

COMPARISON OF DIFFERENT DEFINITIONS OF CHRONIC KIDNEY DISEASE (CKD) PROGRESSION IN PATIENTS IN A METROPOLITAN PUBLIC RENAL PRACTICE IN QUEENSLAND, AUSTRALIA.

R Abeysekera^{1,2,3}, Z Wang^{1,2}, HG Healy^{1,3}, A Cameron^{1,2,3} and WE Hoy^{1,2}
 on behalf of the NHMRC CKD.CRE and the CKD.QLD collaborative: www.ckdql.org
 With acknowledgement and thanks to Dr George John^{1,3}

Affiliations:

¹ NHMRC CKD.CRE & CKD.QLD;

² Centre for Chronic Disease, The University of Queensland, Australia

³ Kidney Health Services, Metro North Hospital and Health Service, QLD, Australia

Background and Aim

Definitions of progression of CKD based on changes in eGFR reflect perceptions of what reliably constitutes significant change. Many definitions are in current use, with significant variability.

This study was conducted to compare different definitions of progression in a population of CKD patients.

Methods

CKD.QLD¹ is a program for surveillance, practice improvement and research of patients with chronic kidney disease that embraces the renal practice network in the adult public health system in Queensland, Australia. Patient enrolment, by informed consent, commenced in May 2011.

Patients consented within the Kidney Health Service of the Metro North Hospital and Health Service were analysed at date of consent, and annually thereafter, by definitions of progression, until initiation of renal replacement therapy, discharge/transfer, death, or the censor date of 31st July 2015.

Six definitions of progression were evaluated:

- Definition 1: loss of eGFR of >2ml/min/1.73m²/year
- Definition 2: loss of eGFR >5ml/min/1.73m²/year
- Definition 3: change of CKD stage
- Definition 4: ≥20% eGFR reduction
- Definition 5: combination of CKD stage change and ≥25% eGFR reduction [KDIGO definition]²
- Definition 6: start of renal replacement therapy [RRT]

Results

Of 1,265 patients consented, 905 patients met criteria for review at one year, and of these, 682 at 2 years.

- **Patient demographics [all n =1,265]** by stage, primary diagnosis and age at consent are shown in figures 1, 2 and 3.

