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Supporting Information

Supplementary methods and results

Appendix to: Bongetti EK, Wolfe R, Wetmore JB, et al. Classification of chronic kidney disease in older Australian adults by the CKD-EPI 2009 and 2021 equations: secondary analysis of ASPREE study data. *Med J Aust* 2025; doi: 10.5694/mja2.52559.

Supplementary methods

Estimated glomerular filtration rate (eGFR) equations

2021 Chronic Kidney Disease-Epidemiology Collaboration equation

eGFR = 142 x $(SCr/A)^{B}$ x 0.9938^{age} x (1.012 if female), where *A* and *B* are the following:

Women		**Men**	
Serum creatinine ≤0.7 mg/dL	*A* = 0.7 *B* = -0.241	**Serum creatinine ≤0.9 mg/dL**	*A* = 0.9 *B* = -0.302
Serum creatinine >0.7 mg/dL	A = 0.7 B = -1.2	**Serum creatinine >0.9 mg/dL**	*A* = 0.9 *B* = -1.2

2009 Chronic Kidney Disease-Epidemiology Collaboration equation

eGFR = A × $(Scr/B)^{C}$ × 0.993^{age} × (1.159 if Black*), where *A*, *B*, and *C* are the following:

Women		**Men**	
Serum creatinine ≤0.7 mg/dL	*A* = 144 *B* = 0.7 C =-0.329	**Serum creatinine ≤0.9 mg/dL**	*A* = 141 *B* = 0.9 C = -0.411
Serum creatinine >0.7 mg/dL	A = 144 B = 0.7 C = -1.209	**Serum creatinine >0.9 mg/dL**	*A* = 141 *B* = 0.9 C = -1.209

*In Australia, the 2009 Chronic Kidney Disease-Epidemiology Collaboration equation is used without a coefficient to adjust for ethnic background.

Serum creatinine was recorded in the ASPREE trial in µmol/L; to convert µmol/L to mg/dL, multiply by 0.0113.

Supplementary results

Figure 1. ASPREE participants included in the secondary analyses reported in this article

