



## Nephrology Services in Delhi NCT

### Abstract

Kidney disease is a rapidly growing non-communicable ailment, with Delhi-National Capital Territory (NCT) emerging as a key hub for nephrology services in India. The field's evolution in Delhi-NCT has seen significant milestones, starting with the establishment of the nephrology department at AIIMS in 1969 and the expansion of dialysis and transplantation services across the region. Currently, Delhi-NCT hosts over 300 nephrologists and more than 70 nephrology centers, serving over 13,500 patients on hemodialysis and around 550 on peritoneal dialysis. The region leads in the number of kidney transplant, having conducted over 23,000 transplants till 2023, with 97% of these involving living donors, mainly close relatives. A gender disparity exists, with 80% of transplants performed on males and females constituting the majority of donors. The limited scope of deceased donor programs underscores the need for greater awareness of cadaver donation. To address this, Delhi Nephrology Society is promoting paired kidney donation through software aimed at expanding the donor pool. Delhi-NCT also excels in academic and community engagement, offering nephrology training programs and conducting public awareness and outreach initiatives. Despite these advancements, challenges persist, including limited access to specialized care in the peripheral areas, financial constraints, and a shortage of nephrologists. Governmental efforts, such as the Pradhan Mantri National Dialysis Programme (PMNDP) and the Delhi Arogya Kosh, support kidney care but face gaps in coverage and implementation. The absence of a state-run CKD registry and standardized policies highlights the need for strategic improvements. Enhancing resource allocation, integrating technology, and expanding governmental programs are essential steps toward advancing kidney care services in Delhi-NCT.

**Keywords:** Nephrology, Kidney transplant, Dialysis, Chronic kidney disease


### Introduction

Kidney disease has emerged as the fastest-growing non-communicable ailment, with death rates rising by over 30% over the past decade.<sup>1,2</sup> India's diverse geographical landscape presents challenges in ensuring equitable access to nephrology services nationwide. Delhi, Gurugram, Faridabad, Ghaziabad, and Noida collectively form the Delhi-National Capital Territory (NCT), which is home to approximately 16.78 million people.<sup>3</sup> Currently, Delhi-NCT boasts over 300 nephrologists catering to more than 70 nephrology centers, with around 13,500 patients undergoing hemodialysis and 550 receiving peritoneal dialysis. The region hosts approximately 50 facilities dedicated to kidney transplants, with over 23,000 renal transplantations conducted as of 2023. Delhi-NCT stands as a leading contributor to kidney transplants nationwide.

### History and important milestones in the evolution of kidney care services in the state

Delhi-NCT is known for its pursuit of excellence in healthcare. Renowned figures in nephrology have shaped the field in this region, beginning with the establishment of the Nephrology department at the All India Institute of Medical Sciences (AIIMS) in 1969, where Dr. Awasthi initiated the first dialysis unit around the year 1970. Dr. KK Malhotra, upon returning from the United States of America, led the nephrology unit at AIIMS. Subsequently, Maulana Azad Medical College initiated hemodialysis treatment in 1978 under Dr. Hari Vaishnava's guidance.

The Delhi Nephrology Society was founded in November 1979 at AIIMS, with Dr. PD Gulati conceiving the idea in January 1979 during the formation of the Indian

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Society of Nephrology (ISN). Prof. KK Malhotra served as the inaugural president. Dr. DS Rana established the nephrology department at Sir Ganga Ram Hospital (SGRH) in 1981, pioneering maintenance hemodialysis services in North India in a non-government setup, along with the introduction of a chronic peritoneal dialysis program in 1987.

Safdarjung Hospital and Ram Manohar Lohia Hospital soon followed suit, initiating dialysis services. There was also a heightened emphasis on ensuring proper water quality. Max Super Specialty Hospital, Saket, pioneered online hemodiafiltration (OL-HDF) in Delhi-NCT in 2013, leading other hospitals to follow suit. The introduction of the central dialysate delivery system at Max Super Specialty Hospital, Saket marks only the second instance of its implementation in Asia.

Delhi's first kidney transplantation was performed at AIIMS in April 1972 under Dr. Inder Dhawan's guidance. SGRH established kidney transplantation services in 1987.

In Delhi-NCT, nephrologists uphold the practice of conducting interventional nephrology procedures. Currently, nephrologists at over 30 centers independently perform AV fistula surgeries, and both tunneled and non-tunneled hemodialysis catheter insertions. Peritoneal dialysis facilities, including those for chronic peritoneal dialysis (PD), are available in a similar number of centers, offering a viable long-term solution for a significant population. There have been instances of remarkable long-term survival, with some patients surpassing 20 years on PD therapy.

