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Internal Medicine Residents' Perceptions of Nephrology as a Career: A Focus Group Study

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Abstract

Background Interest in nephrology as a career has declined dramatically over the past several years. Only 62% of nephrology fellowship positions are filled for the upcoming 2020 appointment year. The purpose of this study was to identify perceptions, attitudes, motivators, and barriers to a career in nephrology among internal medicine residents.

Methods We recruited focus groups of internal medicine residents (N=25) from the University of Colorado, and asked questions aimed at exploring perceptions, attitudes, and barriers to a career in nephrology, and ways to increase interest in nephrology. All focus groups were conducted on the University of Colorado Denver Anschutz Medical Campus. Focus group sessions were recorded and transcribed. Thematic analysis was used to identify key concepts and themes.

Results Residents described many barriers to a career in nephrology, including lack of exposure, lack of advances in the field, low monetary compensation, high complexity, lack of role models/mentors, and low-prestige/noncompetitive nature of the field. Most residents had no exposure to outpatient nephrology. Lack of new therapeutics was a significant deterrent to nephrology. Nephrology teaching in medical school was described as not clinically relevant and too complicated. Several residents felt they were not smart enough for nephrology. Only three residents had a role model within nephrology. Residents used the word "stigmatized" to describe nephrology, and discussed how low prestige decreased their interest in a field. Participants expressed suggestions to increase interest in nephrology through earlier and more outpatient nephrology exposure, enhanced interactions with nephrologists, and research and advancements in the field.

Conclusions Residents identified several modifiable barriers to a career in nephrology. Changing how nephrology is taught in medical school, enhancing interactions with nephrologists through increased exposure, and highlighting research and advancements in nephrology may change the perception of nephrology and increase the number of residents entering the field.

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Introduction

The interest in nephrology as a career has declined dramatically over the past several years (1,2). Nephrology fellowship programs are struggling to fill positions, with only 62% of positions filled for the upcoming 2020 appointment year (3). Only 291 candidates applied for the available positions (3). The decline in nephrology training has led to significant concerns about future shortages of nephrologists, especially given the rising incidence and prevalence of CKD (4). In 2010, the American Society of Nephrology created a task force aimed at increasing interest in nephrology careers. Several programs were developed including the Kidney STARS (Students and Residents) and Kidney TREKS (Tutored Research and Education for Kidney Scholars) programs. It is too early to determine whether these programs will lead to an increase in nephrology applicants, but the current reality is that, a decade after the implementation of these programs, there has not been an increase in the number of internal medicine residents entering nephrology.

The reasons for the declining interest in nephrology have been examined at various levels. Viewpoints from nephrology program directors, nephrology fellows, and private practice nephrologists have been examined (5–7). Fewer studies have focused on internal medicine residents, and those that have were mainly survey based (8,9). The perceptions of nephrology by internal medicine residents is critical in understanding why they are not choosing a career in nephrology. We performed focus groups of internal medicine residents at our institution to identify perceptions, attitudes, motivators, and barriers to a career in nephrology to provide insight into how to increase interest in this field.

Materials and Methods

Participants

We recruited internal medicine residents from the University of Colorado Denver (CU). The program has

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154 categorical residents. At our institution, nephrology is not a required elective. We offer an outpatient, inpatient, and combined inpatient/outpatient rotation from which the residents may choose. Last year, 13 residents and eight students rotated on the elective. Additionally, residents rotate through the nephrology clinic at the Veterans Affairs hospital as part of their outpatient general medicine duties. Residents are also exposed to nephrology *via* weekly, nephrology-run noon conferences at one of our sites and quarterly conferences at another site. Moreover, nephrology-focused medicine grand rounds are given four to five times per year. Finally, nephrologists attend on general medicine approximately 8–10 weeks per year.

Internal medicine residents were invited to attend *via* email during their outpatient block ($N=77$), and were given a choice of two different sessions to attend over the lunch hour. This invitation process occurred in two rounds over two consecutive months, because residents in our institution alternate inpatient and outpatient duties every 4 weeks. Preliminary interns were excluded because they had already matched into a different career choice before the start of their residency. We targeted six to eight participants in each group. Participants were given a $10 gift card for their participation. All participants provided informed consent.

