Global Action. Local Change.

KDIGO Controversies Conference on Blood Pressure in CKD

September 7-10, 2017
Edinburgh, Scotland

Kidney Disease: Improving Global Outcomes (KDIGO) is an international organization whose mission is to improve the care and outcomes of kidney disease patients worldwide by promoting coordination, collaboration, and integration of initiatives to develop and implement clinical practice guidelines. Periodically, KDIGO hosts conferences on topics of importance to patients with kidney disease. These conferences are designed to review the state of the art on a focused subject and to ask conference participants to determine what needs to be done in this area to improve patient care and outcomes. Sometimes the recommendations from these conferences lead to KDIGO guideline efforts and other times they highlight areas for which additional research is needed to produce evidence that might lead to guidelines in the future.

Background

One of the primary objectives of KDIGO is the improvement of medical care for patients with chronic kidney disease (CKD). In that respect, the management of hypertension, a common disorder in these patients, is critical. High blood pressure (BP) is closely related to adverse kidney and cardiovascular (CV) outcomes in CKD. As a result, KDIGO published a guideline on the management of hypertension in CKD in 2012. The guideline was derived from a significant effort by the Work Group to summarize the evidence in this topic available through 2011. Since 2011, new evidence has emerged which has important implications that should be considered for integration in the guideline. Such evidence includes, but is not limited to, data from the Systolic Blood Pressure Intervention Trial (SPRINT) *(NEJM, JASN)* and other randomized controlled studies, namely HALT-PKD and SPS3. Therefore,

KDIGO will convene a Controversies Conference to examine this new evidence as it relates to management and treatment of hypertension in CKD.

Relevance of the topic and the conference

Control of high BP is a pivotal element for all types of kidney diseases. There is no controversy regarding the pathogenic role of hypertension in the acceleration of kidney disease progression and CV diseases in CKD. However, the optimal BP target to minimize these systemic complications is unclear. Given new data from recent trials, the KDIGO Controversies Conference on Blood Pressure in CKD will assess which parts of the 2012 KDIGO BP guideline should revisited by the future updating Work Group. Potential new data on mortality and kidney and CV outcomes, as well as cognitive function and quality of life in hypertensive patients with CKD, will be examined. In particular, the conference will explore the need to revisit specific guideline recommendations related to CKD subpopulations, such as those defined by age, the presence or absence of diabetes, severity of CKD, transplant recipients and those with underlying primary kidney disease (e.g., ADPKD) In addition, the methods by which BP readings are obtained have attracted increasing attention. When, where and how BP is measured will be discussed at our conference for potential future guideline updating.

It is anticipated that evidence in certain domains will be weak; hence the need for specific clinical research agenda will be presented. Investigators, healthcare providers, research funding agencies and the public will be informed about priorities of research that this conference identifies.

Conference Overview

The KDIGO Controversies Conference on Blood Pressure in CKD will gather a global panel of multidisciplinary clinical and scientific expertise, including nephrology, cardiology, hypertension, endocrinology, pediatrics, and pharmacology, who will identify key issues relevant to the updating of the 2012 KDIGO BP guideline. The objective of this conference is to assess the current state of knowledge related to the optimal means for measuring BP; management of hypertension in CKD patients with

and without diabetes, the elderly, as well as the pediatric and kidney transplant subpopulations.

Alfred K. Cheung, MD (Chief, Division of Nephrology & Hypertension, University of Utah Health, USA) and Johannes F. E. Mann, MD, (KfH Kidney Center, Munich & Dept. of Nephrology & Hypertension, University of Erlangen-Nuremberg, Germany) will co-chair this conference. The format of the conference will involve topical plenary session presentations followed by focused discussion groups that will report back to the full group for consensus building. Invited participants and speakers will include worldwide leading experts who will address key clinical issues as outlined in the **Appendix: Scope of Coverage**. The conference output will include publication of a position statement that will help guide KDIGO and other organizations on BP management and future research.

Appendix: Scope of Coverage

Group 1: Blood Pressure (BP) Measurement

1a. How do measures of BP differ across the following four techniques or settings: 1) auscultatory office-based BP (OBP); 2) automated oscillometric BP at home (HBP); 3) automated oscillometric office-based BP (AOBP); 4) ambulatory BP monitoring (ABPM). In particular, what are the differences in systolic BP (SBP) and diastolic (DBP) in the same patient when the above methods are systematically compared?

1b. Current guidelines define hypertension as OBP SBP ≥ 140 mm Hg or DBP ≥ 90 mm Hg; mean awake ABPM SBP ≥ 135 mm Hg or DBP ≥ 85 mm Hg; mean 24-hour SBP ≥ 130 mm Hg or DBP ≥ 80 mm Hg; HBP SBP ≥ 135 mm Hg or DBP ≥ 85 mmHg. How strong is the evidence supporting the equivalence of these measurements? Can we provide equivalent values for AOBP? How does the presence or absence of an observer during BP measurement affect AOBP? Do we need to reexamine how hypertension should be defined?

