



Resources for Pharmacists in Improving Consequences of Diabetic Kidney Disease

Complementing the educational contributions of the experts, these downloadable resources may be used as guidelines, reference sources, and clinical tools allowing pharmacists to implement better management of diabetic patients with chronic kidney disease:

- ***Advancing Kidney Health Through Optimal Medication Management Initiative:*** This initiative is based upon the vision that every person with kidney disease receives optimal medication management through team-based care including a pharmacist to ensure their medications are safe, effective and convenient for them to use. The mission is to engage pharmacists and key stakeholders to develop partnerships for optimal medication management in persons with kidney disease to improve health outcomes and reduce healthcare costs. Goals include: developing pharmacy practice standards for optimal medication management in kidney disease; formulating education standards, curriculum and training for optimal medication management in patients with kidney diseases; engaging key stakeholders to drive optimal medication management practices into new-value based kidney care models; and developing learning and action collaborative to aid practices and kidney care companies and health systems to incorporate pharmacists into the care loop.

<https://www.kidneymedicationmanagement.org/>

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- ***The Kidney Disease: Improving Global Outcomes (KDIGO) 2020 Clinical Practice Guideline for Diabetes Management in CKD:*** This represents the first KDIGO guideline on this subject. The scope includes topics such as comprehensive care, glycemic monitoring and targets, lifestyle and antihyperglycemic interventions, and approaches to self-management and optimal models of care. The goal of the guideline is to generate a useful resource for clinicians and patients by providing actionable recommendations with infographics based on a rigorous, formal systematic literature review. Another aim is to propose research recommendations for areas in which there are gaps in knowledge. The guideline targets a broad audience of clinicians treating diabetes and CKD, while taking into account implications for policy and payment. The development of this guideline followed an explicit process of evidence review and appraisal. Treatment approaches and guideline recommendations are based on systematic reviews of relevant studies, appraisal of the quality of the evidence, and the strength of recommendations following the Grading of Recommendations Assessment, Development, and Evaluation (GRADE) approach. Limitations of the evidence are discussed and areas for future research are presented.

Reference: Kidney Disease: Improving Global Outcomes (KDIGO) Diabetes Work Group. KDIGO 2020 Clinical Practice Guideline for Diabetes Management in Chronic Kidney Disease. *Kid Int.* 2020; 28(4S):S1-S115.

<https://kdigo.org/guidelines/diabetes-ckd/>

- Kidney Disease: Improving Global Outcomes (KDIGO) Blood Pressure Work Group. KDIGO 2021 Clinical Practice Guideline for the Management of Blood Pressure in Chronic Kidney Disease:** This updated clinical practice guideline for blood pressure management for adults with CKD who are not receiving dialysis advises treating to a target systolic blood pressure of <120 mm Hg, provided measurements are "standardized" and that blood pressure is measured properly. This blood pressure target, largely based on evidence from the Systolic Blood Pressure Intervention Trial (SPRINT), represents a significant update from the 2012 KDIGO Clinical Practice Guideline, which advised clinicians to treat to a target blood pressure of ≤130/80 mm Hg for patients with albuminuria or ≤140/90 mm Hg for patients without albuminuria. The new goal is also lower than the <130/80 mm Hg target in the 2017 American College of Cardiology/American Heart Association (ACC/AHA) Guideline.

Reference: Kidney Disease: Improving Global Outcomes (KDIGO) Blood Pressure Work Group. KDIGO 2021 Clinical Practice Guideline for the Management of Blood Pressure in Chronic Kidney Disease. *Kidney Int.* 2021;99(3S):S1–S87.
<https://www.kidney-international.org/action/showPdf?pii=S0085-2538%2820%2931270-9>
- Chronic Kidney Disease Disparities: Educational Guide for Primary Care:** PCP teams can help reduce disparities in care for CKD through early identification, treatment, monitoring progression, collaborating with nephrologists and other specialists, building care teams and engaging patients. This educational guide, prepared by the National Committee for Quality Assurance (NCQA) for Centers for Medicare & Medicaid Services (CMS), is intended to foster the development of primary care practice teams in order to enhance care for vulnerable patients who are at risk of CKD or who have CKD and are at risk of progression of disease or complications. This guide addresses three aspects of care: identification of CKD; treatment and monitoring progression; and delivering patient-centered care. It is meant to inform readers about disparities in the care of patients with CKD, present potential actions that may improve care and suggest other available resources that may be used by primary care practice teams in caring for vulnerable patients.
<https://www.cms.gov/files/document/chronic-kidney-disease-disparities-educational-guide-primary-care.pdf>
- NKF KDOQI Staging Guidelines:** These guidelines from the National Kidney Foundation (NKF) Kidney Disease Outcomes Quality Initiative (KDOQI) provides updated clinical practice recommendations on the evaluation, diagnosis and treatment of kidney disease. KDOQI CKD Staging Guidelines define major treatment goals for all patients with CKD. These goals include slowing disease progression, detecting and treating complications, managing cardiovascular risk factors, and in providing timely referral to a nephrologist. CKD often is overlooked in its earliest, most treatable stages. The guidelines recommend estimating glomerular filtration rate and screening for albuminuria in patients with risk factors for CKD, including diabetes, hypertension, systemic illnesses, age greater than 60 years, and family history of prediction equation, detects CKD more accurately than does the serum creatinine level alone; the glomerular filtration rate also is used for disease staging.
https://kidneyfoundation.cachefly.net/professionals/KDOQI/guidelines_ckd/p4_class_g1.htm

