

## Annex 13B. Kidney Disease Improving Global Outcomes (KDIGO): Stages of Chronic Kidney Disease

Supplementary material for: Dirks, J., S. Anand, B. Thomas, G. Remuzzi, M. Riella, and others. 2017. “Kidney Disease.” In *Cardiovascular, Respiratory, and Related Disorders* edited by D Prabhakaran, S Anand, TA Gaziano, J-C Mbanya, Y Wu, and R Nugent. Volume 5 of *Disease Control Priorities, third edition*. Washington, DC: World Bank.

| eGFR categories (ml/min/1.73m <sup>2</sup> ) |                                  |       | Albuminuria categories (mg/g) |                   |                  |
|--|----------------------------------|-------|-------------------------------|-------------------|------------------|
|  |                                  |       | A1<br>< 30 mg/g               | A2<br>30-300 mg/g | A3<br>≥ 300 mg/g |
| G1   | Normal or high                   | ≥ 90  |                               |                   |                  |
| G2   | Mildly decreased                 | 60-89 |                               |                   |                  |
| G3a  | Mildly to moderately decreased   | 45-59 |                               |                   |                  |
| G3b  | Moderately to severely decreased | 30-44 |                               |                   |                  |
| G4   | Severly decreased                | 15-29 |                               |                   |                  |
| G5   | Kidney failure                   | <15   |                               |                   |                  |

Source: Based on <http://kdigo.org/home/guidelines/ckd-evaluation-management/>.

Note: Green = low risk; yellow = moderately increased risk; orange = high risk; red = very high risk.

In response to criticism of the first published guidelines (NKF/KDOQI 2002), these guidelines attempt to move away from heavy reliance on estimated glomerular filtration rate and incorporate prognosis as predicted by accompanying albuminuria (Kidney Disease: Improving Global Outcomes Work Group 2012). For example, individuals with eGFR 45-59 ml/min/1.73 m<sup>2</sup> without albuminuria are labeled as being at moderately increased risk for adverse events related to CKD, compared to individuals with eGFR 45-59ml/min/1.73m<sup>2</sup> and with albuminuria > 300 mg/g who are recognized to be at very high risk.

eGFR = estimated glomerular filtration rate.

With these caveats in mind, we make the following interpretation from available population-based prevalence studies

:

- CKD prevalence is understudied in LMICs.
- CKD prevalence in LMICs approaches that of HICs.
- Earlier stages of CKD—albuminuria alone—are common in LMICs, unlike HICs, where modest eGFR reductions with or without albuminuria (CKD stage 3) predominate.

At the same time, individuals with CKD in LMICs remain at high risk of adverse events. Notably, albuminuria has been associated with a linear and sizable increase in risk for all-cause mortality and cardiovascular events, starting at urine albumin-to-creatinine ratios above 10 mg/g (Chronic Kidney Disease Prognosis et al. 2010). Risk for end-stage renal disease is 4-11 fold higher among individuals with albuminuria (Chronic Kidney Disease Prognosis et al. 2010).