Title

The Heart of the Center: Exploring the Role of the Patient Care Technician in US Dialysis Care.

Journal

Kidney Medicine, 7(1)

Authors

Urbanski, Megan
Blythe, Emma
Hamblin, Alicia
et al.

Publication Date

2025

DOI

10.1016/j.xkme.2024.100934

Peer reviewed

"The Heart of the Center": Exploring the Role of the Patient Care Technician in US Dialysis Care

Megan Urbanski, Emma Blythe, Alicia Hamblin, Alexis A. Bender, Courtney Hoge, Clarica Douglas-Ajayi, Fran Rickenbach, Jessica Joseph, Kelli Collins Damron, Jennifer Craft Morgan, Bernard Jaar, and Laura Plantinga

Rationale & Objective: Dialysis patient care technicians (PCTs) provide essential, frontline care for patients receiving in-center hemodialysis. We qualitatively explored perceptions of the PCT job role, responsibilities, and training among current PCTs, non-PCT dialysis staff, and patients receiving hemodialysis.

Study Design: Focus group study.

Setting & Participants: Discussions were conducted in March–May 2023 among US PCTs, non-PCT staff, and patients.

Analytical Approach: Thematic analysis was conducted using inductive and deductive strategies.

Results: Seven focus groups (N = 36 participants) were conducted (3 with PCTs [n = 19], 2 with non-PCT staff [n = 6], and 2 with patients [n = 11]). Eight themes emerged: (1) value of PCT role is not reflected in job or organizational policies and structures; (2) PCTs play a flexible and often ill-defined role in dialysis clinics; (3) despite being in a position with high risk of burnout, PCTs find ways to persevere and provide high-quality care; (4) PCTs are often perceived as "helpers" or ancillary rather than an integral part of the dialysis care team; (5) PCT job training and qualifications are not standardized and often not commensurate with job expectations and responsibilities; (6) PCT-patient relationships are deeply valued, but boundaries can be fluid and become blurred because of the frequency and nature of dialysis care; (7) dialysis patients and staff are vulnerable to multilevel workplace safety issues; and (8) PCT-staff dynamics have a strong impact on employee morale, clinic efficiency, and patient satisfaction.

Limitations: Non-English-speaking participants and physicians were excluded, limiting diversity in perspectives.

Conclusions: PCTs play a multifaceted role in dialysis care that is highly valued among patients and staff but not always reflected in actual tasks performed by PCTs, training received by PCTs, or the respect afforded to PCTs. Our findings are actionable and can inform future intervention-based work aimed at improving the PCT role in US hemodialysis care.

Complete author and article information provided before references.

Correspondence to M. Urbanski (megan.urbanski@emory.edu)

Kidney Med. 7(1):100934. Published online November 14, 2024.

doi: 10.1016/j.xkme.2024.100934

In 2019, burnout and staffing shortages among the US health care workforce had reached "crisis levels" and[1] the pandemic exacerbated this crisis, increasing work demands and working hours, particularly among frontline workers.[1,2] In response, the US Surgeon General released an urgent Advisory that included a recommendation for researchers to investigate issues currently faced across the US health care workforce.[2]

Dialysis patient care technicians (PCTs), who provide life-sustaining health care services to the nearly 500,000 US patients receiving in-center hemodialysis, represent an understudied, yet critical, segment of the frontline US health care workforce.[3] US PCTs spend substantial time chairside with patients, overseeing the technical and logistical aspects of dialysis, including cannulation of the dialysis access; cleaning, maintaining, and setting parameters on hemodialysis machines; and measuring vital signs and monitoring patients during treatment. We previously found high levels of burnout (58%) and low levels of professional fulfillment (37%) in a survey of 228 dialysis PCTs, with nearly half (47%) indicating they do not plan to be working as a PCT within the next 3 years.[4] However, little is known about the on-the-ground, lived experiences of PCTs or their interactions with colleagues and the patients for whom they care. These data are critical for improving our understanding of how to reduce burnout, increase professional fulfillment, and ultimately retain these essential members of the dialysis care team – without whom US hemodialysis care delivery would be impossible. This study aimed to fill this important knowledge gap by qualitatively exploring perceptions of the PCT job role, responsibilities, training, staff and patient relationship dynamics, and workplace safety issues among US dialysis PCTs, non-PCT dialysis staff, and patients receiving in-center hemodialysis.

METHODS

Study Overview

This focus group study was informed by a simplified version of the Institute of Medicine's Quality of Care Framework put forth by the Agency for Healthcare Research and Quality to promote quality health care and includes domains related to safety, effectiveness, timeliness, efficiency, patient-centeredness, and equity (Table 1).[5-7] The study adhered to the Consolidated

PLAIN-LANGUAGE SUMMARY

In the United States, patient care technicians (PCTs) spend the most chair-side time with patients receiving hemodialysis, but little is known about the role of patient care technicians (PCTs) in dialysis care. We conducted 7 focus groups with US PCTs, other dialysis staff, and patients receiving hemodialysis. Discussions showed that the PCT role is highly valued among dialysis staff and patients, but this is often poorly reflected in organizational structures. PCTs also often work outside of their scope and training. Additionally, PCTs and patients form strong bonds, but these relationships are sometimes viewed as problematic. Results highlight the complex, valuable role PCTs play in US dialysis care, as well as areas to improve to ultimately improve patient care.

Criteria for Reporting Qualitative Research (COREQ) (Item S1), was conducted from March to May 2023, and received approval from the Emory University Institutional Review Board.[8] Verbal informed consent was obtained from all study participants.

Participants and Setting

Participants were purposively sampled and included English-speaking adults (≥18 years) with access to the internet who identified as currently working as PCTs or other dialysis staff roles (eg, social workers, dietitians, nurses) or who were currently receiving in-center hemodialysis in a US dialysis clinic. Participants were recruited via email invitation and social media postings from various patient and professional advocacy organizations, as well as a modified snowball approach using personal contacts. We aimed to capture diversity in participant experience based on race, ethnicity, gender, geography, number of years working in the field and role (staff participants), and number of years receiving in-center hemodialysis (patient participants). There were no known pre-existing relationships between the study team and participants. Participants were made aware of the study's purpose and goals. No characteristics about the moderators were provided to participants.

