

An overview of patients with chronic kidney disease, and their outcomes, in the Australian CKD.QLD Registry (2011-2016)

J Zhang^{1,2}, Z Wang^{1,2}, HG Healy^{1,3}, SK Venuthurupalli^{1,2,4}, KS Tan^{1,2,5}, RG Fassett^{1,2,6}, A Cameron^{1,2,3} and WE Hoy^{1,2}
 on behalf of the CKD.QLD Collaborative. www.ckdqld.org

¹NHMRC CKD.CRE and CKD.QLD, Brisbane, Australia; ²Centre for Chronic Disease, University of Queensland, Brisbane, Australia; ³Renal Services, Metro North Hospital and Health Service, Brisbane, Australia; ⁴Renal Services (Toowoomba Hospital), Darling Downs Hospital and Health Service, QLD, Australia; ⁵Renal Services, Metro South Hospital and Health Service, Brisbane, Australia; ⁶School of Human Movement and Nutrition Sciences, University of Queensland, Brisbane, Queensland.

AIM

To profile patients with chronic kidney disease (CKD) in the public renal practice system, and their outcomes, through the CKD in Queensland (CKD.QLD) Registry, from 2011 to censor dates 2015-2016.

BACKGROUND

- Around 1.7 million Australians aged >18 years (1 in 10) have indicators of CKD.
- There were 1.5 million hospitalisations associated with CKD in 2012–13.
- The burden and costs of renal replacement therapy (RRT) and premature non-renal death in patients with pre-terminal kidney disease are of concern.
- CKD.QLD is a program for surveillance, practice improvement and research for CKD that embraces the renal practice network in the adult public health system in Queensland. Patient enrolment commenced in May 2011.

METHODS

- Each patient enrolled in CKD.QLD registry was by informed consent. The study has Queensland Health and University of Queensland Ethics approval, and affiliated site-specific governance approvals.
- 6,728 patients have enrolled as of August 2016.
- Baseline characteristics are reported on the first 5,935 patients from eleven public renal practices. Among these, 3,452 patients from three major practices were thoroughly reviewed for outcome data: “the outcome cohort”. They were followed until death, RRT, discharge or censor date.
- Patient characteristics described at baseline included age, gender, indigenous status, CKD stage, primary diagnosis and comorbidities.
- CKD progression patterns and patient outcomes, including death or RRT, were also assessed.

RESULTS

- Of 5,935 patients, there were more males (54.2%) than females.
- Ages ranged from 16 to 100 with a mean of 64.7 years and median at 67.8, at consent. About 57% were >70 years old (Fig 1a).
- Indigenous CKD patients were younger than non-indigenous patients (Fig 1b) ($p < 0.001$), and more likely to be female (54%).

Fig 1a. Age distribution by gender
 Female n=2,719, Male n=3,216)