**Governmental efforts and financial support for kidney care**

India's health expenditure accounts for only 4% of the total GDP, with public health spending constituting roughly a quarter of this amount. Chronic kidney disease (CKD) patients, particularly those on dialysis, often face financial burdens, spending several lakhs annually on treatment in private facilities. Universal health insurance coverage remains low, with only 37% of the population having access to some form of health insurance.<sup>4</sup> Payment for dialysis treatment typically involves a mix of state funding, employment-based insurance, charity, and self-funding. There is a notable gap between the demand for dialysis services and the government's preparedness, indicating insufficient attention to kidney disease. In Delhi, free hemodialysis is provided at all state-run hospitals through various central and state government health schemes [Table 1].<sup>5-7</sup> The disparity between demand and supply remains significant.

**Materials and Methods**

We conducted a survey to assess nephrology services in Delhi-NCT by contacting various nephrology institutions via email and WhatsApp. Senior nephrology consultants were asked to complete a structured Google Form questionnaire

**Table 1: Various available governmental initiatives to support kidney care in Delhi-NCT**

Scheme	Descriptions
PMNDP, 2016	Offers free dialysis services to below-poverty line (BPL) beneficiaries at district hospitals across the country.
Peritoneal Dialysis Program, 2012	Offers governmental reimbursement for PD in 2019 under the aegis of National Dialysis Scheme. Also, central and Delhi state government employees get full reimbursement for peritoneal dialysis which is much more cost-effective and efficient. <sup>6</sup>
NHM	NHM is a significant public health endeavor aiming to enhance healthcare infrastructure and access, with over 17.27 lakh beneficiaries availing dialysis services by December 2022.
ABPM-JAY, 2018	Offers financial protection to economically vulnerable individuals and families, enabling cashless treatment for CKD. Unfortunately, the PMJAY hasn't been implemented by the state government of Delhi yet.
The One Nation One Dialysis Program, 2019	Aims for equitable distribution of dialysis services, though its success has been hindered by low awareness.
The Delhi Arogya Kosh	Provides financial aid of up to Rs. 5 lakhs to eligible patients seeking treatment in government hospitals, catering to families with incomes below Rs. 3 lakh annually.
Delhi Arogya Nidhi	Offers financial assistance of up to 1.5 lakhs annually to individuals with incomes below 1 lakh per annum.
The PPP Dialysis project by GNCT of Delhi, 2013	This initiative provides accessible hemodialysis services of superior quality at reduced rates. Some hospitals even extend free services to patients classified under the BPL category. Notable hospitals participating in this scheme include Lok Nayak Hospital, Rajiv Gandhi Super Speciality Hospital, and Dr. Hedgewar Arogya Sansthan. Additionally, approximately 10 private hospitals in Delhi are enrolled in this dialysis program. <sup>7</sup>

PMNDP: Pradhan Mantri National Dialysis Programme, NHM: The National Health Mission, ABPM-JAY: Ayushman Bharat Pradhan Mantri Jan Arogya Yojna, PPP: Public-Private Partnership, PD: Peritoneal Dialysis, CKD: Chronic Kidney Disease, BPL: Below Poverty Line, GNCT: Government of National Capital Territory.

survey. The survey focused on key aspects of nephrology services in Delhi-NCT, including facilities for hemodialysis, peritoneal dialysis, kidney transplantation, chronic kidney disease management, as well as academic, community, and research activities related to nephrology. The collected data was compiled and analyzed to identify trends and

**Table 2: Nephrology services in Delhi-NCT**


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Delhi-NCT is home to 70 nephrology centers and over 300 practicing nephrologists.

Over 120 nephrology trainees including DrNB, DM, and fellows get trained in the specialty yearly.

50 centers in the state offer facilities for kidney transplantation.

30 centers provide nephrology training programs.

Intervention nephrology services are available in 54 centers.

Currently, over 13,500 CKD patients undergo hemodialysis, while over 550 receive peritoneal dialysis in the region.

Over 23,000 CKD patients have undergone kidney transplants (97% from living donors and 3% from cadaver donors) as of 2023.

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CKD: Chronic Kidney Disease, NCT: National Capital Territory, DrNB: Doctorate of National Board, DM: Doctor of Medicine

gaps. Literature search was performed using the PubMed and Embase databases, with relevant keywords such as "nephrology," "dialysis," "kidney transplant," and "government dialysis schemes" to provide context for the findings.

