Closing the gap between evidence and practice in chronic kidney disease

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There are major gaps between our growing knowledge of effective treatments for chronic kidney disease (CKD), and the delivery of evidence-based therapies to populations around the world. Although there remains a need for new, effective therapies, current evidence suggests that many patients with CKD are yet to fully realize the benefits of blood pressure–lowering drugs (with and without reducing proteinuria with renin-angiotensin system blockade), wider use of statins to reduce atherosclerotic cardiovascular disease events, and better glycemic control in both type 1 and type 2 diabetes. There are many barriers to optimizing evidence-based nephrology care around the world, including access to health care, affordability of treatments, consumer attitudes and circumstances, the dissemination of appropriate knowledge, the availability of expertise and structural impediments in the delivery of health care. Further investment in implementation science that addresses the major barriers to effective care in a cost-effective manner could yield both local and global benefits.

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Although there are many unanswered questions on how best to manage patients with chronic kidney disease (CKD),[1] some strategies and treatments have been shown to be effective at reducing morbidity and mortality. Despite substantial evidence gaps, the fastest and most efficient way to improve kidney outcomes is to fully implement therapies with proven benefit. Specific strategies shown to improve CKD patient outcomes include blood pressure lowering,[2,3] reduction of proteinuria,[2,4] use of angiotensin-converting enzyme inhibitors and angiotensin receptor blockers,[5] and the use of statins to reduce atherosclerotic events.[6,7] Glycemic control in people with both type 1 and type 2 diabetes also improves outcomes,[8,9] and newer agents such as sodium-glucose cotransporter 2 inhibitors may have the additional benefit of reducing albuminuria, cardiovascular outcomes, and progression of CKD in diabetics.[10–12] There are also recent studies suggesting therapies targeted at cause-specific CKD, for example, glomerulonephritis and polycystic kidney disease,[13] may be of long-term benefit.

The implementation of established therapies is variable within and between regions for a variety of reasons. Physician, patient, and health care system factors may all play a role. Access to care or therapies is often restricted by poor availability, expense, or limited access to nephrology care.[14] Physicians may fail to adopt best practices or lack the tools to

ensure the delivery of optimal care. There is a clear motivation to reduce the variability in the implementation of guideline-indicated therapies, and optimizing the delivery of care presents a clear and efficient opportunity for improving health outcomes.

This report describes the deliberations of the Working Group of a meeting organized by the International Society of Nephrology: the first Global Kidney Health Summit held on July 26 to 28, 2016 in Vancouver, Canada. This article expands on the recently published International Society of Nephrology CKD Roadmap,[15] which is a result from the Summit. Our article describes current knowledge gaps and suggests goals for evaluating and implementing evidence-based treatment options for people with CKD.

KNOWLEDGE GAPS

Evidence-practice gaps

Evidence-practice gaps occur when evidence-based therapy is withheld or suboptimally delivered. For many evidence-based therapies, clinical practice guidelines exist, and evidence-practice gaps may occur due to the failure in implementing these guidelines. However, not all therapies for which there is sound evidence are covered by up-to-date guidelines. There will always be patients with genuine contraindications or preferences regarding specific therapies who represent an obligate evidence-practice gap. However, the real concern for health services is the myriad of potentially reversible causes of evidence-practice gap, including patient, provider, health system, and socioeconomic factors.

The full extent of evidence-practice gaps is not known for a variety of conditions and locations. A majority of evidence-practice gap studies have been conducted in high-income countries and followed a retrospective or cross-sectional design. For example, a study of 322 representative primary health care providers in Australia, a country with universal health care coverage, looked specifically at evidence-practice gaps in the management of 1845 patients with evidence of CKD in 2008. Guideline-directed management for blood pressure lowering and lipid lowering was not met in 59% and 64% of patients with CKD, respectively.[16] Even the universally accepted therapeutic approach of renin-angiotensin blockade for blood pressure lowering in the presence of proteinuria was not adopted for 35% of apparently eligible people.[16] A similar finding was found in a Canadian analysis in which 35% of patients with known CKD were treated by nephrology specialists and were not prescribed renin-angiotensin blockade.[17] Among US Medicaid recipients, only 25% of patients were adherent after 5 years.[18]

