

The New KDOQI™ Clinical Practice Guidelines and Clinical Practice Recommendations for Diabetes and CKD

Robert G. Nelson^a Katherine R. Tuttle^b for the National Kidney Foundation

^aPhoenix Epidemiology and Clinical Research Branch, National Institute of Diabetes and Digestive and Kidney Diseases, National Institutes of Health, Phoenix, Ariz., and ^bProvidence Medical Research Center, Spokane, Wash., USA

Key Words

Chronic kidney disease · Diabetes · Guidelines, KDOQI

Abstract

Background/Aims: The National Kidney Foundation (NKF) recently published new guidelines and clinical practice recommendations for the diagnosis and management of patients with diabetes and chronic kidney disease (CKD). **Methods:** Guidelines were developed using an evidence-based approach. When sufficient evidence was lacking, recommendations were developed that reflect expert opinion. **Results:** Guidelines describe the process for screening and diagnosis of kidney disease in the setting of diabetes and the management of hyperglycemia, hypertension, dyslipidemia, and nutrition. Recommendations describe the management of albuminuria in the normotensive diabetic patient and the potential value of albuminuria as a marker of treatment efficacy; the impact of diabetes and CKD in special populations; the importance of behavioral self-management; and the value of intensive multifaceted intervention in these high risk patients. **Conclusions:** The new guidelines and recommendations update and extend the scope of the NKF's Kidney Disease Outcomes Quality Initiative (KDOQI™).

Copyright © 2007 S. Karger AG, Basel

Nearly 21 million persons in the US have diabetes. About 5–10% of them have type 1 diabetes, which develops as a consequence of the body's failure to produce insulin. Most others have type 2 diabetes, which develops because of the body's failure to properly use the insulin it produces. Projections on the future burden of diabetes suggest that the prevalence will increase 165% between 2000 and 2050, with the greatest increases in the population over 75 years old and among African-Americans [1]. Children are also increasingly affected by diabetes. Most of the increase in the prevalence of diabetes in children and adults is attributable to the alarming rise in obesity.

Diabetes is the leading cause of chronic kidney disease (CKD) in the US, with microalbuminuria found in 43% and macroalbuminuria in 8% of those with a history of diabetes [2]. Moreover, diabetes accounts for 45% of prevalent kidney failure, up from 18% in 1980 [3]. Substantial under-diagnosis of both diabetes and CKD leads to lost opportunities for prevention, and inadequate or inappropriate care of patients with diabetes and CKD may contribute to disease progression.

A similar report was recently published in *Nephrology News and Issues* (Nelson RG, Tuttle KR: NKF releases new KDOQI guidelines for diabetes and CKD. *Nephrol News Issues* 2006;20:29).

KARGER

Fax +41 61 306 12 34
E-Mail karger@karger.ch
www.karger.com

© 2007 S. Karger AG, Basel
0253-5068/07/0251-0112\$23.50/0

Accessible online at:
www.karger.com/bpu

Dr. Robert G. Nelson
National Institutes of Health
1550 East Indian School Road
Phoenix, AZ 85014-4972 (USA)
Tel. +1 602 200 5205, Fax +1 602 200 5225, E-Mail rgnelson@mail.nih.gov

Table 1. Work group membership

<i>K/DOQI™ advisors</i>	
Adeera Levin, MD	Michael Rocco, MD
<i>Work group</i>	
Pablo Aschner, MD, MSc	Robert G. Nelson, MD, PhD (Co-Chair)
George L. Bakris, MD	Mary Ann Sevick, ScD, RN
Rudolf W. Bilous, MD	Michael Shlipak, MD, MPH
M. Luiza Caramori, MD, MSc, PhD	Katherine R. Tuttle, MD (Co-Chair)
Michelle M. Richardson, PharmD, BCPS	Christoph Wanner, MD
Jordi Goldstein-Fuchs, DSc, RD	Jeffrey A. Cutler, MD, MPH
S. Michael Mauer, MD	Tom Hostetter, MD
Mark E. Molitch, MD	Marc A. Pfeffer, MD, PhD
Andrew Narva, MD	
<i>Evidence review team</i>	
Ethan Balk, MD, MPH	Gowri Raman, MD
Joseph Lau, MD	Katrin Uhlig, MD

Table 2. Staging of chronic kidney disease

Stage	Description	GFR
1	Kidney damage with normal or ↑ GFR	≥ 90 (with CKD risk factors)
2	Kidney damage with mild or ↓ GFR	60–89
3	Moderate ↓ GFR	30–59
4	Severe ↓ GFR	15–29
5	Kidney failure	<15 (or dialysis)

GFR = Glomerular filtration rate; CKD = chronic kidney disease.
Adapted with permission from the National Kidney Foundation [2].

