Patients with kidney failure on dialysis are medically and socially complex, receive care from multiple providers to manage numerous comorbidities, and therefore, are at risk for fragmented health care delivery leading to poor outcomes (1). The optimal delivery of primary care and the role of primary care providers (PCPs) for patients on dialysis remain unclear (2).

Traditionally, PCPs are the central figures in the health care of their patients, with key responsibilities that include (1) establishing primary contact and entry into the medical system, (2) evaluating and providing personalized health care recommendations, and (3) referring to and coordinating with specialists. For patients on dialysis, some if not many of these responsibilities may be managed by nephrologists, largely because of how these patients interact with the medical system. Visits to the dialysis unit represent the most frequent and consistent encounters that patients on dialysis have with the health care system, and additional visits can be perceived as a burden if not accompanied by unique benefits of that care (3). In a survey of nephrologists, 90% reported providing primary care to their patients on dialysis, and more than one third of their time was dedicated to general medical care (4).

However, there is varying comfort among nephrologists regarding ownership of primary care; one study demonstrated high rates of PCP involvement after dialysis initiation, with an average of 4.5 PCP visits per year and 6.9 visits per year in older, sicker patients (2). Similarly, survey studies of general medicine providers and nephrologists highlight that, although most nephrologists maintain confidence in their ability to provide primary care, both provider groups agree that the entirety of primary care should not be provided by the nephrologist alone (5). The lack of clarity regarding how primary care should be delivered, the role of PCPs, and delineation of responsibilities between PCP and nephrologist highlights a need to understand the effect of the current state of primary care delivery on clinical outcomes and to define how to provide optimal primary care for patients on dialysis.

In this issue of CJASN, Silver et al. (6) examine the effect of PCP’s involvement, specifically PCP continuity, in the transition of patients with kidney failure to dialysis and whether such continuity is associated with improved clinical outcomes. Their findings come at a critical moment in the reframing of care for patients on dialysis in the United States with the emergence of ESKD Seamless Care Organizations (ESCOs) in which the dialysis units and partnering nephrologists provide many of the traditional primary care functions in coordinating care. In addition, the Advancing American Kidney Care Initiative incorporates payment models in which the nephrologist assumes a more holistic approach to care delivery.

The authors conducted a population-based retrospective cohort study of 19,099 adult patients who initiated hemodialysis in the province of Ontario, Canada, during the study period (2005–2014). The study used province-wide administrative databases that were linked at the patient level and included validated information on dialysis modality, with low rates of loss to follow-up (<0.5% annually). The key exposure of interest was high PCP continuity defined as both a high usual provider of care index (>75% of PCP visits with the same PCP) in the 2 years before dialysis initiation and at least one visit with the same PCP in the 90 days after dialysis initiation. Failure to meet both criteria was defined as low PCP continuity. The primary outcome was all-cause mortality during the 2 years after dialysis initiation. Secondary outcomes were all-cause hospitalization as well as disease-specific hospitalizations (including but not limited to heart failure, myocardial infarction, stroke/transient ischemic attack, sepsis, and diabetes) that were felt to be either common in patients on dialysis or amenable to PCP continuity of care.

Multivariable logistic regression models were used to estimate propensity scores for high PCP continuity. Cox proportional hazards models were used to derive hazard ratios for the primary outcome as well as for the secondary outcome of disease-specific hospitalizations. Sensitivity analyses were conducted for alternative definitions of PCP involvement.

The authors found that, of the 19,099 patients included in the study cohort, 6612 (35%) met both criteria for high PCP continuity, whereas 12,487 (65%) did not. Those patients with high PCP continuity were
significantly older and had lower Charlson comorbidity scores than patients with low PCP continuity. The authors matched 6391 patients with high PCP continuity to an equivalent number of patients with low PCP continuity, matching on dialysis modality. There was neither a significant reduction in all-cause mortality in patients with high PCP continuity (14.5 deaths per 100 person-years versus 15.2 deaths per 100 person-years) nor a significant reduction in the rate of all-cause hospitalizations. Sensitivity analyses designed to reflect varying levels of PCP involvement continued to demonstrate no difference in results, except for a small but significant reduction in the rate of hospitalizations when the definition of PCP continuity included PCP visits for 1 year after dialysis initiation (hazard ratio, 0.89; 95% confidence interval, 0.85 to 0.93). Among disease-specific hospitalizations, the authors found a reduction in diabetes-related hospitalizations from 8.0 events per 100-person years in the low-PCP continuity group to 7.0 events per 100-person years in the high-PCP continuity group.