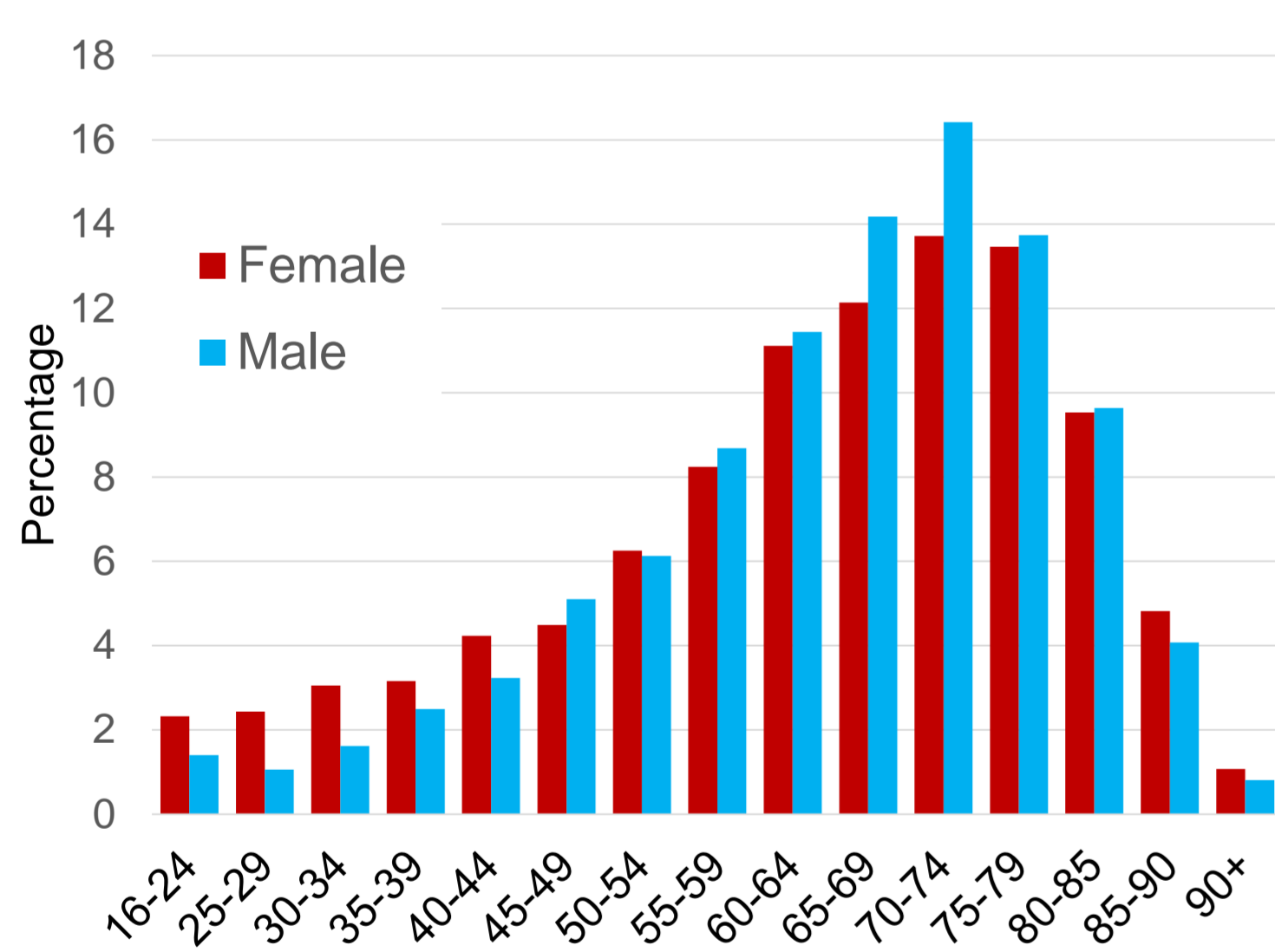
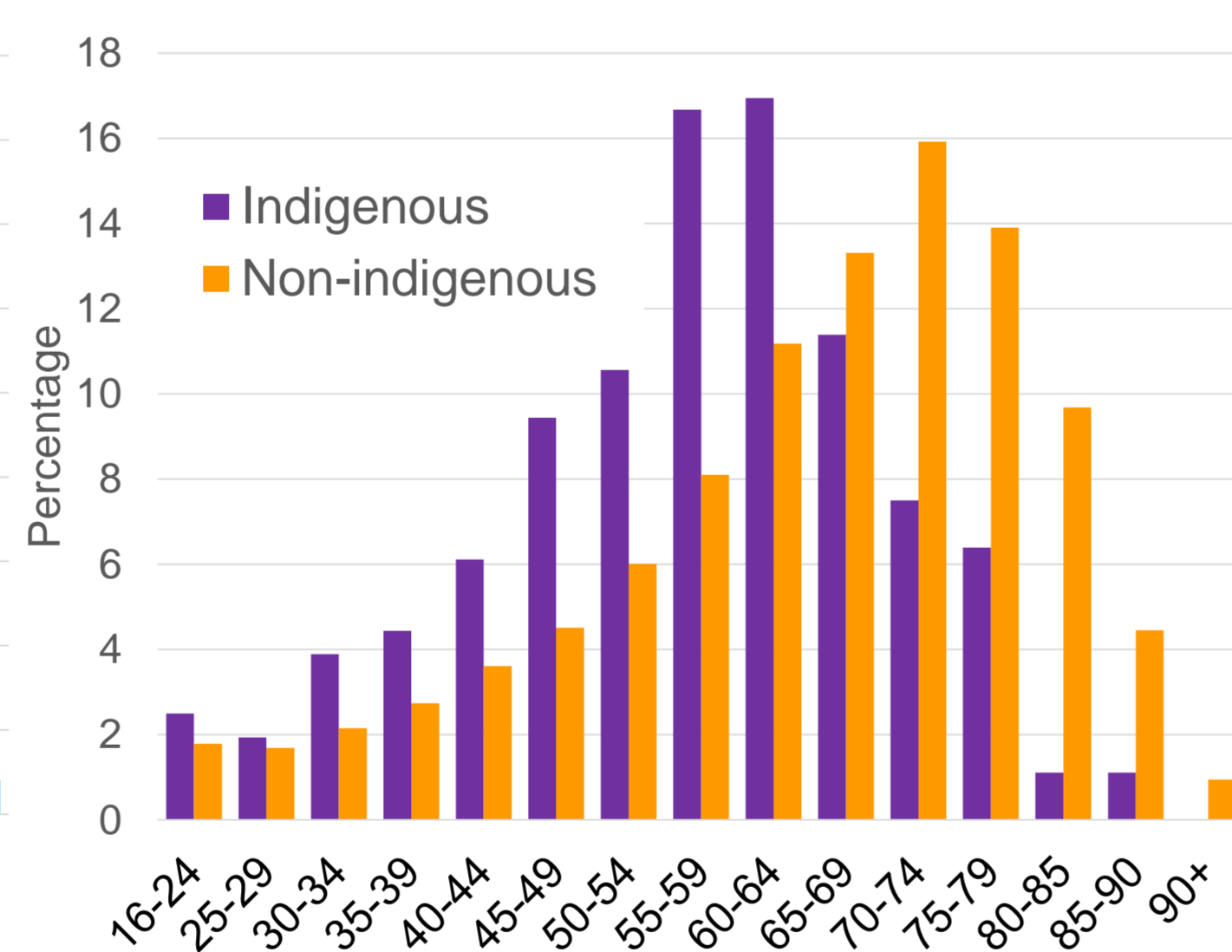


Fig 1b. Age distribution by indigenous status
 Indigenous n=360, non-indigenous n=4,741)



- Most had CKD stages 3B (30.3%) & 4 (26.2%) at consent; 7.8% had stage 5.
- Males tended to have more advanced CKD stages than females ($p < 0.001$) (Fig 2a).
- Indigenous patients were more prevalent at earlier stages and at stage 5 CKD compared to non-indigenous patients ($p < 0.001$) (Fig 2b).

