5-1-2010

CKD Surveillance: The Next Generation

Jerry Yee
Henry Ford Health, JYEE1@hfhs.org

Recommended Citation
Yee J. CKD Surveillance: The Next Generation. Advances in Chronic Kidney Disease 2010; 17(3):211-212.

ACKD Advances in Chronic Kidney Disease — National Kidney Foundation

Vol 17, No 3, May 2010

EDITORIAL

CKD Surveillance: The Next Generation

Human surveillance from the French word "surveiller" *denotes* a state of watchfulness, vigilance, and close supervision of behaviors.[1] Disease surveillance is ongoing systematic data aggregation and analysis that provisions defined information that generates action(s) targeted at prevention and control of a particular disease entity.[2] Surveillance also *connotes* a state of dynamism, agility, and hence, responsiveness. With the recognition that the prevalences of hypertension, obesity, and diabetes continue to escalate, the incidence and prevalence of CKD will follow suit. Therefore, it logically follows that CKD surveillance mechanisms must be conceived, developed, and implemented.

A combination of heuristics and the results of accumulated data inform the development of CKD surveillance schemas for future process development and implementation. However, stereotypical analyses that derive from classical schema must be critically examined and re-examined by the selfsame developers of such cognitive frameworks. Otherwise, one remains gullible to confirmation of pre-existing beliefs, which narrowly circumscribe one's knowledge. Thinking forwardly, the development of CKD surveillance, locally, regionally, nationally, and even globally must adhere to *glasnost*-like precepts. Such candor and openness positively facilitates models of surveillance, and consequently, patient care and clinical outcomes.

The estimation of glomerular filtration rate (eGFR) has somewhat pursued this pattern of development, retrenchment, and revival. After the publication of the Modification of Diet in Renal Disease (MDRD) eGFR equation sets, the calculus of CKD surveillance was born and a plethora of publications appeared in the renal literature that forcefully described the enlarging base of CKD, much of what had been previously undisclosed.[3] However, with a maturation of the employment of the practitioners using the MDRD eGFR tool, it became apparent that dependency on a single calculation had been misapplied in certain instances, particularly among elderly persons.

Revisitation of the issue was required and the January 2009 Kidney Disease: Improving Global Outcomes (KDIGO) meeting in London, England convened 100 persons to address and discuss the following issues at this "Controversies" conference.

1. What are the key outcomes of CKD?
2. What progress has been made in CKD testing (eGFR and albuminuria)?
3. What are the key factors determining prognosis (eGFR, albuminuria, others)?
4. Should the current CKD classification (based on eGFR) be modified to include additional factors associated with prognosis?
5. Based on these results, should the CKD definition be modified?

In addition, the conference was purposed to evaluate the definition and classification of CKD using data based upon prognosis, thereby focusing the debates toward a productive end. This focus culminated in the

1548-5595/10/1703-0001$36.00/0
doi:10.1053/j.ackd.2010.04.001

generation of a 43-cohort meta-analysis that corroborated the contemporary system for defining and classifying CKD: the National Kidney Foundation Kidney Disease Outcomes Quality Initiative (NKF KDOQI) published in 2002.[4] Essentially, patients with CKD, according to that definition, have a worse prognosis than those who do not meet the criteria. The stratification of CKD Stage 3 and addition of the criterion albuminuria more sharply define the prognosis of CKD. Additional information enhances the characterization of CKD and could be incorporated into large neural networks that predictively model CKD prognostic risk.

This enhanced model is especially relevant since CKD has become a more common health issue that must be enveloped by a continuum of care and one that will not be solely directed by nephrologists. CKD has cast off its "grim reaper" image as the presager of dialytic care because CKD is itself an important disorder with prognostic significance. It is now a target for prevention in those so predisposed to develop it, and a condition that must be detected early to forestall its progression and associated outcomes of cardiovascular events and death. It is a complex management problem in its advanced stages that demands excellent kidney care by primary care physicians and nephrologists. Furthermore, the institution of preventive measures, including directed, simplified CKD education, early detection measures, and management by primary health care providers, is vital.

The Guest Editors, Drs Rajiv Saran and Vahakn Shahinian, have recognized that the global impact of CKD requires a sea change in the perspectives of public (and private) health organizations regarding kidney disease. They acknowledge that all of the aforementioned discussion plus more would be required within the architecture of a responsive and robust CKD surveillance system. This biosurveillance system would require careful system application design; high-level database design, linked to multiple other health informatics systems; high throughput data analysis software, with commensurately powerful hardware; Web-savviness, -service, and -integration; syndromic grouping; disease parameter-specific detectors; detection-focused visualizations; facile communication among end-users and researchers; and security.[5] They have judiciously amalgamated a group of contributors who provide their varied perspectives in this issue of Advances of Chronic Kidney Disease. Indeed, common threads run through the fabric of the authors' arguments for the development of worldwide CKD surveillance methodologies targeted toward an improvement in CKD outcomes: watchfulness, vigilance, and close supervision.

CKD has evolved rapidly and continues to do so. It has passed through two generations already: definition and identification were the first, and refinement was the second. Surveillance will now become the focus of the next generation. It is time for us to engage!

Jerry Yee, MD
Editor

References

1. Available at: http://www.merriam-webster.com/dictionary/surveillance. Accessed March 29, 2010
2. Lombardo JS, Ross D: Disease surveillance, a public health priority, in Lombardo JS, Buckeridge DL (eds): Disease Surveillance: A Public Health Informatics Approach. Hoboken, NJ, Wiley & Sons, 2007, p 1
3. Levey AS, Bosch JP, Lewis JB, et al: A more accurate method to estimate glomerular filtration rate from serum creatinine: A new prediction equation. Modification of Diet in Renal Disease Study Group. Ann Intern Med 130:461-470, 1999
4. Available at: http://www.kidney.org/professionals/kdoqi/guidelines_ckd/p4_class_g1.htm. Accessed March 31, 2010
5. Hauenstein L, Wojcik R, Loschen W, et al: Putting it together: The biosurveillance, in Lombardo JS, Buckeridge DL (eds): Disease Surveillance: A Public Health Informatics Approach. Hoboken, NJ, Wiley & Sons, 2007, pp 193-250