The main strength of the study is the focus on the effect of PCP continuity on important clinical outcomes, like mortality and hospitalization. The study also benefits from the use of population-level databases. However, the authors note several important limitations, including limited generalizability to other types of health systems, lack of quality of life or mental health data, and most importantly, the absence of a standardized definition for PCP continuity of care. The definition of high PCP continuity included 2 years of consistent PCP visits and one PCP visit within 90 days after dialysis initiation, which is reasonable but somewhat arbitrary because there is no expert consensus regarding timing or type of PCP care while on dialysis. It is notable that there was a small, significant reduction in the rate of hospitalization when the definition of PCP continuity was expanded to 1 year after dialysis initiation. Notably, other studies have found that, for patients on dialysis, outpatient care can reduce the risk of readmission (7). Finally, it is unclear exactly what type of care was provided by the PCPs, if there were barriers to care (such as interoperability), and what type of communication occurred between the PCP and nephrologist.

The findings of Silver et al. (6) illustrate the importance of better defining how primary care should be delivered to patients on dialysis. Wang et al. (1) conducted a systematic analysis of studies examining the role of primary care for patients on dialysis and revealed a lack of consistency regarding expectations among nephrologists, PCPs, and patients in terms of how primary care is delivered, resulting in primary care fragmentation. The consequences of the current state of undefined primary care delivery include underutilization of necessary care, duplication of care, miscommunication, and lack of coordination. Given the national interest in advancing the care of all patients with kidney disease, there is an opportunity to identify these challenges and propose innovative care delivery models.

Currently, key primary care delivery barriers for patients on dialysis include (1) lack of delineation in roles between PCPs and nephrologists, (2) lack of interoperability of electronic health records, and (3) need for improved coordination and communication between PCP and nephrologist. Addressing these barriers may improve outcomes distinct from visit timing and frequency. Collaborative care agreements have been proposed as a mechanism by which PCPs and specialists can codify their roles in the care of patients with kidney disease (8). For example, hepatitis B vaccination is more easily accomplished during a regularly scheduled visit to the dialysis unit, whereas planning for a colonoscopy, mammogram, or low-dose chest computed tomography (and follow-up to discuss results) is best done in the PCP office. Similarly, sharing electronic health record data is essential to ensuring that the PCP is aware of the care provided by the nephrologist and vice versa to reduce redundancy of care, avoid assumptions about care, and improve medication safety and adherence (9). The Centers for Medicare and Medicaid Services is leading efforts to advance electronic data exchange, but patients on dialysis have not been specifically referenced, which we recently highlighted as an important opportunity. Finally, ensuring coordination of care between the PCP and the nephrologist, other specialists, and various sites of care is important to ensure high-quality holistic care delivery, particularly during periods of transition. Notably, the logistical and scheduling aspects of dialysis treatments may contribute to the marginalization of PCP care after patients transition onto dialysis. The need for improved coordination supports the evolution of ESCOs, in which coordination to improve outcomes was central to the design of the program (10).

Silver et al. (6) raise the importance of not only the timing and frequency of PCP care but also, the quality of the primary care delivered. By addressing barriers to high-quality primary care and exploring innovative care delivery models that emphasize clear delineation of primary care versus nephrology responsibilities, interoperability, and coordination, there is an opportunity to advance care for patients on dialysis. It is vital to not discount primary care for the patients on dialysis, but instead, we must consider how to better integrate all care in a patient-centered care delivery model.

Disclosures
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References


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See related article, “Association of Primary Care Involvement with Death or Hospitalizations for Patients Starting Dialysis,” on pages 521–529.