

Global Dialysis Perspective: Vietnam

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Introduction

Vietnam is one of the most populated Southeast Asian countries, with a population of around 97 million people in 2018 (1). Three kinds of RRT, including hemodialysis (HD), peritoneal dialysis (PD), and kidney transplantation, are currently available in Vietnam; they service a total of about 36,000 patients, but this only accounts for about one third of the estimated ESKD population in need of dialysis across the country.

The purpose of this article is to give a broad overview of some key aspects of RRT and nephrology in Vietnam.

Hemodialysis

HD has been available in Vietnam since 1968. Initially, it was only used to treat acute kidney failure. During that period, only the Travenol Drake-Willock machine was used. Starting from 1996, with the initiation of the national insurance reimbursement system, a remarkable development in dialysis was seen throughout the country, with the number of patients on maintenance hemodialysis (MHD) steeply increasing. MHD has become the most common type of dialysis and has been available in many Vietnamese cities and provinces since then (2). Although little is known about the actual number of patients with ESKD in need of dialysis in the general population, it is estimated to be >100,000 persons. However, only about one third of them (approximately 30,000 patients) are actually on MHD all over the country. Although this proportion is still very low compared with the estimated demand, all dialysis facilities are frequently overwhelmed and have to operate up to four 4-hour shifts per day; home dialysis is not available yet in Vietnam.

All dialyzers are capillary type, mainly low flux, and they are reused six times in total to compensate for the low reimbursement of only \$25 per session. We import all dialysis machines and dialyzers from various foreign brands, such as Nipro (Japan), B. Braun, and Fresenius (Germany), *etc.* On the other hand, water treatment systems with reverse osmosis are mainly locally made. Dialysates with bicarbonate buffer are used during dialysis sessions. The arteriovenous fistula created at the wrist by the urologist or vascular surgeon is the main vascular access for dialysis.

The majority of HD facilities belong to the public sector. Although the supply is still unable to handle the

increasing demand, the government has in fact invested in this service enormously. In contrast, although the private health care network has been greatly developed in big cities such as Hanoi and Ho Chi Minh City, these hospital systems are not interested in providing HD services because they are not considered lucrative and require the large investments in equipment and infrastructure.

In 2017, the Japanese-standard High-Tech Hemodialysis Center in cooperation with the Tanaka Urology Clinic from Japan was inaugurated in Nguyen Tri Phuong hospital, one of the highest-ranked public general hospitals in Ho Chi Minh City, Vietnam. This center has been unique in Vietnam so far. Since its establishment, the center has serviced not only Vietnamese but also many dialyzed patients from the United States, Europe, and other neighboring Asian countries coming to Vietnam for tourism or business. The quality of life and satisfaction level of the patients dialyzed in this center are much better compared with other centers.

Online hemodiafiltration is also available in several HD facilities, but it is only indicated as a once-per-month adjunct therapy to conventional HD for patients who can afford the extra out-of-pocket fee after insurance reimbursement. Although this kind of “hybrid” therapy is thought by some Vietnamese physicians to result in improvement of certain clinical complications of patients on long-term dialysis, such as pruritus or elevated serum β_2 -microglobulin level, there is currently no randomized, control trial comparing conventional MHD and this hybrid therapy regarding the overall outcome, and thus, the beneficial effects of this modality cannot be ascertained for the time being.

Peritoneal Dialysis

Compared with other developed countries such as France (3), the United States (4), or Japan (5), since its first appearance in 1997, which was much later than HD, PD had more difficulty in gaining market share in Vietnam and was not the preferred option for both physicians and patients due to various misconceptions and concerns. The most common reason for limited PD utilization is patient preference, as they often do not have accurate information about PD and are worried about the infection risk; therefore, they

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prefer the incision at the wrist to that at the abdomen. Moreover, in many cases, it was not convenient to set up PD at patients' home due to low socioeconomic status. Physicians are also skeptical about the performance of PD and obsessed by the potentially high risk of infection due to inadequate patient education level and low living standard as well as environmental pollution. As a result, many have considered PD as a second-line therapy, which is only indicated in patients with contraindication for HD (6,7).

According to the Baxter Viet Nam 2017 data, the only PD provider in Vietnam, the dropout rate, the hospitalization rate, and the peritonitis rate were 23.3%/yr, 3.9%/yr, and one episode per 65.66 patient-months, respectively.

To date, there have been nearly 2000 patients on PD, even though it is also totally reimbursed by the national insurance (8).

Continuous ambulatory PD is more common, and there are just >60 patients on automatic PD as the machine is too expensive and is not covered by the insurance.

Kidney Transplantation

Since the first cases of kidney transplantation from a living donor done in the north of Vietnam in 1992 with Taiwanese aid, there have been >4400 patients with kidney transplant performed by Vietnamese surgeons throughout the country so far. Living donor is the main source of kidney donation, and organ trafficking is strictly prohibited. Although the law permitting organ procurement from brain-dead donors was approved by the National Assembly, there have been only 176 patients transplanted from brain-dead donors.

