



# Landmarks in Clinical Solid Organ Transplantation in Vietnam

H. Ledinh

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## ABSTRACT

Renal transplantation was first performed in Vietnam in 1992. Up to the end of 2010, there have been 400 kidney and 16 liver transplantations from related and unrelated living donors. From 8 brain-dead donors between 2008 and 2010, we performed 15 kidney, 1 liver, and 1 heart transplantation. Few people agree to donate their own or their relatives' after death, mainly owing to the traditional belief of the Vietnamese that "as a man lives, so shall he die." The demand for organs for transplantation therefore exceeds the organ availability. This article sought to present some achievements and challenges in the field of solid organ transplantation in Vietnam as well as the necessary measures to develop this young promising specialty.

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## HISTORICAL CORNERSTONES<sup>1-7</sup>

Kidney transplantation was envisioned in Vietnam since the 1970s, but could not become a reality owing to the war conditions. In the early 1990s, the Military Academy of Medicine in the north of Vietnam started human resources training, for living-donor kidney transplantation with the support of Cuba. These efforts included education in operative technique, immunology, and immunosuppressive drug therapy. On June 4, 1992, the first living-donor kidney transplantation was successfully performed at Military Hospital No. 103. That institute also performed the first living-donor liver transplantation on January 31, 2004. In 2005, the Ho Chi Minh Prize, the most honorable prize in Vietnam, was awarded to the authors of a multicenter study on solid organ transplantation.

On November 29, 2006, the National Assembly approved a law on donation, procurement, and transplantation of tissues and organs from living and deceased donors, this law has been in effect since July 1, 2007. Renal transplantation from brain-dead donors began in 2008 at Cho Ray Hospital, and in 2010 liver and heart deceased-donor transplantations were reported at Viet Duc Hospital and Military Hospital No. 103, respectively.

## CURRENT STATUS OF TRANSPLANT ACTIVITY

Up to November 2010, 18 years after the first kidney transplantation, there have been 400 kidney and 16 liver transplantations performed in Vietnam from related and unrelated living donors. Unrelated living donors, namely, husbands or wives or friends in the majority of cases comprised only a small percentage of living donors, although some altruist donors have also been accepted. From 8 brain-dead donors from 2008 to 2010, we have also

performed another 15 kidney, 1 liver, and 1 heart transplantations (Table 1).

Twelve hospitals are permitted to perform kidney transplantation; 4 of them, are allowed to do liver transplantation. Table 2 summarizes the transplant activity according to transplant center.<sup>8-12</sup> Cho Ray Hospital has transplanted almost one-half of the living-donor kidney transplantations: 95.8% of patients had survived over 10 years' follow-up; 4 patients died due to viral infections, suicides, or unknown reasons, according to the data released in March 2010. Another single-center report showed the rates of patient and graft survivals at 1 and 3 years after transplantation to be 82% and 73%, and 82% and 65%, respectively. Most graft losses occurred in the context of patient death with a functioning graft due to viral and fungal infections, myocardial infarction or stroke.<sup>9</sup> Four centers which are permitted to perform heart transplantation are Military Hospital No 103, Viet Duc Hospital, National Hospital of Pediatrics and Trung Uong Hue Hospital.<sup>13</sup>

## ESTIMATION OF END-STAGE ORGAN FAILURE AND POTENTIAL DECEASED DONORS IN VIETNAM

### Estimates of End-Stage Organ Failure

Estimates showed that nearly 6 million of 86 million habitants (6.7%) suffer from chronic kidney disease of various severity at 1, April 2009.<sup>14</sup> Among them, ~ 80,000

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From the Department of Urology and Transplantation, University of Medicine Pham Ngoc Thach, Ho Chi Minh City, Viet Nam.