1c. Do the differences in BP using these four techniques differ among persons with and without CKD? Should there be different thresholds to define hypertension in persons with CKD?

2a. Does the relation of BP with outcomes (e.g., death, cardiovascular events, kidney disease progression) differ depending on whether BP is measured using AOBP, OBP, HPB and ABPM and do these relationships vary in CKD?

2b. How does nocturnal / sleeping BP, dipping status and variability in BP associate with outcomes and do these relationships vary in CKD?

3. What are the essential preparations that should precede any BP measurement (e.g., duration of rest prior to measurement, dietary preparation, absence of medical personnel, body and arm positions,

appropriate cuff size selection, ambient temperature)? Are these elements different depending on whether OBP, HBP or AOBP is used?

4. Based on the answers to questions 1-3, are we able to recommend any particular method(s) of BP measurement in CKD?

5a. How should we define white-coat hypertension, masked hypertension, and masked uncontrolled hypertension and when should we evaluate for these? How do white-coat hypertension, masked hypertension, and masked uncontrolled hypertension associate with outcomes? Are there differences in CKD?

5b. How should we define orthostatic hypotension or orthostatic hypertension and when should we evaluate for these? How do orthostatic hypotension and orthostatic hypertension relate to outcomes and are there differences in CKD?

6. Should other techniques of assessing blood vessels, such as pulse-wave velocity, central aortic BP measurements, and wearable BP monitors be used clinically?

Group 2: Management of Hypertension in CKD Patients with Diabetes vs without Diabetes

1. What should the BP targets be for non-diabetes mellitus (non-DM) CKD? Is it sensible to have a single target for all hypertensive non-DM CKD patients?

2. Should the BP target in non-DM CKD be the same as for DM-CKD?

3. Which clinical outcome measures should drive the BP target value: Mortality? Kidney outcomes (e.g., estimated glomerular filtration rate (eGFR) or albuminuria or ESRD)? Quality of life?

4. Is there a lower limit for SBP? Is there a J-curve? If so, where is the nadir?

5. Should DBP be taken into consideration for initiation or target of anti-hypertensive therapy?

6. Are the decreases in eGFR and/or increased risks for kidney events observed with lower BP goals in ACCORD, SPS3 and SPRINT clinically important?

7. Should the degree of albuminuria affect BP targets?

8. Should the choice of antihypertensive agents (RAS inhibitors in particular) be determined by albuminuria level?

9. How should resistant hypertension be managed in CKD?

Group 3: Management of Hypertension in CKD among Elderly and Individuals with Previous Stroke

1. Should antihypertensive therapy be initiated in the elderly with CKD at the same BP level as in the younger CKD patients?

2. Should the BP goal be different in the elderly with CKD from that in younger CKD patients? How are BP targets affected by levels of proteinuria?

3. What is the role for frailty in determining the initiation of antihypertensive treatment and BP goal?

4. Are there preferred medications in the elderly population?

5. What role should life expectancy play in determining the initiation of antihypertensive treatment and BP goal?

6. How should patients' perspectives of side effects be considered in the definition of BP targets and medication choice?

7. How should elderly CKD patients in whom antihypertensive therapy has been initiated be monitored (i.e., symptoms, orthostatic BP, serum-creatinine, serum potassium, etc)?

8. Should history of stroke change the initiation and target of BP treatment?

9. Are there preferred medications in the population with stroke?

10. Does recent or remote stroke make a difference? What are the specific considerations?

11. Does the severity of CKD change BP goals or selection of antihypertensive drugs in elderly patients or those with prior stroke?

Group 4: Management of Hypertension in CKD in Transplant and Pediatric Populations

1. In pediatric CKD patients:

   (a) Is there new evidence on BP targets?

   (b) Is there new evidence in the choice of anti-hypertensive agents?

   (c) Is there new evidence to guide the appropriate method and frequency of BP measurements?

   (d) Is there evidence to make dietary sodium and potassium recommendations?

   (e) Is there new evidence to guide the surveillance of the systemic consequences of hypertension?

(f) Do BP guideline recommendations in the adult general CKD population apply to the pediatric CKD population?

(g) Which part of the 2012 KDIGO BP guidelines related to pediatric patients with CKD may need to be revised?

2. In kidney transplant recipients:

(a) Is there new evidence on BP targets**?**

(b) Is there new evidence in the choice of anti-hypertensive agents?

(c) Do BP guidelines in the adult general CKD population apply to the kidney transplant recipients?

(d) Which part of the 2012 KDIGO BP guidelines related to the kidney transplant recipients may need to be revised?

3. Is there evidence to guide the frequency of BP measurement to monitor people who have previously donated a kidney?