Data Collection

The focus group guide was based on a previous survey done with internal medicine residents and medical students and also on discussion among the research team (9). Questions were aimed at exploring perceptions, attitudes, and barriers to a career in nephrology, and ways to increase interest in nephrology. All focus groups were conducted on the CU Anschutz Medical Campus. All focus groups were facilitated by an experienced investigator (J.K.). A second investigator (N.B.) took notes during the sessions. J.K. is a nephrologist at CU. N.B. was, at the time, a third-year internal medicine resident at CU. All focus group sessions were digitally audiotaped and transcribed. Focus groups were conducted until new insights were no longer gained, *i.e.*, until theoretic saturation was reached. Each participant completed a brief demographic questionnaire that included age range, sex, race/ethnicity, year of internal medical residency, and future career pathway. Each focus group session was 45–60 minutes in length. This study was approved by the Colorado Multiple Institutional Review Board (identifier 19-2907), and the Consolidated Criteria for Reporting Qualitative Health Research was followed (10).

Analysis

Using thematic analysis, J.K. and N.B. read the transcripts line by line; they identified key concepts, themes, and ideas, and developed a preliminary coding scheme. The data was coded in parallel by the two investigators and the main themes were identified. The investigators (J.K., N.B., S.F., M.C.) then discussed and reviewed the main themes to reduce overlap and redundancy among the categories. The transcripts were then recoded to the revised themes and reviewed by the investigators. Triangulation among the investigators ensured that the range and depth of the concepts from the data were captured in the themes.

Results

Four focus groups with 25 participants were conducted from December 2019 through January 2020. In the groups, there was a range of three to nine participants. Participant characteristics are shown in Table 1. All were graduates from US medical schools with representation from all geographic regions in the United States.

The following six main themes were identified as barriers to a career in nephrology: lack of exposure, lack of advances in the field, low monetary compensation, high complexity, lack of role models/mentors, and being a low-prestige/noncompetitive field. The following three main themes were identified as ways to increase interest in nephrology: earlier and more exposure, enhanced interactions with nephrologists, and research and advancements in the field. Figure 1 summarizes the resulting themes. Selected quotations from each theme are provided in Tables 2 and 3.

Barriers To a Career in Nephrology

Lack of Exposure

Lack of exposure to nephrology was a barrier mentioned in every focus group. The residents' exposure to nephrology was primarily on the inpatient side. Residents were unsure of the true mix of patient care for nephrologists. When asked how nephrologists spend their time, responses included spinning urine, seeing inpatient consults, and performing dialysis. "I think one reason why I hadn't really considered nephrology as a specialty of choice [was] because I had no outpatient exposure to their clinic or anything like that" (group 4). For the participants who had an outpatient experience, it was not always perceived as positive. Residents who had an outpatient experience primarily did so at the Veterans Affairs hospital and stated they saw "stage three CKD," and found it "to be particularly uninteresting to manage" (group 4). Residents discussed how the lack of exposure made them less comfortable in managing patients with renal disorders, and how that may be a reason they would not choose a career in nephrology.

The majority of the residents only had exposure to patients undergoing kidney transplant, and patients on hemodialysis and peritoneal dialysis while they were hospitalized. One resident characterized these patients as "very sick and depressing to care for" (group 2). Another described dialysis as a "black box . . . I don't really know what happens in dialysis. I have no idea what they are doing but numbers look better" (group 3). Several other residents in group 3 also shared this sentiment. Residents had interest in seeing outpatients with kidney disease, but reported they did not have the opportunity unless they took the renal elective, which is not required. Of the residents who had done a renal elective, the experience was overwhelmingly positive and several of them reported that they had considered a career in nephrology after the rotation.

Several residents described dissatisfaction with mainly seeing patients with AKI in the hospital. "It's been really frustrating, because on the inpatient side we see a lot of AKI . . . I feel like we consult them [nephrology], it's not helpful, it's more of . . . avoid nephrotoxins, maybe give some fluid, maybe diuresis, check some [urine electro-]lytes" (group 1). Another resident described nephrology as "providing a service" for the other specialists (group 4).

