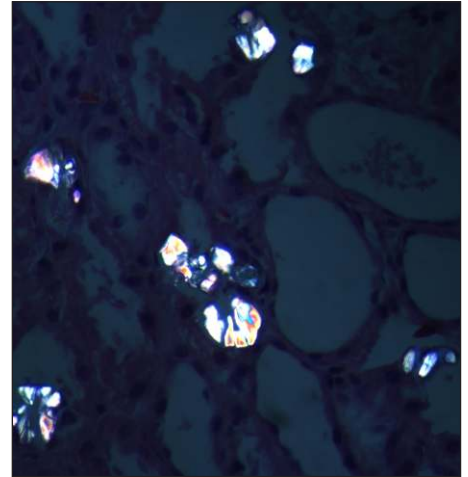
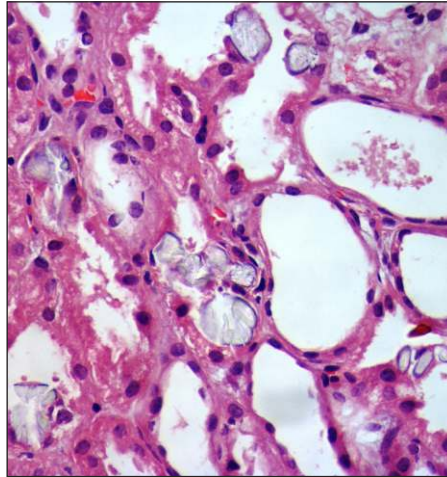
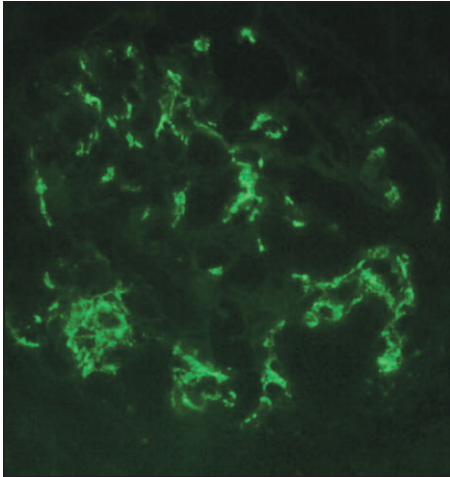


# KIDNEY KOLUMNS

*Freely filtered from the ISN*



## Happy Reading !

We are delighted to bring out the inaugural edition of the official newsletter of the Indian Society of Nephrology-'Kidney Kolumns'. The Indian Society of Nephrology (ISN) has always strived to be a transparent and progressive society with a vision to bond the entire nephrology community of the country together. Academics, recent advances, and research collaborations along with mentoring of the newer generations have been the priorities of the society all throughout. Kidney Kolumns aims to be the mouthpiece of the society along with highlighting knowledge, wit and humour in nephrology.

The editorial board has members representing all four zones of the country to bring out the varied flavours of nephrology from all over. The nephrology fellow corner has been introduced to encourage the fellows and residents to voice their opinions and share their thoughts openly. We hope to bring forth a balance of knowledge titbits along with the ongoings of the society in an informal fun way.

We are grateful to all our contributors, mentors and the members of the ISN for giving us this opportunity and hope to keep up the standards expected out of a society this vast and accomplished

### *Inside*

Genetic Polymorphisms & Tacrolimus dosing	- 4
Thiazides & Renal Stones	- 10
Pee-viously in Nephrology	- 13
Stay toned	- 16
Why Nephrology?	- 17
Upcoming Events	- 21



# KIDNEY KOLUMNS

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## COVERIMAGES:

Immunofluorescence image (**left**) showing Mesangial IgA deposits in a case of IgA Nephropathy (Image courtesy of Dr Sachin Chaudhari, Assistant professor, Dept. of Pathology, AIIMS, Nagpur).

H&E stained section (**centre**) showing intratubular colourless to yellow coloured radially arranged crystals which are birefringent (**right**) on polarization. (Image courtesy of Dr Mahesha Vankalakunti, Nephrologist, Manipal hospitals, Bengaluru)

# IgA Nephropathy – are the recent Indian cohorts telling us anything different?

In the recent issue of the Indian Journal of Nephrology, [Prasad et al](#) have published their large retrospective experience of IgA Nephropathy (IgAN) from Lucknow. The study comes close on the heels of the prospectively followed cohort by [Alexander et al](#) from Vellore in southern India. This cohort from the populous, low socioeconomic belt in northern India paints a frightening and dismal picture of low glomerular filtration rates (GFR) and with more sclerotic lesions (the S from the Oxford C-MEST scores) than the global experiences. We do not seem to compare favourably, whether we look east or west!

A high predominance of hypertension and presentation with chronicity and advanced stages has been the case with retrospective IgAN cohorts, such as [Swarnalata et al](#) from four centres in South India and the present study from Lucknow (barring the experience by [Bagchi et al](#) who reported predominant nephrotic proteinuria, and renal failure in only a third of their cohort). When compared in the light of the prospective cohort by Alexander, the difference is stark – the serum creatinine is much lower in the Alexander et al cohort, when compared to the existing retrospective cohorts. This is encouraging, as it presents data beyond 2018, the later time point covered in the Prasad et al study – things may be getting better in the last years, though it is too soon to say. Even though typical inflammatory lesions such as M1 and C1 were infrequent in all the cohorts presented so far, the predominance of S1 lesions in even

younger individuals with moderate degrees of renal failure, implies that different pathogenetic mechanisms, as yet unknown, might underlie faster progression in Indian IgAN. Another important difference is the prevalence of E1 lesions in the Vellore versus Lucknow cohorts (44% vs 24%). Regional differences (upto one-half of patients in Alexander et al cohort belong to West Bengal, Bihar and Bangladesh) and local variation in referral patterns could underlie the predominant E1 lesions in the Vellore cohort. Prompt recognition of clinical symptoms (hypertension and microscopic hematuria) might have helped pick up higher E than S lesions in the Vellore cohort (beyond 2018), which if true, bodes well for IgAN management in the region. While being studied in the Vellore cohort, other glomerulonephritis registries in the region should develop their prospective cohorts to answer the conundrum of IgAN in our region – is it a result of our urinary screening difficulties in large populations, low nephron endowment or as yet, unknown genetic factors that lead to the rapid progression of this proverbial mute assassin. What does your gut (rather, gut-kidney axis) say?

**Dr Namrata Rao**

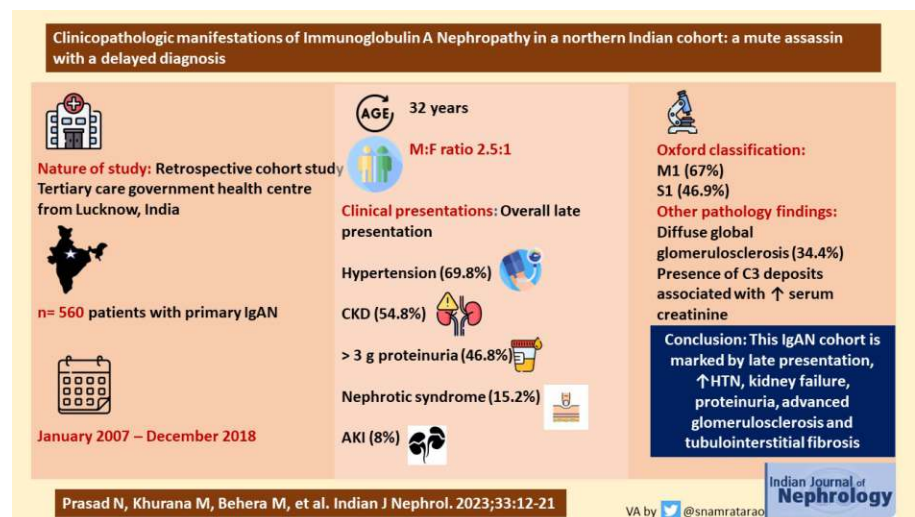
Associate Professor, Nephrology,  
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**Dr Abhilash Chandra**

Additional Professor, Nephrology,  
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*This cohort from the populous, low socioeconomic belt in northern India paints a frightening and dismal picture of low glomerular filtration rates (GFR) and with more sclerotic lesions (the S from the Oxford C-MEST scores) than the global experiences.*



# Role of genetic polymorphisms in the dosing of Tacrolimus in renal transplant recipients- advancing towards personalized medicine

Tacrolimus has [improved](#) graft survival since its inception and continues to be a better choice than its predecessor. Due to its narrow therapeutic index and highly variable pharmacokinetics, it has toxicity occurring at a concentration slightly above or sometimes within the normal range. On the contrary, underdosing can precipitate acute rejection. Hence, it is a great challenge to strike the right balance in dosing tacrolimus to transplant recipients. Trough blood concentration (C<sub>0</sub>) is the widely accepted parameter for therapeutic drug monitoring in predicting the risk of both acute rejection and toxicity.