The new Kidney Disease Outcomes Quality Initiative (KDOQI™) Clinical Practice Guidelines and Clinical Practice Recommendations for Diabetes and CKD were developed by the National Kidney Foundation (NKF) to improve outcomes in patients with diabetes and CKD by providing strategies for the diagnosis and management of CKD in the setting of diabetes. The guidelines will be published in 2007 as a supplement to the *American Journal of Kidney Diseases* [4]. Since this review was submitted prior to publication of the guidelines and recommendations, some portions may differ slightly from the published report.

The work group that developed the guidelines and recommendations consisted of individuals with expertise in nephrology, diabetology and endocrinology, pharmacology, social work, nursing and nutrition. They were assisted by an evidence review team with expertise in systematic review of the medical literature. The members of these groups are listed in table 1. Evidence for

clinical practice guidelines was derived from a systematic summary of the available scientific literature. When sufficient evidence was lacking, clinical practice recommendations were developed that reflect expert opinion.

The target patient population for this clinical practice guideline is those with CKD stages 1–5, including dialysis and transplant patients (table 2). The emphasis of the guideline, however, is on stages 1–4, since the evidence in stage 5 is either lacking or addressed in other NKF-KDOQI™ guidelines. Consideration is given to the diagnosis, impact, and management of diabetes and CKD in children, adults, the elderly, pregnant women, and in different racial and ethnic groups. The intended readers are practitioners who manage patients with diabetes and CKD, including, but not limited to, primary care providers, nephrologists, diabetologists and endocrinologists, cardiologists, nurse practitioners and physician's assistants, nurses, dietitians, and diabetes educators.

The guidelines describe the process for screening and diagnosis of kidney disease in the setting of diabetes and the management of diabetes and CKD, including the management of hyperglycemia and general diabetes care, hypertension, dyslipidemia, and nutrition. Special topics such as the management of albuminuria in the normotensive diabetic patient and the potential value of albuminuria as a marker of treatment efficacy; the impact of diabetes and CKD in special populations, including minorities and pregnant women; the importance of behav-

ioral self-management, and the value of intensive multifaceted intervention in these high risk patients are also addressed as recommendations.

The new guidelines update and extend the scope of the NKF-KDOQI™ Clinical Practice Guidelines that presently offer strategies to identify CKD [2] and manage hypertension [5], dyslipidemia [6], bone disease [7], anemia [8], nutrition [9], and cardiovascular disease [10] in patients with CKD.

References

- 1 Boyle JP, Honeycutt AA, Narayan KM, Hoerger TJ, Geiss LS, Chen H, Thompson TJ: Projection of diabetes burden through 2050. *Diabetes Care* 2001;24:1936–1940.
- 2 National Kidney Foundation: K/DOQI Clinical Practice Guidelines for Chronic Kidney Disease: evaluation, classification and stratification. *Am J Kidney Dis* 2002;39:S1–S266.
- 3 US Renal Data System, USRDS 2005 Annual Data Report: Atlas of End-Stage Renal Disease in the United States. Bethesda, National Institutes of Health, National Institute of Diabetes and Digestive and Kidney Diseases, 2005.
- 4 Clinical practice guidelines and clinical practice recommendations for diabetes and chronic kidney disease. KDOQI, National Kidney Foundation. *Am J Kidney Dis* 2007; 49: in press.
- 5 Clinical practice guidelines on hypertension and antihypertensive agents in chronic kidney disease. K/DOQI, National Kidney Foundation. *Am J Kidney Dis* 2004;43:S1–S290.
- 6 Clinical practice guidelines for managing dyslipidemias in chronic kidney disease. K/DOQI, National Kidney Foundation. *Am J Kidney Dis* 2003;41:S1–S92.
- 7 Clinical practice guidelines for bone metabolism and disease in chronic kidney disease. K/DOQI, National Kidney Foundation. *Am J Kidney Dis* 2003;42:S1–S201.
- 8 Clinical practice guidelines for anemia of chronic kidney disease: update 2000. K/DOQI, National Kidney Foundation. *Am J Kidney Dis* 2001;37:S182–S238.
- 9 Clinical practice guidelines for nutrition in chronic renal failure. K/DOQI, National Kidney Foundation. *Am J Kidney Dis* 2000; 35:S1–S140.
- 10 Clinical practice guidelines for cardiovascular disease in dialysis patients. K/DOQI, National Kidney Foundation. *Am J Kidney Dis* 2005;45:S1–S153.