Data Collection

Focus groups were conducted via HIPAA-compliant Zoom, audio-recorded, and transcribed verbatim. Focus groups were moderated by a female, PhD-trained qualitative researcher and former nephrology social worker and current Assistant Professor (MU). A second member of the study team, a female epidemiologist with extensive experience conducting nephrology research (LP) was also present to take field notes. Moderator guides were informed by the simplified Quality of Care Framework and a review of the extant literature and included the following domains: PCT role and responsibilities, PCT training, and patient and staff relationship dynamics and workplace safety (Table 1; Item S2).[5-7] Moderator guides were pilot tested among colleagues with expertise in nephrology and workforce issues and iteratively refined. Relevant participant characteristics were collected and managed using REDCap electronic data capture tools hosted at Emory University.[9,10] Focus groups lasted an average of ∼78 minutes. Transcripts were not returned to participants for review.

Data Analysis

Participant characteristics were analyzed using frequencies and counts for all categorical variables with SAS version 9.4 (SAS Institute, Inc). Thematic analysis was used to analyze the qualitative data.[11] Data collection and analysis occurred concurrently until saturation. An initial codebook was developed using a priori codes informed by the domains of the study's theoretical framework (Table 1) and questions in the moderator guides.[5-7] Transcripts were reviewed independently by two members of the research team (EB and MU) to inductively identify emergent salient codes and the codebook was iteratively refined. Intercoder reliability was assessed using percent agreement before coding all transcripts. Two coders (EB and AH) independently coded all transcripts and discrepancies in code application were resolved via discussion to consensus. Coded segments were aggregated into categories within the domains of the research question and synthesized into themes. Structured comparisons identified similarities and differences among the three participant groups. All qualitative data were managed using MAXQDA 2020 software.[12]

Table 1. Mapping of Study Framework to Original and Simplified Institute of Medicine Framework[5-7]

Original IOM Quality of Care Framework Domains[5]	Simplified Framework Domains[6,7]	Study Framework Domains
Effectiveness	Care that is proven to work	PCT roles and responsibilities
Timeliness		
Efficiency		
Patient-centeredness	Care that is responsive to a patient's needs and preferences	Patient and staff dynamics and workplace safety
Equity		
Safety	Care that protects patients from medical errors and does not cause harm	PCT training

IOM, Institute of Medicine; PCT, patient care technician.

RESULTS

Participant Characteristics

Seven focus groups were conducted (3 with PCTs [N = 19], 2 with non-PCT dialysis staff [N = 6; social workers: n = 3, dietitians: n = 2, advanced practice provider: n = 1], and 2 with patients currently receiving in-center hemodialysis [N = 11]). Most participants were aged 35 to 49 (n = 15, 41.7%) and identified as female (n = 20, 55.6%), White (n = 18, 50.0%), and non-Hispanic (n = 31, 86.1%). About half of all PCTs (n=9, 47.4%) and non-PCT staff (n=3, 50.0%) had been working in their role for ≥5 years. Most PCTs and non-PCT staff reported working in a for-profit dialysis clinic (n = 13, 52.0%). More than half of patients had been receiving dialysis for between 1 and 5 years (n = 6, 54.6%) (Table 2).

Focus Group Discussion Themes

Analysis showed eight major themes. For clarity, we have organized them below according to the study domains of PCT roles and responsibilities, PCT training, and patient and staff dynamics and workplace safety (Table 1). See Table 3 for themes and corresponding illustrative quotations.

Domain 1: PCT Roles and Responsibilities

Theme 1: The value of the PCT role is not reflected in the title or organizational policies and structures

Participants in all groups viewed PCTs as vital members of the team. PCTs were viewed as "frontline" workers or the "heart of the clinic" by dialysis staff and patients, but participants across all groups agreed that their title does not sufficiently reflect the extent of technical and interpersonal work that they do. All groups commented that PCTs are perceived as undervalued, because of low pay and lack of credit for their work. Participants in all groups advocated for a title change that captures the expertise and professionalism inherent to the PCT role and responsibilities. Participants also noted that this change may inspire other changes, including increased compensation and respect from other dialysis care staff and patients.

Theme 2: PCTs play a flexible and often ill-defined role in dialysis clinics, acting as "all-in-one" employees

Participants explained that the roles and responsibilities of PCTs were often unclear to PCTs, their colleagues, and patients; additionally, they described conflict when there was discordance between role expectations and actual tasks performed. PCTs reported that they often felt pressured to act as other members of the dialysis care team (eg, social worker, dietitian) because of staffing shortages and patient and staff expectations. However, non-PCT staff expressed concern for patient care and safety when PCTs acted outside of their prescribed role and performed tasks for which they were untrained. Patients often expressed uncertainty regarding the boundaries of the PCT role and other dialysis staff roles.

Theme 3: Despite being in a position with high risk of burnout, PCTs find ways to persevere and provide high-quality care to patients

Participants acknowledged that the work environment for PCTs is often stressful because of frequent staffing shortages coupled with unrealistic patient and staff expectations that arise from their visibility as frontline workers in the clinic. Although participants noted these factors could lead to PCT burnout, PCTs reported relying on internal motivators and rewards, including finding joy in their work and personal satisfaction in caring for and developing strong relationships with patients, to combat burnout. Non-PCT staff and patients reported occasionally trying to alleviate stress on PCTs. For example, patients indicated that they would offer an encouraging word or affirmation if a PCT is particularly stressed or overwhelmed. Despite difficult working conditions, many PCTs reported that they still felt highly satisfied with their jobs and that they strive to provide quality care, and this was recognized by non-PCT staff and patient participants alike.

