

Barriers and Facilitators to Renal Replacement Therapy for Acute Kidney Injury in Latin America: Insights From an Expert Roundtable

Aqeeb Ur Rehman^{1,27}, Stefania Renzi^{1,27}, David Andres Ballesteros Castro², Lilia Cervantes³, René Clavero⁴, Bianca Davidson⁵, Mariano Rafael Farias⁶, Vicente Campolo Girard⁷, Rolando Claure-Del Granado⁸, Gonzalo Ramirez-Guerrero^{9,10}, Darío Jiménez^{11,12,13,14}, Cristian Paul Leon Rabanal¹⁵, Alejandra Molano Trivino¹⁶, Thiago Reis^{17,18}, Lilia Rizo-Topete¹⁹, Olynka Vega-Vega²⁰, Andrea K. Vieceili²¹, Krissia Kamile Singer Wallbach-Massal^{22,23}, Marina Wainstein²⁴, Sabine Karam^{25,26} and Javier A. Neyra¹

¹Division of Nephrology, Department of Internal Medicine, University of Alabama at Birmingham, Birmingham, Alabama, USA; ²Division of Nephrology, Department of Internal Medicine, Universidad del Cauca, Hospital Universitario San José de Popayán, Colombia; ³Department of Medicine, University of Colorado School of Medicine, Aurora, Colorado, USA; ⁴Nephrology Service, Quillota Biprovincial Hospital, Quillota, Chile; ⁵Division of Nephrology and Hypertension, Department of Medicine, Groote Schuur Hospital, Hypertension and Nephrology Research Unit, University of Cape Town, South Africa; ⁶Division of Nephrology and Kidney Transplant, Department of Internal Medicine, Hospital Privado de Rosario, Rosario, Argentina; ⁷Division of Nephrology and Critical Care, Clínica Pasteur, Neuquén, Argentina; ⁸Division of Nephrology, Department of Medicine, Hospital Obrero No 2 – Caja Nacional de Salud, Cochabamba, Bolivia; ⁹Nephrology Service, Hospital Las Higueras, Talcahuano, Chile; ¹⁰Nephrology and Dialysis Unit, Carlos Van Buren Hospital, Valparaíso, Chile; ¹¹Division of Nephrology, Enrique Garcés Hospital, Quito, Ecuador; ¹²Critical Nephrology Department, DIALNEF, Quito, Ecuador; ¹³Division of Nephrology, Hospital Metropolitano, Quito, Ecuador; ¹⁴Medicine School at Universidad Central del Ecuador, Quito, Ecuador; ¹⁵Department of Nephrology, Hospital Nacional Cayetano Heredia, Universidad Peruana Cayetano Heredia, Lima, Peru; ¹⁶Division of Nephrology, Department of Internal Medicine, La Cardio, Fundación Cardioinfantil, School of Medicine and Health Sciences, Universidad del Rosario, Bogotá, Colombia; ¹⁷Division of Nephrology, University of São Paulo Medical School, São Paulo, Brazil; ¹⁸CPQuali Pesquisa Clínica, Clinical Research Center, São Paulo, Brazil; ¹⁹Division of Nephrology, Department of Internal Medicine, University Hospital “Jose Eleuterio Gonzalez”, Universidad Autonoma de Nuevo Leon, Monterrey, Nuevo Leon, Mexico; ²⁰Department of Nephrology and Mineral Metabolism, Instituto Nacional de Ciencias Médicas y Nutrición Salvador Zubirán, Mexico City, Mexico; ²¹Australasian Kidney Trials Network, The University of Queensland, Brisbane, Queensland, Australia; ²²Nephrology Intensive Care Unit, Division of Nephrology, Faculty of Medicine, University of São Paulo, Brazil; ²³Chronic Kidney Disease Department, Hospital do Rim / Federal University of São Paulo, São Paulo, Brazil; ²⁴Academia Nacional de Medicina de Buenos Aires, Buenos Aires, Argentina; ²⁵Division of Nephrology and Hypertension, Department of Medicine, University of Minnesota, Minneapolis, US; and ²⁶Division of Nephrology and Hypertension, Department of Internal Medicine, American University of Beirut, Beirut, Lebanon