- **Kidney Failure Risk Calculator:** Identifying patients at risk of CKD progression may optimize nephrology care. This online calculator is based upon pooled kidney failure risk data based upon a Canadian population showing high discrimination and adequate calibration when validated in 31 multinational cohorts [Tangri N et al. *JAMA*. 2016 Jan 12;315(2):164-742016]. This kidney failure risk equation includes such factors as the 4-variable equation which requires age, sex, eGFR and UACR. The equation provides the 2- and 5-year probability of treated kidney failure for a potential patient with CKD stage 3 to 5, as well as when a referral to specialist might be needed. <https://kidneyfailurerisk.com>
- **CRN Pocket Guide to Nutrition Assessment in the Patient with CKD:** This guide supports the 5th edition of the *Pocket Guide to Nutrition Assessment of the Patient with Kidney Disease* and provide concentrated information that clinicians use on a regular basis. With shortcuts to calculations for commonly used formulas and east-to-find CKD nutrition information, this app will help the clinician provide consistent, high-quality care for patients with kidney disease. <https://nkf.worksmartsuite.com/UserContentStart.aspx?pl=12-85-0946>
- **Advancing American Kidney Health:** As part of the Administration’s focus on improving person-centered care, the US Department of Health and Human Services (HHS) is announcing its vision for advancing kidney health to revolutionize the way patients with CKD and kidney failure are diagnosed, treated, and most importantly, live. The initiatives discussed in this paper are designed to tackle the challenges people living with kidney disease face throughout the stages of kidney disease, while also improving the lives of patients, their caregivers, and family members. <https://aspe.hhs.gov/system/files/pdf/262046/AdvancingAmericanKidneyHealth.pdf>
- **Anemia Therapy Management:** Anemia therapy in patients with CKD requires effective use of iron agents, guided by appropriate testing of iron status. Efficacy of iron therapy appears not to be limited to patients with evidence of iron deficiency. Thus, the goals of iron therapy are to avoid storage iron depletion, prevent iron-deficient erythropoiesis, and achieve and maintain target Hb levels.
 - http://kidneyfoundation.cachefly.net/professionals/KDOQI/guidelines_anemia/cpr32.htm
 - <https://kdigo.org/guidelines/anemia-in-ckd/>

- **KDOQI Clinical Practice Guidelines:** Recognized throughout the world for improving the diagnosis and treatment of kidney disease, the KDOQI guidelines have changed practice through its 18 evidence-based guidelines, as well as collaboration through wider policy and education programs to support implementation of guideline recommendations.

<https://play.google.com/store/apps/details?id=com.indico.nkf>

<https://apps.apple.com/us/app/nkf-kdoqi/id1514625642>



- **eGFR Calculator:** Assists clinicians in estimating kidney function using 5 separate eGFR calculators (CKD-EPI creatinine 2009 equation, MDRD study equation, CKD-EPI creatinine 2012 equation, Cockcroft-Gault Formula, and Revised Bedside Schwartz Formula). The eGFR Calculator also includes a reference list and other information to help clinicians identify risk factors, evaluate for CKD, and manage progression using evidence-based strategies from the KDOQI guidelines.

<https://play.google.com/store/apps/details?id=org.nkf.calculators>

<https://apps.apple.com/us/app/egfr-calculators/id483182385>



- **NKF CKD Care: An Interactive Guide for Clinicians:** Allows clinicians to estimate kidney function using an eGFR calculator and provides care guidelines based on multiple parameters entered by the clinician. This tool offers succinct, patient-specific strategies that define diagnosis and guide management.

<https://play.google.com/store/apps/details?id=com.nkf.ckd>

<https://apps.apple.com/us/app/ckd-care/id1258442585>



- **H2O Overload: Fluid Control for Heart-Kidney Health:** Designed to help clinicians guide patients on limiting fluid intake, especially in people with hyponatremia, kidney failure, or heart disease.

<https://apps.apple.com/us/app/h2o-overload-fluid-control-for-heart-kidney-health/id926707743>