Fig 2a. CKD stage by gender
 Female n=2,703 Male n=3,200)

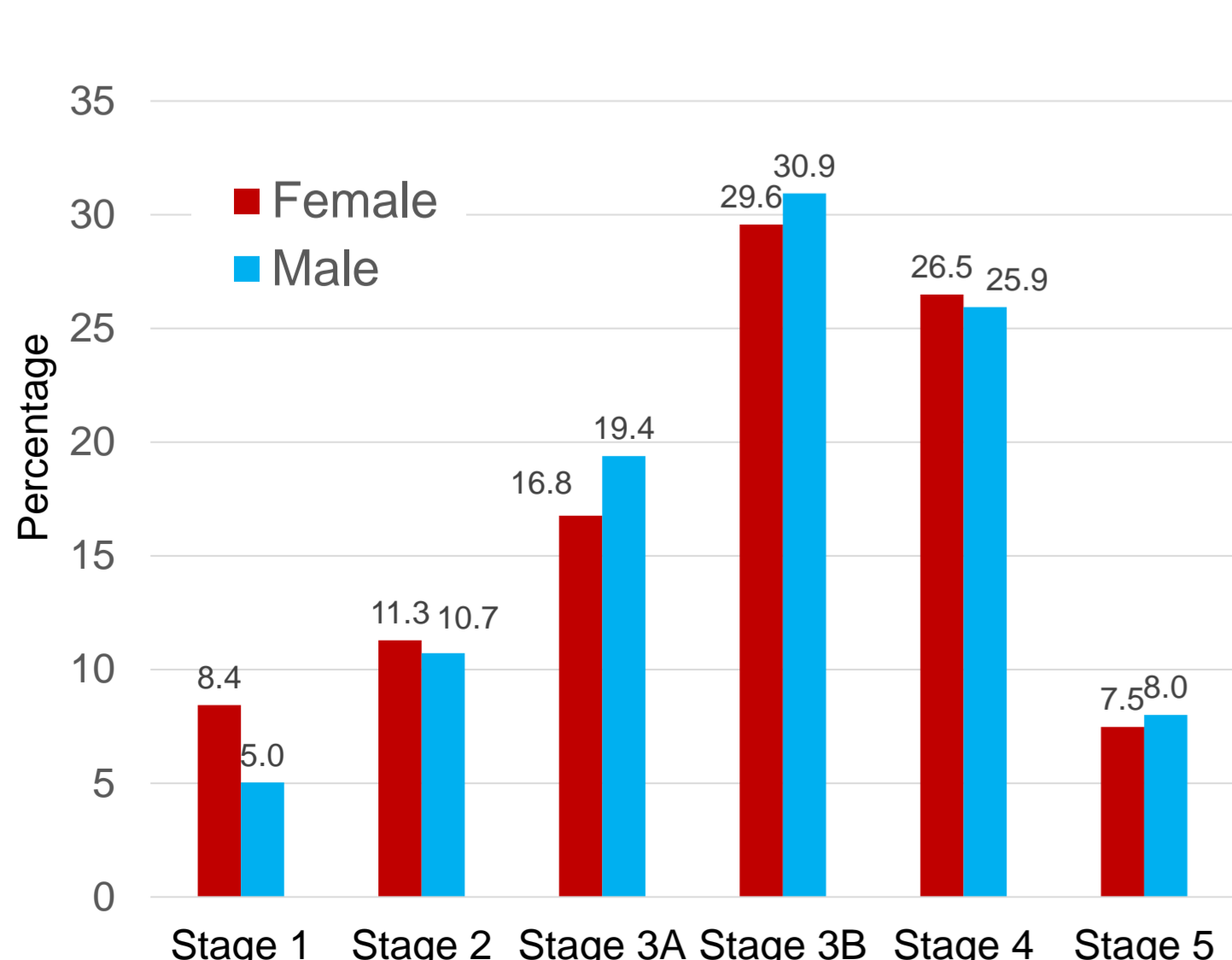
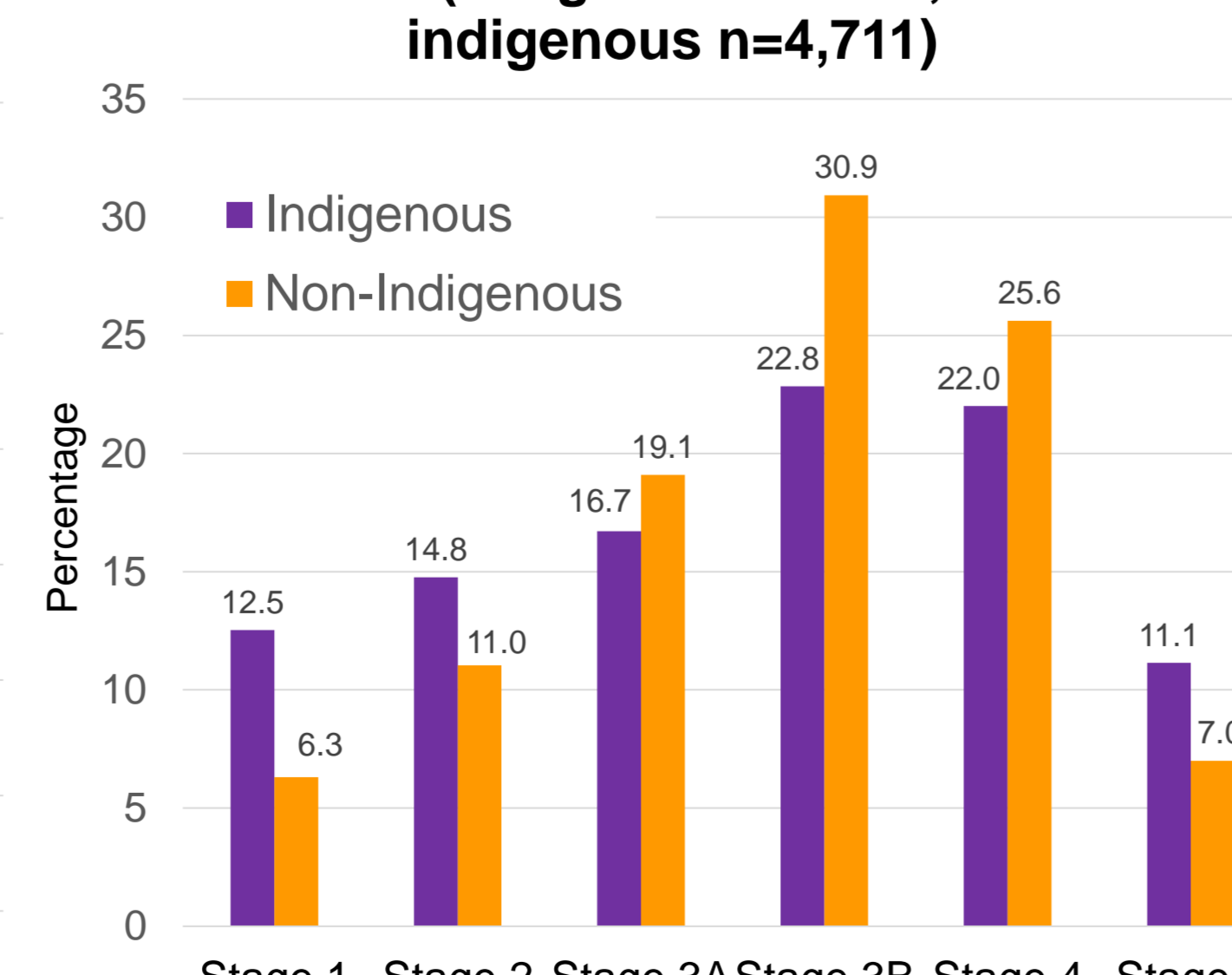