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Introduction

Significant regional variations exist in the epidemiology of acute kidney injury (AKI) globally, with underreporting being particularly common in low- and low-to-middle income countries. The latter is because of lack of standardized AKI reporting, absence of representative epidemiological studies, and an overall limited nephrology workforce.¹ Latin America (LATAM), comprising many low-income and low-to-middle income countries, has a reportedly higher incidence of AKI among hospitalized patients than North America and Europe (31% vs. 19% and 25%, respectively),² though this could be misrepresented because of inconsistent AKI definitions, regional variations within LATAM, and publication bias. Globally, AKI is estimated to contribute to 2 million deaths annually because of the high cost and lack of access to timely and optimal renal replacement therapy (RRT).³ LATAM has a reportedly higher AKI-associated mortality in adults (38.9%) than the global average of 23.9%.⁴ However, AKI epidemiology in LATAM, specifically for AKI requiring RRT, remains insufficiently characterized with regard to interregional and intraregional variations and socioeconomic disparities.

Each country within LATAM faces unique challenges and barriers in the provision of optimal AKI care in both rural and urban areas. This could be attributed to the heterogeneity in health care infrastructure and systems, the limited human and logistical resources, and multilevel disparities in access to equitable care.⁵⁻⁹

Correspondence: Javier A. Neyra, Division of Nephrology, Department of Internal Medicine, University of Alabama at Birmingham, 703 19th Street South, Birmingham, Alabama 35233, USA. E-mail: jneyra@uabmc.edu

²⁷AUR and SR contributed equally

Therefore, addressing these contextual factors is key for the development and sustainability of value-based health care processes that are patient-centered, cost-effective, and supported by local and regional policy. To outline and summarize some of these challenges, an expert roundtable was organized by the Young Nephrology Committee of the ISN during the 2024 World Congress of Nephrology in Buenos Aires, Argentina. The principal objective of this roundtable session was to discuss barriers and facilitators in the provision of AKI care, particularly the delivery of RRT, across a sample of representative LATAM countries. In this article, we provide a summary of the discussion and introduce potential strategies to improve the delivery of RRT for AKI care in LATAM.

We used a convenience sample of nephrologists actively practicing in LATAM countries with

diversity in size and country income level. The methodology and country-specific perspectives, and [Supplementary References](#) are reported in the [Supplementary Material](#). The contributions were semistructured and focused on insights related to health care system and logistical infrastructure; human workforce availability and education; resource allocation and quality assurance; RRT modalities; and contextual factors that could facilitate interventions, programs, or policy to enhance RRT access and delivery.

Summary of Barriers to the Provision of Optimal RRT for AKI Care in LATAM

Equitable access to optimal RRT for AKI care in LATAM is hindered by systemic disparities that can be grouped into 4 themes ([Figure 1](#)): (i) inadequate or insufficient critical care nephrology training; (ii) limited access to RRT

infrastructure and consumables (e.g., devices, supplies, etc.); (iii) lack of standardized protocols, guidelines, and programs; and (iv) heterogeneity in the national health care policy landscape addressing AKI care. In [Table 1](#), we summarize key country-specific barriers to the provision of optimal RRT for AKI care highlighted by LATAM nephrologists. One highlighted theme was the lack of structured training in critical care nephrology, particularly in the different RRT modalities, which contributes to inconsistencies in providers' competence and potentially suboptimal choice of RRT modality and delivery of RRT. Another important theme was the limited access to infrastructure for RRT delivery, including RRT consumables, which tend to be concentrated—albeit insufficiently—in large, tertiary urban centers in LATAM, similar to the distribution of the

