



The new focus on chronic kidney disease and the role for large administrative datasets in enabling research

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Why CKD matters?

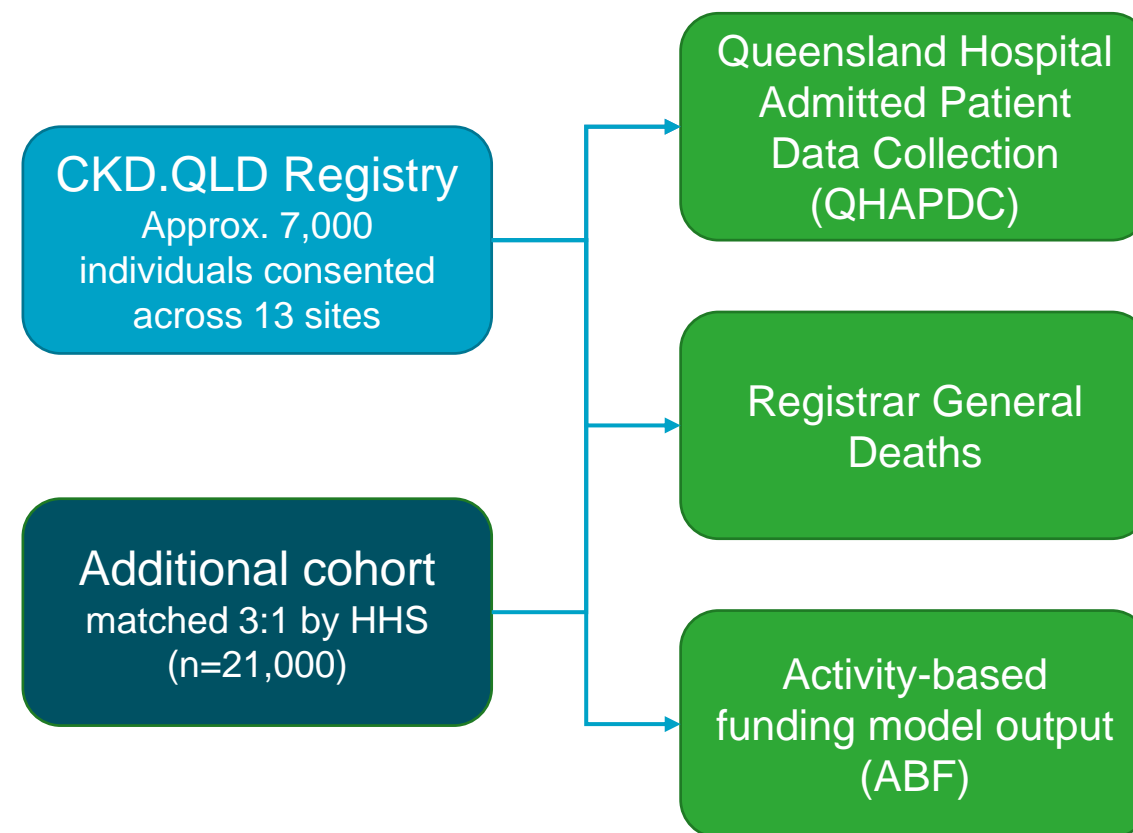
- Consequences if progress unchecked
 - Loss of renal function
 - Silent
 - RRT
 - Preventable
- Prevalence
 - Adult population
 - Sub-groups
 - Burden
- The chronic disease “package”
 - Diabetes, cardiovascular disease

CKD.CRE

- NHMRC Centre of Research Excellence (2015-19)
 - Leadership: Prof Wendy Hoy, Dr Helen Healy, Prof Ann Bonner, Prof Luke Connelly, et al.
- Building upon the CKD.QLD statewide collaborative (est. 2009)
- Purpose: addressing the challenges of CKD through a multidisciplinary program of research and practice
- Streams of research
 - Biomarker
 - Practice improvement
 - Surveillance
 - Health economics

