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NEW INITIATIVE

Definition and classification of chronic kidney disease: A position statement from Kidney Disease: Improving Global Outcomes (KDIGO)

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Definition and classification of chronic kidney disease: A position statement from Kidney Disease: Improving Global Outcomes (KDIGO). Chronic kidney disease (CKD) is a worldwide public health problem, with adverse outcomes of kidney failure, cardiovascular disease (CVD), and premature death. A simple definition and classification of kidney disease is necessary for international development and implementation of clinical practice guidelines. Kidney Disease: Improving Global Outcomes (KDIGO) conducted a survey and sponsored a controversies conference to (*1*) provide a clear understanding to both the nephrology and nonnephrology communities of the evidence base for the definition and classification recommended by Kidney Disease Quality Outcome Initiative (K/DOQI), (*2*) develop global consensus for the adoption of a simple definition and classification system, and (*3*) identify a collaborative research agenda and plan that would improve the evidence base and facilitate implementation of the definition and classification of CKD.

The K/DOQI definition and classification were accepted, with clarifications. CKD is defined as kidney damage or glomerular filtration rate (GFR) <60 mL/min/1.73 m^2 for 3 months or more, irrespective of cause. Kidney damage in many kidney diseases can be ascertained by the presence of albuminuria, defined as albumin-to-creatinine ratio >30 mg/g in two of three spot urine specimens. GFR can be estimated from calibrated serum creatinine and estimating equations, such as the Modification of Diet in Renal Disease (MDRD) Study equation or the Cockcroft-Gault formula. Kidney disease severity is classified into five stages according to the level of GFR. Kidney disease treatment by dialysis and transplantation should be noted. Simple, uniform classifications of CKD by cause and by risks for kidney disease progression and CVD should be developed.

Key words: chronic kidney disease, glomerular filtration rate, proteinuria, albuminuria, KDIGO.

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Kidney failure is a worldwide public health problem, with increasing incidence and prevalence, high costs, and poor outcomes [1]. There is even a substantially higher prevalence of the earlier stages of chronic kidney disease (CKD), with adverse outcomes, including loss of kidney function, cardiovascular disease (CVD), and premature death. Strategies to improve outcomes will require a global effort directed at the earlier stages of CKD.

The rationale for a global initiative to address this problem is simple and self-evident. The epidemic of CKD is global. The adverse outcomes of CKD are universal, as are the underlying science and evidence-based strategies for prevention, detection, evaluation, and treatment. Although risk factors and resources for care vary locally, it is important to increase the efficiency of utilizing available expertise and resources in improving the care and outcomes of CKD worldwide.

Development, dissemination, and implementation of clinical practice guidelines are means to improve outcomes of CKD. Rigorously developed evidence-based clinical practice guidelines, when implemented, can reduce variability of care, improve patient outcomes, and ameliorate deficiencies in health care delivery [2–4]. Kidney Disease: Improving Global Outcomes (KDIGO) is a recently established and independently incorporated organization governed by an international board of directors with the stated mission to "improve the care and outcomes of kidney disease patients worldwide through promoting coordination, collaboration and integration of initiatives to develop and implement clinical practice guidelines" [1].

One of the initiatives undertaken by KDIGO is a series of International Controversies Conferences that examine what is known, what can be done with what is known, and what needs to be known on selected issues that

impact on the care and outcomes of kidney disease patients worldwide. The first KDIGO International Controversies Conference on "Definition and Classification of Chronic Kidney Disease in Adults" was held in Amsterdam, The Netherlands, on November 16 and 17, 2004. The topics covered included the definition and classification of CKD, estimation of glomerular filtration rate (GFR), and measurement of albuminuria and proteinuria. This article has been reviewed by the conference participants and reports the recommendations of the conference, which have been reviewed and adopted as a position statement by the KDIGO Board of Directors.

SCOPE

The National Kidney Foundation's Kidney Disease Outcomes Quality Initiative (K/DOQI) Clinical Practice Guidelines on Chronic Kidney Disease: Evaluation, Classification and Stratification of Risk published in 2002 provided the first definition of CKD independent of cause, and classification of severity based on GFR level [5]. The guidelines have been widely disseminated and generally accepted [6–13]. However, concerns have been expressed about the definition and classification, methods to estimate GFR, and ascertainment of proteinuria [14–21].

The goals for the KDIGO Controversies Conference were (*1*) to provide a clear understanding to both the nephrology and nonnephrology communities of the evidence base for the K/DOQI definition and classification of severity of CKD; (*2*) to develop global consensus for the adoption of a simple definition and classification system for CKD, clarifications and modifications to current guidelines to facilitate more widespread implementation of initiatives for patient care and physician and public education worldwide; and (*3*) to identify a collaborative research agenda and plan that would improve the evidence base and facilitate the implementation of the definition and classification of CKD

CONFERENCE

KDIGO co-chairs (G. Eknoyan and N. Lameire) identified Conference co-chairs (A. Levey and K.-U. Eckardt) and worked together to develop the agenda and select individuals with demonstrated expertise in CKD and interest in global issues regarding guideline implementation. The Conference was attended by 60 participants from North and South America, Europe, Asia, Australia, and Africa (Appendix 1). Plenary sessions and breakout sessions were designed to provide an overview of each of the three major topics, detailed discussions, and a summary of clarifications and modifications of the K/DOQI guidelines, and suggestions for implementation, and recommendations for research. Invitees were also encouraged to submit abstracts of their work to complement the discussion. The agenda and abstracts can be found at *www.kdigo.org*. This manuscript contains a brief summary of the survey conducted prior to the meeting, as well as the specific recommendations approved by the KDIGO Board of Directors at its meeting on December 3 and 4, 2004 in Paris.

SURVEY

Prior to the conference, a survey was developed and disseminated to nephrologists worldwide to assess their opinion of the K/DOQI definition and classification of CKD. The survey was designed to answer the following questions:

What is the current practice for definition of CKD, use of a classification system, estimation of GFR, and measurement of proteinuria?

Is there agreement on the use of estimated GFR as a basis for classifying CKD?

What is the current knowledge on parameters required for GFR estimates?

Is there agreement on the use of spot urine samples for measurement of proteinuria?

What are potential barriers and concerns regarding implementation?

Questions were drafted by conference planners, reviewed and amended by KDIGO Board of Directors and other experts. A "pilot" version was tested, revised, and translated from English into French, German, Spanish, and Japanese. The final version of the survey contained 25 questions and was distributed to approximately 10,000 nephrologists via electronic mail. Mailing addresses were kindly provided by the International Society of Nephrology, European Renal Association-European Dialysis and Transplant Association, Spanish Society of Nephrology, Latin American Society of Nephrology, French Society of Nephrology, and Japanese Society of Nephrology.

Responses, received from 1190 (12%) representing nephrologists in all continents (Table 1), were used to formulate the issues that the Controversies Conference would address. The detailed results and analyses of the responses received will be the subject of a separate publication.

Definition and classification of kidney disease

In brief, respondents commented on the following with regard to definition and classification:

K/DOQI system is frequently used already;

Vast majority believe that it helps in identifying individuals with CKD;