#### Current status of nephrology and renal transplantation in Delhi-NCT

In Delhi-NCT, nephrology services are well-established, with 70 nephrology centers and around 300 nephrologists.

The region demonstrates a strong commitment to training initiatives, with 30 centers actively engaged in nephrology training programs that offer opportunities for both doctoral studies and certificate courses. Recently, the Indian Society of Nephrology launched a Post Doctoral Fellowship program focusing on various sub-specialties of Nephrology, with three centers from Delhi-NCT being selected for this program.

The focus on renal replacement therapy (RRT) is apparent, with 50 facilities in Delhi-NCT dedicated to kidney transplantation. There is a marked preference for hemodialysis over PD, with 90% of patients choosing hemodialysis, of which 70% are on three-weekly sessions. Presently, in Delhi-NCT, approximately 14,000 patients undergo dialysis, with the majority (around 13,500) undergoing hemodialysis and only 550 patients undergoing PD. Over 75% of cases utilize AV fistula as the preferred vascular access for hemodialysis. About 30 centers provide specialized care in intervention nephrology [Table 2].

Over 23,000 renal transplantations have been performed in Delhi-NCT until 2023, establishing the region as the leading contributor to kidney transplants nationwide. In 2023 alone, Delhi-NCT witnessed about 2150 kidney transplants. The vast majority (approximately 97%) involved living donors. Among living donors, more than 75% of transplants were close relatives, indicating a strong dependence on familial donors for kidney transplants. Around 80% of kidney transplants were conducted on males. These figures underscore the urgent need for increased awareness about deceased organ donation. Females remain the predominant donor pool, while males

are more frequent recipients, highlighting an existing gender disparity in kidney transplantation. Recognizing the value of paired kidney donation, several Delhi-NCT centers have recently adopted new software and will collaborate to expand the donor pool, potentially leading to national-level cooperation. Currently, there is no state-run policy for palliative or conservative care for kidney disease patients in the Delhi-NCT region. Instead, decisions regarding palliative care are left to the discretion of individual physicians.

There is no official state registry for CKD, dialysis, or transplants. Each hospital maintains its patient cohort, either through electronic health records (EHR) or manual files, and information related to transplantation activities is mandatorily shared with the National Organ and Tissue Transplant Organization (NOTTO).

#### Community engagement and educational activities

Centers in Delhi-NCT engage with the community regarding kidney care services through a variety of initiatives, including outreach programs, community lectures, health talks, and awareness campaigns. Many centers mark World Kidney Day with public lectures, health check-ups, and collaborations with other healthcare professionals to address specific care needs. Some utilize social media and patient care programs to disseminate information, while others hold educational lectures and panel discussions, and write articles for newspapers and online platforms. Several centers have outreach OPDs, government-sponsored programs, and satellite centers to extend their reach, particularly in rural areas.

The DNS offers a rich academic experience for the nephrology community. An annual conference and monthly meetings are held to present and discuss rare and interesting cases.

#### Challenges in providing kidney care services in the Delhi-NCT

Despite its metropolitan status, kidney care services in Delhi-NCT face challenges. Access to specialized facilities is limited in peripheral areas. Financial constraints and a shortage of nephrologists and specialized staff hinder treatment affordability for economically disadvantaged residents, even with governmental support. The high prevalence of non-communicable diseases like diabetes and hypertension exacerbates kidney disease, underscoring the need for enhanced prevention efforts. Inadequate infrastructure and resources, combined with socioeconomic disparities, create significant barriers to access and quality of care. Ethical dilemmas arise in resource allocation and kidney transplantation due to high demand and limited resources.

Addressing these barriers through strategic resource allocation, financial management while seeking help from various philanthropic organizations/individuals, and patient engagement will improve efficiency and overall outcomes.

Integrating information technology offers an opportunity to bridge the demand-supply gap for RRT. Implementing a PPP model, launching more kidney-centric government programs, and integrating kidney disease into the Non-Communicable Disease Program are crucial steps forward.

Regarding dedicated research endeavors, approximately 40% of centers in Delhi-NCT are actively participating, primarily concentrating on data collection with limited involvement in extensive clinical trials, often sponsored by pharmaceutical companies. There is a lack of uniform data collection and no state-run registry program for CKD, glomerulonephritis, and transplants. Only 20% of centers have implemented specific policy initiatives for kidney care, indicating potential disparities in standardized practices throughout the area.

#### **Conflicts of interest**

There are no conflicts of interest.

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