The selection criteria are mainly on the basis of histocompatibility, age, and comorbidities. HLA typing anti-HLA antibodies, plasma reactive antigen test, and donor-recipient crossmatch are routinely done, and they are among the main selection criteria for transplantation.

For brain-dead donors, the consent of the family or next of kin is a compulsory, indispensable step before any organ procurement.

For living donors, the consent form must be signed by both donor and recipient, and it must be certified and approved by the administrative authority to avoid organ trafficking.

Like dialysis, the transplantation surgery is covered by insurance.

Regarding the immunosuppressive drugs, basiliximab/OKT3 antibody, tacrolimus/cyclosporin, mycophenolate mofetil and corticosteroids are available, and covered by the national insurance about 50%.

Table 1 describes the key aspects of the actual dialysis status in Vietnam.

Nephrology and Nephrologists

In Vietnam, nephrology is only taught as a part of the internal medicine coursework in both undergraduate and graduate programs, and there are no training courses majoring in nephrology in medicine universities. With the aim to fill in the gap in nephrology and dialysis training, the Ho Chi Minh Society for Nephrology and Dialysis Therapies (HSDT), of which I (B. Pham Van) am currently the president, was founded on December 26, 2016 in Ho Chi Minh

Table 1. Some key aspects of the actual dialysis status in Vietnam

Hemodialysis	Status and Funding
No. of patients on dialysis in Vietnam (total no. and per million people in the general population)	Total no. of patients with RRT <ul style="list-style-type: none"> • Approximately 30,000 on MHD (310 patients per 1 million population) • Approximately 2000 on PD • >4000 with kidney transplantation Or 372 patients with RRT per 1 million population
Home dialysis	Home dialysis is not available in Vietnam
Payment for dialysis	>95% of patients on dialysis covered by insurance from 80% to 100% depending on the kind of insurance. Patients on OL-HDF have to pay out-of-pocket expenses
Dialysis facilities	Dialysis units are mainly hospital based; freestanding ones are few and invested by privates
Dialysis profit	Majority of dialysis units, especially hospital-based ones, are nonprofit. All private freestanding are for profit; patients have to pay out-of-pocket expenses
Reimbursement policy	Insurance reimburses about \$25 per dialysis session
Care for patients during dialysis	Only nurses care for patients. Technicians are only in charge of machine maintenance/ minor repairation
Nurse-to-Patient Ratio in the dialysis units	One nurse for five patients during dialysis
Average length of a dialysis session, h	4
Patients' consultation/visit	Patients are seen by their nephrologists once per month. Nephrologists on duty have to see all patients at least once during dialysis session
Vascular access	>95% patients are dialyzed <i>via</i> AVF, approximately 4% AVG, approximately 1% CVC. In some facilities, tunneled CVC is used for dialysis while awaiting the maturation of AVF

MHD, maintenance hemodialysis; PD, peritoneal dialysis; OL-HDF, online hemodiafiltration; AVF, arteriovenous fistula; AVG, arteriovenous graft; CVC, central venous catheter.

City, Vietnam. Our main vision and mission are to bridge educational and practical training gaps among nephrologists and other health professionals involved in nephrology and to improve health outcomes and the quality of life of patients with kidney disease not only in Ho Chi Minh City but also throughout Vietnam. To accomplish our vision and mission, our goals are to provide academic training opportunities for all physicians, nurses, technicians, and pharmacists working in nephrology and dialysis from all over country, as well as foster collaborative scientific research between Vietnamese health care providers and international colleagues in order to expand our knowledge and skills in nephrology and dialysis. Since its introduction, the society has always received precious support from the Japanese Society of Dialysis Therapy (JSDT), and we have been welcoming Japanese experts and professors who have shared their invaluable expertise and experiences with us at our annual congresses. More importantly, the JSDT has also been kindly providing short-term training for Vietnamese nephrologists in Japan. In addition, the HSDT has also received valuable support from our American colleagues at Northwestern University (Chicago, IL), Pennsylvania University (Philadelphia, PA), and Johns Hopkins University (Baltimore, MD). Their dedication and willingness to share their knowledge and experiences have contributed a big part to the success of our annual meetings and the continuous growth of our society, for which we are beyond grateful. During the past few years, despite being a newly established and local organization, our society has been highly appreciated by our Vietnamese colleagues and has successfully been playing the role of the national society in networking and joining forces between different dialysis centers across the country. We hope to continue this special cooperation with our international colleagues and collaborators, and we hope further expand our society to include more members throughout the country in the future and be able to fulfill our mission for patients with ESKD in Vietnam.

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Author Contributions

B. Pham Van and C. Vo Duc wrote the original draft and reviewed and edited the manuscript.

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