambodia, with French-speaking specialists occupying high-level hospitals and administrative functions on one side, and a pool of general practitioners trained only in Cambodia or in other countries on the other side. Indeed, an indefinite but significant number of Khmer physicians and pharmacists did part or all their studies in Vietnam, Russia, China and other countries, the diplomas of which were recognized by the Ministry of Education, Youth and Sport in Cambodia. Indeed, this mix in training languages, accentuated by the lack of Khmer translation of medical terminology, created misunderstandings in hospital wards conflicting with the quality of care.

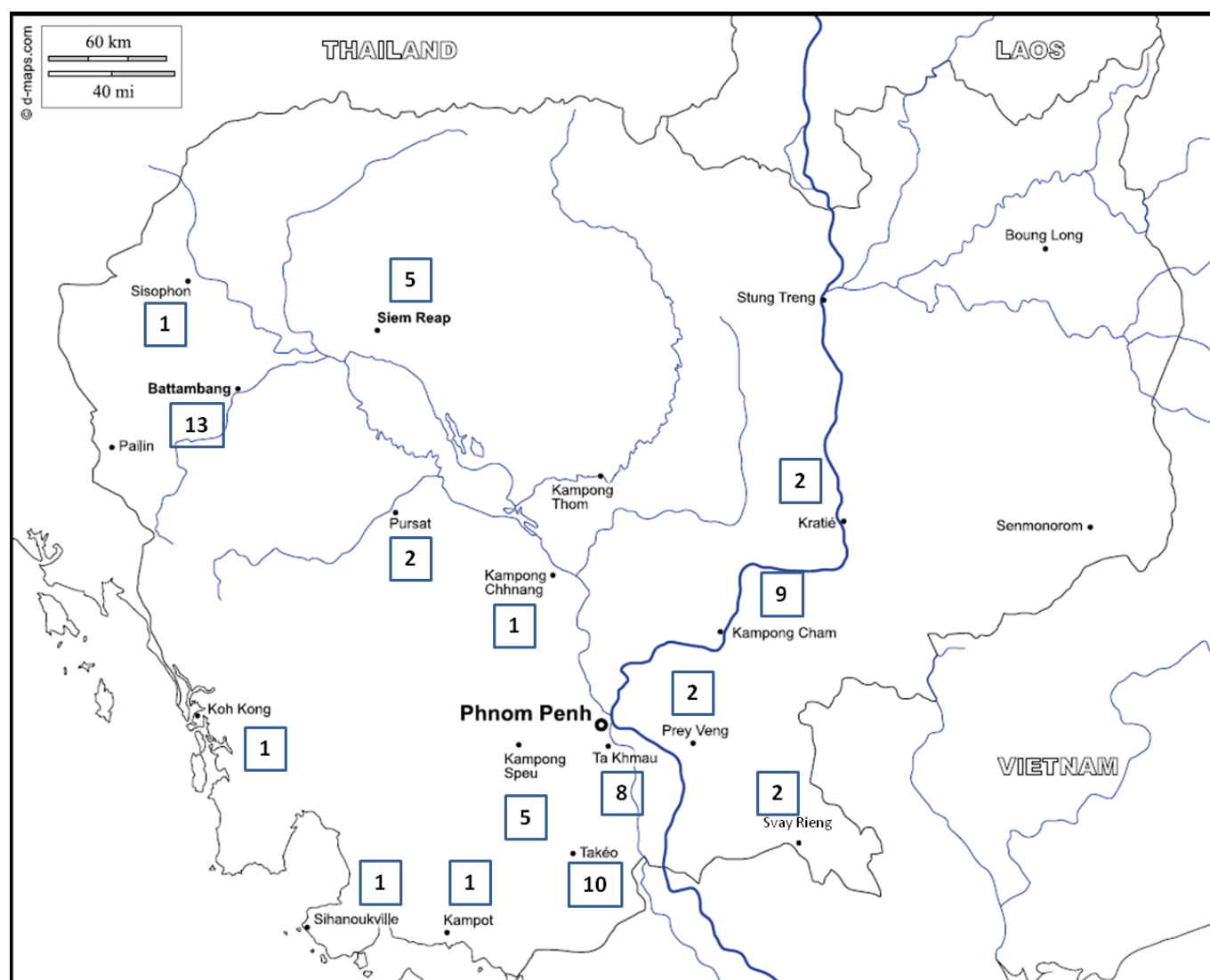
The number of specialists reported in this study is limited to students who completed their mobility path under the FFI or DFMS/A programs under the responsibility of UHSC. It does not take into account the Khmer students and doctors who travelled to France under the initial responsibility of the Cambodian diaspora in France, or French NGOs, outside or under cover of these programs. Initially, French cooperation activities have been strongly supported by these civil society structures, who contributed to the medical training and improvement of care in



**Figure 3:** Current positioning of doctors and pharmacists trained in France between 1996 and 2013.



**Figure 4:** Assignment of the 357 doctors and pharmacists in Phnom Penh, after their training, between 1996 and 2013.



**Figure 5:** Assignment of the 63 doctors and pharmacists in the provinces, after their training, between 1996 and 2013.