The pharmacokinetics of tacrolimus is highly influenced by the [CYP3A5](#) gene. Out of 9 different alleles identified in CYP3A5, CYP3A5\*1 and \*3 occur frequently and have been studied over the last decade. This has led to researchers developing a keen interest in studying the efficacy of dosing tacrolimus based on genotype polymorphisms.

The study, by [Raj TY et al](#), a non-randomized study, is aimed at comparing the pharmacokinetic characteristics of tacrolimus in live-related renal transplant recipients at doses adapted based on the genome typing (n=41) to the conventional [weight-based](#) doses (n=41). Based on the best-studied single nucleotide polymorphism (SNP) in literature, which is at position 6986 (6986A>G), within intron 3 of the CYP3A5 gene, the sample population was [categorized](#) into extensive metabolizers – CYP3A5\*1/\*1 alleles (rs6986 AA), intermediate metabolizers – CYP3A5\*1/\*3 alleles (rs6986 AG), and poor metabolizers – CYP3A5\*3/\*3 alleles (rs6986 GG). These patients received tacrolimus in the [dose](#) of 0.2, 0.15, and 0.1 mg/kg/day, respectively. The conventional weight-based dosing was 0.1mg/kg/day. The C<sub>0</sub> tacrolimus levels were measured on postoperative day (POD) 4, 10, 30, and 60. The follow-up period was 3 months. Regarding the efficacy outcomes, on POD4, 53.6% in the adapted group and 24.3% in the control group (p=0.01) achieved target C<sub>0</sub> levels, with significantly lesser time taken in the adapted group (4 days vs 25 days, p=0.01). At the end of the third month, there was 100% graft survival in both groups without any significant difference in the incidence of biopsy-proven acute rejection (BPAR). In terms of toxicity, there was an increased incidence of tacrolimus [nephrotoxicity](#) in the adapted group (27% vs 14.6%, p=0.27). On subgroup analysis, the incidence of nephrotoxicity was significantly higher in the expressors

of the adapted group (32% vs 0% in the control, p=0.01), which may be ascribed to increased dosage of tacrolimus amongst expressors (CYP\*1/\*1 and CY3A5\*1/\*3). Thus, the primary finding from this study is that genotype-based tacrolimus dosing helps in attaining earlier targets of tacrolimus concentrations with a possible higher risk of nephrotoxicity.

Another study by [Prasad N et al](#), aimed at studying the effect of both CYP3A5 and MDR1 (multidrug resistance gene 1) polymorphisms in adjusting the dose to achieve the C<sub>0</sub> level of 8 to 12 ng/mL in the first 3 months post-transplantation in 255 living donor transplant recipients, whose initial dose was 0.15mg/kg/day. Here, the dose required to achieve C<sub>0</sub> target level was significantly higher in expressors (CYP3A5\*1\*). Of the MDR1 gene SNPs, only G2677T/A homozygous variant strongly correlated with P-gp (P-glycoprotein) expression, thus emphasizing the knowledge of both CYP3A5 and MDR1 polymorphisms in optimizing the dose of tacrolimus in renal transplant recipients.

However, to address the interpopulation differences in the allele frequencies of drug metabolizer and transporter genes, [Srinivas L et al](#), studied the effect of CYP3A5, CYP3A4, and ABCB1 gene polymorphisms in 145 renal transplant recipients and formulated a population-specific equation to calculate the required dose of tacrolimus level in the 6th day of transplantation.

*Hence, further studies that provide knowledge of gene polymorphisms, that determine the drug metabolism, along with population-specific dose prediction models will help in optimizing the dose of tacrolimus to achieve C<sub>0</sub> targets, with minimal or no adverse effects in indigenous renal transplant recipients in the long run.*

**By Dr M Subashri**

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# President's Message



As President of the Indian Society of Nephrology, I extend my warm greetings to all my teachers, senior colleagues, friends as well as my students. I am proud to say that ISN has always been committed to excellence in patient care, education and research. We are at turning point in world history as India assumes presidency of G20. I will strive to work hard along with other members of General Body so that ISN is able to achieve leadership in international nephrology arena. We have already submitted our bid to host 2025 World Congress of Nephrology.

There have been several new initiatives that have been launched like the Young Nephrologists committee, Patient advocacy and Liason committee. A Medicolegal committee has been formed and we have negotiated an attractive group indemnity with 24x7 medicolegal support. A Social Media committee has been formed and a Youtube channel of ISN has been launched the aim to operationalise the last world kidney day theme of "Bridging the knowledge gap" between the nephrologist and the common man. It will also update them about new scientifically validated therapies in kidney diseases and bust existing myths and untested treatments.

I am reminded of a quote by Alvin Toffler "*The illiterate of the future are not those who cannot learn or write but those who cannot learn, unlearn and relearn*". Over the last decade there have been tremendous advancements in the field of kidney diseases with new agents being made available in our therapeutic armamentarium. The Newsletter is another unique initiative by our new team that allows us to keep uptodate with recent advances and research in nephrology work as well as providing a platform to residents and young nephrologists to share their experiences. It also sows the seeds for future research and collaborative studies. I request each one of us to optimize the use of this platform so that we can continue to make significant contributions for the care of kidney disease patients in our country.

There are several hurdles and challenges that remain and I seek your suggestions as well as cooperation in raising the status of Indian Society of Nephrology in national as well as international arena.

**Dr Sanjeev Gulati**  
President  
Indian Society of Nephrology



Dear esteemed members of the Indian Society of Nephrology, As the newly appointed secretary of the society, I am thrilled to share with you the various new initiatives that Indian SN has taken to advance our society's mission and goals.

Firstly, to address the needs of the changing times, we have created a few subcommittees, with the approval of the Governing body, in addition to scientific and credential committees. The intent of these new subcommittees is to help broaden the reach of ISN and connect to many more members and include-

1. Social media committee
2. The Youth Committee
3. Medicolegal committee

## Hon. Secretary's Message

4. Patient advocacy committee
5. Liaison Committee

The details of subcommittees are available on the website [www.isn-india.org](http://www.isn-india.org).

Also the inclusion of woman members and young nephrologists in some leading roles will help bring diverse ideas to the table.

We are planning to introduce a series of webinars and online lectures to promote continuous medical education among our members. These sessions will cover various topics related to nephrology and will be conducted by renowned experts in the field. We hope that these webinars will help our members stay updated with the latest developments in nephrology and enhance their knowledge and skills. The first webinar would be conducted on 12th May on Onco-Nephrology in

association with the American Society of Onco-Nephrology, including the joint faculty of Indian SN and ASN.

Secondly, we have planned several awareness campaigns to educate the public about kidney health and the importance of early detection and prevention of kidney diseases. Our society will be collaborating with various organizations to conduct these campaigns, and we aim to reach out to a large number of people across the country.

Thirdly, we are in talks with the International Society of Nephrology and the American Society of Nephrology to increase collaboration with them so that our students and fresh graduates get opportunities for fellowships in institutes abroad. We are also planning to initiate fellowships in Indian institutes for our graduates in Nephrology in case they want to improve their skills and expertise in areas like interventional nephrology, transplantation etc.

Lastly, we have revamped our website to make it more user-friendly and interactive. The new website will provide our members with easy access to information about our society, its activities, and events. It will also serve as a platform for our members to connect with each other and share their knowledge and experiences.

We believe that these new initiatives will help us achieve our society's objectives and significantly impact the field of nephrology. We look forward to your active participation and support in these initiatives.

Thank you.

Sincerely,

**Dr Shyam Bihari Bansal**

Hon. Secretary

Indian Society of Nephrology

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## *IJN Editor-in-Chief's Message*



As we move into 2023, a predominantly clinical biomedical journal like the Indian Journal of Nephrology (IJN) needs to reorient itself to cater to the changing expectations and needs of its readership, and be responsive to the current and future topics of interest as well as the way journal content is delivered. Mindful of the changing expectations, the new IJN Editorial Team has agreed on the following vision and mission statement.

