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### Authors

Kalantar-Zadeh, Kamyar

Edwards, Dawn P

Henner, David

et al.

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# Closure of Dialysis Clinics in the United States in 2021–2023

Kamyar Kalantar-Zadeh<sup>1,2,3,4</sup>, Dawn P. Edwards<sup>1,5,6</sup>, David Henner<sup>1,7</sup>, Daniel L. Landry<sup>1,8</sup>, Donald A. Molony<sup>1,9</sup>, and Preethi Yerram<sup>1,10,11</sup>, on behalf of the Medical Advisory Council of the National Forum of ESRD Networks\*

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The ESRD program legislation, proposed by the US Congress and ratified by the US President in October 1972, was enacted to start in July 1973.<sup>1</sup> In 1978, the US Congress mandated the establishment of ESRD Network Organizations. These Quality-Innovation Network/Quality-Improvement Organizations are contracted under the *Centers for Medicare & Medicaid Services* (CMS) with the responsibility for monitoring the quality and safety of the ESRD program across 18 geographic territories nationwide. Ensuring the flow of information stands as a central objective for the Quality-Innovation Network/Quality-Improvement Organizations that manage the 18 ESRD networks. To that end, the National Forum of the ESRD Networks, a coalition comprising all CMS-contracted ESRD network organizations, has ensured quarterly access to select ESKD data on a quarterly basis.<sup>2</sup>

By October 2021, the National Forum of ESRD Networks had initiated the public release of select national ESRD data to provide accessible insights into key ESKD information and trends in the post–coronavirus disease 2019 (COVID-19) pandemic era.<sup>3</sup> These data, obtained quarterly, are sourced from the ESRD *National Coordinating Center*, which is also contracted by CMS. The ESRD-*National Coordinating Center* holds access to data originating from the ESRD *Quality Reporting System*. The ESRD *Quality Reporting System* data, which are compiled in real time, are based on mandatory reports from all dialysis facilities across the United States and its territories.<sup>4</sup> We plotted dialysis clinic

and patient data at the end of each calendar quarter from the third quarter of 2021 to the second quarter of 2023, and trends were compared.

As shown in [Figure 1](#), upper panel, the number of dialysis clinics across the United States maintained relative stability from mid-2021 to mid-2022. This period saw only a modest net growth, *i.e.*, from 7815 clinics on January 10, 2021, to 7853 clinics by January 10, 2022, marking the latter the peak over the 2-year observation window. However, a significant shift occurred thereafter, in that there was a downward trend in the number of dialysis clinics. In subsequent calendar quarters, the number of dialysis units closing exceeded those newly opened. The largest net closure happened in the first quarter of 2023. This net closure trend persisted over four quarters, resulting in a net loss of 215 dialysis facilities, equivalent to 2.7% of all clinics nationwide. Consequently, as of July 1, 2023, the United States had 7638 operational dialysis clinics remaining.

[Figure 1](#), middle panel further illustrates a reduction in the number of prevalent patients undergoing in-center hemodialysis (ICHD) treatment during the 2-year observation period. From January 1, 2021, to January 1, 2023, the prevalent ICHD patient count decreased from 447,739 to 435,195, representing an attrition of 12,544 patients or a 2.8% decline over 2 years. This stands in stark contrast to the consistent growth observed in prevalent dialysis patients in prior years over nearly half a century until 2020. Conversely, the number of home dialysis patients increased from 76,996 to

<sup>1</sup>The National Forum of ESRD Networks, Henrico, Virginia

<sup>2</sup>The Lundquist Institute for Biomedical Innovation at Harbor-UCLA Medical Center, Torrance, California

<sup>3</sup>Department of Epidemiology, UCLA Fielding School of Public Health, University of California Los Angeles, Los Angeles, California

<sup>4</sup>Tibor Rubin Veterans Affairs Healthcare System, Long Beach, California

<sup>5</sup>Kidney Patients Advisory Council, Brooklyn, New York

<sup>6</sup>Rogosin Institute, New York, New York

<sup>7</sup>Berkshire Medical Center, Pittsfield, Massachusetts

<sup>8</sup>Division of Nephrology, UMASS Chan Medical School-Baystate, Springfield, Massachusetts