Theme 4: PCTs are often perceived as "helpers" or ancillary rather than an integral part of the dialysis care team

Despite being an integral part of the dialysis care team and having the most chairside time with patients, PCT and non-PCT staff commented that PCTs are often considered merely "helpers" to other team members. All groups commented that PCTs commonly serve as a liaison or messenger between patients and other dialysis staff, which may contribute to this view. PCTs described constraints of the hierarchy of the dialysis clinic, which often puts them at the mercy of supervising nurses, nephrologists, or clinic leadership who may have conflicting demands and expectations. Most participants felt that PCTs are grossly underutilized, as evidenced by their lack of involvement in broader clinic initiatives and goals, representing a missed opportunity to improve the quality of patient care.

Domain 2: PCT Training

Theme 5: PCT job training and qualifications are not standardized and often not commensurate with job expectations and responsibilities

Participants across groups expressed concern that PCTs often lack adequate training to complete job responsibilities, in large part because of inconsistent professional and employment requirements, lack of time, staffing shortages, and lack of incentive. Patients reported that the lack of consistent and adequate training can lead to unease, fear, and mistrust of PCTs who they deem to be undertrained or inexperienced. PCTs explained that they often feel inadequately trained to complete their job responsibilities. Specifically, because of the frontline nature of their role and the substantial time spent with patients,

Table 2. Characteristics of US Dialysis Patient Care Technicians and Other Hemodialysis Clinic Staff and of US Patients Receiving Hemodialysis who Participated in Seven Focus Groups

Characteristic n, (%)	Total N = 36	PCTs[a] N = 19 (76.0%)	Dialysis Staff N = 6 (16.7%)	Dialysis Patients N = 11 (30.6%)
Role				
Patient	11 (30.6)	—	—	11 (100.0)
Staff	25 (69.4)	—	—	—
APP[a]	1 (4.0)	—	1 (16.7)	—
Dialysis PCT	19 (76.0)	19 (100.0)	—	—
Dietitian	2 (8.0)	—	2 (33.3)	—
Social worker	3 (12.0)	—	3 (50.0)	—
Length of time in role (staff)				
Age (y)				
18-34	10 (27.8)	7 (36.8)	1 (16.7)	2 (18.2)
35-49	15 (41.7)	9 (47.4)	3 (50.0)	3 (27.3)
50-64	7 (19.4)	2 (10.5)	2 (33.3)	3 (27.3)
65+	4 (11.1)	1 (5.3)	0 (0.0)	3 (27.3)
Gender				
Female	20 (55.6)	6 (31.6)	6 (100.0)	8 (72.7)
Male	16 (44.4)	13 (68.4)	0 (0.0)	3 (27.3)
Race				
American Indian/ Alaska Native	2 (5.6)	2 (10.5)	0 (0.0)	0 (0.0)
Asian	2 (5.6)	1 (5.3)	1 (16.7)	0 (0.0)
Black/African American	13 (36.1)	7 (36.8)	1 (16.7)	5 (45.5)
Hawaiian/Pacific Islander	2 (5.6)	2 (10.5)	0 (0.0)	0 (0.0)
White/Caucasian	18 (50.0)	8 (42.1)	4 (66.7)	6 (54.6)
Other	1 (2.8)	0 (0.0)	1 (16.7)	0 (0.0)
Prefer not to say	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
Ethnicity				
Hispanic/Latinx	3 (8.3)	2 (10.5)	1 (16.7)	0 (0.0)
Not Hispanic/Latinx	31 (86.1)	15 (79.0)	5 (83.3)	11 (100.0)
Prefer not to answer	2 (5.6)	2 (10.5)	0 (0.0)	0 (0.0)
<6 months	0 (0.0)	0 (0.0)	0 (0.0)	—
6-12 months	2 (8.0)	2 (10.3)	0 (0.0)	—
1-5 years	11 (44.0)	8 (42.1)	3 (50.0)	—
5+ years	12 (48.0)	9 (47.4)	3 (50.0)	—
Duration of dialysis (patient)				
<6 months	1 (9.1)	—	—	1 (9.1)
6-12 months	2 (18.2)	—	—	2 (18.2)
1-5 years	6 (54.6)	—	—	6 (54.6)
5+ years	2 (18.2)	—	—	2 (18.2)
Region[b]				
Midwest	4 (11.1)	2 (10.5)	2 (33.3)	0 (0.0)
Northeast	8 (22.2)	5 (26.3)	1 (16.7)	2 (18.2)
South	12 (33.3)	6 (31.6)	1 (16.7)	5 (45.5)
West	10 (27.8)	6 (31.6)	2 (33.3)	2 (18.2)
Missing	2 (5.6)	0 (0.0)	0 (0.0)	2 (18.2)
Clinic type				
Acute inpatient/hospital-based	8 (22.2)	7 (36.8)	1 (16.7)	—
Outpatient/freestanding	19 (52.8)	14 (73.7)	5 (83.3)	—
Outpatient/hospital campus	11 (30.6)	10 (52.6)	1 (16.7)	—
Dialysis organization type				
For-profit	13 (52.0)	10 (52.6)	3 (50.0)	—
Not-for-profit	10 (40.0)	8 (42.1)	2 (33.3)	—
Government/Veterans' Affairs	1 (4.0)	1 (5.3)	0 (0.0)	—
Unsure	1 (4.0)	0 (0.0)	1 (16.7)	—

Northeast: CT, ME, MA, NH, RI, VT, NJ, NY, PA.
South: DE, DC, FL, GA, MD, NC, SC, VA, WV, AL, KY, MS, TN, AR, LA, OK, TX.
West: AZ, CO, ID, NM, MT, UT, NV, WY, AK, CA, HI, OR, WA.
[a]APP, advance practice provider; PCT, patient care technician.
[b]Midwest: IN, IL, MI, OH, WI, IA, NE, KS, ND, MN, SD, MO.