*The vision of the IJN is to become a leading peer-reviewed journal in the field of nephrology, both in India and internationally.*

*The mission of IJN is to publish high-quality, original research and review articles that advance the understanding and treatment of kidney-related diseases, to be a vehicle for the best research from India and to provide a forum for the exchange of ideas and information among nephrologists and other healthcare professionals.*

Additionally, IJN would strive to promote the education and training of nephrologists, and to raise awareness of kidney-related issues among the general public. We have put together a dynamic editorial team,

with the members having equal stake in the success of the journal. The team represents the diversity of India but is joined by a common commitment to achieving the journal's vision. The current team will be strengthened at regular intervals by addition of talent to fill in specific skill gaps as they are identified.

As the inaugural Editorial, signed by the entire team states "*The new direction of the IJN will be guided by four key principles: quality, diversity, transparency, and relevance. We believe that by prioritizing these principles, we can create a journal that not only meets the needs of our readers, but also sets the standard for biomedical publications in India.*" We will also expand the scope of the journal to embrace the requirements of other kidney health professionals, nurses, technicians, nutritionists, as well as patients.

Besides a bold contemporary look and a new online platform, the IJN is bringing in changes in the quantity and quality of the content. A number of new article types have been introduced already, with more changes on the way. Taking advantage of the rise in digital media, we will bring in more interactive and multimedia content, such as videos, infographics, and interactive figures to

enhance the reading experience.

We will absolutely prioritize diversity and inclusion so that we are best positioned to meet the expectations of the Indian Society of Nephrology membership by ensuring that our editorial boards and authors reflect a diverse range of perspectives, and by prioritizing research that addresses health disparities and inequalities. We will encourage content that emphasizes patient-centered care. Readers are looking for research and review papers, guidelines and discussions of clinical controversies so that they can gain knowledge that directly benefits patients. The IJN will feature research that focuses on improving patient outcomes, reducing healthcare costs, and enhancing patient experiences. IJN will foster interdisciplinary collaborative research from different disciplines and encourage innovative research that tackles complex healthcare challenges and produces meaningful outcomes for patients. We will introduce content that provides explanation of the nuances of local settings, resources, values and preferences of the Societies for whom findings such research are relevant.

We are committed to bring in process efficiencies to

streamline the submission and review process will be streamlined, utilizing the latest technological tools to reduce the time from submission to final disposal. We encourage all readers and potential contributors to have a look at the new 'Instructions to Authors' page that outlines changes that have been introduced already.

By bringing in these changes, we hope that the IJN not only meets with the immediate expectations of its readership, but also remain relevant and influential in the years to come.

Finally, we are open to feedback from all stakeholders, and invite comments (bouquets/brickbats) which will keep us honest, on our toes and mindful that the IJN is in service of its readership.

**Dr Vivekanand Jha**  
Editor-in-chief  
Indian Journal of Nephrology



I am pleased to wish the new venture of the Indian Society of Nephrology, 'KIDNEY KOLUMNS', a grand success.

Indian Nephrology has progressed leaps and bounds in the past few years, and academic events, small and large, are happening across the country throughout the year. Apart from the major national level events, there are quite a good number of regional, state-level and city-level academic programmes. Many a publication done by Nephrologists in non-Nephrology journals slip away without getting noticed. There is, as yet, no portal or platform to get to know about events / developments / publications of importance from different corners of the country.

This newsletter, I'm sure, will fulfil the much-awaited wish of the Indian Nephrology fraternity. This

## *Chairman, Scientific Committee's Message*

online venture intends to extend its scope and ambit beyond mere announcements of events and highlights of publications.

I hope this newsletter serves as a bridge of communication amongst all members of the Indian Nephrology community.

The vibrance and brilliance of the Editorial team have raised my expectations. Like you all, I too am eagerly awaiting to welcome and rejoice this new venture of Indian Society of Nephrology.

**Dr N Gopalakrishnan**  
Prof. & Head, Department of Nephrology  
Madras Medical College, Chennai.

# ABO incompatible kidney transplantation in India – A review of two recent studies

In India, only 2% of chronic kidney disease (CKD) stage 5 patients are worked up for transplantation, according to the CKD registry in 2012. There is a significant demand and supply mismatch in the availability of living donor kidney transplantation. ABO incompatible (ABOi) kidney transplantation can expand the donor pool for the growing CKD population. However, it is associated with an added concern about

the use of more intense immunosuppression in these cases, greater risk of rejection or infections, and greater costs of transplantation. While the first ABOi kidney transplant in India was performed in 2011, there is a paucity of short- and long-term follow-up data of outcomes of ABOi kidney transplants from this region. In this review, we highlight two recent studies highlighting Indian data in ABOi kidney transplantation.

	<b>Jha et al, IJN 2022</b>	<b>Pathak et al, Transplant Rep. 2023</b>
N	100	247
Baseline titre	Median – 1:128 (2-1024)	Mean Anti A 1:32 (2-512) Mean Anti B 1:64(4->8000)
Recipient demographics	Mean age 41.5 ± 13 years 81% males	Mean age 45 ± 3.96 years 88% males
Desensitisation protocols	200 Mg Rituximab 2 weeks prior Initially regular plasmapheresis Later, cascade plasmapheresis (CP)/ immunoadsorption (IA)  +5g IVIg given after each session of CP or plasmapheresis	Rituximab 200 mg 2-3 weeks prior Plasmapheresis (replaced with albumin + small volume of donor group FFP) ± immunoadsorption (if titers >1:128) + IVIg 0.1gm/kg after each session  Later, only donor group FFP and single dose IVIg after last session
Induction	None – 13 Basiliximab – 65 Thymoglobulin – 11 Grafalon – 11	Thymoglobulin (4.5mg/kg) for first 30 patients Basiliximab for subsequent 216 patients
Outcomes	At median follow up – 33 months	
Rejections	BPAR – 17% ACR – 14% Acute AMR – 3%	BPAR 11.5% Predominant AMR
Patient survival	93%	1 year – 97.7% 3 years – 93.4% 5 years – 90.2%
Death-censored graft survival	94%	1 year – 95.5% 3 years – 90.0% 5 years – 91.1% (Overall graft survival – 77%)
Infections	53 infective episodes in 37 patients	Post-transplant TB (1.2%), CMV (0.8%), BKV (1.6%)



In a single-center retrospective study from North India, [Jha PK et al.](#) described the outcome of 100 ABOi kidney transplants done between 2011-2020 with at least 6 months follow-up. In another study from Southern India, [Pathak et al.](#) analyzed 247 ABOi kidney transplants done between 2012 and 2020. In the former study, cascade plasmapheresis was found to be safe, effective and required lesser plasma transfusions to achieve the desired target titres. Immunoabsorption was not cost effective at titers <1:128. Intravenous immunoglobulin (IVIg) protocol was modified later and was given only in cases with anti-HLA antibodies due to concerns of rebound increase in Anti A or B titres after few batches of IVIg. In the latter study, patients underwent plasmapheresis, immunoabsorption or both. There was a change in protocol with only donor group FFP used as replacement in the later sessions of plasmapheresis irrespective of titers, and IVIg used only after the last session. Thymoglobulin was discontinued due to high rates of graft loss. Prednisolone was tapered early to 20mg on the 5th day post-transplant, and to 5mg over the next 3 weeks, while mycophenolate was given at a dose of 500mg twice daily. Protocol biopsies were done in all patients at 3 months, 1 year and 5 years posttransplant.

In the study by [Jha PK et al.](#) over a median follow-up duration of 33 months, the observed patient survival was 93% with death-censored graft survival of 94%. An [earlier study](#) from the same group described death-censored graft survival of 88% over a 31 month median follow-up period. Biopsy-proven acute rejection occurred in 17 patients which comprised of acute cellular rejection in 14 cases while antibody-mediated rejection (AMR) was seen in 3 patients (all resulting in graft nephrectomy, despite best efforts). There were 53 infective episodes in 37 patients with urinary tract infection being the commonest followed by cytomegalovirus (CMV) infection. Data on ABOi kidney transplants show [rejection rates](#) up to 35%. However, outcomes from recent studies may be improving. The limitations of the study were the heterogeneous induction protocols used, retrospective study design and a short follow up of 6 months. However, this study had a good sample size and shed light on the evolving knowledge of immunosuppression in ABO incompatible transplants.