<sup>9</sup>University of Texas McGovern Medical School, Houston, Texas

<sup>10</sup>Division of Nephrology, University of Missouri-Columbia, Columbia, Missouri

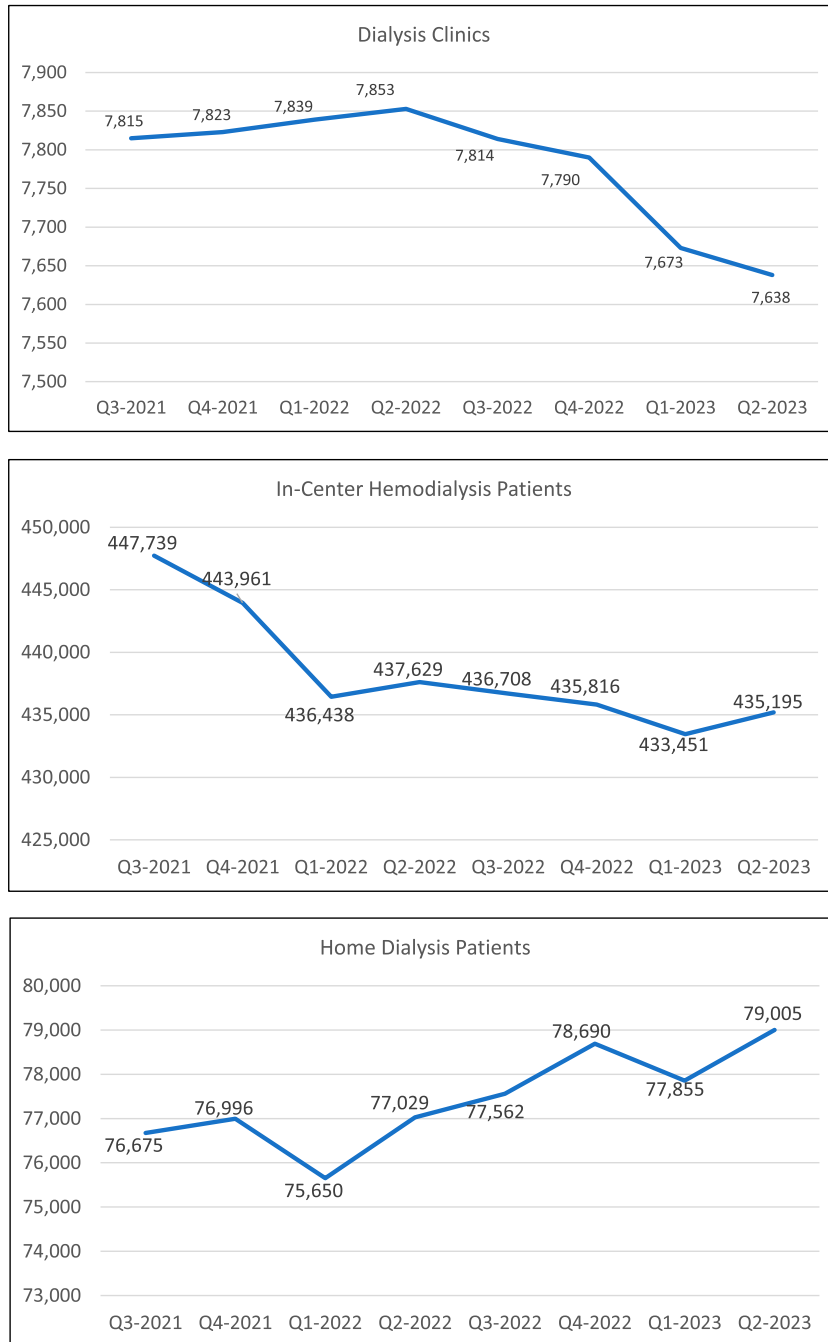
<sup>11</sup>Harry S Truman Memorial Veterans' Hospital, Columbia, Missouri

**Correspondence:** Kamyar Kalantar-Zadeh, email: [kkalantar-zadeh@dhs.lacounty.gov](mailto:kkalantar-zadeh@dhs.lacounty.gov)

