



Dismantling Inequities in Global Living Kidney Donation: Overcoming Immunological Barriers and Financial Disincentives

Ramesh Chandran* and Deepa Venkatraman

Department of Nephrology and Renal Transplantation, Christian Medical College (CMC), Vellore, Tamil Nadu, India

***Corresponding author:** Ramesh Chandran, Department of Nephrology and Renal Transplantation, Christian Medical College (CMC), Ida Scudder Road, Vellore, Tamil Nadu 632004, India, Email: rchandran@cmcvellore.ac.in

Editorial

Volume 10 Issue 2

Received Date: May 16, 2025

Published Date: May 21, 2025

Abstract

Kidney transplantation is universally recognized as the gold standard therapy for end-stage kidney disease (ESKD), delivering vastly superior survival, cardiovascular risk reduction, and quality of life compared to maintenance dialysis at a fraction of long-term healthcare expenditure. Yet, the global demand for donor kidneys outstrips supply by more than four-to-one, condemning millions of patients in low- and middle-income countries (LMICs) to premature mortality due to catastrophic out-of-pocket dialysis costs. Living kidney donation represents the most clinically viable and successful pathway to alleviate organ scarcity. However, living donation remains severely bottlenecked by two persistent structural hurdles: immunological barriers (ABO-incompatibility and pre-formed donor-specific anti-HLA antibodies) and socioeconomic disincentives (uncompensated lost wages, travel costs, and insurance discrimination against donors). This editorial examines advances in desensitization protocols and national paired kidney exchange (KPE) networks, while outlining an urgent editorial call for national governments to implement financial neutrality laws that protect and support living donors.

Keywords: Kidney Transplantation; Living Kidney Donation; Paired Kidney Exchange; Desensitization; Antibody-Mediated Rejection; Organ Shortage; Global Health Equity

Abbreviations

ESKD: End-Stage Kidney Disease; KPE: Kidney Paired Exchange; DSA: Donor-Specific Antibodies; ABOi: ABO-Incompatible; HLA: Human Leukocyte Antigen; ABMR: Antibody-Mediated Rejection; LMICs: Low- and Middle-Income Countries; IVIG: Intravenous Immunoglobulin.

Introduction

The Global Crisis of Renal Replacement Access

Over 850 million individuals worldwide are affected by kidney disease, with the global burden of end-stage

kidney disease (ESKD) growing at an alarming rate [1]. While maintenance hemodialysis and peritoneal dialysis can sustain life, they offer suboptimal five-year survival rates (often lower than many solid-organ malignancies) and impose devastating economic burdens on health systems and families [2].

Kidney transplantation restores physiological metabolic homeostasis and cuts 10-year mortality by more than 60% compared to waitlisted dialysis patients [3]. However, deceased organ donation rates remain near zero across vast regions of South Asia, Africa, and Latin America, making living kidney donation the sole viable lifeline for millions of individuals.

Immunological Frontiers: Paired Exchange and Desensitization

Historically, up to one-third of willing living donor-recipient pairs were turned away due to blood group ABO-incompatibility or positive complement-dependent cytotoxicity (CDC) crossmatches from pre-formed anti-HLA donor-specific antibodies (DSA) [4,5].

Over the last decade, immunological advances have rewritten this paradigm. National and regional Kidney Paired Exchange (KPE) algorithms allow incompatible pairs to swap donors, creating multi-center domino chains that achieve fully compatible, excellent graft outcomes without requiring heavy immunosuppression [6,7].

For highly sensitized patients without exchange options, modern desensitization regimens—incorporating plasma exchange, low-dose intravenous immunoglobulin (IVIG), anti-CD20 monoclonal antibodies (rituximab), and complement inhibitors (eculizumab)—now achieve 5-year graft survival exceeding 85% in experienced transplant centers [8,9].

The Moral Imperative of Living Donor Financial Neutrality

While surgical and immunological technologies have advanced, the socioeconomic protections afforded to living donors remain grossly deficient. In many developing nations, living donors—who undertake elective major surgery purely to save another human being—incur substantial out-of-pocket expenses, uncompensated lost wages during recovery, and long-term travel costs for follow-up [10].

The Declaration of Istanbul explicitly mandates that living donation must be financially neutral: donors must neither gain financially nor suffer economic hardship as a consequence of their altruism [10].

A Policy Action Plan for National Transplant Frameworks

Our editorial board calls upon international transplant societies and national health ministries to implement three critical structural reforms:

- Universal Financial Neutrality Legislation: Enact statutory living donor assistance funds covering 100% of medical evaluations, travel, lost wages, and lifetime health monitoring.
- Centralized Software-Driven Paired Exchange Networks: Establish federally supported, single-platform KPE registries across all public and private transplant centers to maximize matching efficiency.
- Comprehensive Post-Donation Healthcare Guarantees:

Legally prohibit private life and health insurers from charging higher premiums or denying coverage to living kidney donors based on donor status.

Living kidney donors are the unsung heroes of modern medicine. It is our collective duty to ensure their altruism is met with absolute medical safety and zero financial penalty.

References

1. Jager KJ, Kovesdy C, Langham R, Rosenberg M, Jha V, et al. (2019) A single number for advocacy and communication—worldwide more than 850 million individuals have kidney diseases. *Nephrol Dial Transplant* 34(11): 1803-1805.
2. Liyanage T, Ninomiya T, Jha V, Neal B, Patrice HM, et al. (2015) Worldwide access to treatment for end-stage kidney disease: a systematic review. *Lancet* 385(9981): 1975-1982.
3. Wolfe RA, Ashby VB, Milford EL, Ojo AO, Ettenger RE, et al. (1999) Comparison of mortality in all patients on dialysis, patients on dialysis awaiting transplantation, and recipients of a first cadaveric transplant. *N Engl J Med* 341(23): 1725-1730.
4. Montgomery RA, Lonze BE, King KE, Kraus ES, Kucirka LM, et al. (2011) Desensitization in HLA-incompatible kidney recipients and survival. *N Engl J Med* 365(4): 318-326.
5. Segev DL, Gentry SE, Warren DS, Reeb B, Montgomery RA (2005) Kidney paired donation and optimizing the use of live donor organs. *JAMA* 293(15): 1883-1890.
6. Ferrari P, Weimar W, Johnson RJ, Lim WH, Tinckam KJ (2015) Kidney paired donation: principles, protocols and programs. *Nephrol Dial Transplant* 30(8): 1276-1285.
7. Rees MA, Kopke JE, Pelletier RP, Segev DL, Rutter ME, et al. (2009) A nonsimultaneous, extended, altruistic-donor chain. *N Engl J Med* 360(11): 1096-1101.
8. Vo AA, Choi J, Cisneros K, Reinsmoen N, Haas M, et al. (2014) Benefits of rituximab combined with intravenous immunoglobulin for desensitization in kidney transplant recipients. *Transplantation* 98(3): 312-319.
9. Takahashi K, Saito K (2006) Present status of ABO-incompatible kidney transplantation in Japan. *Xenotransplantation* 13(2): 118-122.
10. Steering Committee of the Istanbul Summit (2008) Organ trafficking and transplant tourism and commercialism: the Declaration of Istanbul. *Lancet* 372(9632): 5-6.