The study by [Pathak et al.](#) showed >90% patient and graft survival rates at 1 and 5 years of follow-up, which is comparable to Western data. 1-year patient and graft survival rates were similar to that noted in other Indian studies and 5-year rates were higher than the 73.5% and 60% respectively, noted from a study in [Western India](#). Acute rejection occurred in 11.2% of the patients, most of which were AMR occurring within the first few days

after transplant. There were 15 deaths (6%) with mortality rate being higher in the thymoglobulin group (12.9%) compared to the basiliximab group (3.7%). Death-censored graft survival at 1 and 5 years was significantly higher in the basiliximab group at 97% and 91% compared to 84% and 69% respectively in the thymoglobulin group. There were 4 episodes of AMR among 216 patients in the former compared to 8 among 31 patients in the latter group. The [Indian guidelines](#) recommend avoidance of combined use of rituximab and thymoglobulin due to high infection rates. The use of donor group FFP without albumin and only a single dose of IVIg in this study, could have economic implications by lowering cost of ABOi transplants. Use of FFP may also reduce posttransplant bleeding risk. The rate of infections may be lowered with early tapering of prednisolone as seen in the study. While the [guidelines](#) recommend use of standard triple immunosuppression as in ABO-compatible transplants, there is a need for more evidence on immunosuppression protocols in ABOi transplantation. These studies highlight the outcomes of ABOi transplants in India but also the differences in practices in various regions of the country. Further studies are also required to compare different desensitization protocols, as well as fixed plasmapheresis cycles protocols. With the advent of kidney paired donation (KPD), studies evaluating outcomes of ABOi transplantation in comparison to KPD are also anticipated.

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&

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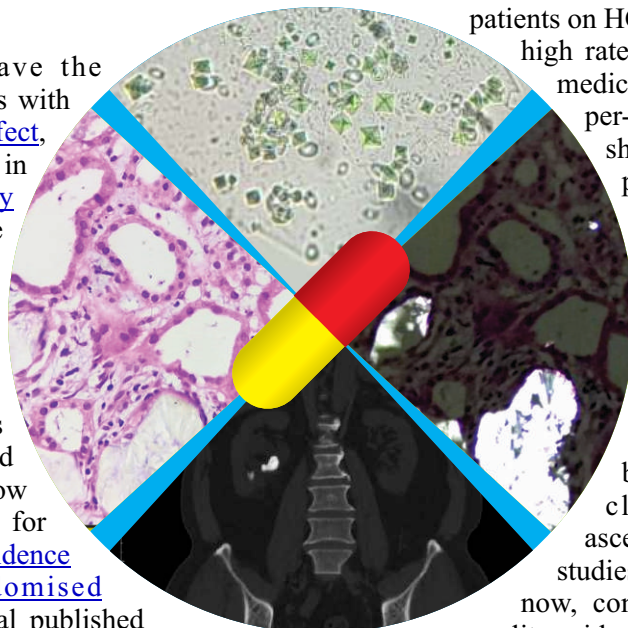
# Thiazides do not guarantee NO STONES in nephrolithiasis

A commentary on: Dhayat NA, Bonny O, Roth B, Christe A, Ritter A, Mohebbi N et al. Hydrochlorothiazide and Prevention of Kidney-Stone Recurrence. N Engl J Med. 2023 Mar 2;388(9):781-791.

The prevalence of renal stones in India varies with higher prevalence in [North India](#) compared to the South. Most of the stones are calcium containing stones and [hypercalciuria](#) is the most common metabolic abnormality in recurrent stone formers. Thiazide and thiazide-like diuretics are often used to prevent the recurrence of calcium-containing renal stones (CCRS). Hypocalciuria caused by thiazides, mediated by an acute increase in distal tubular calcium reabsorption through TRPV5 (transient receptor potential vanilloid 5) and a more pronounced chronic effect due to proximal tubular reabsorption related to subclinical volume depletion is considered the most plausible reason for less calcium stone formation.

Low dose thiazides have the advantage of fewer side effects with [comparable antihypertensive effect](#), and are now being used even in [advanced chronic kidney disease](#). Hydrochlorothiazide (HCTZ) is often used in doses of 12.5-25 mg once daily as an antihypertensive agent, but higher doses (up to 50-100mg) of HCTZ are used for the prevention of CCRS as illustrated in various randomised controlled trials. Despite this, low dose thiazides are often used for prevention of CCRS [without evidence](#) to back the same. A [randomised controlled trial](#) by Dhayat et al published recently in NEJM was [designed](#) to investigate the dose-response effect of low dose HCTZ for the primary endpoint, a composite of symptomatic or radiologic recurrence of kidney stones (either appearance of new stones or enlargement of preexisting ones). Adult patients with a past history of recurrent CCRS (n=416), who were not on any pharmacological therapy for stone prevention, were randomised to receive placebo or HCTZ (12.5mg, 25mg, and 50 mg once daily). At a median follow-up time of 2.9 years, there was no significant difference in the trial arms in the primary endpoint. Moreover, there was no evidence of a dose-response relation between the hydrochlorothiazide dose and the occurrence of a primary end-point. Despite the decreased urinary calcium levels, patients failed to demonstrate a decrease in the urinary relative

[supersaturation](#) ratios which are a surrogate for stone forming risk. This may have occurred due to a decrease in urinary citrate through enhanced proximal reabsorption or a marginal increase in urinary oxalate (the mechanism remains a mystery). The safety data showed a higher incidence (though not statistically significant) of hypokalemia, hyponatremia, rise in serum creatinine to more than 150% of baseline, gout and new onset diabetes in patients on thiazides without any significant increase in serious adverse events. So should we do away with low dose thiazides for CCRS? Not so quickly! The trial did demonstrate a decreased incidence of radiologic recurrence of CCRS and a decrease in urinary calcium in patients on HCTZ. Additionally, the trial had a high rate of non adherence (15-26%) to medication in the thiazide group but the per-protocol analysis also failed to show any significant change in the primary endpoint between the two groups. A [recent meta-analysis](#) also concluded that although the evidence of thiazides on decreasing 24 hour calciuria is moderate, the evidence to prevent recurrent renal stones is low. Why the biochemical and radiologic benefits are not translating into a clinical benefit is yet to be ascertained and may be evident in studies with longer follow-up time. For now, considering the absence of high-quality evidence supporting the use of low dose thiazides, associated with long term economic and pill burden and their adverse effect profile, its best to avoid thiazide use in recurrent stone formers. A high fluid, low sodium, high fiber diet every day, is all that we can prescribe to our patients to keep renal stones at bay!



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# New Committees of the Indian Society Nephrology

## *ISN Young Nephrologists' Forum*

The ISN fulfilled a long standing request of early career nephrologists of the country and recently created a platform called the “Youth Nephrology Forum” (YNF) under the able guidance of Dr SB Bansal. The inaugural team includes young nephrologists from various cities across the country forming a reasonable mix of regional and professional diversity. The forum includes Coordinators as Dr Mayuri Trivedi and Dr Sanjeev Nair, with other members being Dr Vineet Behera, Dr Mastakim Ahmed Mazumdar, Dr Jasmine Sethi, Dr Sandhya Suresh, Dr Darshan Rangaswamy, Dr Amit Kumar Mahapatra, Dr Arun Kumar Subbiah, Dr Anand Chellappan, and Dr Pragya Pant. Dr Umesh Khanna, senior nephrologist and long-standing proponent for youth activities, will serve as a mentor for the YNF. The YNF will help create a platform that allows fellows and

early career nephrologists to learn from and be mentored by senior Indian nephrologists, both in academic activities and organization skills involved in the running of the Indian Society of Nephrology.

The key role of the YNF will be to disseminate the goals or activities of ISN among fellows and young nephrologists of the country, promote them to take up the society's membership, and encourage their participation in ISN activities and programs. The YNF will also bring out a quarterly newsletter of the ISN named as “Kidney Kolumns” that would summarise the happenings in the field of nephrology, along with relevant articles from the India. They will also organize the “Meet and Greet” session in the ISNCON for young Nephrologists.

## *ISN Social Media Team*

One of the most vibrant additions to ISN's new cap has been the Social Media (SoMe) team. While the stellar team members of the SoMe team have already spent the last few years disseminating nephrology education among the medical or nephrology professionals, and non-medical community; the formal induction of the team under the aegis of ISN, highlights its importance to strengthen the cause of ISN. The team is an eclectic mix of seniors including Dr Arvind Conjeevaram (Chairman), Dr Manish Rathi and Dr SB Bansal, with other nephrologists including Dr Amit Langote, Dr Vinant Bhargava, Dr Garima Agarwal, Dr Mythri Shankar, Dr Priti Meena, Dr Saurabh Sharma, Dr

Smriti Sinha, Dr Aakash Shingada, and Dr Jithu Kurian.