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\*The Medical Advisory Council of the National Forum of ESRD comprises the chairs of the medical review boards of the 18 congressionally mandated ESRD networks including Network 1: Daniel L. Landry, DO; Network 2: George Coritsidis, MD; Network 3: Keith Norris, MD, PhD; Network 4: Paul Palevsky, MD; Network 5: Marc Brazie, MD; Network 6: John J. Doran, MD; Network 7: Debra Hain, PhD, APRN; Network 8: Martha Tankersley, MSN, RN; Network 9: Anne Huml, MD, MS; Network 10: Daniel Roseman, MD; Network 11: Louis Raymond, MD; Network 12: Preethi Yerram, MD; Network 13: Laura Rankin, MD; Network 14: Donald Molony, MD; Network 15: Harmeet Singh, MD; Network 16: Christine Logar, MD; Network 17: Ramin Sam, MD; Network 18: Kamyar Kalantar-Zadeh, MD, MPH, PhD.

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**Figure 1. Number of dialysis clinics and patients receiving in-center and home dialysis therapies in the United States at the end of each calendar quarter, 2021–2023.** Upper panel: changes in the number of dialysis clinic. Middle panel: changes in the number of patients receiving ICHD. Lower panel: changes in the number of patients receiving home dialysis modalities including peritoneal dialysis and home hemodialysis. ICHD, in-center hemodialysis. Figure 1 can be viewed in color online at [www.cjasn.org](http://www.cjasn.org).

79,005, reflecting a rise of 2009 patients or 2.7% (see Figure 1, lower panel). Moreover, the number of patients receiving dialysis within nursing homes experienced growth from 2330 to 3018 patients, reflecting an increase of 688 patients or 30% (data not shown). However, it is important to note that this status constitutes a very small fraction (<1%) of the overall national prevalent dialysis patient pool.

The observed closure of dialysis clinics took place a year after a reduction in the number of prevalent dialysis pa-

tients in the United States. This 1-year gap is understandable, considering that a decrease in in-center dialysis patients naturally calls for fewer operational dialysis clinics over time from an economic standpoint. Nonetheless, the implications of this unparalleled closure of dialysis units could be underestimated if we solely focus on the numerical decline. Our results should be qualified for its inherent limitations given that our reported trends fail to account for the anticipated growth that would have occurred

otherwise—projections indicated the possibility of having more than 8000 clinics by now on the basis of previous trajectories, as opposed to the current count of 7638 clinics (see the dotted line in [Figure 1](#), upper panel). Furthermore, the net closure of facilities, the difference between closed and newly opened clinics, does not fully capture the actual number of dialysis facilities that had to be closed, and trends can be different across different geographic areas. In addition, these numbers do not account for market consolidations or changes in dialysis service availability arising from closure of dialysis chairs, underperforming clinics with underutilized in-center hemodialysis chair times or those with nonoperational dialysis shifts, particularly on Tuesday, Thursday, and Saturday schedules. More granular data are needed to examine these trends.

The origins of these historically unprecedented trends remain widely speculative. Potential factors include (1) excess deaths during the COVID-19 pandemic,<sup>5,6</sup> compounded by higher prevalence of COVID death predictors like obesity and diabetes<sup>3</sup>; (2) reduced reliance on ICHD attributed to increased home dialysis options<sup>7</sup>; (3) recent shifts toward later initiation of dialysis therapy in advanced CKD; and (4) a scarcity of dialysis staff and higher wages juxtaposed with a stagnant payment system. Whether these trends signify the tip of a nationwide kidney health crisis with deteriorating health equity or a positive trajectory toward improving the ESKD epidemic remains to be illuminated by future research.