Address reprint requests to Ledinh Hieu, MD, Department of Urology and Transplantation, University of Medicine Pham Ngoc Thach, 88/2 Than Thai street, District 10, Ho Chi Minh City, Viet Nam. E-mail: ledinhhieu@pnt.edu.vn

**Table 1. Number of Solid Organ Transplants Reported in Vietnam from 1992 to November 2010**

Donor Category	Kidney	Liver	Heart
Living	400	16	—
Deceased	15	1	1

people were in end-stage kidney disease (ESKD), an incidence of 6,400 patients per year. However, only 10% of ESKD patients received renal replacement therapy. Up to the beginning of 2010, there are >6,000 hemodialysis (HD) and >1,000 peritoneal dialysis (PD) patients in Vietnam.<sup>15</sup> The average costs for HD and PD were 7.5–8 million and 9.5 million VN dong/mo/patient respectively (the exchange rate between US dollar and VN dong varies over time but is ~1 US dollar to 20000 VN dong). On average, each patient on HD or PD pays ~100 million VN dong/y. For kidney transplantation, the average cost of the surgical intervention is ~80–100 million VN dong and the after care ~4–8 million VN dong/mo/patient for the rest of life. So not many patients are able to support this cost without government help although these costs are already much lower than in other countries. At present, social insurance reimburses 50% of the expenses for immunosuppressive drugs.

There have been ~23,000 cases of cirrhosis or liver cancer in Vietnam.<sup>16</sup> Hepatitis B virus and alcoholism are the most common causes of chronic liver disease, followed by hepatocellular carcinoma.

At the Department of Vascular Cardiology of Military Hospital No. 103, during the 2 years from 2007 to 2008, 30.7% of hospitalized patients experienced heart failure. Among 1,839 hospitalized heart-disease patients five hundred sixty-two subjects suffered from dilated cardiomyopathy of II, III, or IV degree. Twenty percent of dilated cardiomyopathy patients were recommended for heart transplantation. At the National Institute of Vascular Cardiology, 30% of 11,393 hospitalized patients in 2008 had

heart failure of varying degrees of severity with a quite large number of potential heart transplantations.<sup>17</sup>

### Consequences

Many ESKD patients die because of lack of access to renal replacement therapy or while waiting transplantation. Vietnam is suffering from a great loss due to chronic kidney disease.<sup>18</sup>

Patients have gone abroad for transplantation the most common destination being China. About one-half of the transplanted patients now in Vietnam were transplanted in China. From 1992 to 2005, 159 patients were transplanted in Vietnam (157 kidney and 2 liver recipients) compared with 300 kidney recipients transplanted abroad.<sup>19</sup> The risks of transplantation in foreign countries such as China, India, and Pakistan are evident.

Organ commercialism is likely to develop further. Recipients and donors make secret deals before going to a foreign country for transplantation. They may perform medical testing abroad or in Vietnam, where the cost of medical testing is less expensive. The price of 1 kidney has been suggested on the internet to be 4,000–10,000 US dollars. There has even been a representative office of a transplant center located in the Pinyin province of China in Ha Noi city.<sup>20</sup>

### Estimates of Transplant Candidates

Statistical data from the Ministry of Health estimated 6,000 ESKD patients awaiting kidney transplantation.<sup>21,22</sup> Data from 5 large hospitals in Ha Noi city have demonstrated that among 4,143 liver disease patients up to one-third need transplantations.<sup>23</sup> Another study at 2 large hospitals in Ho Chi Minh city showed similar result (32%).

The waiting lists in several transplant centers include: 20 patients for kidney grafts at-Cho Ray Hospital; 50 for kidney and 15 for liver grafts at-Viet Duc Hospital<sup>13,24</sup>; and 10 for heart grafts at-Military Hospital No. 103.

**Table 2. Number of Organ Transplants According to Transplant Centers from 1992 to November 2010**

Hospital	Kidney		Liver	
	Beginning	Number	Beginning	Number
Cho Ray Hospital	12/28/1992	200*		
Nhan Dan Gia Dinh Hospital	01/22/2002	5		
Nhan Dan 115 Hospital	02/10/2004	34		
Hospital of Pediatrics No.2	06/14/2004	7	12/01/2005	7
Kien Giang General Hospital	04/03/2007	2		
Trung Uong Hue Hospital	07/31/2001	26		
Da Nang General Hospital	03/28/2006	2		
Military Hospital No.103	06/04/1992	61*	01/31/2004	1
Viet Duc Hospital	08/14/2000	35*	11/28/2007	2†
National Hospital of Pediatrics	05/26/2004	5	07/02/2005	7
Bach Mai Hospital	10/24/2005	2		
Hospital 'The 19th of August'	10/17/2008	7		

\*Includes deceased-donor kidney transplants (7 at Cho Ray Hospital, 6 at Viet Duc Hospital, and 2 at Military Hospital No. 103).

†Includes 1 deceased-donor liver transplant.

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