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Q1 Could you tell us who or what inspired you to pursue a career in medicine and, more specifically, to become a nephrologist?

Growing up, I did not have much exposure to medicine. There were no physicians, or even anyone in science, in my family, including my extended family. However, I always had a love and fascination with biology. I remember having a two-storey playhouse in the backyard as a child. My sister had the top floor, and I had the bottom. I ended up converting the bottom floor of that playhouse into a laboratory. My parents bought me a microscope that included real glass slides. I loved to look at anything I could find in the backyard under the microscope. I was always exploring new things and was never satisfied with answers. It was fascinating, and I think it is why I pursued a research career, and it is why I love pathology and urine microscopy.

When I was at the University of Arkansas, Fayetteville, USA, I initially focused on a career in music, playing the trumpet. After spending a few years as a music major, I decided to take an immunology course. This was taught by Jeannine Durdik, who is now the Associate Dean in the Fulbright College of Arts and Sciences at the University of Arkansas. I really credit Durdik for inspiring and instilling the confidence in me to pursue a career in science and medicine. I decided to switch my studies to microbiology and immunology, and I joined her research laboratory. I was hooked.

Fast forward to medical school. I was lucky to train at the University of Arkansas for Medical Sciences, where I was exposed to many amazing nephrologists who inspired me to pursue nephrology. Tom Andreoli, Bob Safirstein, Sudhir Shah, Sameh Abul-Ezz, and Michelle Krause each played an important role in my decision to pursue nephrology. I loved everything about it, and the connection to patients in a longitudinal manner. I saw the relationships that nephrologists established with their patients. I also saw a field with many opportunities to innovate. Importantly, I saw the field of nephrology as welcoming and collegial. That was important to me. I have really enjoyed being a nephrologist.

Q2 You have clinical interests in hypertension and cancer-related kidney disease, and in 2021 you co-authored a paper on onco-hypertension as an emerging specialty. Could you summarise the key takeaway messages from this review, and highlight the specific implications for nephrologists?

Onconephrology is an emerging subspecialty of nephrology, and deals with the intersection of nephrology with oncology. I have always had a desire to understand the underpinnings of blood pressure determination and pathogenesis of hypertension. Onco-hypertension was a natural progression in that clinical and research interest. There is an article that examines the emerging field and reviews all of the potential clinical entities one could encounter.[1] It also describes the multitude of anti-cancer agents that can cause or worsen hypertension;[1] however, another article discusses these medications in more detail.[2] Moreover, the article describes how hypertension and anti-hypertensive drugs

have been associated with malignancy. Lastly, the article describes why a multidisciplinary approach to onco-hypertension between oncology, primary care physicians, nephrology, endocrinology, and cardiology is needed.[2]

Q3 You also co-authored a paper on the potential impact of emerging viral infections on hypertension and kidney disease, following the COVID-19 pandemic. How do you think the pandemic impacted kidney healthcare, and what key messages does the paper convey?

So many aspects of nephrology and kidney health were impacted by the COVID-19 pandemic. An article published in 2022 reviews how many viruses contribute to hypertension, cardiovascular disease, and kidney disease.[3] This topic was thrust into the spotlight during the COVID-19 pandemic, and has renewed the interest in research into not only severe acute respiratory syndrome coronavirus 2, but also other viruses, such as HIV, coxsackievirus, cytomegalovirus, hepatitis C, respiratory syncytial virus, Middle East respiratory syndrome coronavirus, and influenza, among others. The key message of the manuscript is that cardiovascular and kidney health can be adversely impacted by a multitude of viruses.[3] It is important that the research community continues to conduct research on this important topic.

Q4 Your academic work has spanned multiple topics within the field of renal medicine. Having published almost 100 academic articles, contributed to several book chapters, and co-authored the book entitled *Nephrology Secrets*, what do you feel are the current gaps in the kidney medicine literature, and what topics within the field warrant greater attention?