Table 1. Characteristics of study participants

Characteristic	*N* (%)
Age (yr)	
<25	0 (0)
25–30	23 (92)
31–35	2 (8)
>35	0 (0)
Sex	
Men	12 (48)
Women	13 (52)
Ethnicity	
Hispanic or Latino	1 (4)
Not Hispanic or Latino	24 (96)
Race	
American Indian or Alaskan Native	0 (0)
Asian	7 (28)
Black	0 (0)
Native Hawaiian or other Pacific Islander	0 (0)
White	18 (72)
Year of residency	
First	4 (16)
Second	12 (48)
Third	9 (36)
Geographic location of medical school	
West	6 (24)
Pacific Northwest	2 (8)
Mountain West	4 (16)
Midwest	7 (28)
East North Central	4 (16)
West North Central	3 (12)
Northeast	5 (20)
New England	1 (4)
Mid-Atlantic	4 (16)
South	7 (28)
South Atlantic	3 (12)
East South Central	0 (0)
West South Central	4 (16)
Career choice	
Nephrology	2 (8)
Hospitalist	6 (24)
Cardiology	3 (12)
Gastroenterology	4 (16)
Hematology/oncology	2 (8)
Infectious disease	2 (8)
Allergy/immunology	1 (4)
Rheumatology	1 (4)
Pulmonary/critical care	1 (4)
Dermatology	1 (4)
Primary care	2 (8)

Lack of Advances in the Field

Every focus group mentioned that the lack of treatment options turned them away from a career in nephrology. The residents discussed how new therapeutics in fields like oncology have made them more popular. When it came to nephrology, the residents felt they are using the same treatments that have been around for decades. Yet others mentioned frustrations with the diagnosis of kidney disease and the lack of performing biopsies to guide management. Participants discussed that an official diagnosis is not ever made, just an assumption that the underlying disease is due to diabetes or hypertension. Others discussed that even if there were a pathologic diagnosis, the nephrologists do not have new therapeutics for treatment of the disease and are "limited by what is in their toolbox" (group 3). Another resident commented, "you can't really necessarily make that much of a change in the patient's outcome. Maybe you'll delay dialysis by a little bit" (group 3).

Residents also mentioned lack of exciting research in nephrology. Only one of the residents had participated in kidney-related research, but many of the others had participated in research in other fields. Residents recounted that, because they spent more time with fellows and attendings in other fields (because rotations are mandatory), they were able to make more connections for research projects. Additionally, residents discussed how nephrologists do not "impose their field" on them (group 2, group 4) like other specialists do. Residents described that other specialists will hand them things to do, such as case reports or research projects.

Low Monetary Compensation

Residents in every focus group discussed that the perception of nephrology is one of low monetary compensation compared with other specialties, although not all participants held this belief. The residents discussed how nephrologists make less money now because they no longer "own dialysis units" (group 2). Residents believed nephrology paid the same or less than hospital medicine, and expressed they did not want to do more training for less money. It was felt that people did not go into nephrology for the money but rather for intellectual reasons and academics. Residents who had done a renal elective did not have the perception of low compensation. These participants discussed that the monetary benefit was actually very good, and they learned this during their elective. Two residents who are pursuing a career in nephrology discussed how they were not concerned with compensation and that did not influence their decision.

Nephrology Is Too Complex

Residents expressed that not only was the physiology difficult, but the patients were also complex and difficult. All of the residents had a renal physiology/pathophysiology course in medical school. Most felt that it was challenging and overwhelming. "Renal physiology was so hard. Like real hard" (group 3). Some of the residents said the renal course influenced them against nephrology. Many recounted that what they learned was not clinically relevant to future patient care and thus they could not see themselves as nephrologists. Participants discussed that, even in residency, nephrology still seems too complicated. "Too many numbers [they just rattle] off numbers, rapid-fire math in their head. It's just not how I think" (group 2). Residents also discussed that they do not manage nephrology-related issues a lot on their own, so they do not feel comfortable with nephrology. Some also felt that the complexity drives people away from the field. Several residents mentioned that they did not think they were smart enough to be a nephrologist (groups 2 and 3).