Fig 2b. CKD stage by indigenous status
 Indigenous n=359, Non-indigenous n=4,711)



- Leading primary renal diagnoses were renovascular disease, diabetic nephropathy, glomerulonephritis and genetic renal diseases (Fig 3a).
- Indigenous CKD patients were more than twice as likely to have diabetic nephropathy than non-indigenous patients (Figs. 3b and 3c).

Fig 3a Primary renal diagnosis
 All patients (n=5,773)

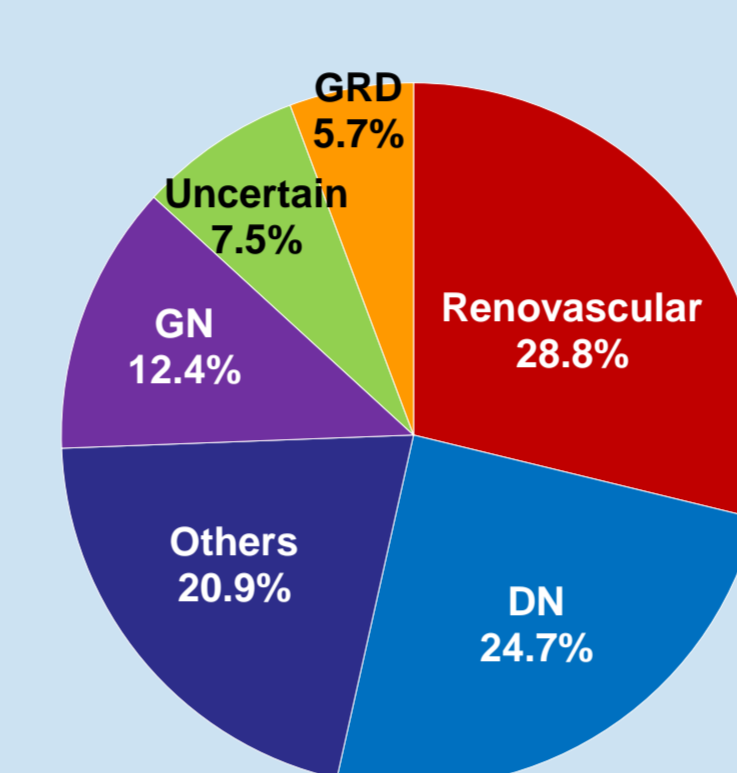


Fig 3b Primary renal diagnosis
 Non-indigenous (n=4,752)