Figure 1: Proportion of patients by CKD stage

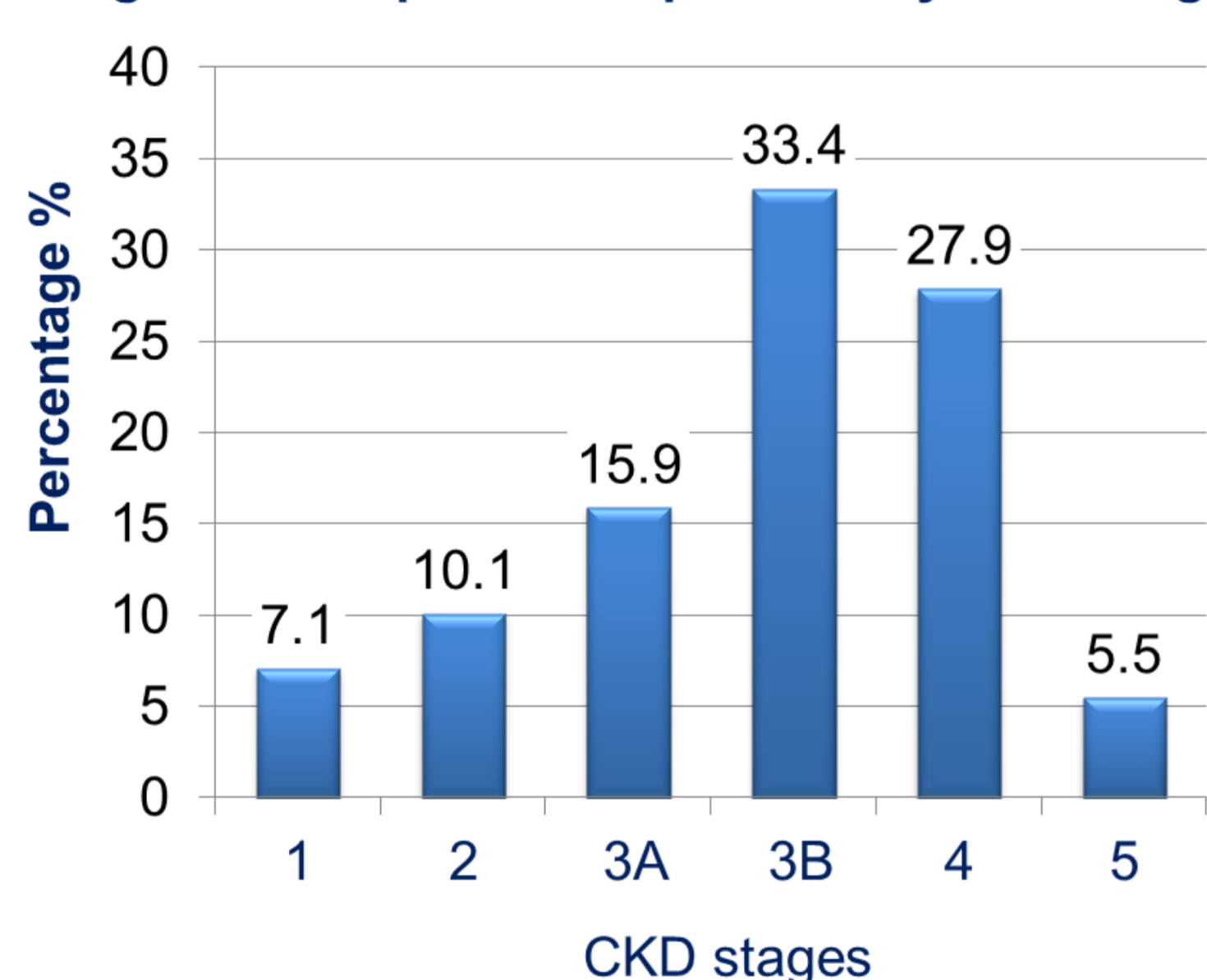