Cambodia, but also to the identification of positions of foreign resident in French hospitals.

The databases analyzed in this study relate to UHSC only and should now integrate other private universities in Phnom Penh. The first private university training health professionals, International University, opened in 2002, and began offering some specialized medical training in 2013. Two other universities, Puthisastra and Norton University, opened their doors in 2011 and 2013 respectively, and will offer specialized medical training in the years to come. Students from these universities should be considered in the evolution of training projects with France in the years to come.

The census of Cambodian doctors who completed further training in France, carried out by the Ministry of Health of Cambodia, found that 97% of the 486 doctors trained in France between 1996 and 2013 returned to Cambodia, 92% being still in activity, thus demonstrating the usefulness of the practical training program in France for the development of health human resources in Cambodia. In addition, the majority of specialist doctors now work as public servants since the Royal Government of Cambodia decided to waive age criteria for civil servant recruitment exam for health professionals early 2017.

Very few doctors who benefited from practical training in France oriented their career toward research and teaching. Only 12 health professionals, doctors or pharmacists have joined UHSC, three integrated national research centers, and one the Pasteur Institute

in Cambodia. Taking into account i) the lack of a training hospital / university status for health professionals, and ii) the lack of recognition of research activities within the Cambodian legislative framework, it seems normal to observe this trend. On the other hand, the DFMS/A program is not intended to train doctors in research, but in quality care for patients. However, given the current trend in linking research activities with improved quality of care, it seems important to take now advantage of the DFMS/A program to involve more students in clinical studies and thus initiate them into clinical research.

An important question is whether the training of specialists remained in line with the health priorities of Cambodia. Between 1996 and 2010, the needs were such that the training of all medical specialties was essential in addition to the training of general practitioners. Since 2010, Cambodia has witnessed rapid economic growth leading to changes in the priorities for care. Increased traffic has resulted in a dramatic increase in mortality and disability caused by road accidents, and emergency medicine, trauma, and neurology have become a priority and have so far been neglected in the context of training in France. The ageing of the population necessarily involves an increased rate of incidence in cancer and cardiovascular diseases. However, only 7 anatomopathologists and 13 oncologists have been trained so far and we recorded only 2 cardiovascular surgeons.

The majority of specialists hold a position in a public hospital in Phnom Penh (363). On the other hand, the position of the 63 doctors in the provinces is not related to the size of the population, but rather

to long-established relationships based on public-sector cooperation projects or NGOs with provincial hospitals, such as Takeo and Kompong Cham. The cities of Battambang and Siem Reap, respectively 3rd and 4th cities in Cambodia, received only 13 and 5 specialized doctors respectively, which represent few health professional specialists compared to the number of inhabitants.

Today, UHSC is fully autonomous in the management of its university and teaching. In relations with the country's major public hospitals, it ensures the training of healthcare professionals with respect to students and patients, and has established regulations and quality assurance that meets international requirements for diploma recognition. The good relationships established with France and other countries allowing student mobility have contributed to the international upgrading of UHSC, which represents a pool of quality health professionals that will contribute to strengthen the public health plan of the Kingdom of Cambodia. The DFMS/A training has proven its usefulness in the reconstruction of a health professional network in the Kingdom of Cambodia. It should now be directed toward new health priorities guided by the rapid country economic growth, in coordination with the training and research programs of other international partners and all private and public training institutions in Cambodia.

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### Author's Contribution

PM analyzed data and wrote the manuscript; VS wrote the manuscript and interpreted data. PH collected data. GV, YB, HE, and HMB ensured program management and were involved in data interpretation.

### References

1. Guillou Anne Yvone. Anne Yvonne Guillou. Les médecins au Cambodge. Entre élite sociale traditionnelle et groupe professionnel moderne sous influence étrangère. Anthropologie sociale et ethnologie. Ecole des Hautes Etudes en Sciences Sociales (EHESS), 2001.
2. World Bank Statistics.
3. WHO Statistics.
4. Human resources for Health, country profiles, Cambodia, WHO Western Pacific Region, 2014, ISBN 9789290616276.
5. Decree of 1<sup>st</sup> August 1991 on inter-university diplomas of specialization.
6. Diploma of specialized medical training and advanced diploma of specialized medical training [DFMS/A].
7. Information about the Specialised Medical Training Program.
8. Website of Mekong Pharma Master.