Table 3. Themes and Illustrative Quotations

Study Domain	Theme	Quotes
PCT Roles and Responsibilities	**Theme 1. The value of the PCT role is not reflected in the title or organizational policies and structures.**	• "…I think they do a lot more than…when I think of a technician personally, I think of someone who is technical… So, they are, I don't know, working on a machine or, you know, which they do, but I think that the term itself doesn't really capture all that they do because they— in my sense, they do a lot more than just deal with a machine. They're dealing with a patient and the machine happens to be part of that interaction. But the term itself, I think it kind of maybe detracts from, you know, thinking more about the depth of that role…" (Non-PCT Dialysis Staff) • "But sometimes, when these jobs are done or when you are done with these jobs, aside from the fact that you're not gettin', maybe, paid for, all the time, like, what you're supposed to get, but when these jobs are done, sometimes the nurses will come in and take credit for it." (Dialysis PCT) • "…You know, they're really involved a lot with our health and safety. And maybe they—you know, we might get into this later, but, their title, really, should be changed and upgraded so they, maybe, could get some pay raises that are much needed." (Dialysis Patient) • "For me, they are, like, the heart of the center—of the dialysis facilities. And I say this because, uh, so many facilities have had to shut down because they didn't have enough techs…So that lets you know, without the technicians, the dialysis facilities cannot run." (Dialysis Patient)
	Theme 2. PCTs play a flexible and often ill-defined role in dialysis clinics, acting as "all-in-one" employees.	• "Yeah, I think is similar with like nutrition. I've had techs give nutrition information that might be sound but might not apply to that person…And then we did have something come up in another building where somebody like instructed somebody on an infection of a catheter or something. It was like way out of the-out of their lane." (Non-PCT Dialysis Staff) • "I would say that there's a lot of tasks that entails, you know, with our profession as a renal technician. For example, you heard about the peers mentioned. About doing the puncture, vital signs. We are also social workers. We are also therapists. We're also counselors. We are a shoulder to cry on. We are…a person to listen to on a day-to-day basis for years." (Dialysis PCT) • "…We think we wanna do more. You know? We-we are licensed as a clinical, as a technician, certified dialysis technician, but we do a lot of roles that we think we could get to do more. So you know what we do, a lot of us? We take on other little, small roles. Fluid management, making sure the patients are staying within range of their fluid. Transplantation. Just having that conversation. Having the patients get ready and prepared to go and think about transplant. So we wear a lot of different hats." (Dialysis PCT)
	Theme 3. Despite being in a position with high risk of burnout, PCTs find ways to persevere and provide high quality care to patients.	• "I think one thing that maybe sticks out to me as something that they could be pushing me to do was, and particularly when you get into the cities and there is lack of ratio, so they may then just require PCT, you know, to be in the position to work with maybe seven-to-one. So I can see that, like, being stretched too thin… that you are, you know, potentially pushed way beyond your capabilities." (Dialysis PCT) • "You know, technicians aren't the greatest paid, individuals in health care. And so we stay in dialysis not because of the pay, but because we love what we do. We care for our patients. And, you know, I think we're somewhat of altruistic bunch of people because, again, it's not the pay." (Dialysis PCT) • "We're, you know, lucky they're there, and they're all very pleasant. It's remarkable, considering the work conditions." (Dialysis Patient)
	Theme 4. PCTs are often perceived as "helpers" or ancillary rather than an integral part of the dialysis care team.	• "I hate to say this, but, for the more general terms or general experiences, nephrologists and technicians do not engage with each other as intimately as social workers and nurses do with physicians. We're still, 'til this day, after all these years, looked upon as helpers, not as part of the IDT [interdisciplinary team]. We're not part of the team. We're helpers." (Dialysis PCT) • "They [nephrologists] interact with the charge nurse, the clinic manager but the techs are kind of someone they don't even talk to…So, I don't think there is a relationship, at least at our clinic between nephrologist and techs. I've never seen it." (Non-PCT Dialysis Staff) • "I was just telling someone, like, our clinics would not be able to run without them. They—I feel like they don't deserve—they don't get the credit they deserve. They just are the ones that are with the patients every single day. They spend the most time with them. They're the reason I know what's going on 98 percent of the time." (Non-PCT Dialysis Staff)

(Continued)

Kidney Medicine

Table 3 (Cont'd). Themes and Illustrative Quotations

Study Domain	Theme	Quotes
PCT Training	**Theme 5. PCT job training and qualifications are not standardized and often not commensurate with job expectations and responsibilities.**	• "You know, I think it is important for them to be able to understand, like, the labs that are coming back, their diet, because they have the most contact with these patients. The patients build a great rapport with them, and they are going to ask some questions. And, sometimes, the techs don't always give the most accurate information. Like, I've had a tech tell a patient—the patient said they were cramping, so the tech told them go home and drink a banana smoothie." (Non-PCT Dialysis Staff) • "And not everybody cares to learn it. And they're just kind of there to do their task list, you know. But the ones that interact with the patients—I mean, I've seen the same thing where they're just kind of saying the wrong thing to the patients… 'cause they're just making it up, you know, 'cause they haven't been educated." (Non-PCT Dialysis Staff) • "I wish they were more educated about, like, some of the health educational materials that we receive from, like, the social worker and, maybe, the dietitian. I wish they were more knowledgeable about, like, the handouts or education materials that we receive, even different treatment modalities." (Dialysis Patient) • "There needs to be a bigger emphasis and, maybe, some more training in regards to patients crashing and coding. I think it's talked about in theory, but it's not highlighted on enough... there's, no clear step by step, which I get 'cause, you know, it's not linear. But I think there needs to be bigger emphasis on when that actually happens 'cause dialysis is really hard on the heart, and a lotta people don't know that." (Dialysis PCT) • "I think the lack of incentives... I think I would imagine for across the board, just time and the incentive to come, when is your off day… But as far as having that training, I think that's doable. It is just those incentives, and there are no incentives, to have them come back and say, you know, 'You're gonna be here for three hours, but we'll pay you for eight.'" (Non-PCT Dialysis Staff)
Patient and Staff Dynamics and Workplace Safety	**Theme 6. The PCT-patient relationship is deeply valued, but boundaries can be fluid and blurred because of the frequency and nature of dialysis care.**	• "…We're the frontline caregivers, and that's who the patients actually open up to more so than the nurses and the doctors. They'll tell us things that they won't tell the nurses, the dietitians, the social workers. They'll tell us. So, yes, the technician was intimately involved with it because, again, we're closer to those people than most of the other caregivers." (Dialysis PCT) • "Our techs are really good. Like you say, your techs become your friends. They become your family." (Dialysis Patient) • "…But I do see patients like, you know, they don't they don't come with all of their stuff, you know, so maybe like halfway through, they want a paper towel or somebody opened my snack or somebody—and it's like, 'I want it right now.' I do see a lot of that. But, okay, well, hey, I'm with another patient, or maybe someone… you have to really prioritize, right? So, if one person's having a bleed or having a blood pressure change or something, then your cup of ice or something…I do see them a lot of times, like—and calling by name, like not even using their call light….It's just like, you know, "<Name>, <Name>." Or, you know, it's not any of our tech's names, but, you know, they're just very—so it becomes so personal, but then patients can be very, very demanding. And then, you know, why aren't you doing any—why aren't you doing these things for me?" (Non-PCT Dialysis Staff) • "I think, in my clinics, I've noticed they don't have the same ethical education that social workers have, so they don't maybe understand appropriate boundaries…in the way that higher—not higher educated but people that have gone to more school understand. So I've had techs take cash from patients before. They've built relationships outside of the clinic before, and I've always had to get involved and kind of explain to them why that's not okay and review the company policies on it." (Non-PCT Dialysis Staff)