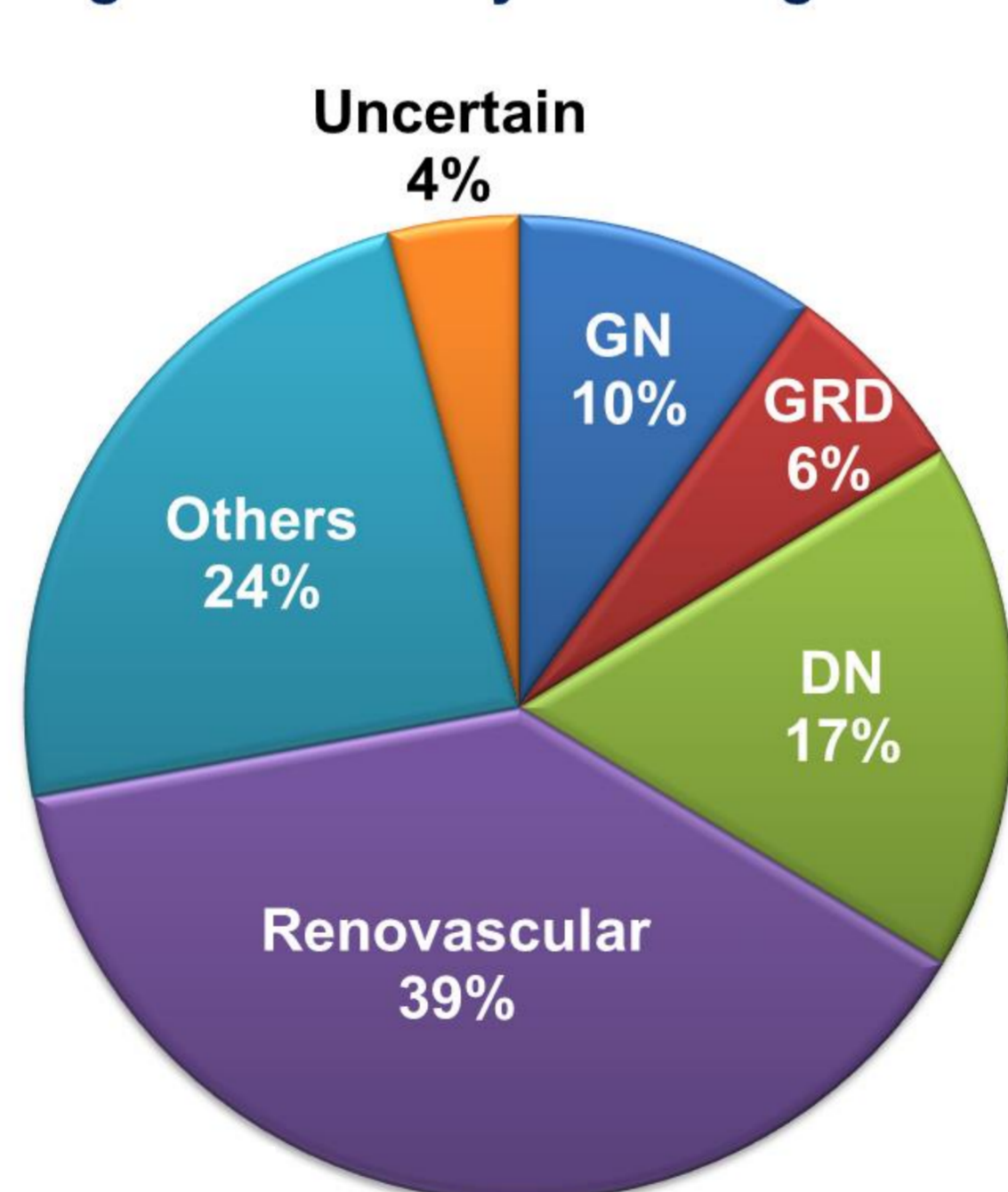
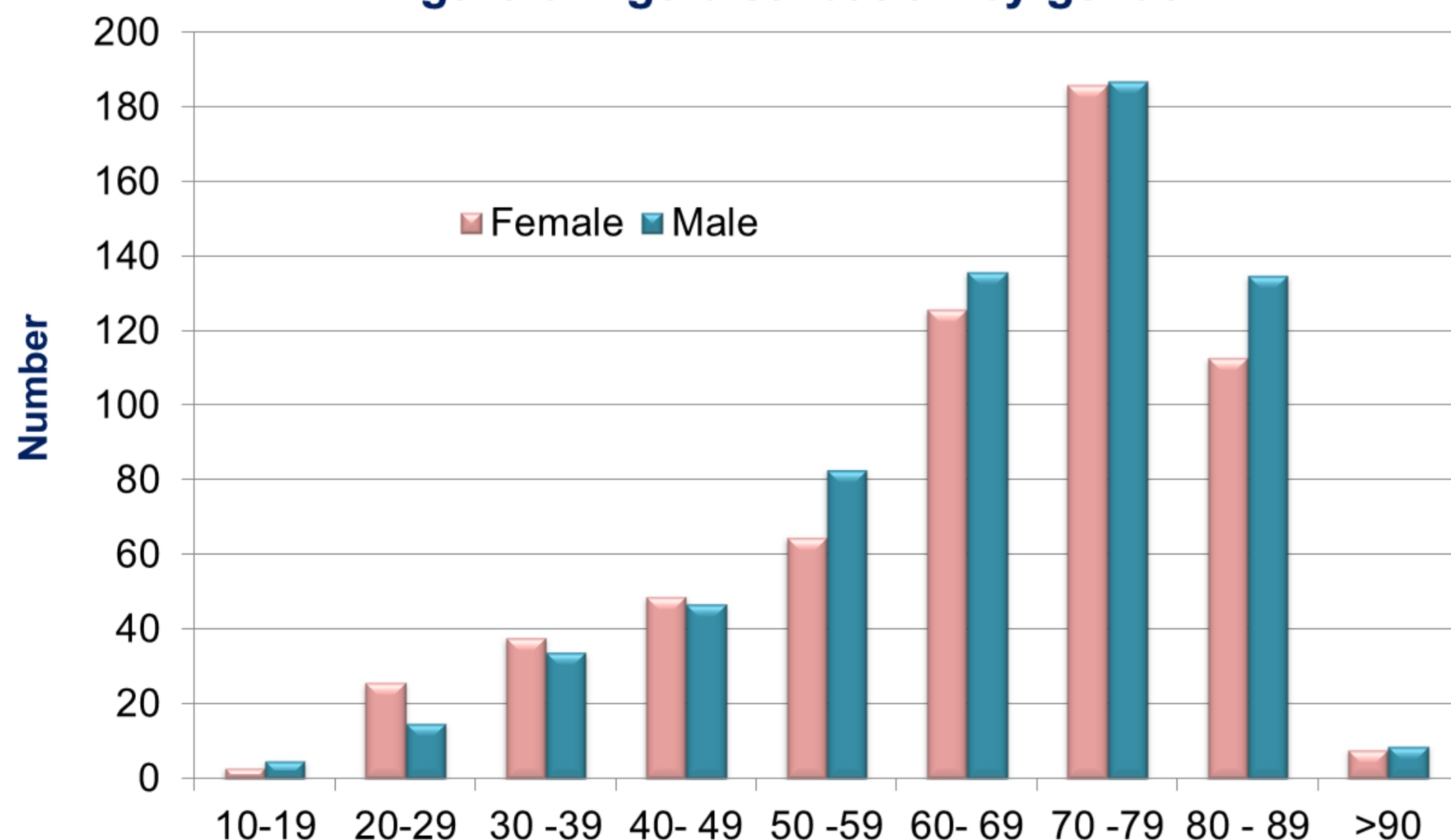