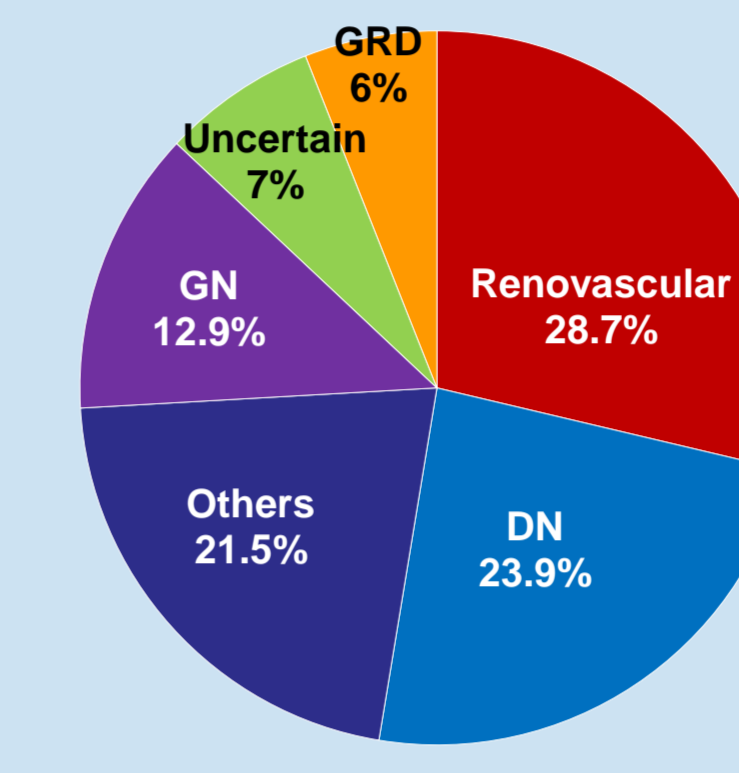
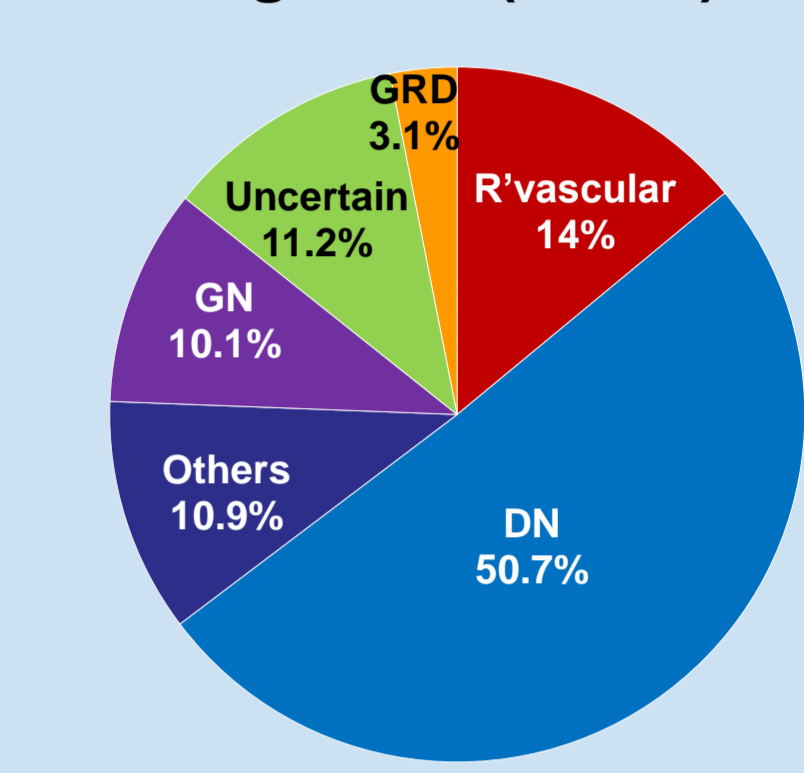


Fig 3c Primary renal diagnosis
 Indigenous (n=360)



- The five most common comorbidities were hypertension (80.6%), dyslipidaemia (47.5%), diabetes (45.9%), CVD (29.9%) and chronic lung disease (21.6%).
- In those with sufficient longitudinal data (n=1,945), eGFR fell by ≥ 5 ml/min, in the first year, in about 26.8% of patients, remained within ± 5 ml/min of baseline for 51.7%, and rose by ≥ 5 ml/min in 21.5% of patients.
- In the outcome cohort, the incidence rate of RRT was lowest for those at stage 3B at baseline, increased at stage 4 and peaked at stage 5 (Fig 4a). The incidence rates of death without RRT increased steadily by baseline CKD stage, peaking at stage 5 (Fig 4b).

Fig 4a Incidence rate of RRT by CKD stage
 (n=207)

