



## The Current Status of Kidney Transplantation in Taiwan

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### Short Communication

The prevalence rate of chronic kidney disease such as nephritis, nephrotic syndrome and nephropathy in Taiwan is extremely high. Although the Ministry of Health and Welfare (MOHW) had implemented all action measures in the “five-year-plan for Chronic Kidney Disease (CKD) prevention and enhancing the quality of care 2012-2016” to decrease the incidence rate of End-Stage Renal Disease (ESRD) on dialysis, according to the 2016 report of The United States Renal Data System (USRDS) [1], the incidence rate of ESRD in Taiwan was 368 per million populations in 2001, while it was 455 per million populations in 2014, and were higher than that in Japan as well as in the United States. The prevalence rate of ESRD in Taiwan was 3,219 per million populations in 2014, whereas the expenditure of outpatient dialysis was up to 1.36 billion USD in 2015, and ESRD was still one of the diseases with the highest single payment among 20 leading outpatient diseases in 2014-2015. However, in recent 5 years through substantial focus on raising awareness, early identification and proactive management of CKD, the annual growth rate of patient with chronic renal failure who needs dialysis has been decreased to 3% while it was 6% annually in 2001-2010. Although the incidence of patient under 65-year-old grew from 4,260 in 2006 to 4,834 in 2013, the annual growth rate decreased year by year, which shows that CKD prevention in Taiwan is working.

In order to enhance the number of patient receiving kidney transplantation for decreasing the prevalence rate of ESRD on dialysis, then furthermore, to reduce the medical expenditure of outpatient dialysis, the MOHW took all kinds of action measures such as: 1) Continue promoting organ donation, and enhancing cooperation with religious groups; 2) Helping citizens to sign the authorization for organ and tissue donation with registration on their National Health Insurance (NHI) cards, as well as including the authorization for organ and tissue donation in examples of notice for hospitalized patients; 3) Integrating the possibility and applicableness of persuading organ donation; 4) Legislating regulations for intergroup matching of living donor kidney transplantation to enhance the promotion of organ donation, therefore, the more people knows about organ donation, the higher rate of organ donation could be achieved, and the number of patients receiving kidney transplantation could grow annually.

According to statistical data from the Organ Registry and Sharing Center in Taiwan, and the Transplantation Society of Taiwan (Figure 1), in 2005-2016, the number of patients who received kidney transplantation per year ranged from 230 to 325; besides, in 2016, the cases of living donor kidney transplantation reached 36.3% among patients undergo kidney transplantation.

In Taiwan, patients waiting for kidney transplantation have always been the highest number

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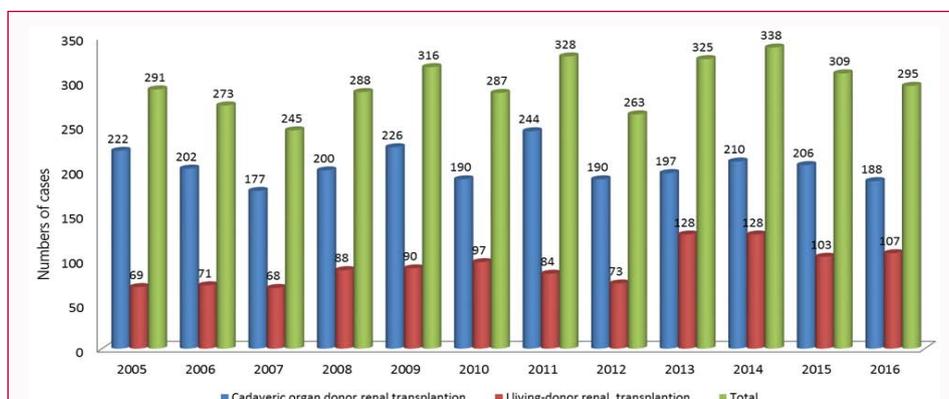


Figure 1: Statistics of kidney transplantation by year in Taiwan.

Sources: Statistical data from the Organ Registry and Sharing Center in Taiwan, and the Transplantation Society of Taiwan.

of patients waiting for organ transplantation and there were totally 6,557 patients waiting in line for transplantation by April 05, 2017. The origin of kidney transplantation includes living donor transplantation, and the MOHW learned from the matching and donation rules in the United States and Netherlands such as matching with the relatives in other groups when the donors are not able to donate because of incompatible blood or immune matching, therefore the original designed definition of relatives in the human organ transplant regulation was broadened to complete the donation between non-relatives and the group matching and donation of living donor kidney transplantation was included in the regulation to offer part of the patients in the waiting list of kidney transplantation with another opportunity. Partial amendment of the Human Organ Transplant Regulation was examined on June 12, 2015 by Legislative Yuan, hoping to improve the situation of patients lining up to wait for kidney transplantation and to sentence organ brokers and the ones who disobey donation without compensation. The amendment included enabling matching and donating for living donor kidney transplantation, besides, few citizens went abroad for organ transplantation, but all the countries face the same problem of insufficient organ donation. Off-shore organ transplantation may bring doubts of organ trading and unknown origin which violate human rights and ethics seriously. To prevent the citizens from becoming abettors of illegal organ trading and profiting, the organ brokers and the ones who disobey donation without compensation should be sentenced, furthermore, patients undergo off-shore organ transplantation and return home for follow-up treatments will be asked to submit related information for the government to control off-shore organ transplantation and to manifest our attention on human rights.

Donation without compensation is the fundamental spirit of The Law in Human Organ Transplantation. To be in concert with the WHO Guiding Principles on Human Cell, Tissue and Organ Transplantation [2], the World Medical Association (WMA) statement on human organ & tissue donation and transplantation and The Declaration of Istanbul, the organ brokers and the ones who disobey donation without compensation should be sentenced to

imprisonment for 1 to 5 years with a fine of 10 to 50 thousand USD, when it comes to medically qualified personnel, the qualification will be abolished to stop illegal business such as organ trading or transplant tourism. Besides, patients undergo off-shore organ transplantation and return home for follow-up therapy will be asked to submit related information, or there will be a forfeiture of one to five thousand USD.

Orandi et al. [3] published a report based on a long-term multicenter study. The article has subverted the recognition of quite a few people and part of the medical community. According to that study, the survival rate of patients with HLA-incompatible living donor kidney transplantation was higher than that of patients with non-heart-beating donation and dialysis. Before the transplantation surgery, a desensitization therapy will be used for several days to weeks according to the situation of patient. Therefore, the desensitization therapy is only suitable for living donor transplantation because the organ from non-heart-beating donation couldn't last for such a long period of time. The efficacy was even better than compatible cadaveric kidney and the survival rate was higher from the first year than the other 2 groups. After the third year post-operation, the survival rate got even higher than the other 2 groups annually, which was far beyond the efficacy of dialysis. Therefore, in the future, the MOHW will be deliberating to further loosen the restriction of living donor kidney donation and transplantation, hoping that after amending the regulation, a more robust organ donation and transplantation medical mechanism could be organized in order to balance evidence-based medicine, medical technique and medical ethics as well as fulfill social consensus and expectation, therefore more patients lining up for organ transplantation could be saved.

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