Figure 2: Primary renal diagnosis



GRD=Genetic renal disease
 DN=Diabetic nephropathy
 GN=Glomerulonephritis

Figure 3: Age distribution by gender



Conclusions

- The consistency and credibility in these findings supports the likely reliability and suitability of these expressions of progression. Simple algorithms can convert any creatinine based measure into all such expressions.
- The choice of measures for evaluations and comparisons should be context specific.

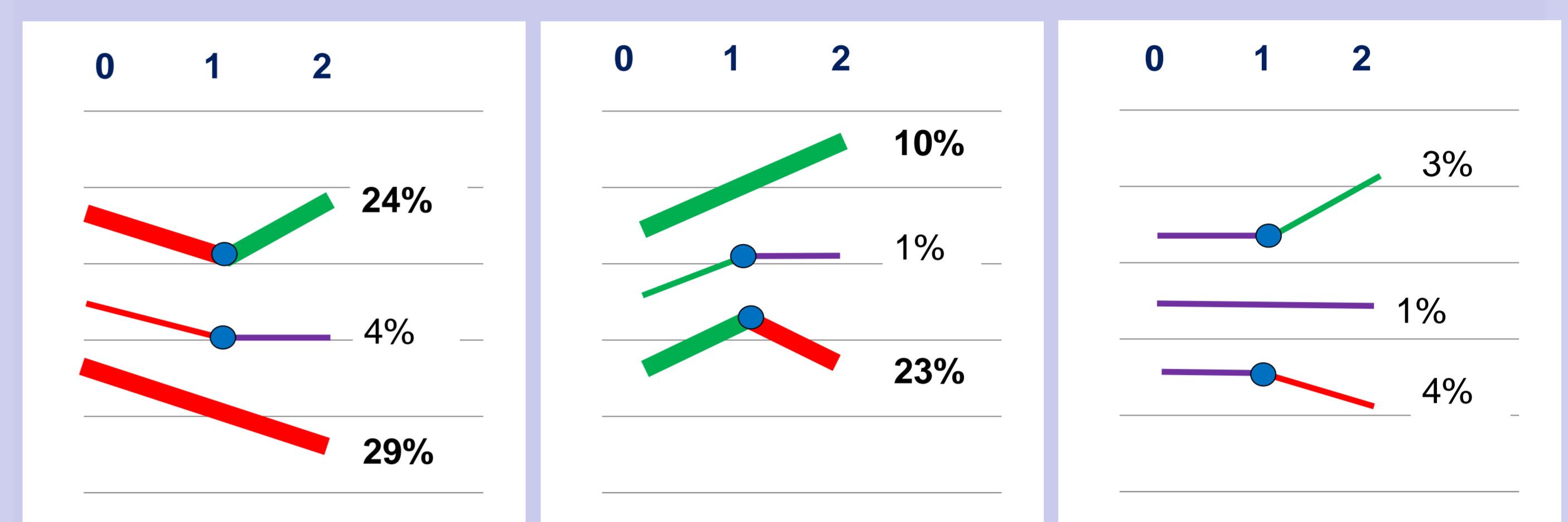
Enquiries: Please contact Dr Rajitha Abeysekera on rajitha.abeysekera@health.qld.gov.au or email the NHMRC CKD.CRE on ckd.cre@uq.edu.au

Patterns of mean eGFR change at one and two years [n=682]

eGFR fluctuations occurred in individuals in several different patterns. Figure 4 outlines the most common patterns from the perspective of stable, improved and declined renal function over time.