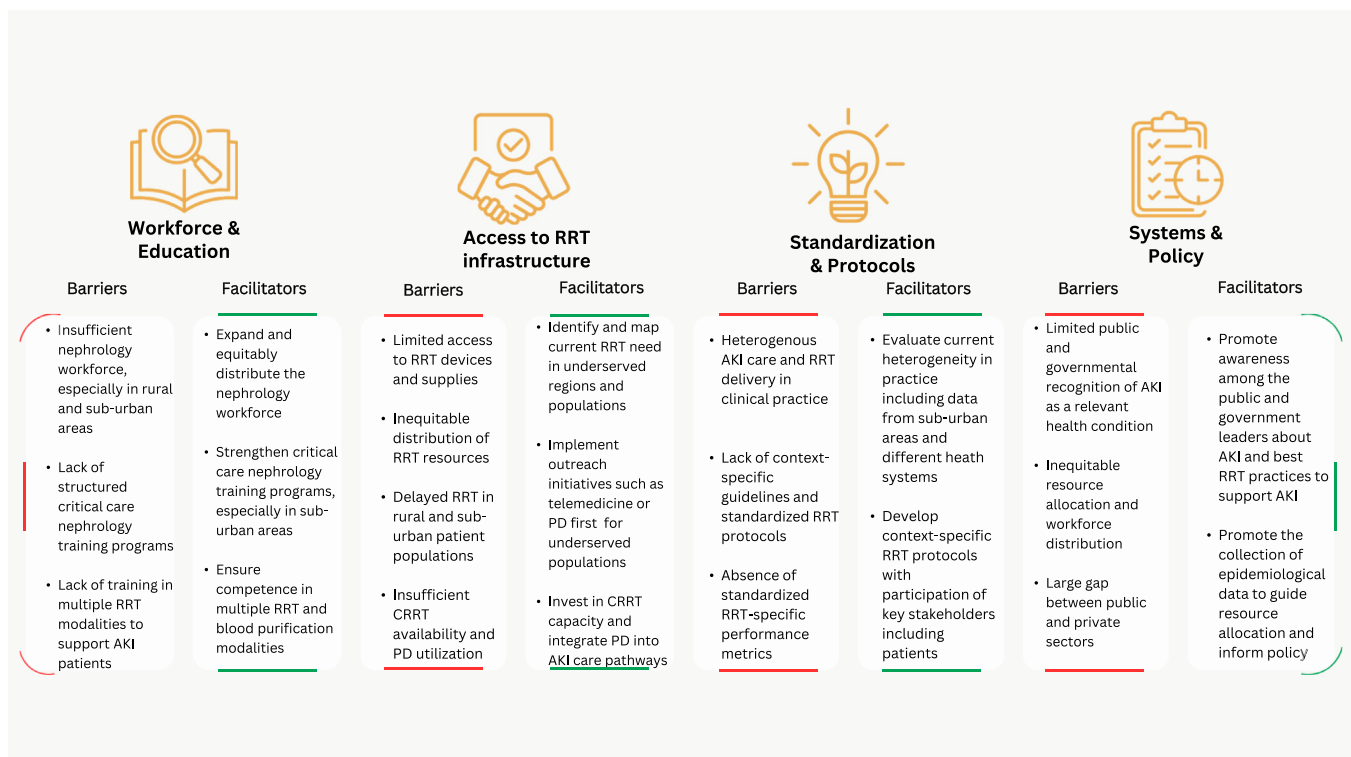


Figure 1. Summary of highlighted barriers and facilitators to the provision of optimal RRT for AKI care in LATAM. AKI, acute kidney injury; LATAM, Latin America; RRT, renal replacement therapy.

Table 1. Expert perspectives on barriers to the provision of optimal RRT for AKI care in LATAM