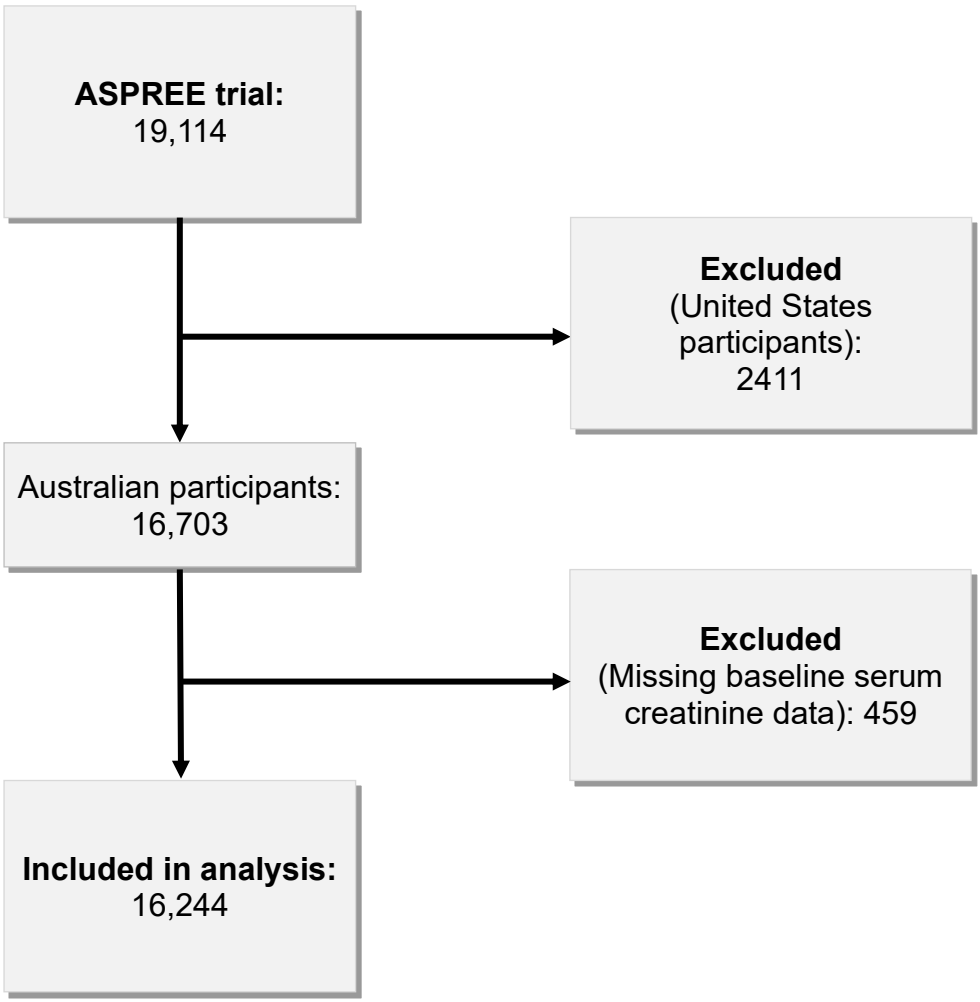


Table 1. Subgroups for sensitivity analyses

	Subgroup	CKD subgroup	No CKD (eGFR ≥ 60 mL/min/1.73m^2, both equations	Total
1	Stage 3a CKD (eGFR 45 to less than 60mL/min/1.73m^2) according to both equations	1,403	11,474	12,877
2	Stage 3b CKD (eGFR 30 to less than 45mL/min/1.73m^2) according both equations	291	11,474	11,765
3	CKD (eGFR <60mL/min/1.73m^2) according to the 2009 but not the 2021 CKD-EPI equation	651	11,474	12,125

eGFR = estimated glomerular filtration rate; CKD = chronic kidney disease; CKD-EPI = Chronic Kidney Disease-Epidemiology Collaboration equation

Table 2. Long term health outcomes for ASPREE participants reclassified to a different chronic kidney disease glomerular filtration rate stage by the 2021 Chronic Kidney Disease–Epidemiology Collaboration equation (reference: participants who were not reclassified): Cox proportional hazards regression subgroup analyses

Outcome	Events	Hazard ratio (95% CI)	Adjusted hazard ratio* (95% CI)	Adjusted hazard ratio† (95% CI)
Disability free survival				
Subgroup 1: Stage 3a both‡	1,848	1.54 (1.36-1.75)*	1.16 (1.02-1.32)*	1.08 (0.95-1.23)
Subgroup 2: Stage 3b both§	1,636	1.82 (1.43-2.31)	1.24 (0.97-1.58)	1.14 (0.89-1.45)
Subgroup 3: CKD with 2009, not 2021¶	1,675	1.27 (1.05-1.54)*	1.06 (0.87-1.28)	1.01 (0.83-1.23)
All-cause mortality				
Subgroup 1: Stage 3a both‡	1,186	1.63 (1.40-1.91)*	1.20 (1.03-1.41)*	1.12 (0.95-1.31)
Subgroup 2: Stage 3b both§	1,049	2.14 (1.62-2.82)*	1.46 (1.10-1.93)*	1.16 (0.86-1.57)
Subgroup 3: CKD with 2009, not 2021¶	1,071	1.37 (1.08-1.74)*	1.14 (0.90-1.45)	1.09 (0.86-1.38)
Major adverse cardiovascular events				
Subgroup 1: Stage 3a both‡	680	1.70 (1.39-2.08)*	1.41 (1.15-1.74)*	1.34 (1.09-1.66)*
Subgroup 2: Stage 3b both§	595	1.94 (1.32-2.85)*	1.54 (1.04-2.27)*	1.41 (0.95-2.09)
Subgroup 3: CKD with 2009, not 2021¶	610	1.35 (0.98-1.84)	1.24 (0.90-1.70)	1.19 (0.87-1.64)
Hospitalisations for heart failure				
Subgroup 1: Stage 3a both‡	137	1.92 (1.24-2.96)*	1.30 (0.83-2.02)	1.16 (0.74-1.81)
Subgroup 2: Stage 3b both§	119	2.60 (1.21-5.57)*	1.58 (0.73-3.43)	1.43 (0.65-3.13)
Subgroup 3: CKD with 2009, not 2021¶	122	1.65 (0.86-3.15)	1.29 (0.67-2.48)	1.24 (0.64-2.38)

ASPREE = ASPirin in Reducing Events in the Elderly study; CKD-EPI = Chronic Kidney Disease-Epidemiology Collaboration equation; eGFR = estimated glomerular filtration rate; CI = confidence interval.