Residents also discussed how caring for patients with kidney disease is challenging, and not just from a physiology standpoint. They commented on psychosocial effects of dialysis, including the large prevalence of depression they

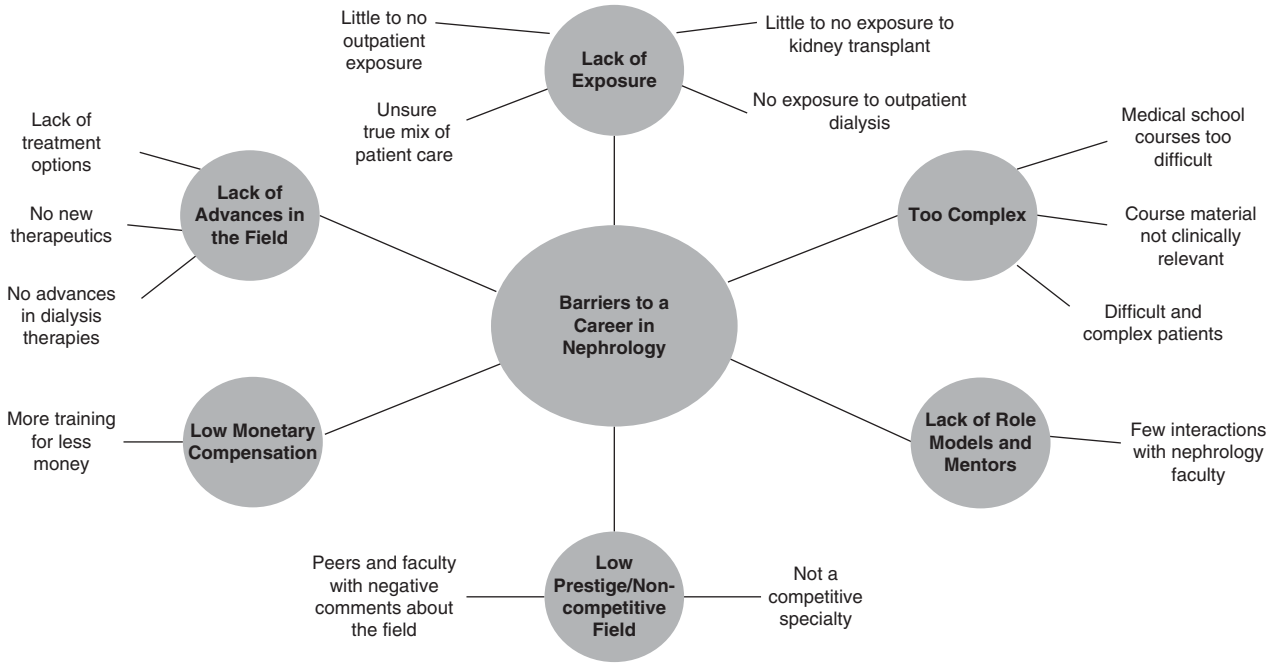

Figure 1. | **Summary of the six themes identified as barriers to a career in nephrology.**

see in dialysis-dependent patients. Others expressed frustration with compliance in patients with kidney disease. Residents also discussed that nephrologists did a lot of comanaging of disease, with other specialties "driving the ship" (group 2).

Lack of Role Models/Mentors

Lack of role models and mentors was also seen as a barrier. Most residents responded that mentors were very important in choosing their field. Only three residents had a role model within nephrology. Of these, two are pursuing a career in nephrology, and they emphasized how important mentors were in making their decision.

Residents also discussed how important interactions with fellows were in choosing career pathways. They demonstrated how positive interactions with fellows, who like to teach and take time to talk with them, really do matter. However, some residents pointed out that their interactions with nephrology fellows were more mixed. Several felt that the fellows were often very busy and did not always take the time to teach them.

Low-Prestige/Noncompetitive Field

Residents in all four groups discussed how nephrology is not a competitive specialty, having been told this by peers and faculty. Residents discussed that the stigmatization of a field as nonprestigious and noncompetitive turns people away from it. One commented "[for example] family medicine kind of gets a bad rap. I think nephrology is . . . nowhere near that but . . . it's just this cultural thing that we grow up [with] within our [training]" (group 1). During group 3, the residents recalled attending a recent fellowship session with internal medicine core faculty. The faculty made a demeaning comment to a resident going into nephrology about the field being so uncompetitive that it did not matter who wrote letters of support. Another resident replied, "[s]ome people say it's a dying specialty" (group 2).

Increasing Interest in Nephrology

Earlier and More Exposure

Residents in all focus groups felt that increased exposure to nephrology would be a great way to increase interest. Specific ideas residents discussed were first to make nephrology more clinically relevant for the learner and to change how it is taught. Residents commented on having more discussion of nephrology as a career choice in medical school. All groups suggested increased exposure to outpatient nephrology, including outpatient clinics, dialysis, and kidney transplant. Residents also suggested enhancing the outpatient clinical experience so they can see more interesting nephrology cases.