Country	Workforce capacity and training	RRT modality and supplies	Standardization and protocols	Systems and policy
Argentina	1 nephrologist for over 36,000 population ^{S1} Optimal care is centralized in urban areas ^{S1} Most centers lack dedicated AKI-trained staff	IHD: 90%; CRRT/PIRRT: 5% ^{S2} Only 5% of hospitals have access to CRRT/PIRRT infrastructure ^{S2} No reliable data exist for PD availability and utilization	No national AKI guidelines or standardized RRT protocols for AKI care exist Heterogeneity in RRT modality and AKI care quality vary widely across regions	AKI is not prioritized at the national level; significant regional disparities exist
Bolivia	1 nephrologist for 100,000 population ⁹ Optimal care is centralized in urban areas ⁹ Limited trained physicians and staff for CRRT and PIRRT	No reliable data exist on RRT modalities Only 3 ICUs in Cochabamba have access to CRRT No reliable data exist for RRT modality availability and utilization	No national AKI guidelines or standardized RRT protocols for AKI care exist	AKI is not prioritized at the national level; significant regional disparities exist
Brazil	1 nephrologist for 40,000 population ^{S3} > 65% nephrologists practice in south/southeast Brazil ^{S3} CRRT training is deficient in public hospitals	PIRRT: 47%; IHD: 31%; CRRT: 20%; PD: 2% ^{S4} <5% of public hospitals have access to CRRT infrastructure, compared to 92% in private hospitals ^{S5} PD is available in 44% hospitals but 77% of physicians report not using it for AKI care ^{S5}	No national AKI guidelines or standardized RRT protocols for AKI care exist	Large gap between public and private sectors; no unified national policy for AKI care
Chile	1 nephrologist for 50,000 population ^{S6} 70% of nephrologists are in the public health system; 52% are in the capital city ^{S6} CRRT training programs exist only in a few urban regions, mostly in large hospital systems	No reliable data exist on RRT modality availability and utilization PD is available in 12.5% of dialysis centers based on unpublished data	No national AKI guidelines or standardized RRT protocols for AKI care exist. Approximately one-third of RRT is prescribed by non-nephrologists	Centralized care model; access to optimal AKI care in rural and suburban areas remains limited
Colombia	1 nephrologist for over 100,000 population ^{S7} Optimal care centralized in 35 urban areas ^{S7} Nephrology training is heterogenous and lacks specialized CRRT training	No reliable data exist on RRT modality availability and utilization	No national AKI guidelines or standardized RRT protocols for AKI care exist	Significant health disparities despite universal health coverage
Ecuador	1 nephrologist for over 60,000 population ^{S8} Optimal care is centralized in urban areas ^{S8} Young nephrologists often lack formal CRRT training and rely on self-learning, resulting in heterogeneous skill levels	IHD or PIRRT: 85%; CRRT: 7%; PD: 0% ⁶ No reliable data exist on RRT modality availability	No national AKI guidelines or standardized RRT protocols for AKI care exist Nonstandardized RRT delivery increases costs and hinder quality of care	Large gap between public and private sectors; no unified national policy for AKI care
Mexico	1 nephrologist for over 100,000 population ^{8, S9} Optimal care is centralized in 3 cities (Mexico City, Guadalajara, and Monterrey) ^{8, S9} Limited critical care nephrology training outside large metropolitan cities	IHD: 53%; CRRT: 46%; PD: < 1% (unpublished data) No reliable data exist on PD availability and utilization	No national AKI guidelines or standardized RRT protocols for AKI care exist	AKI is not prioritized at the national level; significant regional disparities exist
Peru	1 nephrologist for over 100,000 population ^{S10} Optimal care centralized in urban areas ⁷ CRRT training is limited to only a few hospitals	No reliable data exist on RRT modality availability and utilization Only 5 public hospitals in the country have access to CRRT ^{S11}	No national AKI guidelines or standardized RRT protocols for AKI care exist	Large gap between public and private sectors; suboptimal national investment in AKI care

AKI, acute kidney injury; CRRT, continuous renal replacement therapy; ICU, intensive care unit; IHD, intermittent hemodialysis; PD, peritoneal dialysis; PIRRT, prolonged intermittent renal replacement therapy; RRT, renal replacement therapy.

nephrology workforce. The latter contextual factor clearly jeopardizes rural and suburban patient populations by limiting or delaying access to optimal AKI care, particularly urgent or emergent RRT for AKI. Another relevant theme was the lack of standardization of RRT delivery as part of AKI care, which is a worldwide phenomenon, also affecting LATAM. Finally, there is a highlighted significant gap in AKI care between private and hybrid or public health care systems in LATAM. The latter mandates policy changes that promote value-

based and equitable AKI care for all LATAM patient populations at risk of or with AKI.

Opportunities and Facilitators for the Provision of Optimal RRT for AKI Care in LATAM

Reflecting on the presented perspectives, one can appreciate that there is tremendous heterogeneity in health care system models and overall AKI care in LATAM with nonetheless common themes, such as the scarcity of RRT resources and a well-trained nephrology workforce. These contextual factors affect the delivery of RRT and

hinder the standardization of AKI care and RRT protocols. Furthermore, these contextual factors perpetuate health inequity, limit the development of local expertise, and preclude the expansion and sustainability of a competent workforce.

Despite this unfavorable snapshot, many constructive changes can be implemented to improve AKI care in LATAM by focusing on the following 3 pillars that interact with each other: (i) data gathering, (ii) education and capacity building, and (iii) policy development. The generation of

reliable, relevant, and representative epidemiological data could guide tailored interventions to improve logistic and human resources, access to care, education and training, and inform policy changes. The availability of virtual platforms for education and exchange could facilitate harmonization of training in critical care nephrology and assist with the development and promotion of certification courses for the nephrology workforce. Importantly, policy change that prioritizes AKI and its care is critical to standardize value-based care, implement best practices, and study AKI phenotypes and outcomes in the LATAM population.