* Adjusted model 1: age, sex

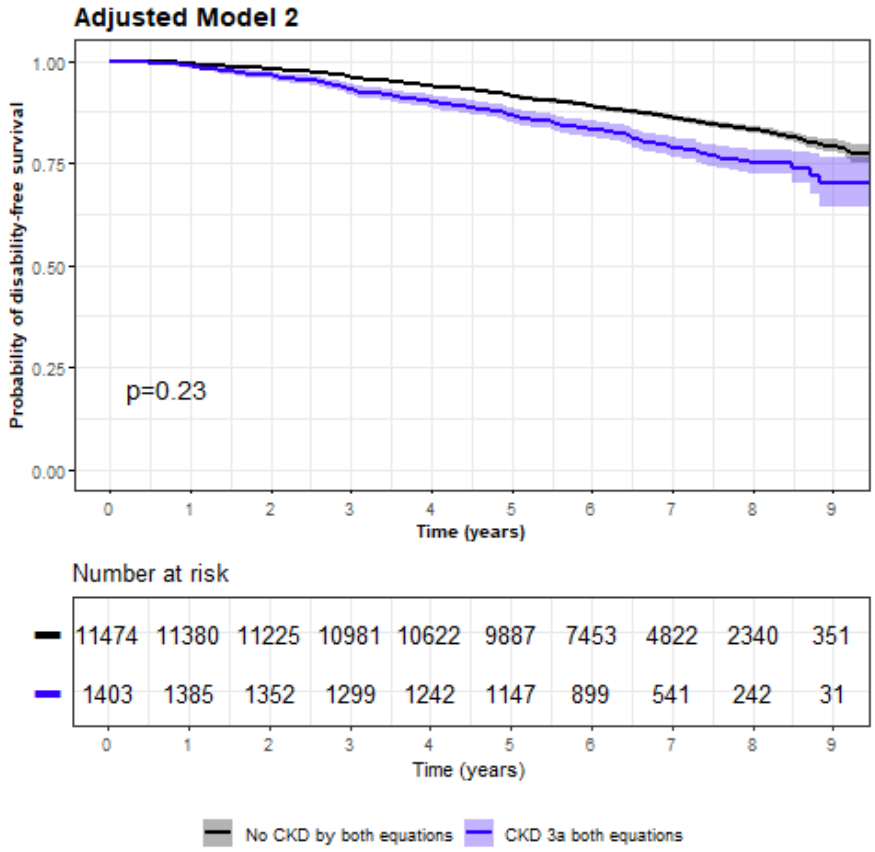
† Adjusted model 2: age, sex, education, dyslipidaemia, diabetes, hypertension, body mass index, smoking, alcohol, and polypharmacy.

‡ Participants classified as having stage 3a CKD (eGFR <60 and ≥45 mL/min/1.73m^2) according to both the 2009 CKD-EPI and the 2021 CKD-EPI equation.

§ Participants classified as Stage 3b CKD (eGFR <45 and ≥30 mL/min/1.73m^2) according to both the 2009 CKD-EPI and the 2021 CKD-EPI equation.

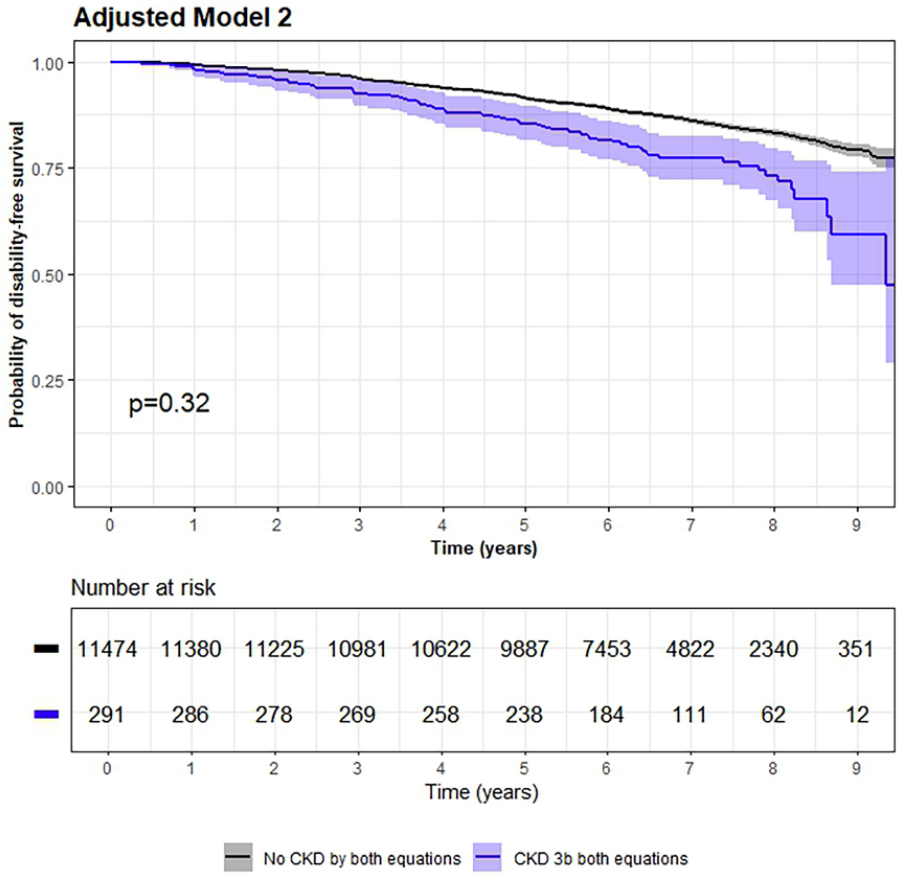
¶ Participants classified as having CKD (eGFR<60 mL/min/1.73m^2) according to the 2009 CKD-EPI equation but not the 2021 CKD-EPI equation.