Residents in all groups also discussed the addition of a required 2-week selective nephrology rotation. The residents believed this would allow for increased exposure to develop skills in a specialty that was felt to be universally important, regardless of future career plans.

Enhanced Interactions with Nephrology Faculty and Fellows

Another theme that surfaced in all groups is enhanced interactions with the nephrologists, both fellows and attendings. Specific ideas mentioned included nephrologists being more involved with cases at noon conferences and going through the process that an expert uses to solve the case. They also requested more in-person interactions to talk about recommendations and to offer the opportunity for the learner to ask questions. Residents also suggested inviting learners to look at biopsy specimens and to teach them to spin a patient's urine in the laboratory.

Table 2. Selected participant quotations for each barrier theme identified

Theme	Quotations	Focus Group Contributing to Theme
Lack of exposure	"One reason I haven't decided I wanted to do nephrology is that I didn't have a lot of exposure before I delineated down the pathways of subspecialties" (group 4) ". . . I think there is a big divide between what we are exposed to for nephrology on the inpatient side, probably to what it's like as an outpatient . . ." (group 1) "I would say exposure on the outpatient side is not only limited but poor" (group 2)	Groups 1–4
Lack of advances in the field	"I am mostly frustrated with the field itself. We can't fix AKI . . . the therapeutics that are there are limited, other than going to something like dialysis. So I am frustrated thinking about if I were to be a nephrologist, how much I can help people" (group 1) ". . . The same diuretics, same anti-hypertensives, . . . so I don't have a great sense of where the field of nephrology is going" (group 2) "It's kind of crazy that it's dialysis, it's been around forever. Like, the fact that there haven't been any advances in dialysis" (group 1).	Groups 1–4
Low monetary compensation	"I used to think [nephrology] was interesting, but it's a long fellowship and you don't make any more money than you would as a hospitalist . . . I'm not going to do more school for less money" (group 1) "I am morally opposed to doing more training for less money" (group 2) "If you go into a nephrology fellowship, you're not going to make money, and I think that has overall made it less popular" (group 3)	Groups 1–4
Too complex	"It was just really in depth and confusing to tackle all that as a med student . . . I thought this is so crazy, and I don't think I can be a nephrologist" (group 1) "Our renal lecture-based stuff is very biochemical and not very clinical" (group 2) "I don't, honestly, think I am smart enough to do [nephrology]" (group 3) "When I hear like that level of physiology . . . it's going to maybe attract the right people. It could also turn away a lot of people that maybe the field needs at this point . . . if it's not actually important that you have that level of intensity of physiology for management of CKD" (group 4) "[W]e know people don't do well on dialysis very long term, so I was always worried about establishing connections with people, very sick people, that likely won't be there in maybe 5 years" (group 1)	Groups 1–4
Lack of role models/ mentors	"I chose hospital medicine because some of my mentors, some of my best teachers in medical school were all hospitalists" (group 1) "I think having mentors super early on [in medical school] helped me kind of guide where I wanted to go for my career and residency" (group 2) "That is what really drove me to choose my field [allergy and immunology], was that the types of interactions with faculty were just overwhelmingly positive . . . and it was like hey this is something you enjoy and the people are really cool so I might as well go for it" (group 4)	Groups 1–4
Low-prestige/ noncompetitive field	"People who feed into [nephrology] are not necessarily competitive applicants, and then it kind of gets this bad rap as like a not that great specialty which is a really unfortunate cycle" (group 3) "Years of build up against nephrology, like it's a very unsexy field" (group 2) "There are some sentiments towards [nephrology] since that isn't one of your highly competitive really sought after specialties . . . it's almost stigmatized and faculty are like 'Why are you doing that?' or they're like 'Oh well that's a waste'" (group 4)	Groups 1–4

Research and Advancements in the Field

Residents expressed frustrations with the lack of advancements in nephrology. They felt it would be helpful if nephrologists shared new therapeutics and other advancements in the field with them. Residents suggested having nephrology advertise research projects or case reports to residents, in a similar manner to other specialists. They explained this would showcase new research and advancements, and also increase exposure to nephrology faculty and fellows.