The team while continuing their seminal work in knowledge dissemination across social media platforms, has set upon itself a host of other targets such as guiding tech-novice nephrologists and postgraduates in utilizing social media platforms for learning, networking and research-related activities, improving visibility of the ISN or related websites, and popularizing various lectures and talks delivered during the national and zonal conferences of the ISN. We look forward to exciting and awe-SoMe times for ISN on the social media space in the years to come.

## *ISN Patient Advocacy Committee*

The Indian Society of Nephrology is thoroughly dedicated to the welfare and well-being of all patients of nephrology, and gives a lot of importance to the welfare and the needs of patients. It therefore, created a Patient Advocacy Committee under the leadership of senior nephrologist Dr Sankar Sundar as Convenor, with other

members as Dr Maryan Manasseh, Dr Vasundhara Raghavan, Dr Naresh Gupta, and Dr Arpita Roy Chaudhury. The Committee will strive to look after the patients' needs, and priorities and will help them to increase awareness about kidney diseases, and provide them support from ISN as required.

## *ISN Medico Legal Committee*

Doctors' professional indemnity has become a necessity for the medical profession and more so for our speciality. Hence the Indian Society of Nephrology (ISN) has formed a Medico-Legal Committee, comprising Dr AK Bhalla, Dr NP Singh, Dr Harsha Jauhari, Dr Sanjeev Gulati (President) with Dr SB Bansal as Coordinator to get an exclusive indemnity policy for its members. The committee had meetings with many companies to get the maximum inclusion with the least premium. They finally tied up with CoverYou and drafted a Doctors' Professional Indemnity with specially designed benefits & 75% savings on premiums, in liaison with ICICI Lombard General Insurance Co. Ltd.

include acceptance of all types of medical negligence notices, a large panel of 500+ medico-legal lawyers, rapid two hour lawyer allocation, more than 200 senior doctor panel, out-of-court settlements, cashless claim settlement, run-off cover, retrospective inclusion of previous policy, handling of dishonesty and criminal allegations, and many more benefits. The details of the policy at a discounted premium, with different category options have been informed to all ISN members. This is a landmark step taken by the ISN and will revolutionize the legal safety of nephrologists across the country. We recommend our members to avail this opportunity by doing the Doctors Risk Assessment through the website - <https://www.coveryou.in/doctors-risk-assessment>

The benefits of ISN & CoverYou endorsed policy

## *ISN Constitutional Amendment Committee*

The Indian Society of Nephrology is bound by the principles laid down in its constitution and thoroughly abides by them. But, the society is well aware of the need of the changing times and has evolved with time, by progressing with the new era. The Society has created a high-level Constitutional Amendment Committee, comprising of senior reputed nephrologists of the country which includes Dr HS Kohli (as Convenor), Dr

Ashwani Gupta, Dr Dipankar Bhowmik, Dr Manisha Sahay, Dr Dharmendra Bhadauria, and Dr SB Bansal (as Coordinator). The Committee will take inputs from all members and the nephrology environment, and will plan suitable necessary amendments for the ISN constitution in changing time, particularly regarding the electronic voting in ISN elections.

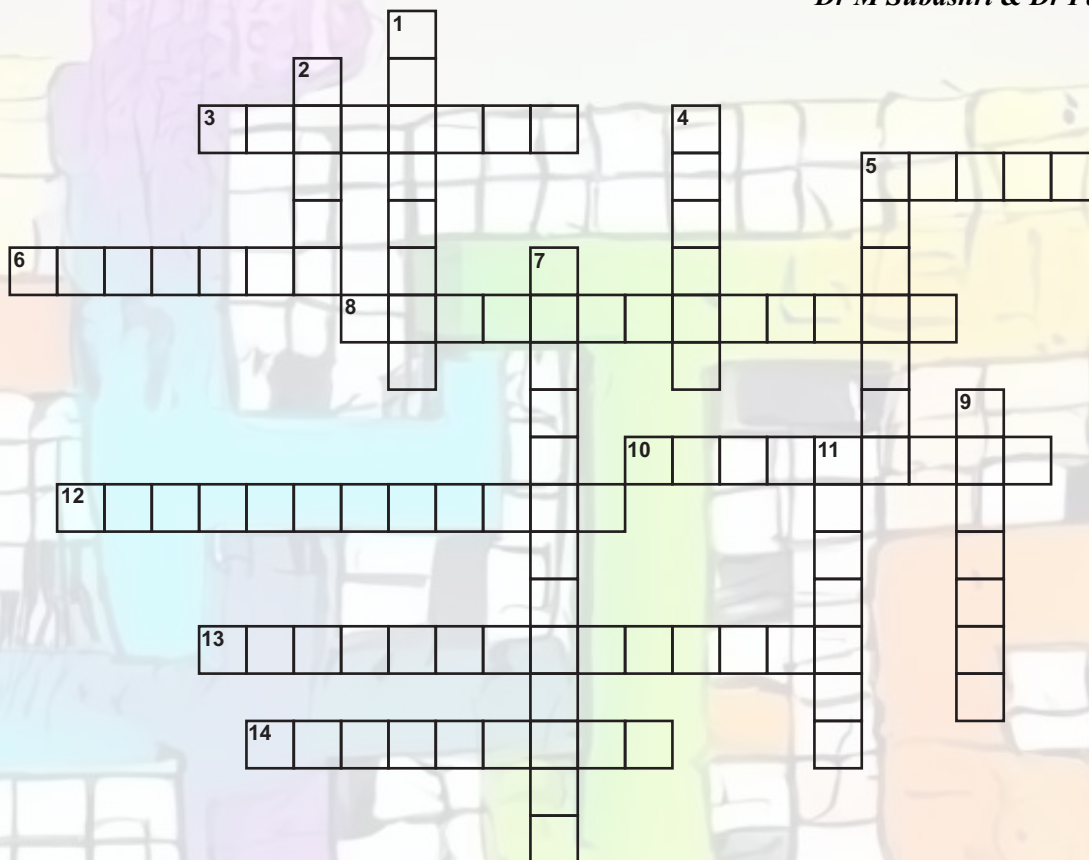
## *ISN Liaison Committee*

The Indian Society of Nephrology has also set up a Liaison Committee to liaise with the government officials or ministers and put up the Society's voice to the government, with regards to various activities and policy

making pertaining to the field of nephrology. The Committee comprises of Dr Sanjay Agarwal, Dr Georgi Abraham, Dr Bharat Shah, Dr Hemant Kumar, President of ISN, and the Secretary of ISN (as Convenor).

# Pee-viously in Nephrology

By • Dr Sandhya Suresh,  
Dr M Subashri & Dr Pallavi Prasad



## SOLVE THE CROSSWORD PUZZLE

### Across

3. This is how foot process pathology was first described under electron microscopy in patients of lipid nephrosis.
5. Born in Netherlands, called the father of artificial organs.
6. If found in urine, turns sheep wool impregnated with stannous chloride black on heating with a candle.
8. Indication of first surgical kidney biopsy by Dr Edelbohls.
10. Surendra Nath Sehgal was instrumental in the discovery of this transplant drug which was once called the treasure from a barren island.
12. His path towards the Nobel prize started with the crash of an R.A.F. Whitley bomber when he tried ingenious methods to treat specific injuries in soldiers.

### Down

1. Man in the red hat, who fashioned a loop between vein and artery.
2. Introduced the prosthesis that between dialyses kept the tract between the skin and the peritoneal cavity patent
4. The Swede who did the first intentional kidney biopsy using RGP and X ray.
5. He is the John P. Merrill in the history of India's successful kidney transplant programme.
7. Bowman's capsule is named after the doctor who went on to practise this speciality.
9. Secreted by salivary gland of leeches, the first anticoagulant used in hemodialysis.
13. In 1959, this drug was first shown to prolong the survival of skin grafts in rabbits and was one of the earliest drugs to be used in kidney transplantation.
14. This Nobel prize winner in economics adapted an algorithm which is famously used for matching to U.S. residency programs for kidney paired donation.
11. Current composition of PD fluid was formulated by him.