The predominant patterns over the two consecutive years were: declined-declined for 29% of patients, then declined-improved [24%], improved-declined [23%], and improved-improved [10%].

Figure 4. declined stable improved

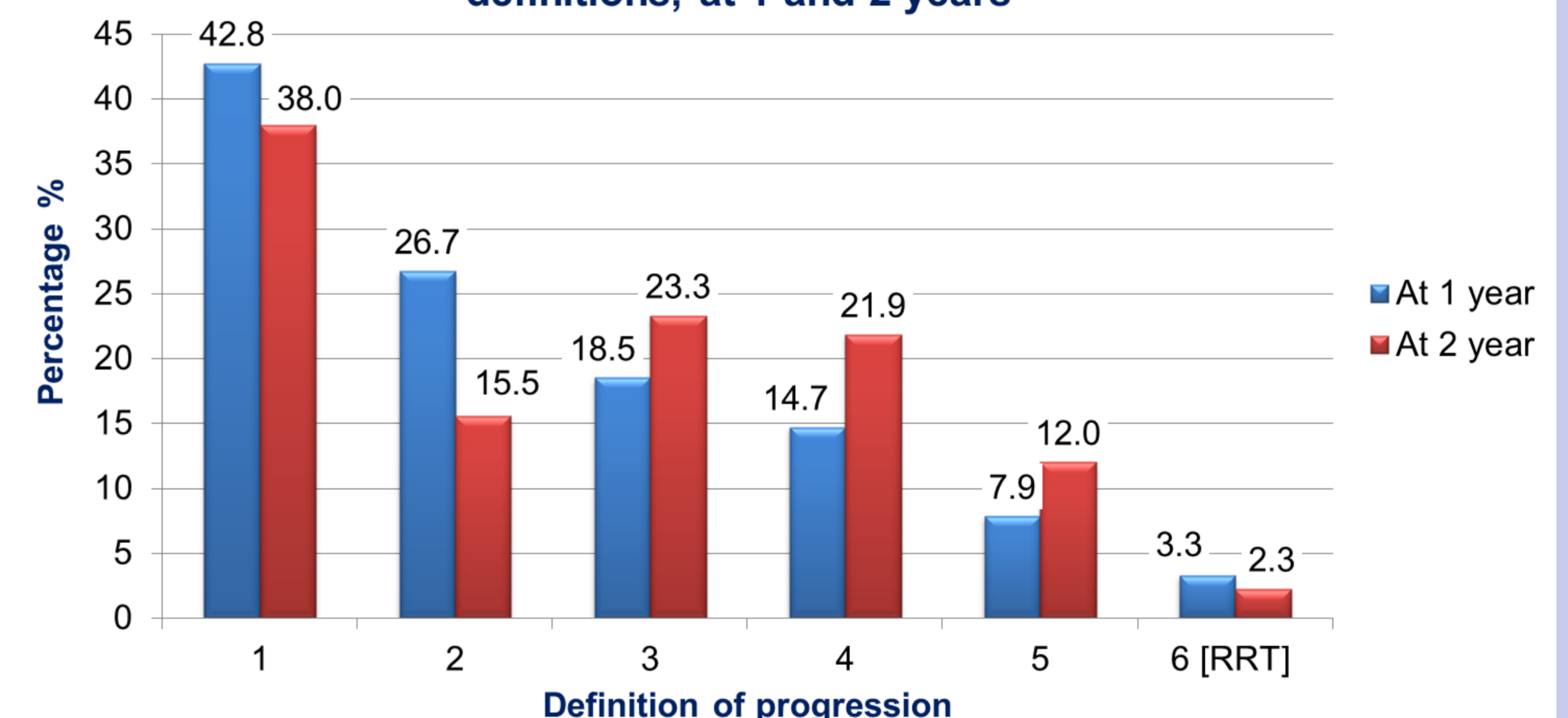


Progression at 1 & 2 years by different definitions

The highest proportion of people progressed with use of definition 1 and the lowest proportion progressed with definition 6.