This is a tough question because there is so much work that needs to be done. Progress and innovation are always needed. I see a big need for innovation in acute kidney injury, as this remains so common, and is a very challenging clinical entity. We need to invest and deploy upstream screening of kidney disease and applying effective interventions to decrease the kidney failure burden. This is needed. Renin-angiotensin system inhibitors, sodium-glucose co-transporter-2 inhibitors, and aldosterone receptor antagonists have demonstrated efficacy, and now it is time to identify and treat individuals at risk for kidney disease progression aggressively. This will take a very broad and unified effort worldwide.

While glomerular diseases have seen much more attention and focus recently, we still lack targeted therapies in many diseases, such as membranous nephropathy, for example. While biomarker research is exploding in membranous, we are still left with therapies that have not changed much over time. This is true for many glomerular diseases. The burden of hypertension

and cardiovascular disease in patients with kidney disease is huge, and continued understanding and effective therapy remains crucial to our patients. It is also important that we continue to advance education in home modalities and, importantly, palliative care in nephrology. These are crucial to patient-centred care. It is apparent that disparities in kidney health is a big problem in nephrology. We need to prioritise research in this area, as the current rates of kidney disease in marginalised groups remains unacceptable.

Lastly, we need to understand how to translate advances in genetics to improvements in therapeutics and clinical outcomes. We are finally in a place where we can test for these diseases, but we are still lacking interventions. This is a necessary and needed next step. It is so exciting to be in nephrology right now. We are making so many important advances. This is just the tip of the iceberg.

Q5 Alongside your clinical work and research, you have a keen interest in medical education. How and why did you become involved in education?

Education is so important. I look at education as my desire to always better myself. Never be satisfied. To this end, I was lucky in that my career intersected nicely with growth of the Internet. I quickly realised that I had a desire to learn, share, and hear from others around the world. I met the late Nate Hellman in 2008 at the very first Origins of Renal Physiology Course at Mount Desert Island in Maine, USA, when we were both fellows. He was the Founder of the Renal Fellow Network, which at the time was one of the few places where you could find free open access medical education (FOAMed). After his untimely passing a few years later, I made it my mission to preserve his legacy and make sure that FOAMed continued and prospered. The rest is history, so they say. I have been

