

AKD—The Time Between AKI and CKD: What Is the Role of the Pharmacist?

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Recently, the Acute Disease Quality Initiative (ADQI) workgroup published a consensus statement describing acute kidney disease (AKD) being the 7 to 90 days between the progression of acute kidney injury (AKI) to chronic kidney disease (CKD).¹ It is important to realize the substantial risk of developing CKD after AKI. According to a meta-analysis, the pooled hazard ratio for developing CKD following an episode of AKI was 8.8 (95% confidence interval: 3.1–25.5).² Even patients whose serum creatinine returns to baseline following an AKI episode have the possibility of progressing to CKD.³ Considering drug-associated AKI, residual kidney damage is noted in 70% of patients at 6 months.⁴ Many factors possibly contribute to the progression of AKI to CKD including nephron loss, endothelial injury, vascular insufficiency, interstitial inflammation and fibrosis, cell cycle disturbance, and maladaptive repair mechanisms.⁵

There is a need for better follow-up care after an AKI episode, and there is a need for improvement in health literacy for kidney disease. Notably, 80% of patients are unaware that they experienced an episode of AKI in the hospital.⁶ Furthermore, only 8% to 41% of patients receiving dialysis in the hospital see a nephrologist within 1 year of hospital discharge.^{7–9} Even those patients who received dialysis in the hospital and recovered adequately to not require dialysis do not typically visit a nephrologist.¹⁰ Follow-up with a nephrologist is imperative because it is associated with improved mortality.⁸

The role of the pharmacist in patients with AKD has not been described, possibly due to the lack of AKD awareness. Pharmacists are actively involved in the management of drugs during an AKI episode and also for patients at high risk for AKI in the community.^{11–13} Pharmacists also participate in dialysis clinics for the care of patients requiring dialysis^{14,15} and in ambulatory care settings to manage drugs in CKD

patients.^{16,17} Because of these services, the involvement of pharmacists in the care of patients with AKD is a natural extension. Table 1 describes the potential role for pharmacists in caring for patients with AKD. Implementation of these services can help bridge the noted gaps in health literacy and follow-up.

Summary

The role of pharmacists in caring for patients with AKD (1) begins with inpatient care at the time of AKI diagnosis, (2) involves patient-pharmacist interaction at hospital discharge, and (3) provides active follow-up care after hospital discharge. The pharmacist, as part of a multiprofessional patient care team, should be actively involved in improving health literacy for kidney disease, should be encouraging patient follow-up after an episode of AKI, and should be actively involved in medication management for patients with AKD. This role is similar to a pharmacist caring for a patient with AKI or CKD because of the central focus on optimal medication management; however, it is different because of the emphasis on enhancing health literacy for kidney disease, preventing progression to CKD, and developing a process for continuity of care.

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Table 1. Role of the Pharmacist in Care for Patients with AKD as part of a patient care team.

Role of pharmacist	Description of the problem	Potential action
Enhancing health literacy about managing medications during AKD	Only 12% of patients thought the kidneys process medicines ¹⁸	Educate patients at hospital discharge Reach out to patients via telemedicine in their homes Meet with patients in post-AKI ambulatory clinics ^{6,10,19}
Managing drug dosing	Almost 5 million ambulatory care visits occur every year due to adverse drug events, and often, these are due to preventable medication errors ²⁰	Active involvement in medication management during the hospital stay and at hospital discharge Reach out to patients via telemedicine to perform medication reconciliation Meet with patients in post-AKI ambulatory clinics ^{6,10,19}
Avoiding nephrotoxins post AKI	20% of patients with a recent episode of AKI take nonsteroidal anti-inflammatory drugs ²¹	Monitor patients in the hospital and intervene as necessary Educate patients at hospital discharge Reach out to patients via telemedicine in their homes Meet with patients in post-AKI ambulatory clinics ^{6,10,19}
Cautiously restarting necessary nephrotoxins	Timing the initiation of nephrotoxins post-AKI requires a balance	Guidance on initiating angiotensin-converting enzyme inhibitors and angiotensin II receptor blockers is provided by the National Health Services of England in their program "Think Kidneys" ²²
Working with patient care team to encourage monitoring	Only about 25% of patients with risk factors for AKI saw a nephrologist within 3 months of the AKI episode ²³	Serum creatinine and urine albumin monitoring after hospital discharge Testing recovery biomarkers when ready for clinical practice ²⁴
Managing diabetes and hypertension as part of a patient care team	Risks for developing AKI include diabetes mellitus and history of hypertension. ²⁵ The risk factors for AKD are not substantiated but are possibly similar to AKI.	Active involvement in hospital patient care rounds, ambulatory clinics, and community care for chronic medication management

Note. AKD = acute kidney disease; AKI = acute kidney injury.

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