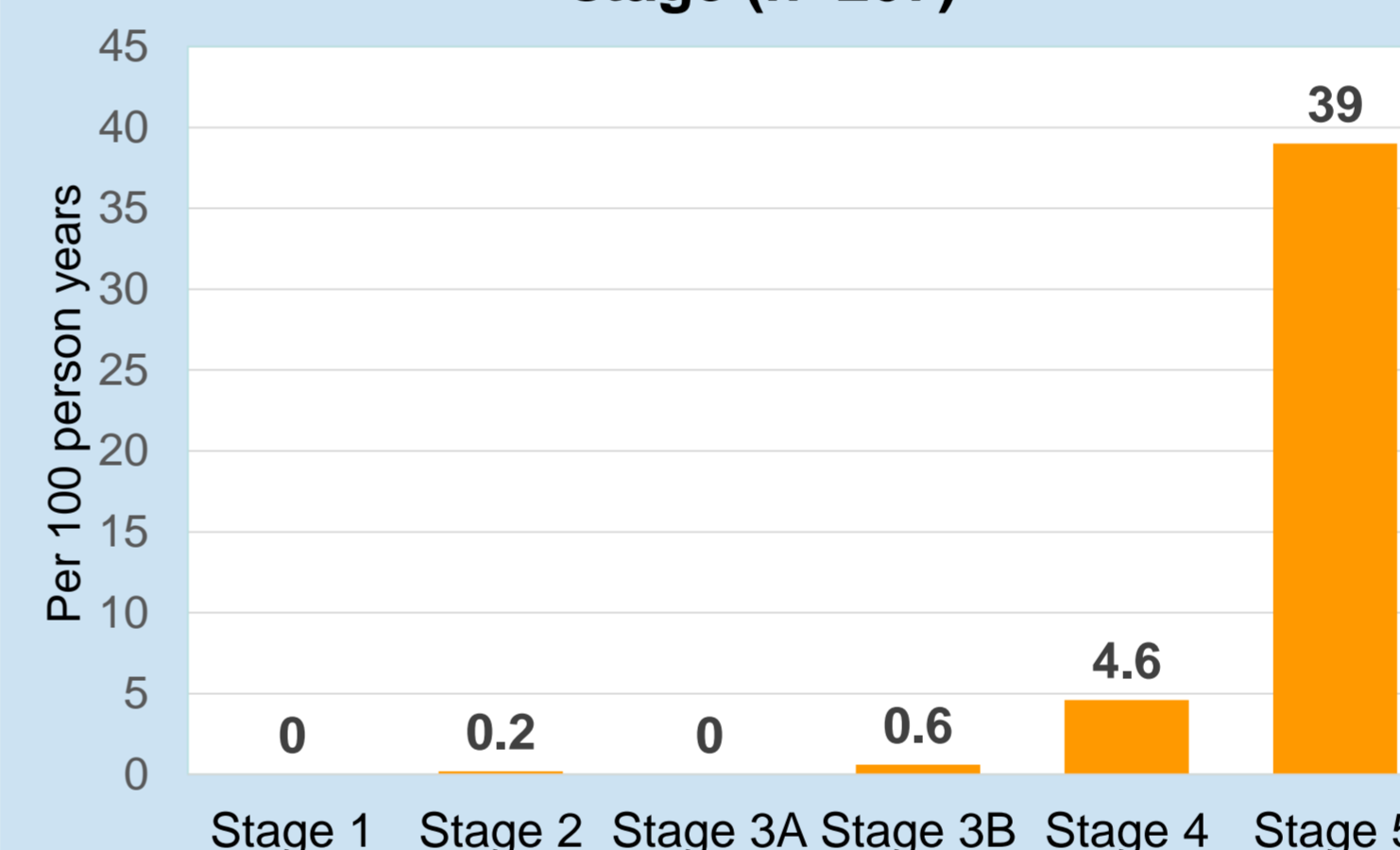
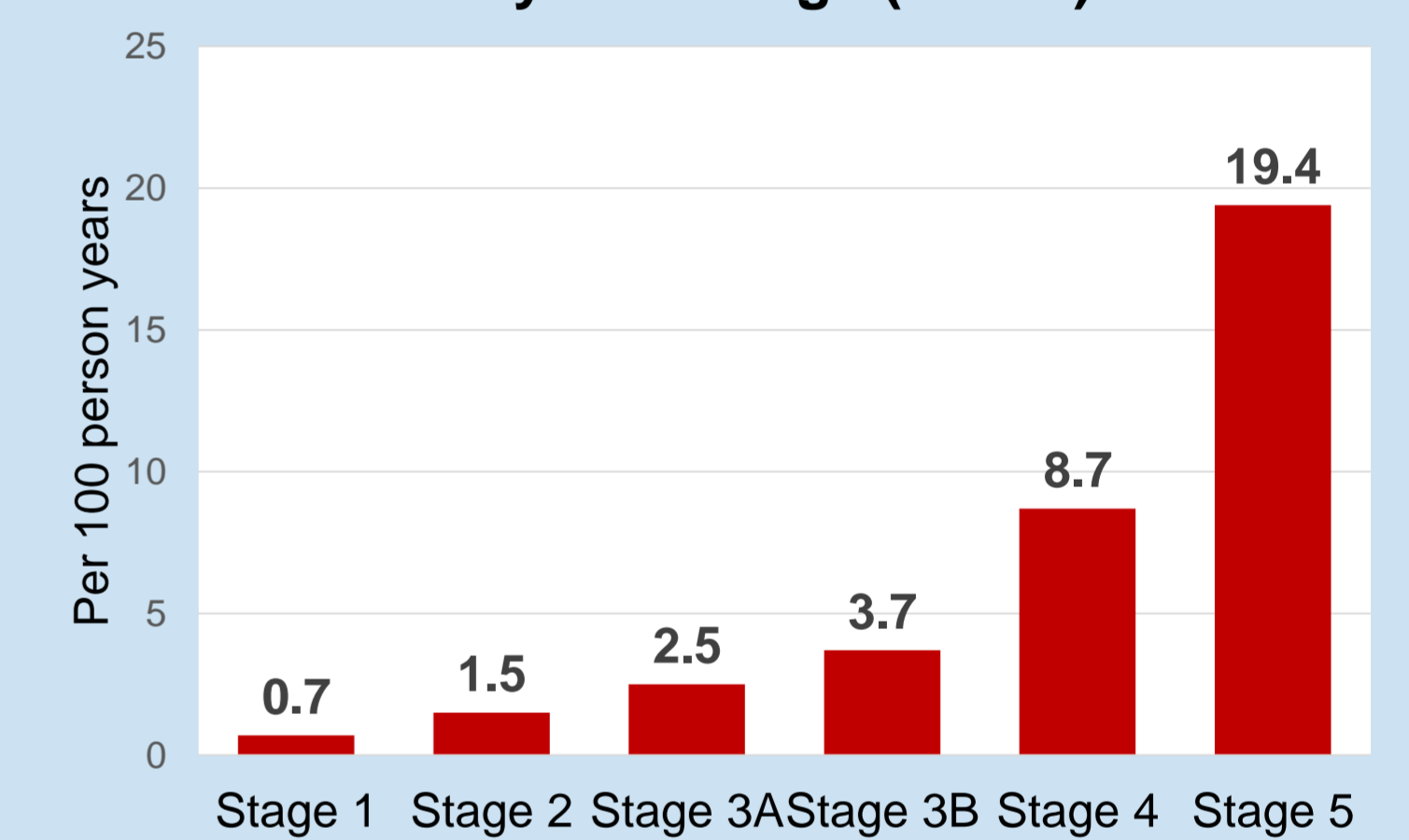