(Continued)

Table 3 (Cont'd). Themes and Illustrative Quotations

Study Domain	Theme	Quotes
	Theme 7. Dialysis patients and staff are vulnerable to multilevel workplace safety issues, especially in understaffed clinics.	• "I've seen techs not using gloves or washing their hands…That is a big— concern for me— going from one machine to the next without using gloves—or washing your hands or sanitizing. Even pickin' up things off the floor and puttin' 'em back on the clean cart." (Dialysis Patient) • "As we always say, too, you know, when we leave, everybody leaves together. And, makin' sure we're lookin' at our surroundings. And if anyone have any problems, like, for example, we had one of our staff members car—had a car issue. Several of us waited until her car got taken care or what needed to be done instead of leaving them there alone by themselves. Just, you know, try to pair up with someone." (Non-PCT Dialysis Staff) • "So, one thing I think that I would like more training on would be, like, and this, may be a little far out—but for, like, a doomsday prep. So if you're— in your facility. You have something, you know, happen. You know? What are your expectations? How can you maintain your existence—and the patients in the facility? There's not really, like, a plan in place for that per se…I mean, they definitely have their emergency procedures and stuff of that nature. But real-life end of-end of days—and what does that look like?" (Dialysis PCT)
	Theme 8. PCT-staff dynamics have a strong impact on employee morale, clinic efficiency, and patient satisfaction.	• "I've experienced two different types of relationships…One is where the techs felt like they were bein' micro-managed, and it was a stressful environment from leadership or—yeah…And you could tell 'cause some of them—because they were so nervous and frustrated and afraid of different things that may happen or could happen with their job or position, they were makin' mistakes…but no one really stepped out to help each other… And then, on the other end, I've seen where staff members are engaging with each other. They are happy. They ask, 'What do you need help with?' and they help each other, and it just seems like a happy environment. I think that rubs off on the patients as well." (Dialysis Patient) • "You're lucky if you see the nephrologist or the medical director and they know your name." (Dialysis PCT) • "Well, we have an on-site home dialysis person, you know, who's kinda pushing—PD [peritoneal dialysis]. And, so, you know, I could just ask him if I had a question. So I don't know what you—I don't know if they're just not interested or that, maybe, they've been told not to say, you know—everything seems so specialized and compartmentalized— when I'm tryin' to ask doctors, even. It's like, 'Oh—that's not my area. You need to, know—talk to somebody else.'" (Dialysis Patient)

Kidney Medicine

they indicated that they feel ill-prepared to respond to specific patient needs and concerns (eg, inquiries regarding transplant). PCTs and non-PCT staff suggested that more in-depth training and continuing education requirements are necessary. PCTs cited hands-on training, manager involvement, and clinic culture to be most influential on training. PCTs also expressed a desire to learn more about mental health, patient safety, customer service, medical knowledge, and technical skills to better meet the needs of their patients as well as assist other dialysis team members. Time and staffing shortages were commonly cited as training barriers. PCTs provided recommendations for solving these barriers, referencing financial incentive, improved staffing coverage, and flexible at-home training.

Domain 3: Patient and Staff Dynamics and Workplace Safety

Theme 6: The PCT-patient relationship is deeply valued, but boundaries can be fluid and blurred because of the frequency and nature of dialysis care

Given the high frequency and long duration of contact between PCTs and patients, participants found that relationships between these groups often extend beyond the professional. PCTs and patients often cited each other as friends or family, and non-PCT staff noted this relationship as well. These personal relationships were described positively by PCTs and patients alike. Specifically, PCTs commented that their close relationships with patients enhanced feelings of job satisfaction and improved quality of life and patient care through mutual support. Patients indicated that they place more trust in their PCTs than other staff because of these close connections and spoke positively about the depth and importance of these relationships to their lives. Non-PCT staff perceived downsides of such close personal relationships and expressed concern that these relationships may be inappropriate, unprofessional, or unethical. They voiced concern regarding the potential for patients to develop higher expectations for PCTs with whom they are close. Non-PCT staff expressed concern regarding how the blurring of personal and professional boundaries between PCTs and patients may affect patient care and relationships with other staff.

Theme 7: Dialysis patients and staff are vulnerable to multilevel workplace safety issues, especially in understaffed clinics

Patients discussed facing multiple safety concerns in the dialysis clinic, including unsanitary conditions and PCT treatment errors. Patients and non-PCT staff explained that their concerns are often exacerbated by clinic staffing shortages. For example, participants indicated that patients may be placed in harm's way more often when PCTs are overworked and more prone to errors in their work. PCT and non-PCT staff shared the safety concerns of patients for potential clinic intruders and violent attacks, particularly when they are forced to operate with limited staff. PCTs equated their frontline role to a first responder in emergency situations (eg, active shooter) but expressed that they felt ill-prepared to deal with such situations. Additionally, patients and non-PCT staff mentioned they feel vulnerable to other emergencies such as natural disasters and acknowledged that this should be a clinic priority.