Estimates of the extent of evidence-practice gap for the delivery of established therapies for CKD in low and lower middle–income countries (LLMICs) are scant.[14] It remains unclear how many are affected by no or suboptimal access to chronic disease management or acute glomerulonephritis diagnosis and treatment. Illustrations from the delivery of non-CKD and renal replacement therapies describe discrepancies in evidence-practice gap according to the country's income. For example, the evidence-practice gap for active epilepsy is in the range of 25% to 100% across low and lower middle–income countries compared with less than 10% in high-income countries.[19] Similarly, the relative availability of renal replacement therapy for end-stage kidney disease differs in higher- and lower-income countries (Figure 1). Overall, there is a large treatment gap globally for access to renal replacement therapy, conservatively estimated at 53%.[20] However, the major contributor to the gap in renal replacement therapy is the excessive gap in resource-poor settings,

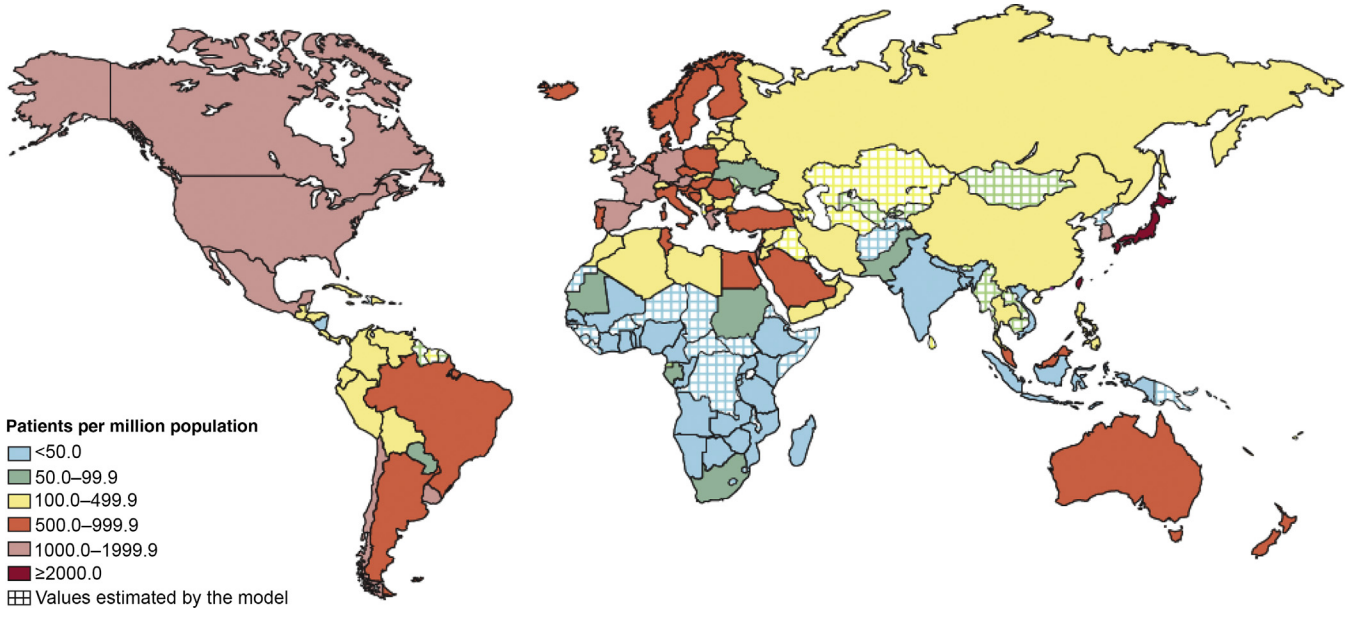

Figure 1 | Availability of renal replacement therapy according to the country. Reproduced from Liyanage T, Ninomiya T, Jha V, et al. Worldwide access to treatment for end-stage kidney disease: a systematic review. *Lancet.* 2015;385:1975–1982, with permission from Elsevier.[20]