Figure 2. Disability-free survival for 11,474 ASPREE participants classified as having no chronic kidney disease (CKD) by both the 2009 and 2021 CKD-EPI equations and 1403 participants classified as having CKD stage 3a by both equations: Kaplan–Meier analysis*



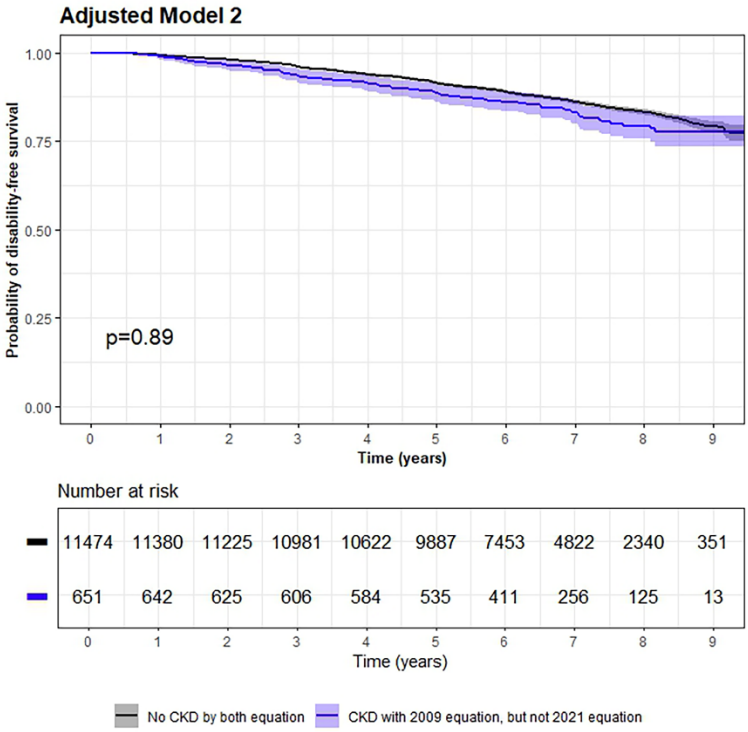
* Adjusted for age, sex, education, alcohol, smoking, diabetes, hypertension, body mass index, dyslipidaemia, polypharmacy, urinary albumin-to-creatinine ratio, baseline estimated glomerular filtration rate (Chronic Kidney Disease-Epidemiology Collaboration 2009 equation).

Figure 3. Disability-free survival for 11,474 ASPREE participants classified as having no chronic kidney disease (CKD) by both the 2009 and 2021 CKD-EPI equations and 291 participants classified as having CKD stage 3b by both equations: Kaplan–Meier analysis*



* Adjusted for age, sex, education, alcohol, smoking, diabetes, hypertension, body mass index, dyslipidaemia, polypharmacy, urinary albumin-to-creatinine ratio, baseline estimated glomerular filtration rate (Chronic Kidney Disease-Epidemiology Collaboration 2009 equation).