Theme 8: PCT-staff dynamics have a strong impact on employee morale, clinic efficiency, and patient satisfaction

PCTs reported a range of professional relationships with their colleagues but indicated they feel the strongest connections with social workers and dietitians (given their frequent communication around patient needs), followed by dialysis nurses and managers. Most PCTs did not feel they had a working relationship with the nephrologists in their clinic, with several commenting that the nephrologists likely do not know their names. Patients perceived relationships between dialysis staff as important to the functioning of the clinic. More efficient communication between staff and better teamwork and collaboration among members of the dialysis care team were often associated with reported feelings of positive morale and improved quality of patient care. Alternately, impersonal, and inflexible relationships between PCTs and other members of the care team, as well as siloed team roles, were also reported, along with reduced employee satisfaction and increased patient frustration with their care.

DISCUSSION

Our findings highlight that US PCTs play a critical role in the provision of hemodialysis care, and they are heavily relied on by their colleagues and patients. However, participants noted discordance between the perceived high value and contributions of the PCT role and the tangible and intangible recognition actually received. For example, participants in all groups expressed strongly that the current job title – "patient care technician" (sometimes "dialysis technician" or "tech" for short), is overly generic and a poor reflection of the substantial, specialized, and highly technical role PCTs play in hemodialysis care.[13] This theme is consistent with the stance taken by the Board of the National Association of Nephrology Technicians/Technologists (NANT), a professional advocacy organization, which argues for a title that reflects "acknowledgement, distinction, and specificity" of the role.[14,15] Correspondingly, participants in all groups spoke of an urgent need for increased financial compensation for PCTs, with recruitment and job-finding sites currently reporting average hourly wages for PCTs often less than $20 per hour.[16] In addition, participants noted intangible examples of the discordance between the perceived value of the PCT role and the actual respect received by PCTs. Specifically, the hierarchical nature

of the dialysis care team was identified as being particularly degrading, with PCTs noting that nephrologists and dialysis clinic medical directors rarely know their names, contributing to feelings of a lack of respect and importance. Notably, race and racial discrimination did not come up during any of the focus group discussions, which may be partially due to the focus group moderators identifying as White or the virtual nature of the group. However, in our prior work Black dialysis staff more often reported that experiences of discrimination "contributed a lot" to feelings of burnout at work compared with White staff (41.5% vs 29.9%).[4] These findings and others are highly actionable and warrant further intervention work (Fig 1). For example, potential initiatives aimed at integrating PCTs more fully within the dialysis interdisciplinary care team and recognizing their unique knowledge and perspectives could include involving PCTs in interdisciplinary clinic rounds and patient care conferences.

Another theme that emerged was inadequate PCT training. Current training and professional qualification standards for US PCTs are highly variable across states and individual dialysis clinics, and this was cited as a source of substantial concern among all participant groups. According to the Centers for Medicare & Medicaid Services (CMS), the minimum requirements to become a PCT include a high school diploma or GED equivalent and certification that includes 18 months of documented, on-the-job training supervised by a registered nurse (RN) followed by the successful completion of a CMS-approved state or national certification.[17,18] However, there are no standardized guidelines for these exams and certifications, and individual clinics are permitted to develop their own training curricula. In this study, PCTs felt that more standardized training would increase their comfort level performing requisite tasks and ensure that they are adequately prepared regardless of their clinic or state. Additionally, PCTs and patients indicated that PCTs often field patient questions for which they have not received training, including issues related to mental health, home dialysis modalities, dietary restrictions, and transplant. Given the frequency of contact between PCTs and patients, arming PCTs with more patient-centered and holistic education could capitalize on a unique opportunity to enhance quality of care for patients as well as support other dialysis staff who have historically been the sole providers of this critical information (eg, social workers and dietitians) (Fig 1).

Patients expressed wanting such information from their PCTs, with whom they are often very familiar and have developed long-standing and trusting relationships. These close relationships–often described in terms of family and friendships by both PCTs and patients–also featured prominently in all focus group discussions. Among PCTs, these relationships and their meaning were cited as a source of professional fulfillment and a primary reason for remaining in the field. This finding is consistent with our prior survey on professional fulfillment and burnout among US PCTs and warrants further exploration to support PCT retention in the nephrology workforce.[4] However, as seen in other patient and direct care worker relationships, such as certified nursing assistants and residents in long-term and dementia care facilities, it can be challenging for PCTs and patients to maintain strictly professional boundaries.[19,20] These relationships were noted as a source of tension between PCTs and other dialysis care team members despite being identified as sources of comfort and examples of quality care among patients. Further, definitions for what constitutes a professional relationship and boundary may differ according to discipline (eg, dialysis social

Theme	Potential Policy Changes
The value of the PCT role is not reflected in the title or organizational policies and structure.	**Title change, standardized pay**
PCTs play a flexible and often ill-defined role in dialysis clinics, acting as "all-in-one" employees.	**Standardization of PCT job responsibilities and training**
Despite being in a position with high risk of burnout, PCTs find ways to persevere and provide high-quality care to patients.	**Recognition for high-quality work**
PCTs are often perceived as "helpers" or ancillary rather than an integral part of the dialysis care team.	**Integration of PCTs into care conferences and quality improvement initiatives**
PCT job training and qualifications are not standardized and often not commensurate with job expectations and responsibilities.	**Standardized job responsibilities, training, and certification**
The PCT-patient relationship is deeply valued, but boundaries can be fluid and blurred due to the frequency and nature of dialysis care.	**Inclusion of ethics in standardized training**
Dialysis patients and staff are vulnerable to multilevel workplace safety issues, especially in understaffed clinics.	**Mandates for adequate dialysis staffing ratios**
PCT-staff dynamics have a strong impact on employee morale, clinic efficiency, and patient satisfaction.	**Requirements for interdisciplinary staff training, peer support**

Figure 1. Interview themes and corresponding proposed policy changes.

workers' Code of Ethics).[21] These findings suggest that further research is needed to uncover a balance that respects professionalism and preserves and honors the humanity and human connection inherent to direct care work.

