QUALITY BIOBANKING OF CHRONIC KIDNEY DISEASE SPECIMENS

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on behalf of the NHMRC CKD.CRE and CKD.QLD collaborators. www.ckdqld.org

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Aim

The NHMRC Chronic Kidney Disease Centre for Research Excellence (CKD.CRE), Australia’s only CRE in CKD, commenced its five-year program in 2015. One planned component is development of a CKD.Biobank (Figure 1) to support CKD research and, specifically, to investigate mechanistic pathways prospectively, systematically, and comprehensively.

Background

There is an urgent need to identify optimal CKD biomarkers to predict the patients whose CKD (Figure 2) will progress and those with sufficient functional reserve for regeneration or repair. Development of the CKD.Biobank provides quality samples for patient research, as well as a platform for multinational CKD biomarker research collaborations, including with our partners in the global consortium of CKD surveillance programs (ISN’s iNET-CKD49; please see Note 1).

Methods

The CKD.Biobank provides scientifically-validated high quality storage of blood (plasma, serum, cellular component), urine and tissue samples4-8. In addition to standard requirements, specimen collection with affiliated patient information is facilitated by the 6,700 patients currently registered in the CKD.QLD database, 3,000 of whom already have >3 years clinical follow-up data (see flow chart in Figure 3).

Core features are patient confidentiality, CKD.Biobank governance, and standard operating procedures (SOPs) adopted from other established biobanks, incorporating pathology collection and cryopreservation. SOPs are integral to quality assurance protocols, and to maintaining long-term molecular and cellular integrity of samples.

Results

CKD.Biobank ethics approval was granted in March 2016. The time required for the development of the CKD.Biobank governance and affiliated ethical approval needs recognition. The time invested ensures that the CKD.Biobank meets national and international standards, and will provide leadership in CKD biobanking practices.

Conclusion

A quality CKD.Biobank of human bio-samples is a pre-requisite for the clinically-critical work of diagnostic and prognostic biomarker panel development (Figure 4). Our CKD.Biobank will leverage data from Australia’s first CKD.CRE and CKD.QLD, where cohorts of CKD patients are well characterised.

Note 1. The International Network for Chronic Kidney Disease Cohort Studies (International Society of Nephrology’s iNET-CKD) links chronic kidney disease cohorts from all over the world to promote research on this rapidly growing public health issue. It is supported by the International Society of Nephrology (ISN) and currently comprises of 14 cohort studies, representing patients from more than 20 developed and developing countries. Our cohort study members have joined this network.

References


Queries

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Figure 1. What is a Biobank? www.freezerworks.com

Figure 2. Defining CKD www.kidney.org

Figure 3. Flow chart for sample collection, preservation, data management, and use of specimens

Figure 4. Biomarker development