Fig 4b Incidence rate of death without RRT by CKD stage
 (n=357)



- Incidence rates of RRT were higher for males than for females ($p = 0.001$) (Fig 4c).
- The incidence rates of RRT for indigenous peoples were considerably higher than those for non-indigenous people ($p < 0.001$) (Fig 4d).

Fig 4c Incidence rate of RRT and Death by gender

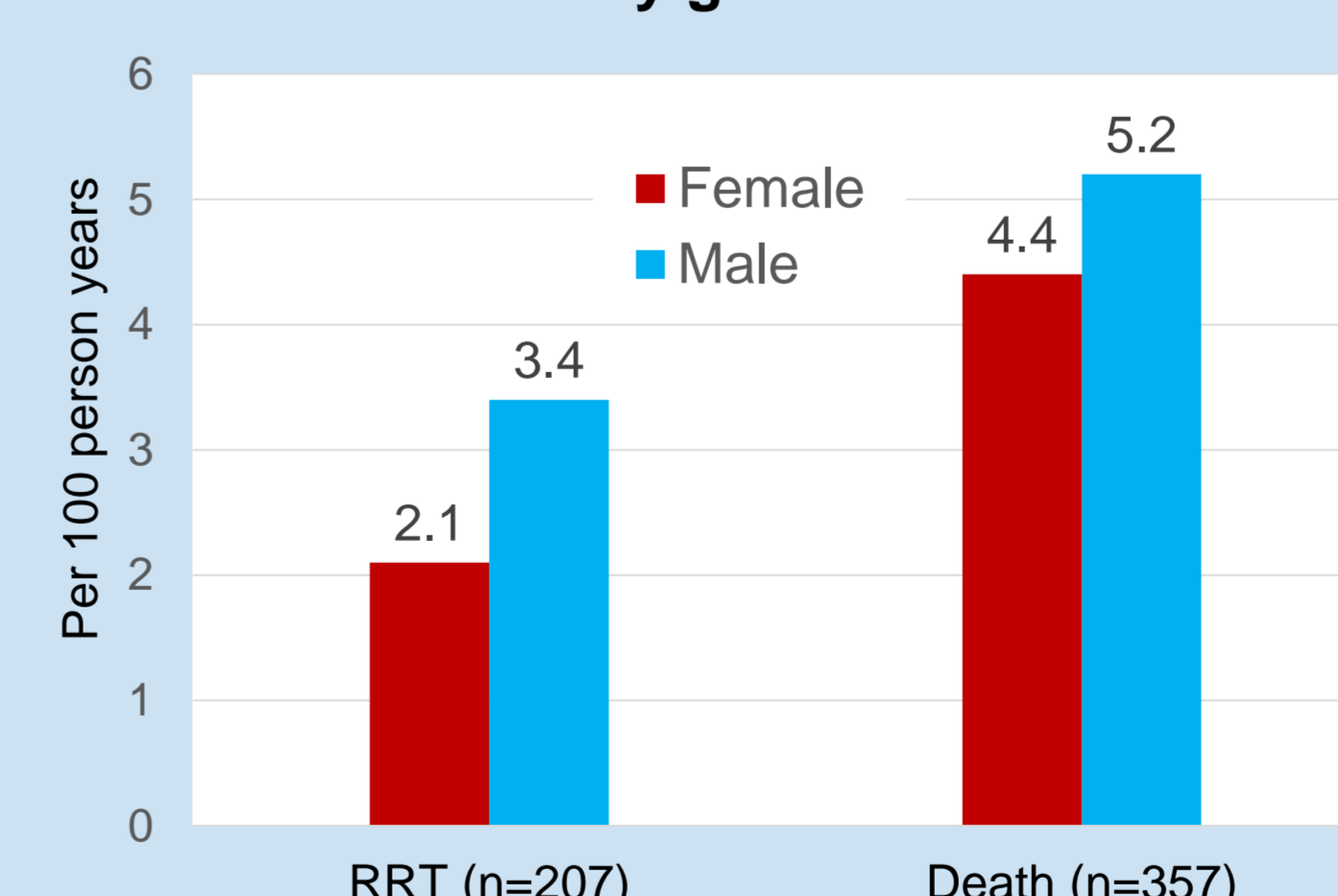
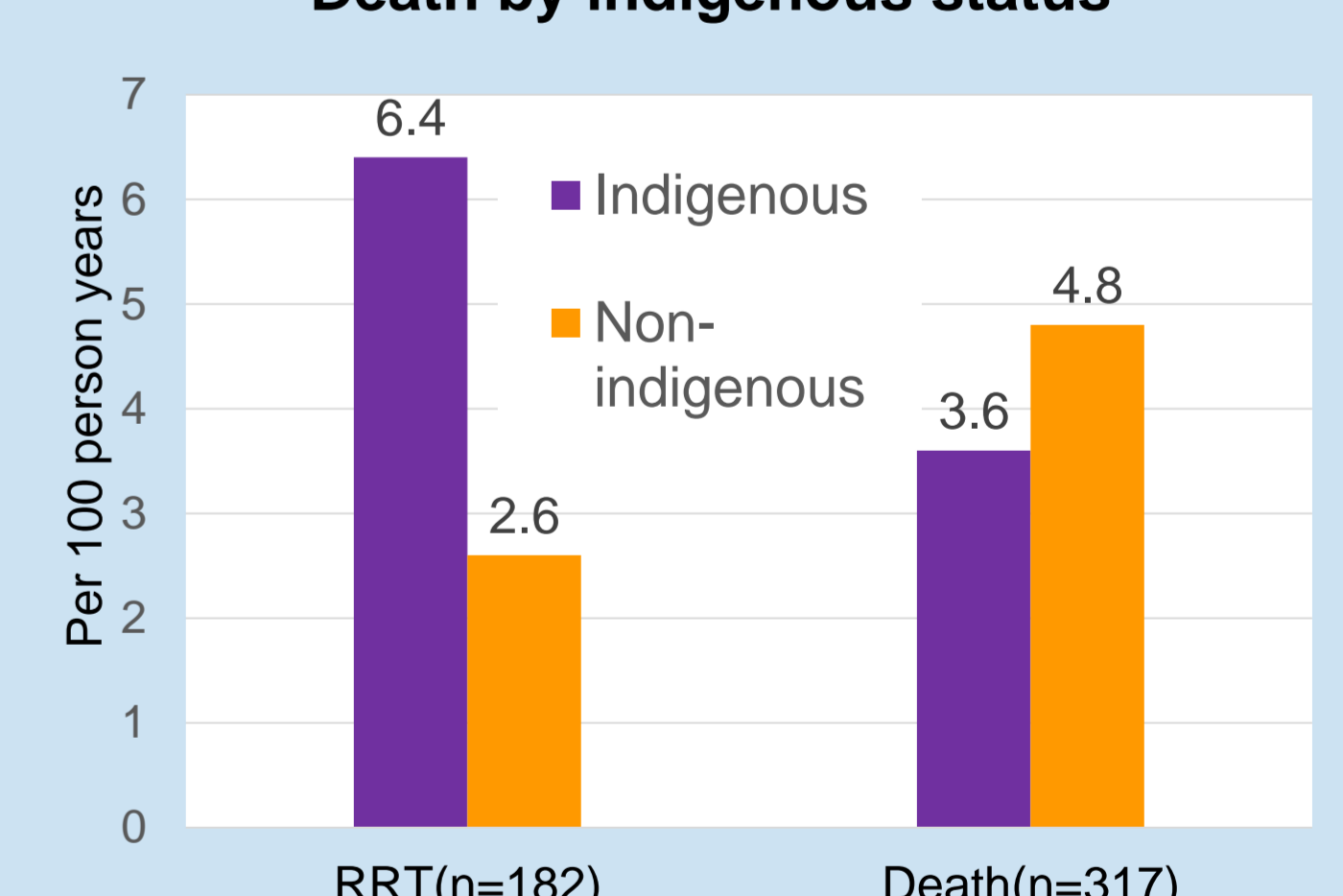


Fig 4d Incidence rate of RRT and Death by indigenous status



CONCLUSIONS

This is the first comprehensive view of CKD in specialty renal services in the public health system in Australia. The data confirm that CKD patients are a very heterogeneous group.

ACKNOWLEDGEMENTS

We gratefully acknowledge the patients who consented to be part of the CKD.QLD Registry, and the many collaborators across Queensland Health's renal services. Thank you for your support.

References

1. Australian Bureau of Statistics. Australian Health Survey: Biomedical Results for Chronic Diseases, 2011-12. ABS, Canberra.: 2013.
2. Chadban SJ, Briganti EM, et al. Prevalence of Kidney Damage in Australian Adults: The AusDiab Kidney Study. Journal of the American Society of Nephrology. 2003;14(suppl 2):S131-S8.
3. Australian Institute of Health and Welfare. Cardiovascular disease, diabetes and chronic kidney disease- Australian facts: Morbidity-Hospital care. Canberra: AIHW, 2014.
4. ANZDATA Registry. 38th Report. Australia and New Zealand Dialysis and Transplant Registry. 2016.

Contact person Dr Jenny Zhang @ jenny.zhang@uq.edu.au