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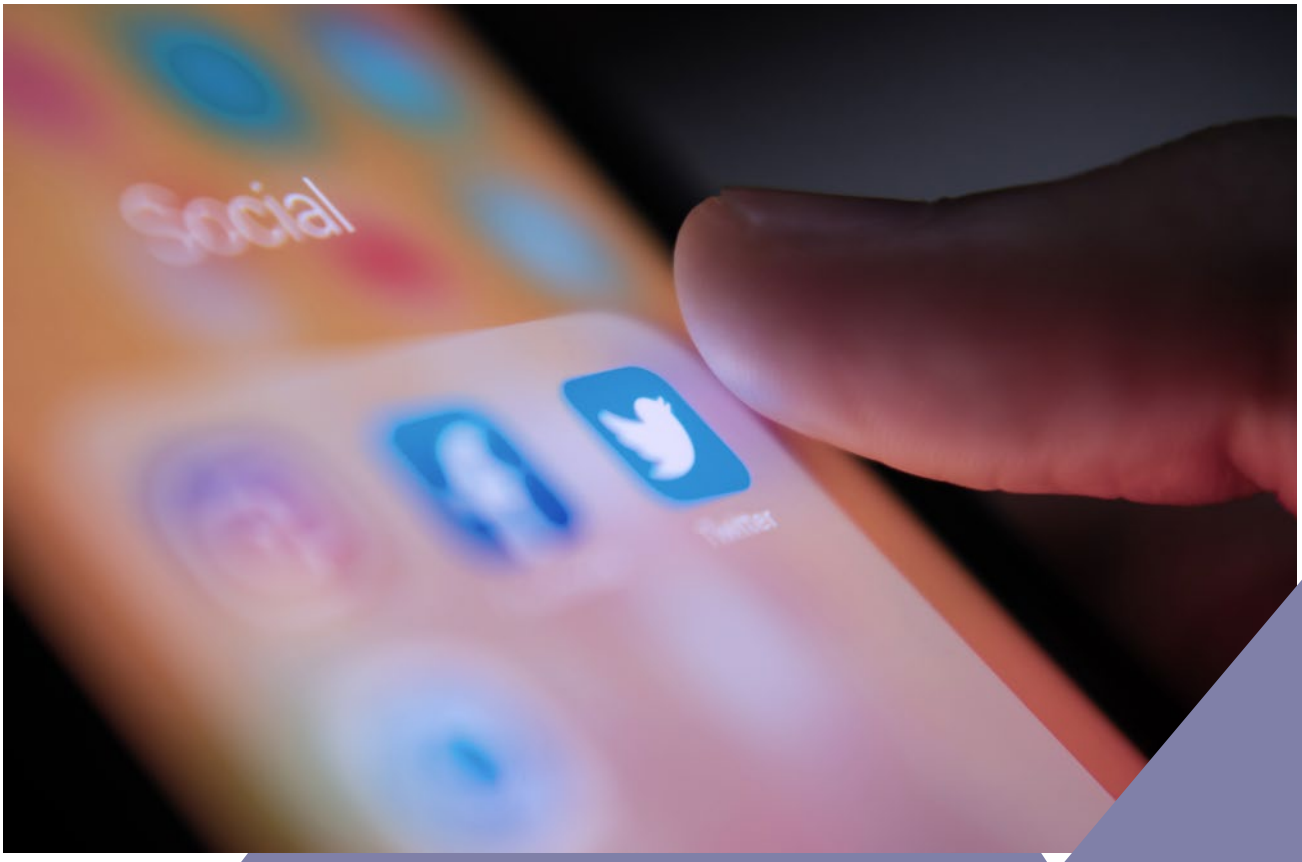

fortunate to have a large group of collaborators along the way. There are way too many people to recognise individually. I do want to recognise the impact that Hellman had in the FOAMed movement. We all should be grateful. To this day, nobody has matched the educational output that he achieved. He published a blog post almost every single day in 2009. Incredible.

Q6 On the topic of medical education, you recently co-authored a paper on the engagement of renal fellows in the USA in FOAMed. What were the key findings from this cross-sectional research, and how can these findings be applied on a global scale to improve digital education for healthcare professionals?

An article that was published earlier this year describes the results of a survey administered by the American Society of Nephrology (ASN) to all fellows (adult and paediatric) in the USA in the year 2022.[4] The aim of the survey was to gain a better understanding of how and why fellows are using FOAMed. We were also interested in the barrier and various ways in which it is used to answer clinical questions. We had a survey response rate of about 43%, and found that 74% used FOAMed. Of these FOAMed users, 33% reported that they applied FOAMed knowledge to clinical care. Several barriers to FOAMed use were also identified. Of all of the fellows who answered the survey 27% were unfamiliar with FOAMed, 22% had validity concerns, and 22% lacked a local community of users.[4] I think many of these results can be applied globally but it will be important to survey users from around the world. We intentionally used the ASN Survey and did not distribute via social media, in an attempt to diminish the amount of bias we received from respondents. The entire community has a lot of work to do in this area, but these survey results are a good start.

Q7 Can you tell us more about how social media can be used to enhance clinical education in the field? What avenues of social media do you use in your roles as an educator?

Social media is a means to share and disseminate knowledge. It also allows for a dialogue with others. Importantly, it allows people from all over the world to communicate and share. For me, I enjoy the interactions with others and, importantly, it is a great way to find new information. I also like seeing what is happening in other fields outside of nephrology; this has provided me with many good ideas we can possibility apply to nephrology. Lastly, the use of social media helps one to solidify one's knowledge, as nothing reinforces learning better than sharing knowledge with others and soliciting feedback.