Answers to the Crossword are available on page 19

# Ruminations of the outgoing Honorary Secretary of The Indian Society of Nephrology : A Journey With Ebb And Flow

My tenure as honorary secretary of the Indian Society of Nephrology (ISN) has been a “Peak and Valley Journey”. It was challenging and, at the same time, offered me an opportunity to prove myself. It was particularly exigent as I took over as Hon. secretary from a stalwart like Prof Vivekanand Jha.

I took over at the ISNCON 2016 in Mumbai, which was brilliantly organised by Dr Umesh Khanna and Mumbai Kidney Foundation (MKF) and was graced by celebrities both in nephrology and outside. This was my first general body meeting that went well without too much hue and cry. The success here made me realise that I should continue to take everyone along regardless of age, gender and region. My impending challenges were to form a scientific and credential committee and select Editor in Chief of Indian Journal of Nephrology (IJN). At every step, there was strong support of senior colleagues from all corners of India. After successful ISNCONs in Delhi and Bhubaneswar in 2017 and 2018 respectively, ISNCON 2019, at Chandigarh was a special celebration of the 50th Year of the formation of ISN. Prof H S Kohli, the Organizing Secretary, brought the glorious history of ISN to one platform, for nephrologists of the current era to see.

One of the toughest challenges was to continue good rapport with the International Society of Nephrology (IntSN) and Asia Pacific Society of Nephrology, and engage the members with academic activities all throughout the year. We succeeded in maintaining all academic relationships with IntSN. ISN continued supporting many IntSN programs like fellowship programs, ISN-ANIO-India Fellowship, Renal Sister Programs, and Education Ambassador Program etc. We showcased the growth of the society during every World Congress of Nephrology, with ISN having the largest representation from any affiliated society.

Academically we achieved many milestones. We have completed AKI registry, in which approximately 4000 patients data was collected from 11 different centres, which we are about to publish. We are currently contributing to the Indian CKD cohort study with long-term follow-up under the leadership of Dr Vivekanand Jha with a DBT funding. A research methodology workshop was conducted each year for postgraduates and junior faculties during my tenure independently, in which Dr Mohan Rajapurkar with his faculty team played a significant role. I would like to congratulate Dr Mohan Rajapurkar on bagging the ISN South Asia Pioneer Award of 2023. We organized a scientific writing

workshop with IntSN with Dr Aparna Iyenger, a key person. We formulated guidelines for managing kidney diseases, including dialysis and transplantation, during the pandemic, which was a great hit. ISN revised the guidelines for Hemodialysis in India. A commentary on KDIGO guidelines on CKD-MBD from an Indian perspective was also published.

An unprecedented COVID-19 emerged in 2020 that taught us many lessons. The MOHFW, Government of India, adopted a guideline on dialysis and implemented it across the country. It was published in IJN, and widely quoted. This guideline saved many lives during the pandemic. During that time, we had many webinars with the ASN and IntSN on multiple topics pertinent to the COVID pandemic. After the COVID we bounced back with a big bang with ISNCON 2021 in Chennai, and subsequently ISNCON 2022 at Pune, with new initiatives such as the ISN Bayer Pioneer Award. One of my outstanding achievements was making the society richer every year with a strong balance sheet, with approximately balance of 60 million rupees.

At last, the success was not without failure. We formed a young nephrologist forum of ISN, which did not pick up; and tried to include women in the nephrology wing, which did not achieve consensus. The handing over to the new secretary Dr Shyam Bansal, was not smooth, with controversies created on the electronic election, which I think was a great initiative by the ISN. I have many promises to keep and miles to go before I sleep. I must thank all those who supported me and contributed to the growth of society.

## *Prof Narayan Prasad*

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Former Secretary of Indian Society of Nephrology, Indian Society of Organ transplantation and Peritoneal Dialysis Society of India Councillor, International Soc Nephrology, and Chair, South Asia Regional Board



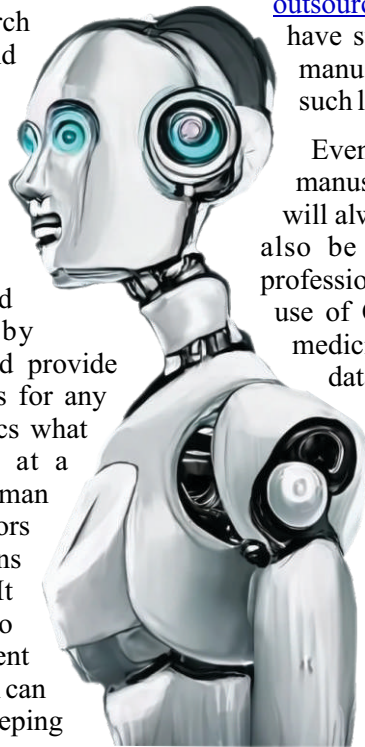
**ISNCON 2016- Inaugural Function**



ChatGPT (Chat Generative Pre-trained Transformer) is an advanced language model developed by OpenAI that uses machine learning algorithms to process and generate text-based responses to inputs submitted by users. First launched on 30th November 2022, it gained quick acceptance and virality thanks to its immediate and detailed responses across various fields. It has the power of a chatbot trained on approximately 300 billion words with the capability to converse on a broad range of topics. ChatGPT reached 100 million users by January 2023. Since its launch, a spate of articles has been published, some possibly written using ChatGPT itself, wondering what impact it will have across various sectors of human endeavour. With an [updated version](#) released in March 2023, the churn is unlikely to abate and healthcare is no exception.

With its ability to analyze vast amounts of data and generate accurate predictions, ChatGPT can impact the practice of medicine both for healthcare workers and patients. ChatGPT can quickly identify relevant symptoms and match them to specific diseases by accessing its vast knowledge base and provide insights into the best treatment options for any given condition. This essentially mimics what healthcare workers already do, but at a computational scale and accuracy the human mind cannot match, thus helping doctors and nurses make more informed decisions and deliver better outcomes for patients. It will almost immediately be used to generate automated summaries of patient interactions and medical histories, which can help streamline the medical record keeping process.

Another way in which ChatGPT will impact the practice of medicine is by improving patient communication. ChatGPT can act as a virtual assistant, answering patients' questions and providing them with more accurate information that they can then use to buttress their communication with their doctors. This can help patients to become more engaged in their care and hopefully help doctors see less number of IDIOT (Internet derived Information Obstructing Treatment) syndromes. ChatGPT will likely also be used by patients to manage their medications, provide reminders, dosing instructions, and potential side effects. With the Internet of Things becoming an increasing reality, the future of medicine will see more wearable sensors and other



monitoring devices. ChatGPT will make accurate remote monitoring of patients possible by analysing relevant data and recognising patterns that mandate an intervention from healthcare workers.

ChatGPT will also impact medical education, research and publishing. Access to relevant medical knowledge and research, for both students and practising doctors will be limited only by the accuracy of the input terms. Medical research and publication for authors will become easier as the analysis of datasets and identification of patterns will be done by the computational power of artificial intelligence (AI). Concerns about actual manuscript writing being [outsourced to ChatGPT](#) notwithstanding, some authors have started listing ChatGPT as co-authors on their manuscripts. However, some journals have [banned](#) such listings.

Even beyond the ethical concerns of authorship of manuscripts, not everything is copacetic. ChatGPT will always be limited by the inputs of its users. It will also be influenced by the biases of the medical professionals on whom the application is trained. As the use of ChatGPT and other AI based technologies in medicine grows, the other concern is the potential for data breaches, which could compromise patient privacy and confidentiality.

Overall regenerative language models have the capability to play a vital role in medical education by providing personalized learning experiences, enhancing textbooks, generating realistic patient care scenarios and summarizing medical research. These models have the potential to complement medical educators and clinical researchers rather than replace them. It is noteworthy that [language models](#) are never a substitute for hand-on clinical training, guidance of a experienced medical profession and empathy of a human teacher.

Nevertheless, the advent of ChatGPT in medicine is inevitable. While it may not replace humans, it can be used to supplement quality of delivered care. Considering the ease of its availability and usage, all medical professionals would do well to understand the capabilities of advanced AI tools and other upcoming disruptive innovations so they know how emerging technologies might bring opportunities and threats to their practices.

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## Pregnancy outcomes post kidney donation: Not All is well!!

Living donor kidney transplantation is the best form of renal replacement therapy (RRT) for patients with end stage kidney disease (ESKD). More than 50% living kidney donors are females, with a significant proportion being in the childbearing age group. In general, long term follow up is recommended in all kidney donors as donor nephrectomy may lead to hypertension and reduction in overall kidney function. In childbearing age group females, pregnancy may add to the concerns regarding risk of [long-term deterioration](#) in kidney function.