To create contemporary data registries of AKI and RRT in LATAM, information should be gathered from representative samples in urban and rural areas, including public, private, and social security hospitals, and ideally from all the countries because they have different Gross National Income per capita and heterogeneous practice models. The unique aspects of each model of AKI care, whether it is driven by nephrologists, intensivists, or other specialists, should be considered. Updates in current Kidney Disease: Improving Global Outcomes guidelines related to AKI care, particularly to guide RRT delivery, are direly needed to harmonize current heterogeneous practices and support effective and sustainable RRT programs in LATAM. To help advance this goal, an emergent study group of young nephrologists from LATAM was assembled in late 2024 to improve AKI care and RRT delivery in the region. As one of the first initiatives, this group launched a survey endorsed by the Latin American Society of Nephrology and Hypertension (SLANH for its Spanish acronym) to examine the current status of

extracorporeal support therapies in LATAM, with emphasis on RRT for AKI care. The results of this survey are expected to be published by the end of 2025.

In terms of education, 2 parallel approaches could be considered. First, specialized training of the nephrology workforce to be competent in critical care nephrology should be universally implemented and standardized in LATAM. This entails uniform access to comprehensive AKI education, including different modalities of RRT and emergent blood purification technologies. For this purpose, multiple critical care nephrology courses are already conducted annually in different areas of LATAM and allied programs ([Supplementary Table S1](#)). In addition, AKI education of primary care practitioners is crucially important, particularly in remote and low-resource communities with limited access to specialists and health care resources. The development of digital health solutions, including telemedicine and electronic health alerts for early AKI detection, is promising to optimize care delivery to disadvantaged rural populations. For example, telemedicine nephrology consultation could facilitate early specialist-driven treatments, timely interventions including RRT, and timely identification of patients who require to be transferred to larger facilities. In addition, policy that recognizes the public health relevance of AKI and supports context-specific multiple modalities of RRT for AKI care (e.g., acute peritoneal dialysis, intermittent hemodialysis, prolonged intermittent renal replacement therapy, and continuous renal replacement therapy) is direly needed in LATAM. For example, water purification systems for intermittent hemodialysis or prolonged intermittent renal

replacement therapy are not available for those living in rural underserved areas. In this case, building capacity in acute PD and other forms of manual dialysis are relevant options to bridge the gaps and improve patient outcomes.

Conclusion

Optimal RRT for AKI care in LATAM is hindered by deficiencies in specialized training in critical care nephrology, limited access to RRT infrastructure, lack of standardized practices, and heterogeneous health care systems. One should note that these challenges are not unique to LATAM, because many low-resource settings worldwide face similar barriers in AKI diagnosis, RRT availability, workforce development, and nephrology training. Therefore, the strategies highlighted here may serve as a scalable framework for improving AKI care globally.

Although it is recognized in the LATAM AKI community that we are at the beginning of the journey of positive change and that the road ahead remains under construction, there is a collaborative agenda fueled by young nephrologists and supported by societies such as the Latin-American Society of Nephrology and Hypertension and ISN to create action 1 step at the time. The ISN's 2024 World Congress of Nephrology session dedicated to the provision of RRT for AKI care in LATAM and the recent Latin-American Society of Nephrology and Hypertension-supported survey on RRT practice for AKI in the region are a testament to this growing momentum, yet it is just the beginning.

DISCLOSURE

JAN has received consulting fees from Vantive and CovarsaDx, outside of the submitted work. SK

serves as an editorial board member in *Advances in Kidney Disease and Health (AKDH)* and as a review editor for "Frontiers in Nephrology." All the other authors declared no competing interests.

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Author Contributions

All authors contributed intellectual content to the manuscript, edited the manuscript, and approved the final version.

SUPPLEMENTARY MATERIAL

[Supplementary File \(PDF\)](#)

[Supplementary Methods.](#)

[Supplementary References.](#)

Expert perspectives on barriers to the provision of optimal RRT for AKI care in LATAM.

Table S1. Sample of critical care nephrology courses currently offered in LATAM.

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