Q8 You are Program Director for the Nephrology Social Media Collective (NSMC) internship, which aims to instil confidence, knowledge, competence, and professionalism in the use of social media, and promote free online medical education. What is the overarching goal of this collective, and how will this be achieved?

The goal of the NSMC internship is to learn by doing. Interns complete four rotations: graphical communication; blogs, tweetorials, and Landmark Nephrology; podcasts; and Nephrology Journal Club on Twitter (San Francisco, California, USA). Our internship allows individuals to learn valuable skills, empowering them to become leaders and effective communicators. We also instil values, so they appropriately use these skills and avoid common pitfalls.

Q9 Do you think there is greater scope for the use of social media in medical education and patient-doctor interactions? Are there any potential pitfalls healthcare professionals should be aware of?

We see patient interactions occurring more and more on social media. This is why it is important to have adequate attention paid to this during medical training. As social media becomes more and more a part of our daily lives, we need to educate physicians about appropriate and inappropriate use of social media. My advice for anyone interested in the professional use of social media is to avoid talking about your patients on social media. I look at anything you do as a risk spectrum, and talking about your patients' medical issues on social media without their consent is very risky, and oftentimes is directly against your employers' policies. All your patient has to do is search your name,

and all of your tweets show up. The patient can easily identify that you are talking about them, even if you remove identifiers. This is especially true if the post occurred just after the clinical encounter. It is also important to remain respectful, and treat everyone as if you are actually meeting them face-to-face. Disagreements happen, but remember to take a step back and learn from everyone. Of course, there are times in which you need to disengage and take a step back. Your social media usage should be a positive aspect of your life and, if it is not, it is okay to stop using it.

Q10 You currently serve as the Program Director for the Nephrology Fellowship Program at Duke University in Durham, North Carolina, USA. Can you tell us how you came to take on this position, and more about what this role entails?

Helping trainees navigate their career path gives me great joy. I also enjoy seeing trainees learn and grow during their journey. In my opinion, there is no better job in the medicine than being a Program Director. I started out as the Associate Program Director a few years after I joined the faculty. My initial role was to administer the core curriculum lecture series and recruit fellows into the programme. Over the next 5 years, I eventually assumed more and more responsibility, and took on the role of Program Director 2 years ago. My job encompasses everything surrounding fellow education, wellbeing, career development, recruitment, and ensuring that our programme meets institutional and national standards. I have a great team, with two Associate Program Directors, Harpreet Singh and Christina Wyatt, and a wonderful Program Co-ordinator. Most importantly, we have amazing fellows. I love my job.

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Q11 The Duke University Department of Medicine Society for Early Education Scholars (SEEDS) is a newly established programme aimed to assist fellows in planning their careers in clinical education. Were you involved in the establishment of the programme and, as Lead, what are your main responsibilities?

The vision for the SEEDS programme was to invest in clinician educators the same way we invest in physician researchers. Our goal is to equip fellows with the necessary tools to succeed as a clinician educator. The programme spans fellows across the entire Department of Medicine at Duke University, not just nephrology fellows. I co-founded this programme 2 years ago and, as the Lead, my responsivity is to administer the programme. This consists of recruitment, selection, organising lectures, and serving on each of the fellow's longitudinal education projects. The SEEDS programme has been a great addition to our offerings for fellows, and I am excited for the future of SEEDS.

Q12 To conclude, what are your hopes or vision for the future of nephrology patient care and clinician education, and where do you see your educational focus lying in the coming years?

I want to continue working to ensure all fellows have similar opportunities from around the world. It is hard to predict the future, but most of the exciting projects have come from great ideas from trainees that are seized upon. It is important not to be complacent, and talk to and listen to trainees. I do believe that in them holds the next big educational advance, and we do not want to miss it. I am lucky to be a part of this journey.

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