More numbers of patients were defined as "progressed" at 2 years, compared to 1 year, irrespective of the definition used, as per Figure 5.

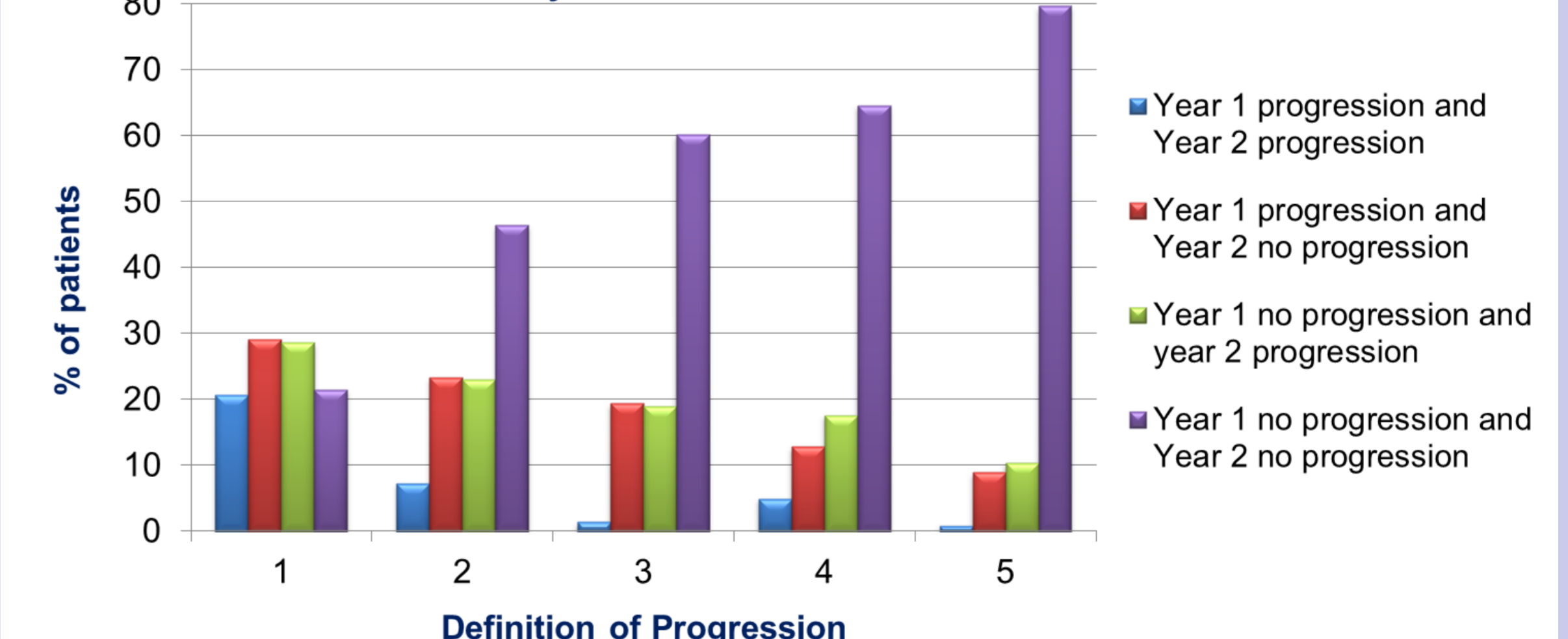
Figure 5. Proportion of patients defined as progressed, by definitions, at 1 and 2 years



Patterns of CKD progression

Different patterns of progression over a two year analysis period were recognized, indicating that not all patients progress in the same way, as summarised in Figure 6. Of note, by the KDIGO definition [def 5], 80% of patients with 2 year data had not progressed.

Figure 6. CKD 1 & 2 year patterns of progression, by definitions



References

¹ Venuthurupalli SK, Hoy WE, Healy HG, et al. "CKD.QLD: Growth of Chronic Kidney Disease Surveillance in Queensland, Australia." Invited Review for: "Taming the Chronic Kidney Disease Epidemic: A Global View of Surveillance Efforts". KI 2014.

² "KDIGO 2012 Clinical Practice Guideline for the Evaluation and Management of Chronic Kidney Disease" volume 3 | issue 1 | January 2013 <http://www.kidney-international.org>