Figure 4. Disability-free survival for 11,474 ASPREE participants classified as having no chronic kidney disease (CKD) by both the 2009 and 2021 CKD-EPI equations and 651 participants classified as having CKD by the 2009 equation but not the 2021 equation: Kaplan–Meier analysis*



* Adjusted for age, sex, education, alcohol, smoking, diabetes, hypertension, body mass index, dyslipidaemia, polypharmacy, urinary albumin-to-creatinine ratio, baseline estimated glomerular filtration rate (Chronic Kidney Disease-Epidemiology Collaboration 2009 equation).

STROBE Statement. Checklist of items that should be included in reports of *cohort studies*

Note: The page numbers refer to the submitted manuscript, not to the published article or its Supporting Information file.

	Item No	Recommendation	Page No
Title and abstract	1	(*a*) Indicate the study's design with a commonly used term in the title or the abstract	1,2
		(*b*) Provide in the abstract an informative and balanced summary of what was done and what was found	
Introduction			
Background/rationale	2	Explain the scientific background and rationale for the investigation being reported	5
Objectives	3	State specific objectives, including any prespecified hypotheses	6
Methods			
Study design	4	Present key elements of study design early in the paper	7
Setting	5	Describe the setting, locations, and relevant dates, including periods of recruitment, exposure, follow-up, and data collection	7
Participants	6	(*a*) Give the eligibility criteria, and the sources and methods of selection of participants. Describe methods of follow-up	7
		(*b*) For matched studies, give matching criteria and number of exposed and unexposed	
Variables	7	Clearly define all outcomes, exposures, predictors, potential confounders, and effect modifiers. Give diagnostic criteria, if applicable	7,8
Data sources/ measurement	8*	For each variable of interest, give sources of data and details of methods of assessment (measurement). Describe comparability of assessment methods if there is more than one group	8
Bias	9	Describe any efforts to address potential sources of bias	7,8
Study size	10	Explain how the study size was arrived at	7
Quantitative variables	11	Explain how quantitative variables were handled in the analyses. If applicable, describe which groupings were chosen and why	8
Statistical methods	12	(*a*) Describe all statistical methods, including those used to control for confounding	9
		(*b*) Describe any methods used to examine subgroups and interactions	
		(*c*) Explain how missing data were addressed	
		(*d*) If applicable, explain how loss to follow-up was addressed	
		(*e*) Describe any sensitivity analyses	
Results			
Participants	13*	(a) Report numbers of individuals at each stage of study—eg numbers potentially eligible, examined for eligibility, confirmed eligible, included in the study, completing follow-up, and analysed	11
		(b) Give reasons for non-participation at each stage	
		(c) Consider use of a flow diagram	

Descriptive data	14*	(a) Give characteristics of study participants (eg demographic, clinical, social) and information on exposures and potential confounders	11, Table 1
		(b) Indicate number of participants with missing data for each variable of interest	
		(c) Summarise follow-up time (eg, average and total amount)	
Outcome data	15*	Report numbers of outcome events or summary measures over time	12, 13
Main results	16	(*a*) Give unadjusted estimates and, if applicable, confounder-adjusted estimates and their precision (eg, 95% confidence interval). Make clear which confounders were adjusted for and why they were included	11,12
		(*b*) Report category boundaries when continuous variables were categorized	
		(*c*) If relevant, consider translating estimates of relative risk into absolute risk for a meaningful time period	
Other analyses	17	Report other analyses done—eg analyses of subgroups and interactions, and sensitivity analyses	13
Discussion			
Key results	18	Summarise key results with reference to study objectives	14
Limitations	19	Discuss limitations of the study, taking into account sources of potential bias or imprecision. Discuss both direction and magnitude of any potential bias	17
Interpretation	20	Give a cautious overall interpretation of results considering objectives, limitations, multiplicity of analyses, results from similar studies, and other relevant evidence	14-18
Generalisability	21	Discuss the generalisability (external validity) of the study results	14-18
Other information			
Funding	22	Give the source of funding and the role of the funders for the present study and, if applicable, for the original study on which the present article is based	19

*Give information separately for exposed and unexposed groups.

Note: An Explanation and Elaboration article discusses each checklist item and gives methodological background and published examples of transparent reporting. The STROBE checklist is best used in conjunction with this article (freely available on the Web sites of PLoS Medicine at http://www.plosmedicine.org/, Annals of Internal Medicine at http://www.annals.org/, and Epidemiology at http://www.epidem.com/). Information on the STROBE Initiative is available at http://www.strobe-statement.org.