Discussion

Our study extends what is known about perceived barriers to a career in nephrology. It underlines the importance of lack of exposure and the perception of a lack of new innovations and low monetary compensation in the field. We also identified a new barrier: the perception of nephrology as being a low-prestige and noncompetitive field. Residents used the word stigmatized to describe nephrology. Another unique aspect of our study is that we asked residents about ways to increase interest in the field; strategies to increase interest based on our results are summarized in Table 4.

Our results suggest that increased exposure to nephrology is essential. Residents consistently discussed lack of exposure to nephrology, primarily outpatient nephrology. Only those who had done a renal elective had outpatient exposure to patients on dialysis and those undergoing kidney transplant. Interestingly, residents did not know how nephrologists spend their time. When residents have no idea what a nephrologist really does, or the breadth of diseases they treat, it is not surprising they are not choosing a career in nephrology.

Other studies also found lack of exposure to be a major barrier to a career in nephrology (11). Studies of other

Table 3. Selected participant quotations for themes on increasing interest

Theme	Quotations	Focus Group Contributing to Theme
Earlier and more exposure	"... A 2-week nephrology rotation, even if it's like inpatient, I think that would be pretty useful . . . I still struggle with kidney stuff because I've never done an elective" (group 1) "I think if there's more exposure to transplant. It's like a multidisciplinary special section of transplant or of renal, and I think it's also very medicine and less chronic" (group 2) ". . . I do feel like I hear a lot of people saying like, 'Oh, dialysis is really depressing.' You know, because I feel like we see so much inpatient dialysis way more than outpatient dialysis, and that is . . . that can be really depressing. But there's like a lot of outpatient people who do really well on dialysis" (group 2) "I think there's probably some sales pitch to be made somewhere talking about the actual advantages and what's exciting about it [nephrology]" (group 4)	Groups 1–4
Enhanced interactions with nephrologists	". . . As much as possible getting recommendations on the phone or in person . . . where it is completely nonjudgmental and where we just feel like we're able to approach them and learn something from every time we consult" (group 1) ". . . but there's like plenty of opportunities for the nephrologists and the nephrology fellows to come talk to the internal medicine residents who are not on the nephrology rotation. Like we have noon conference and we have the Wednesday education sessions" (group 2) "I think the consulting services, the attending, or the fellows should just kind of invite the med students or the residents to come and watch them spin the urine. Or like give a quick like, you know, 5 min backstory on pathophys for like this patient's condition that we're consulting on" (group 3) "Those incredibly teaching-focused, incredibly physiology-focused fellows. They are there and that's amazing and that's I think the biggest selling point for nephrology" (group 4)	Groups 1–4
Research and advancements in the field	"We just had grand rounds about them coming out with a drug for AKI. I mean, not anytime soon, but . . . that was pretty interesting. I thought there was some . . . awesome research" (group 1) ". . . I kind of wonder if it would be helpful for nephrologists to like pump up their own specialty. Like, 'Hey, this is why nephrology is so cool.' 'Oh, I saw this really weird nephrotic syndrome last week. You should do a case report on it, it's so cool'" (group 2) "What's new? Are there new treatments coming down the line? Don't know of them, but like selling some excitement about change and what somebody could look forward to in a career in that field" (group 4)	Groups 1–4

specialties, particularly infectious disease and geriatrics, also found the importance of early exposure (12,13). Early exposure to nephrology role models and mentors is also very important. In our study, only three residents reported a role model or mentor in nephrology. However, two out of these three residents are pursuing a career in nephrology, emphasizing how important role models are. Faculty should be encouraged to be research mentors, clinic preceptors, and clinical coaches for medical students and residents. Additionally, restructuring nephrology rotations to provide both inpatient and outpatient experiences and exposing learners to home dialysis, kidney transplantation, and outpatient specialty clinics may have a positive effect on interest in nephrology.

Lack of advancements in research and therapeutics was seen as a huge barrier for a career in nephrology. Advances in therapeutics in other specialties, such as oncology, were thought to have made those fields more competitive. Residents were not aware of new therapeutics or exciting research going on in nephrology. Using larger platforms such as medicine grand rounds and noon conferences may be a way to showcase advances in the field to larger audiences. Enhancing nephrology faculty interactions with residents and offering case reports and research projects may also increase interest.