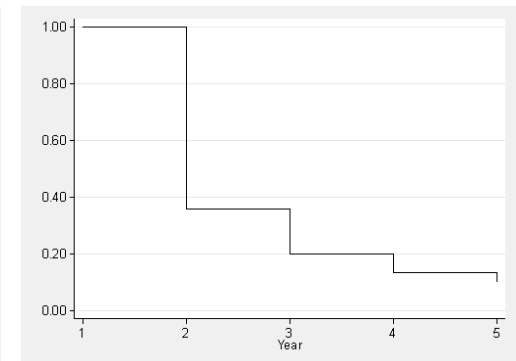
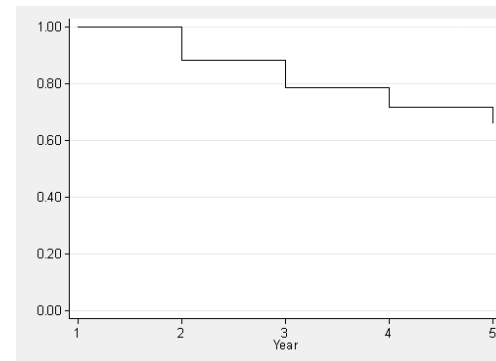
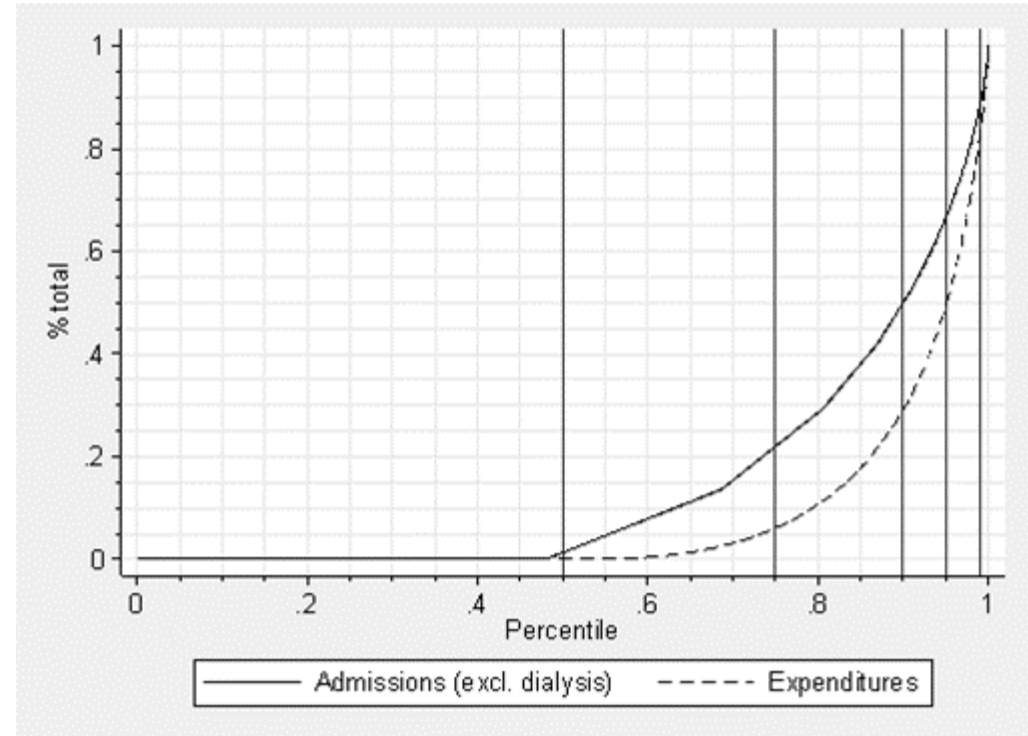
CKD data linkage

- Five years (2011-16)
- Approx. 28,000 patients
- ~687,000 admissions
- ~3.5 million records, including
 - DRG codes
 - Diagnoses
 - Procedures
 - Details of utilisation
 - Cost outcomes
- Representative sample
- High quality data
- Updates and extensions



Frequent and high cost users of hospital care

- Question often asked by clinicians and leads
- Identify **four groups of users** (low/high cost/frequency) and investigate their patterns of admissions within the first year of joining CKD.QLD Registry (excluding those who died)
- Considerable degree of **expenditure concentration**
- Differences between groups in terms of age, indigenous status, comorbidities, **primary renal diagnosis**
- Heavy users' admissions: almost 2/3 are **readmissions** (30-day or routine), lower rates of ED presentations
- Dialysis accounts for 75% of admissions in high cost users however it is **not the primary driver of cost** (25% of cost)
- High cost driven by **repeated episodes** with high LOS and WAU (circulatory, digestive, musculoskeletal)
- Heavy users are **increasingly likely over time** to remain in this category



Polycystic and inherited kidney disease

- Hypothesis: progression and health care needs different from other CKD
- Use ICD codes to identify patients with PKD/IKD and investigate outcomes
- A descriptive view of data revealed that:
 - Approx. 2% of patients in CKD data linkage cohorts have either PKD or IKD
 - At the time of consent these patients, compared to other CKD, were younger (54/48/66 yrs) with lower prevalence of diabetes (17/21/48%) and CVD (34/32/46%)
 - Despite this, have a worse kidney function (eGFR 34.1/36.5/40.8 mL/min/1.73m²) and within 5 years are more likely to require dialysis (34/24/9%), have more admissions (median 7/8/4 excl. dialysis) and increased attributable hospital costs (median 42/46/16 A\$'000)
- Analytical work in progress
- Implications: PKD/IKD are **identifiable groups** of CKD; **early interventions** might be particularly justified given earlier onset and more rapidly progressing disease

Acute kidney injury

- Suddenly occurring damage to the kidneys
- Evidence linking AKI and CKD, ESKD, subsequent AKI and mortality
- Higher than expected **incidence** of AKI in our cohort
- Results presented in September at the ANZSN ASM by Dr J. Zhang:
 - 35% of the registry cohort admitted with a diagnosis of AKI (17% as primary, 83% other)
 - Repeated episodes of AKI: 50% had one, 25% had two, 25% had 3+ episodes
 - Those with AKI vs no AKI: older (68.1/64.6 years), more likely to be male (57%), more advanced CKD (46% stages 4-5), primary renal diagnosis (diabetic nephropathy 30/22%)
- Analytical work in progress
- Implications: major risk factor that is **potentially preventable**

Concluding thoughts

- Sustainability, innovation, and wiser spending
- Shift of focus from addressing ESKD to thinking about CKD
- Research into causes, progression factors, identification of heavy users
- The role for large administrative datasets
 - Enabled by: legal setting (Qld Public Health Act), working framework (Qld Data Linkage Framework), data support (Qld Health Statistical Services Branch), funding
 - Area for improvement: access to federal systems



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Thank you