Our results suggest that US PCTs are simultaneously underutilized and overextended. Further, PCTs are not fully empowered as members of the care team yet perform critical tasks often left to nurses in other contexts. For example, US PCTs perform many technical tasks (eg, cannulation of the dialysis access) that are performed exclusively by registered nurses in many other countries.[22] Staffing shortages were mentioned as a large contributor to an unsafe environment among participants in all groups. US staffing ratios are wide-ranging with a daily median patient-to-PCT staffing ratio of nearly 10:1, and higher patient-to-PCT staffing ratios are associated with higher rates of mortality and hospitalization and lower rates of kidney transplant waitlisting and receipt of a transplant.[23,24] CMS provides limited guidance around adequate patient-to-PCT staffing ratios and presently, only 8 US states have documented dialysis staffing requirements, often not specific to the PCT.[25-32] Future studies to identify ideal patient-to-PCT staffing ratios that support positive patient outcomes and better quality care are urgently needed.

LIMITATIONS

The exclusion of non-English speaking patient participants limits the diversity in perspectives and future work should aim to prioritize inclusion of non-English-speaking participants. Patient participants were younger and more likely to be female than the U.S. population receiving dialysis, and our sample did not include participants who identified as Asian or Hispanic, which limits the interpretations of our findings.[3] Future work should aim to maximize diversity among patient participants. Nephrologists and administrators were purposefully excluded to avoid potential social desirability bias because of the hierarchical nature of dialysis care and their respective leadership roles. Although an additional focus group with these individuals may have provided important information, this was not possible because of time and funding limitations. However, their perspectives are important to consider for future work. Finally, study recruitment strategies may have resulted in selection bias and over-recruitment of highly engaged patients and staff or participants with a higher socioeconomic status (eg, having access to the internet) which could affect study findings.

CONCLUSIONS

Findings from this qualitative study highlight the vital, but often unrecognized, frontline role PCTs play in US dialysis care. Many of the issues identified in the study are highly actionable or intervenable but will require the support of dialysis organizations and other stakeholders in US dialysis care. Future work should prioritize multilevel interventions with the goal of improving the work experiences of US PCTs and fostering the retention of this invaluable member of the dialysis care team, both of which will ultimately improve dialysis care.

SUPPLEMENTARY MATERIALS

Supplementary File (PDF)

Item S1: Consolidated criteria for Reporting Qualitative research (COREQ) Checklist.[1]

Item S2: Sample focus group moderator's guide.

ARTICLE INFORMATION

Authors' Full Names and Academic Degrees: Megan Urbanski, PhD, MSW, Emma Blythe, MPH, Alicia Hamblin, BS, Alexis A. Bender, PhD, Courtney Hoge, MSPH, Clarica Douglas-Ajayi, CHT, Fran Rickenbach, CAE, IOM, Jessica Joseph, MBA, Kelli Collins Damron, MSW, Jennifer Craft Morgan, PhD, Bernard Jaar, MD, MPH, and Laura Plantinga, PhD, ScM

Authors' Affiliations: Division of Transplant, Department of Surgery (MU), Emory University School of Medicine, Atlanta, GA; Health Services Research Center (MU, EB), Emory University, Atlanta, GA; Division of Rheumatology, Department of Medicine (AH, LP), University of California San Francisco, San Francisco, CA; Division of Geriatrics and Gerontology, Department of Medicine (AAB), Emory University School of Medicine, Atlanta, GA; Department of Behavioral, Social, and Health Education Sciences (CH), Rollins School of Public Health, Emory University, Atlanta, GA; National Association of Nephrology Technicians/Technologists (CD-A, FR), Dayton, OH; National Kidney Foundation (JJ, KCD), New York, NY; Gerontology Institute (JCM), Georgia State University, Atlanta, GA; Division of Nephrology, Department of Medicine (BJ), Johns Hopkins School of Medicine, Baltimore, MD; Department of Epidemiology (BJ), Johns Hopkins Bloomberg School of Public Health, Baltimore, MD; Welch Center for Prevention, Epidemiology, and Clinical Research (BJ), Johns Hopkins Bloomberg School of Public Health, Baltimore, MD; and Division of Nephrology, Department of Medicine (LP), University of California San Francisco, San Francisco, CA.

Address for Correspondence: Megan Urbanski, PhD, MSW, 101 Woodruff Cir, Suite 1023, Atlanta, GA 30322. Email: megan.urbanski@emory.edu

Authors' Contributions: Research and study design: AB, BJ, JCM, LP, MU; data acquisition: CD-A, CH, FR, JJ, KCD, LP, MU; data analysis/interpretation: AH, EB, LP, MU; statistical analysis: EB, LP; supervision or mentorship: AB, BJ, JCM, LP, MU. Each author contributed important intellectual content during manuscript drafting or revision and accepts accountability for the overall work by ensuring that questions pertaining to the accuracy or integrity of any portion of the work are appropriately investigated and resolved.

Support: Research reported here was supported by the Agency for Healthcare Research and Quality under award number R03HS029245 (to LP). The content is solely the responsibility of the authors and does not necessarily represent the official views of the Agency for Healthcare Research and Quality.

Financial Disclosures: The authors have no relevant financial interests.

Acknowledgments: The authors would like to thank the following individuals for their contributions to this study: Danilo Concepcion and Meghan Fiely (NANT).

Peer Review: Received July 17, 2024 as a submission to the expedited consideration track with 2 external peer reviews. Direct editorial input from an Associate Editor and the Editor-in-Chief. Accepted in revised form September 11, 2024.