Nephrology was seen to be very difficult, both in terms of the physiology involved and the patient population. Other studies found that internal medicine residents have negative views of patients with kidney disease (6,11). Increasing exposure to patients with kidney problems in the outpatient setting may help decrease this negative view. Many of the residents discussed that the kidney physiology/pathology course in medical school was very difficult and overwhelming. Because only three of the participants attended medical school at CU, this was not unique to our institution. Several studies have found that learning experiences in medical school, and the way subjects are taught, influence interest in the field (12). Changing how nephrology is taught by making it more clinically relevant may have a positive effect on the perception of nephrology. Several of the residents in our study commented that they were not smart enough to go into nephrology. This is a perception that must be eliminated.

Similar to prior surveys, we found that low monetary compensation was a significant deterrent to a career in nephrology (8,9). Residents did not want to do more

Table 4. Suggestions for increasing interest in nephrology

Suggestions
Earlier and more exposure
Exposure in medical school
Invite patients to participate in small groups or panels to share their diagnoses
Make material more clinically relevant for the learner
Discuss nephrology as a possible career choice
Nephrology faculty should participate in lectures, small groups, preceptors, and research projects with students
Exposure in residency
Increase outpatient experience (kidney transplant, dialysis, specialty clinics)
Addition of a required 2-wk selective rotation
Nephrology faculty and fellows leading case conferences
Enhanced interactions with nephrology faculty and fellows
Nephrology faculty and fellows leading noon conferences
Nephrology faculty giving core lectures on education days
More phone or in-person interactions to discuss recommendations and offer the opportunity for the learner to ask questions
Invite learners to watch biopsies, review the pathology slides, and teach them to perform urine sediments
Advertise research projects or case reports to residents to facilitate involvement in scholarship
Nephrology faculty acting as mentors and clinical coaches
Research and advancements in the field
Discuss upcoming therapeutics and advancements in the field with the residents (during medicine grand rounds, noon conferences, and during inpatient and outpatient interactions with residents)
Advertise research projects and interesting case reports to residents

training for less money but, interestingly, those who had done a renal elective did not share this perception. Unlike other studies, we did not find that work/life balance was a significant barrier (8,9).

A new theme that emerged is that nephrology is seen as a less prestigious specialty. This lack of prestige for nephrology was off-putting for residents. Residents recounted how other faculty and specialists made negative comments regarding nephrology. This has been found to be a deterrent to specialty choice in other studies (14–16). A study in Canada found that lack of prestige and respect was a large deterrent for pursuing general internal medicine (15). One study examining students' perceptions of family medicine found that students considered family medicine to be an inferior choice, and it was considered as a second career option if their first choice was not available (16). In nephrology, we have seen, over the past several years, that many candidates were applying for other subspecialties and nephrology was the second choice (3). Although lack of competitiveness and prestige may be difficult to change, our results suggest this is a critical area the nephrology community should focus on. Promoting nephrology to medical students, raising the profile of nephrologists on care teams in training settings, engaging other specialists to make them aware of the importance of nephrologists, and offering nephrologists adequate renumeration may help raise the profile of nephrology.

Our study has several limitations. First, only residents from CU were included and thus our results may not be transferable to all residents in the United States. Second, we did not divide groups based on year of residency and only had four first-year residents participate. Third, we did not have any foreign medical graduates participate. Notwithstanding these limitations, our study also has several strengths. To our knowledge, it is the largest qualitative study performed on this topic. We also included residents both interested and not interested in a career in nephrology. Finally, the participants were from medical schools all over the United States.

The findings from our qualitative study improve our understanding of internal medicine residents' perceptions, attitudes, and barriers to a career in nephrology. We also identified potential interventions that could be applied to increase interest in nephrology. Future qualitative studies should be performed in other areas of the United States to see if similar barriers are identified.

Disclosures

All authors have nothing to disclose.

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Author Contributions

N. Beck was responsible for investigation; N. Beck and J. Kendrick were responsible for data curation; M. Chonchol and S. Furgeson were responsible for validation; M. Chonchol and J. Kendrick were responsible for funding acquisition; J. Kendrick was responsible for methodology and provided supervision; and all authors conceptualized the study, were responsible for formal analysis, wrote the original draft, and reviewed and edited the manuscript.

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