#### Disclosures

D.P. Edwards reports Employer: Fresenius/NxStage Medical; Consultancy: Fresenius/NxStage; Honoraria: Ardelyx Pharma and NIH/NIDDK; Advisory or Leadership Role: Forum of ESRD Networks Patent Advisory Council (KPAC)—Co-Chairperson—Not Paid, Home Dialyzors United—Not Paid, Island Peer Review Organization Board of Directors Member—Paid, NIH/NIDDK Advisory Council—Paid, and Rogosin Institute Wellness Ambassadors Program—Paid; and Speakers Bureau: Fresenius/NxStage. D. Henner reports Consultancy: Outset Medical; Honoraria: Amgen and Outset Medical; and Speakers Bureau: Amgen and Outset Medical. K. Kalantar-Zadeh serves in the medical director teams of DaVita dialysis clinics affiliated to Harbor-UCLA. K. Kalantar-Zadeh also reports Consultancy: CSL/Vifor (ending 2023), Fresenius/Kabi (ending 2023), and GSK (ended 2023); The following have ended: Akebia (ended 2021), Ardelyx (ended 2022), AstraZeneca (ended 2022), CALLIDITAS (ended 2022), Daiichi Sankyo (ended 2021), Hikma (ended 2022), Horizon (ended 2021), Novo Nordisk (ended 2022), NxStage (ended 2022), Otsuka (ended 2021), Pfizer (ended 2022), Pharmacosmos (ended 2022), Sanofi (ended 2022), and Traverre (ended 2022); Research Funding: Lundquist Institute at Harbor-UCLA, NIH NIDDK, and VA ORD; Honoraria: CSL/Vifor, Fresenius/Kabi, and GSK, ending in 2023; Honoraria by other companies listed under Consultancy ended by 2022, Note that the AHRQ (Federal Government) honoraria will continue through 2024 for study section appointment; Patents or Royalties: PATENTS: Prognostic assays for maintenance hemodialysis patients 2019 (Harbor-UCLA/Lundquist); Methods of treating renal disease 2021 (University of California Irvine, UCI); and Speakers Bureau: CSL/Vifor, Fresenius/Kabi, and GSK all ending in 2023; Speaker program from all other companies listed under Consultancy ended by 2022. D.L. Landry reports Advisory

or Leadership Role: Chair for the Medical Advisory Council at the National Forum of ESRD Networks as well as Chair for the Medical Review Board for ESRD Network 1, receives no financial compensation for either position. D.L. Landry also serves as a medical director for Fresenius Kidney Care dialysis clinics. D.A. Molony reports Honoraria: AstraZeneca, Fresenius Medical Care, and Medtronic; Advisory or Leadership Role: ESRD Network 14 Board of Directors and Forum of ESRD Networks; Speakers Bureau: AstraZeneca, Fresenius Medical, and Medtronic; and Other Interests or Relationships: Forum of ESRD Networks—Past-President Board of Directors; Medical Advisory Council—Forum of ESRD Networks, Medical Review Board, Past-Chair—ESRD Network 14 of Texas. P. Yerram reports Consultancy: GSK; Ownership Interest: Sensionics; Research Funding: Ablative Solutions, AstraZeneca, Bayer, CareDx, and CSL Behring; Honoraria: CSL Vifor, GSK, and Traverre Therapeutics; Advisory or Leadership Role: Unpaid: MOKP advisory council member, National Forum of ESRD Networks BOD member, and Vice chair—National Forum of ESRD Networks Medical Director Advisory council (MAC); Paid: Qsource BOD member; and Speakers Bureau: GSK. All authors have affiliations with one or more ESRD Network organizations.

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#### Author Contributions

**Conceptualization:** Kamyar Kalantar-Zadeh.

**Data curation:** Kamyar Kalantar-Zadeh.

**Formal analysis:** Kamyar Kalantar-Zadeh.

**Investigation:** Kamyar Kalantar-Zadeh.

**Methodology:** Kamyar Kalantar-Zadeh.

**Project administration:** Kamyar Kalantar-Zadeh.

**Resources:** Kamyar Kalantar-Zadeh.

**Software:** Kamyar Kalantar-Zadeh.

**Supervision:** Dawn P. Edwards, David Henner, Kamyar Kalantar-Zadeh, Daniel L. Landry, Preethi Yerram.

**Validation:** Dawn P. Edwards, David Henner, Kamyar Kalantar-Zadeh, Daniel L. Landry, Donald A. Molony, Preethi Yerram.

**Visualization:** Dawn P. Edwards, David Henner, Kamyar Kalantar-Zadeh, Daniel L. Landry, Donald A. Molony, Preethi Yerram.

**Writing – original draft:** Dawn P. Edwards, David Henner, Kamyar Kalantar-Zadeh, Daniel L. Landry, Donald A. Molony, Preethi Yerram.

**Writing – review & editing:** Dawn P. Edwards, David Henner, Kamyar Kalantar-Zadeh, Daniel L. Landry, Donald A. Molony, Preethi Yerram.

#### Data Sharing Statement

Original data created for the study are or will be available in a persistent repository on publication. Aggregated Data. Other. ESRD Networks.

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