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P159-How to estimate Glomerular Filtration Rate in sub-Saharan Africa: design and methods of the African Research on Kidney Diseases (ARK) study

Dr Wisdom Nakanga[4], Professor Dorothea Nitsch[1], Professor Rob Newton[2], Dr June Fabian[3], Professor Saraladevi Naicker[3], Dr Jaya George[3], Dr Robert Kalyesubula[1,2], Professor Mia Crampin[2,4], Professor Liam Smeeth[1], Dr Laurie Tomlinson[1]

[1]London School of Hygiene and Tropical Medicine, London, United Kingdom, [2]MRC/UVRI, Entebbe, Uganda, [3]University of Witwatersrand, Johannesburg, South Africa, [4]Malawi Epidemiology and Intervention Research Unit, Lilongwe, Malawi

Background

Chronic kidney disease (CKD) is a substantial cause of morbidity and mortality worldwide with disproportionate effects in sub-Saharan Africa (SSA). The optimal methods to accurately estimate glomerular filtration rate (eGFR) and therefore facilitate identification of CKD among African populations are uncertain. We plan to measure iohexol excretion and correlate measured GFR with existing equations to determine the optimal methods to estimate GFR and accurately determine the prevalence of CKD in Malawi, South Africa and Uganda

Methods

The African Research on Kidney Disease (ARK) study is a three-country study embedded within existing population cohorts. We seek to enrol 3,000 adults >18 years stratified by eGFR using baseline serum creatinine. Study procedures include questionnaires on socio-demographics and potential risk factors for kidney disease, anthropometry, body composition, blood pressure, blood chemistry and urine microscopy and albuminuria. All participants will have a measured GFR (mGFR) by plasma clearance of iohexol at 120, 180 and 240 minutes. Blood and urine samples will be bio-banked for future analysis.

Results

The eGFR determined by established equations will be compared with mGFR to establish the most accurate method(s) to estimate GFR in this population and sub-groups. We will determine the true population prevalence of CKD, both overall and stratified for risk factors of interest, for the three countries. In addition, our results will provide detailed information about risk factors associated with CKD in these populations.

Conclusion

The ARK study draws participants from three countries with harmonised protocols which will increase the applicability of the findings across the region and permit identification of population differences. The study is embedded within established cohorts that have background information and serial measures that can be used to characterize incidence and progression of CKD. This study will overcome the limitations of previous research including the use of single creatinine measures, small numbers or non-population-based sampling strategies, and address the lack of data on proteinuria/albuminuria as recommended by Kidney Disease: Improving Global Outcomes (KDIGO). The ARK collaboration provides a strong platform for kidney disease research, within the context of infectious and non-communicable diseases in SSA. We hope our results will contribute to strengthening health systems and informing public health policy for the screening, prevention and treatment of CKD in the region.