Similar to kidney donation, pregnancy also leads to hyperfiltration, which may lead to adverse foetal and maternal outcomes. A study from Norway revealed a [2.5-fold increase](#) in adjusted risk of preeclampsia in post donation pregnancies. One of the likely explanations for this could be that the mean age was more than 32 years at the time of pregnancy (compared to the younger age at the time of donation), making them more prone for complications, as emphasized in the study by [Garg et al.](#) [Ibrahim HN et al](#) and [Reisaeter et al](#) revealed higher risk of both maternal and foetal adverse outcomes in pregnancy post-kidney donation. A retrospective study from India by [Anupama Kaul et al](#) (n=45; total 48 pregnancies) reported increased risk of adverse foetal outcomes like prematurity and low birth weight babies, with low risk of adverse maternal outcomes, again emphasizing the age factor and a possible long duration between two pregnancies. Also in this study,

childbearing age group females who donated the kidney were younger compared to other studies.

Ethnic and racial diversity along with the mean age amongst the pregnant females post-donation in different studies led to different outcomes. Nevertheless, post-donation pregnancies, although safe most of the times, do carry risk of pre-eclampsia and other hyperfiltration associated problems, affecting maternal and foetal outcomes adversely.

In an ideal world scenario, randomised control trials for estimating the post-donation pregnancy risks should be done but may not be ethically or practically feasible. With the increasing incidence of ESKD and with transplantation being the best treatment on offer, increasing the donor pool is the need of the hour. It has been a long known and scientifically proven fact that women form most of the donor pool world wide with an important percentage belonging to the childbearing age. Therefore, it becomes imperative for the donors to be aware of the actual maternal and foetal risks involved in pregnancy post-kidney donation. Registry data and estimates from high volume transplant centres with long-term follow-up is the need of the hour and may define the way forward.

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## Stay Tooned!



*by Dr Anand Chellappan*





## Residents' Corner

# *Why I chose Nephrology?*

*The art of medicine consists of amusing the patient while nature cures the disease – Voltaire*

She is 20 years young, aspires to be a school teacher someday. Her father works in the field, mother a housewife. One fine morning, her mother tells her “Your face looks swollen”. She ignores. Soon her feet follow course and joint pains set in. She came to our OPD looking for answers. Our Professor, an astute clinician, declares “It is Lupus”. Well, I had only heard Dr. Gregory House say “Its not Lupus” till then. I had little idea how her life would change from that moment, she had even less. ANA 3+, proteinuria 2 grams, RBCs in urine and creatinine of 4 mg/dl; boss was right. Her own body was killing her, the kidneys bearing the brunt of the attack. “Pulse her with Methylpred and Cyclo, read about Leuprolide”. I pulled out my blue Harrison's and read about one of the most dreaded diseases, which was so prevalent in my region. It was fascinating and horrifying at the same time to know our own immune cells can attack other cells of the body. And why would the kidneys be the favourite site for the immune complexes to hang out? I was still struggling with the counter-

current mechanism (I still do!). Questions and more questions cropped up. I dived into the epics Robbins as well as Kelly's, found more questions than answers. “The exact mechanism of action of HCQ is still not known”. Yet it works. She made some recovery and went home. She keeps coming back with her mother and “flares”. The great precision with which the kidneys have developed and the great brutality it faces in infections and auto-immune diseases, not to mention about the OTC drugs are thrilling. I was more drawn into the branch after reading Dr. M.K. Mani sir's articles, listening to Dr Sanjeev Gulati sir's talks and Dr. Rakesh Nair sir's lectures. I come from a region where resources are scarce. But the little that I got to see was enough to draw my attention to this field. I have always regarded Medicine as the mother and Nephrology is my favourite sibling now.

The author declares no conflict of interest.

**Dr. Debarun Choudhury**

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When I was a kid, whenever I was asked what I wanted to become when I grew up, I always answered a “scientist”. Now this word is merely a broad description, it lacks dimensions which would give it a definitiveness and as I grew up, I found adding these dimensions, and fixating on an area as the most difficult thing. Growing up I found my interest switching from becoming an archaeologist to a marine biologist to an astrophysicist. At such a juncture I got introduced to human physiology through my biology teacher. His explanations of the basics of cellular physiology left me awestruck wondering about the organization of the human body. How an everyday simple task like taking a few steps or drinking water when thirsty represents millions of years of evolution to perfection.

This led to my taking up MBBS and further down the line, internal medicine. One realises that Medicine is not just a science but a whole world in its self. It is the wondrous art of deduction and necessitates mastery of understanding physiology.

When it came to progressing further in my academics, in my perception Nephrology related maximally to the core of medicine. Furthermore, nephrology has multiple facets which amalgamate all my aspired areas of interest.

Life began in the primordial oceans and if we look at the development of the functioning nephrons, it is a lesson in evolution of life on this planet, from the evolution from unicellular organisms to highest degree of chordates. All aiming to control the milieu interieur.

Nephrology is rich in history, with humans looking into urine as a window to different maladies since ancient

I remember the first day of my MBBS, a day when everyone already foresaw themselves 15 years later as cardiologists and neurologists. No one even uttered the word nephrologist. I have passed my MBBS and MD Medicine from Government Medical College, Chandigarh. From the time I can recall, I have loved Medicine and the reason is my dear father. He is an MD Medicine from PGIMS, Rohtak. I have watched him work tirelessly during the day, attending night calls and then again running his practice with inadequate sleep. I have sat on his OPD table as a kid, playing with his prescription slips and stethoscopes. I have seen the dedication with which he carefully listened to his patients' complaints, the enthusiasm in how he approached each case and the child-like delight in having saved critically ill patients. I remember a time when a whole village fell ill and no doctor could identify the cause. My father, however, made a spot diagnosis of

times. Many a times the important developments throughout the history of nephrology have been affected by the socio-economic and political events like the work on frequency of RRT in AKI during the Korean wars.

The fundamentals of Nephrology, as is true for other applied sciences, is based on the principles of physics and chemistry. From application of fluid dynamics in the dialyzers and to principles of thermodynamics in tubular transports, all is governed by invisible but binding laws and our attempts to use the knowledge to rectify deviations and diseases.

This subject has not only offered me a vast expanse of exhilarating learning, but also given me the satisfaction of seeing a patient limited by a machine, becoming dialysis free after a successful transplant. The freedom to drink water as much they want to is something that we can only imagine. I am fortunate to get to train in an Institute which has catered to all the fringes and niches of the society, and under teachers who help you to push yourself further and invoke in you the zeal to acquire knowledge.

I am in my last year of residency but I am very excited about the future, because I know that with a subject as dynamic as this there are not going to be dull moments. To quote Bill Watterson (from Calvin and Hobbes) “It's a magical world Hobbes ol 'buddy...let's go exploring”.

The author declares no conflicts of interest.

***Dr Aniruddha Datta***

Resident, Dept of Nephrology,  
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dropsy, treated them and eventually all of them made a successful recovery. The state home minister applauded him for the same. My father wanted to be a nephrologist. He couldn't prepare further due to familial obligations despite being in the first waiting list of PGI, Chandigarh. I wanted to fulfil that dream.

Fast forward to MBBS 3rd Prof. I feared Nephrology. For two reasons; one, I could not understand it; second, I feared our Nephrology professor, Dr. Sanjay D'Cruz. He was the definition of a professor who makes you quake in your shoes. I found the subject difficult as all that was discussed were haemodynamics of the patients, a topic that I believe can disorient anyone. Anyway, I got into MD and had my proper introduction with Dr. D'Cruz. He was intelligent and dedicated but had the most fearsome rounds. He taught both medicine and Nephrology. He wanted an enthusiastic systematic approach to patients and he wanted answers to his

questions. Failing to do so could chuck you out of the wards. Soon, I started to love Nephrology as I saw that sir's approach to the subject was very much streamlined. He paid emphasis on a clinical approach for every disease. I saw sir manage all sorts of kidney diseases from glomerular to pregnancy related to chronic kidney disease effectively. I saw few extremely sick patients make a complete recovery under sir's guidance including those with DAH and TMA. I realised that people of all ages could require the expertise of a nephrologist irrespective of the financial and socio-economic status and, therefore, we in this field have a huge opportunity to give back to the society.