REFERENCES

1. National Academies of Sciences, Engineering, and Medicine; National Academy of Medicine; Committee on Systems Approaches to Improve Patient Care by Supporting Clinician Well-Being. *Taking Action Against Clinician Burnout: A Systems Approach to Professional Well-Being*. Washington (DC): National Academies Press (US); October 23, 2019.
2. Office of the Surgeon General (OSG). *Addressing Health Worker Burnout: The U.S. Surgeon General's Advisory on Building a Thriving Health Workforce*. Washington (DC): US Department of Health and Human Services; 2022.
3. United States Renal Data System. *2023 USRDS Annual Data Report: Epidemiology of kidney disease in the United States*. National Institutes of Health, National Institute of Diabetes and Digestive and Kidney Diseases, Bethesda, MD, 2023. Accessed April 2, 2024. https://usrds-adr.niddk.nih.gov/2023
4. Plantinga LC, Rickenbach F, Urbanski M, et al. Professional fulfillment, burnout, and turnover intention among US dialysis patient care technicians: a national survey. *Am J Kidney Dis*. 2023;82(1):22-32.e1.
5. Institute of Medicine Committee on Quality of Health Care in A. *Crossing the Quality Chasm: A New Health System for the 21st Century*. Washington (DC): National Academies Press (US); 2001.
6. Agency for Healthcare Research and Quality (AHRQ). Provide a Framework for Understanding Healthcare Quality. Agency for Healthcare Research and Quality, Rockville, MD. Content last reviewed December 2022. Accessed August 9, 2024. https://www.ahrq.gov/talkingquality/explain/communicate/framework.html
7. Hibbard J, Sofaer S. *Best Practices in Public Reporting: How to Effectively Present Health Care Performance Data to Consumers*. Rockville, MD: Agency for Healthcare Research and Quality; 2008.
8. Tong A, Sainsbury P, Craig J. Consolidated criteria for reporting qualitative research (COREQ): a 32-item checklist for interviews and focus groups. *Int J Qual Health Care*. 2007;19(6):349-357.
9. Harris PA, Taylor R, Minor BL, et al. The REDCap consortium: Building an international community of software platform partners. *J Biomed Inform*. 2019;95:103208.
10. Harris PA, Taylor R, Thielke R, Payne J, Gonzalez N, Conde JG. Research electronic data capture (REDCap)–a metadata-driven methodology and workflow process for providing translational research informatics support. *J Biomed Inform*. 2009;42(2):377-381.
11. Braun V, Clarke V. Thematic analysis. In: *APA handbook of research methods in psychology, Vol 2: Research designs: Quantitative, qualitative, neuropsychological, and biological*. Washington, DC, US: American Psychological Association; 2012:57-71.
12. VERBI Software. MAXQDA 2020 [computer software]. Published 2024. Accessed April 23, 2024. https://www.maxqda.com/products/maxqda
13. Plantinga LC, Concepcion DB, Chapman SA, et al. It is time to replace the term "patient care technician" in dialysis. *Am J Kidney Dis*. 2024;84(2):135-137.
14. Danilo CB. What's in a name? A technician's perspective. *Nephrol News Issues*. 2016;30(9):36.
15. National Association of Nephrology Technicians/Technologists (NANT). NANT (National Association of Nephrology Technicians/Technologists). Published 2024. Accessed April 2, 2024. https://www.dialysistech.net/
16. Indeed. Patient care technician salary in United States. Published 2024. Accessed April 2, 2024. https://www.indeed.com/career/patient-care-technician/salaries
17. Centers for Medicare & Medicaid Services. End Stage Renal Disease (ESRD) Program Survey Guidance on Patient Care Dialysis Technicians (PCTs) Certification. Baltimore, MD; 2010:1-9.
18. Centers for Medicare & Medicaid Services. Advance Copy – End Stage Renal Disease (ESRD) Program Interpretive Guidance Version 1.1. Baltimore, MD; 2008:1-304.
19. Weidner M, Towsley GL. Meaningful connections: An education program to enhance resident-certified nursing assistant relationships. *Gerontol Geriatr Educ*. 2024;45(2):259-275.
20. Abrams R, Vandrevala T, Samsi K, Manthorpe J. The need for flexibility when negotiating professional boundaries in the context of home care, dementia and end of life. *Ageing and Society*. 2019;39(9):1976-1995.
21. National Association of Social Workers. Code of Ethics. Published 2023. Accessed January 17, 2024. https://www.socialworkers.org/About/Ethics/Code-of-Ethics/Code-of-Ethics-English
22. Lee T, Flythe JE, Allon M. Dialysis care around the world: a global perspectives series. *Kidney360*. 2021;2(4):604-607.
23. Plantinga LC, Urbanski M, Hoge C, et al. Patient care technician staffing in US hemodialysis facilities: an ecological study. *Kidney Med*. 2023;6(3):100782.
24. Plantinga LC, Bender AA, Urbanski M, et al. Patient care technician staffing and outcomes among US patients receiving in-center hemodialysis. *JAMA Netw Open*. 2024;7(3):e241722.
25. Office of the Secretary of State. Rules and Regulations of the State of Georgia: Subject 111-8-22 END STAGE RENAL DISEASE FACILITIES. In. Vol 111-8-22.
26. Maryland Department of Health. Maryland Code of Regulations. 10.12.04.02 - Definitions. Vol 10.12.04.02.
27. Massachusetts Department of Health. 105 CMR 145.000: Licensing of Out-Of-Hospital Dialysis Units in Massachusetts. Vol 105 CMR 145.000.
28. New Jersey Office of Administrative Law. Section 8:43G-30.6 - Staffing requirements for inpatient dialysis services. Vol 8:43G-30.6.
29. South Carolina Department of Health and Environmental Control. Regulation 61-97 Standards for Licensing Renal Dialysis Facilities. Vol Regulation 61-97. Columbia, SC.
30. Oregon Health Authority, Public Health Division. OAR 333-700-0100 Patient Care Staff. Vol OAR 333-700-0100.
31. Texas Secretary of State. Texas Administrative Code Rule §-175.45.d. Vol Rule §-175.45.d.
32. Utah Office of Administrative Rules. Utah Administrative Code R432-650-7 - Required Staffing. Vol R432-650-7.