Now, into my DM Nephrology course at IPGMER, Kolkata, my interest in Nephrology is ever growing. Thanks to my professors, I am now seeing a plethora of patients being managed beautifully in a developing

nation like India despite limited resources.

Nephrology is the true essence of Internal Medicine. I feel Nephrology provides a holistic overview of management of diseases comprising not just a super speciality but also the taste of our first love, Medicine. It is a rewarding field where doctor satisfaction is possible in improving the patient's quality of life with kidney transplants and dialysis. Nephrology truly offers everything – management of both acutely ill patients as well as those requiring chronic care, we are specialists but also generalists. I will be a jack of all trades and definitely a master of one. Would you also like to be one ?

The author declares no conflicts of interest.

*Dr. Sanjana Sharma*

Resident, Nephrology,  
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## *ISN Crossword answers:*

**CLUE 3 ACROSS:** SMEARING – In 1957, Marilyn Farquhar, Robert L Vernier and Robert A Good published the first study of electron microscopic examination of patients with “nephrosis” and lupus nephritis. In patients of “nephrosis” they described the foot processes as masses of epithelial cytoplasm seen to cover partially or completely the surfaces of the capillary loops with degree of foot process "smearing" being variable from patient to patient.

Read more here: [An electron microscope study of the glomerulus in nephrosis, glomerulonephritis, and lupus erythematosus](#)

**CLUE 5 ACROSS:** KOLFF – Born February 14, 1911, in Leyden, The Netherlands, Willem Johan Kolff invented the rotating drum dialyser, wearable artificial kidney, heart-lung machine, artificial heart, published around 600 articles and was rightly called 'the father of artificial organs'.

Read more: [Willem J. Kolff, M.D, Ph.D](#)

**CLUE 6 ACROSS:** GLUCOSE – Although the urine dipstick tests were commercialised in the 1950s by Murray and Free, early experiments on dry chemistry to test urine were first described in the 1800s. In 1850, Jules Maumené, Parisian chemist used sheep's wool impregnated with stannous chloride for testing urine. In the presence of glucosuria, after applying urine, the wool turned black on heating.

Read more: [History of the Dipstick U/A](#)

**CLUE 8 ACROSS:** DECAPSULATION – The first

surgical kidney biopsy was done by Dr George Edelbohls, in New York for renal decapsulation, a concept introduced by Richard Harrison, to relieve intrarenal pressure in patients of acute hemorrhagic nephritis. He published his report of 72 cases in his book with biopsy descriptions of some of these patients although in most cases macroscopic examination was considered sufficient to make a diagnosis.

Read more : [The introduction of renal biopsy into nephrology from 1901 to 1961: a paradigm of the forming of nephrology by technology](#)

**CLUE 10 ACROSS:** RAPAMYCIN – Suren Sehgal was born in the small village of Khushab, India, now part of Pakistan. He was instrumental in the identification of rapamycin produced from *Streptomyces hygroscopicus* which was found in samples from Easter island (Rapa Nui). Initially thought to be an antifungal agent, its antiproliferative effects on cancer and immune cells were later described.

Read more: [Discoverer of the treasure from a barren island: Suren Sehgal](#)

**CLUE 12 ACROSS:** PETER MEDAWAR – Sir Peter Medawar was awarded the Nobel prize for Medicine or Physiology in 1960. His work provided experimental evidence for Burnet's theory of immunological tolerance and formed the basis for transplant immunology. During the World War, he focussed his work on skin grafts after noting the burn injuries among soldiers in a plane crash.

Read more: [Peter Brian Medawar \(1915-87\) 1960 Nobel](#)

### [Prize for Medicine or Physiology](#)

**CLUE 13 ACROSS:** MERCAPTOPYRINE – Although initially developed as an anti-cancer drug, 6-mercaptopurine was noted to have immunosuppressive effect when it was found to suppress rabbit immune response to human albumin and prolonged the survival of skin grafts in rabbits. While it was used in the earliest cases of successful chemical immunosuppression in transplant, it was shortly replaced by its derivative, azathioprine.

Read more: [Kidney transplantation: A history, Kidney transplantation: Principles and Practice, 8th edition](#)

**CLUE 14 ACROSS:** ALVIN ROTH – Alvin Roth was awarded the Nobel prize for economics in 2012 along with Lloyd Shapley. He applied the Gale-Shapley algorithm used for matching markets for kidney paired exchange and advocated for the need for kidney-sharing registries.

Read more: [The Nobel prize in economic sciences 2012](#)

**CLUE 1 DOWN:** SCRIBNER – Better known as Scrib, was born in Chicago on January 18, 1921. Scrib came up with the idea of connecting the arterial and venous cannulas by a short shunt between dialyzes to preserve the blood access, using polytetrafluoroethylene (Teflon) tubing for the cannulas and shunt.

Read more: [—Belding Hibbard Scribner Better Known as Scrib](#)

**CLUE 2 DOWN:** DEANE – The Deane prosthesis is made of Teflon or polyethylene, consisting of a blunt-ended stem and a disc shaped head. And the length depends on the thickness of the abdominal wall. It maintains a permanent fistulous tract into the peritoneal cavity to facilitate easy placement of Peritoneal catheters on subsequent dialysis.

Read more: [Use of the Deane prosthesis in patients on long-term peritoneal dialysis](#)

**CLUE 4 DOWN:** ALWALL – Nills Alwall from Lund, Sweden attempted the first percutaneous needle kidney biopsy in 1944. His case series of percutaneous renal biopsy of 13 patients (including two who had amyloidosis) was published much latter in 1952 after the end of World War II.

Read more: [The introduction of renal biopsy into nephrology from 1901 to 1961: a paradigm of the forming of nephrology by technology.](#)

**CLUE 5 DOWN:** KV JOHNY – The first successful live donor kidney transplant was conducted in CMC, Vellore in 1971 by the team including Nephrologist, Dr. KV. Johny and Urologist, Dr. Mohan Rao, after a deputation in Australia.

Read more about the history of kidney transplantation in India here: [Status of renal transplant in India](#)

**CLUE 7 DOWN:** OPHTHALMOLOGY – Sir William Bowman discovered the Bowman's capsule while studying kidney vasculature by injecting saturated solutions of potassium dichromate and lead acetate successively. His early work including microscopic examination of various structures of muscle, liver and kidney. After completing his surgical training, he became an ophthalmologist. His contributions in ophthalmology include describing the Bowman's layer of cornea.

Read more: [Sir William Bowman: His contributions to physiology and nephrology](#)

**CLUE 9 DOWN:** HIRUDIN – The first human hemodialysis in the history of medicine was performed by Georg Haas in 1924 in the town of Giessen, Germany. The procedure lasted only 15 minutes, and hirudin served as the anticoagulant.

Read more: [—Georg Haas \(1886/1971\): The Forgotten Hemodialysis Pioneer](#)

**CLUE 11 DOWN:** MAXWELL – Maxwell described the first closed system for acute peritoneal dialysis, using two-liter bottle and balanced electrolyte solution with varying concentrations of glucose but excluding potassium. His primary interest was adjusting the solute composition to achieve correction of dyselectrolytemia rather than fluid removal. Read more: [Morton Maxwell \(1924\): He Made Acute Peritoneal Dialysis a Routine Procedure](#)

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### Images:

**Page 12:** Image collage: Top: Urine cast with Envelope shaped Calcium oxalate dihydrate and Calcium monohydrate crystals (Image courtesy of Dr Vasanthakumari, Junior Resident, Dept. of Pathology, AIIMS, Nagpur), Bottom: Renal calculi - CT image (Image courtesy of Dr Chetana Ratnaparkhi, Associate professor, Dept. of Radiodiagnosis, AIIMS, Nagpur); Left: H&E stained section showing intratubular colourless to yellowish colored, fan shaped, radially arranged crystals which are birefringent (Right) on polarization with features of acute tubular injury (Images courtesy of Dr Vrushali Deshpande, Consultant Renal and Transplant Pathology, Alexis Multispecialty Hospitals, Nagpur).

**Page 15:** Crossword puzzle background image created with the assistance of AI from Craiyon.com

**Page 16:** A Humanoid image created with the assistance of AI from Craiyon.com

**Page 18:** Resident doctors image created with the assistance of AI from Craiyon.com

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1. Br J Clin Pharmacol (2016) 82:932–942; 2. D. Impellizzeri et al. / Pharmacological Research 81 (2014) 91–102; 6. Journal of Pain Research 2012:5 437–442

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