Supplementary Materials

Figure S1. Cohort creation. Abbreviation: CNI; calcineurin inhibitor.

Figures S2. Study design. Abbreviation: CNI; calcineurin inhibitor.

Table S1. STROBE checklist.

Table S2. Databases and coding definitions for inclusion/exclusion criteria, baseline

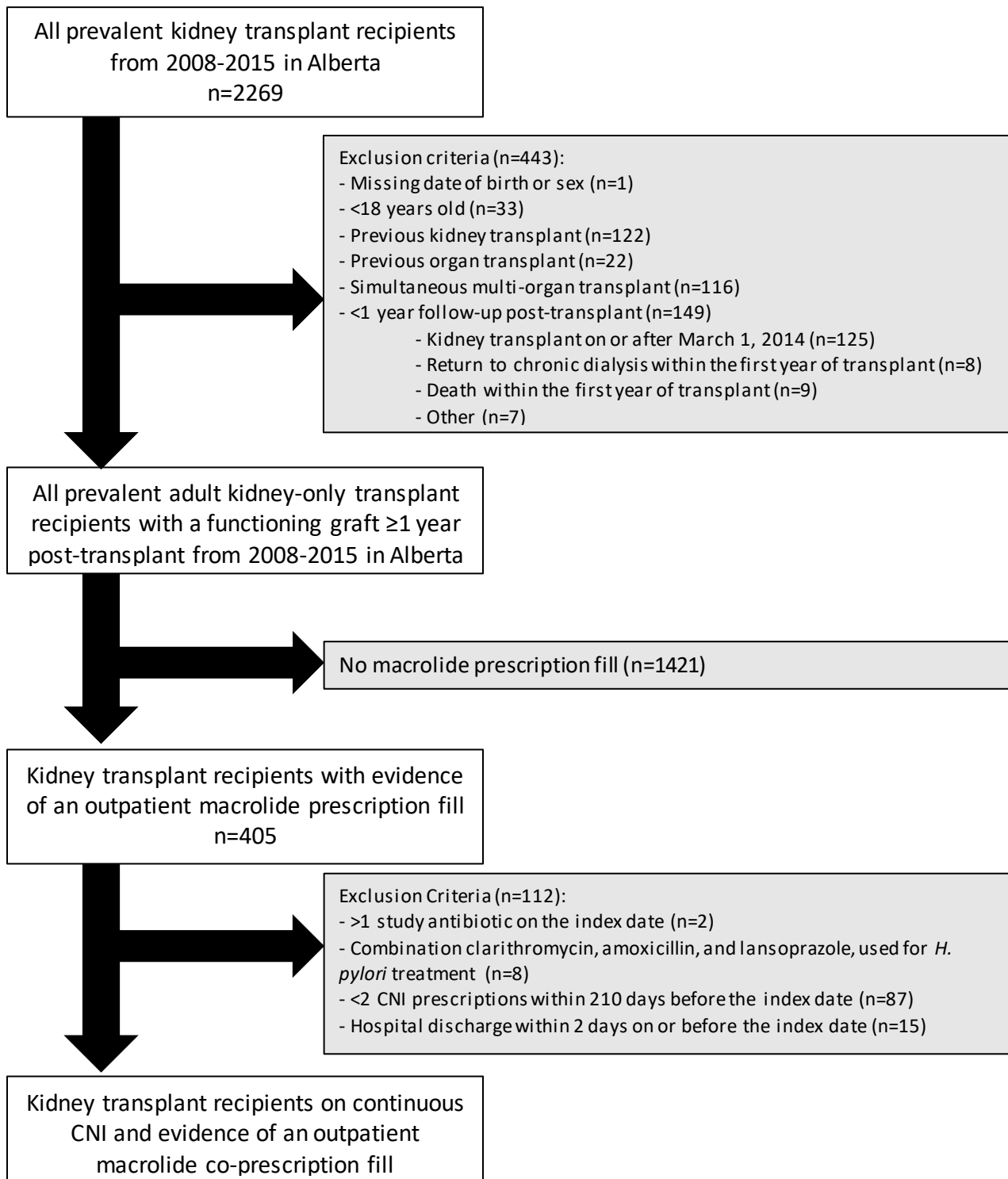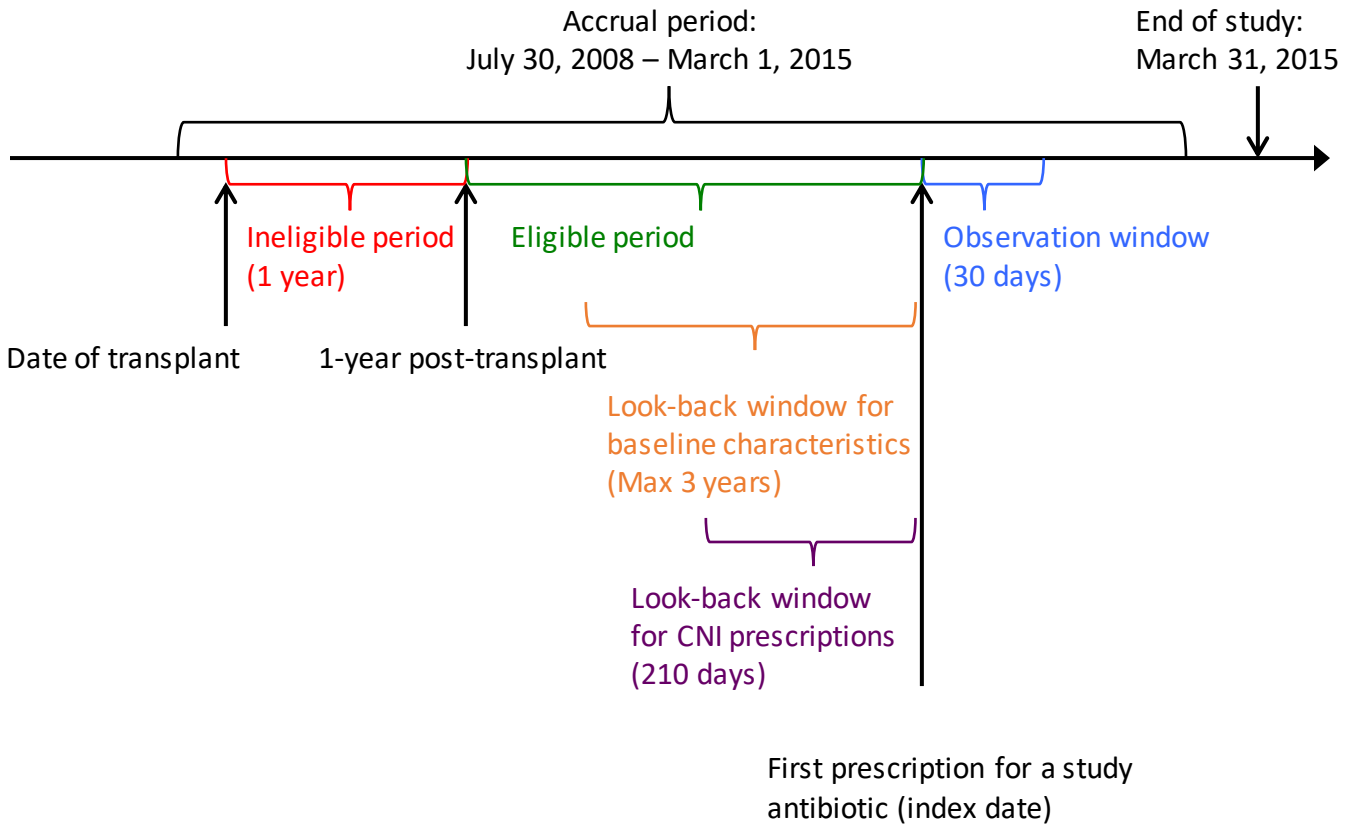characteristics, and outcome measurements.

Figure S1.

All prevalent kidney transplant recipients from 2008-2015 in Alberta
n=2269

Exclusion criteria (n=443):
- Missing date of birth or sex (n=1)
- <18 years old (n=33)
- Previous kidney transplant (n=122)
- Previous organ transplant (n=22)
- Simultaneous multi-organ transplant (n=116)
- <1 year follow-up post-transplant (n=149)
    - Kidney transplant on or after March 1, 2014 (n=125)
    - Return to chronic dialysis within the first year of transplant (n=8)
    - Death within the first year of transplant (n=9)
    - Other (n=7)

All prevalent adult kidney-only transplant recipients with a functioning graft ≥1 year post-transplant from 2008-2015 in Alberta

No macrolide prescription fill (n=1421)

Kidney transplant recipients with evidence of an outpatient macrolide prescription fill
n=405

Exclusion Criteria (n=112):
- >1 study antibiotic on the index date (n=2)
- Combination clarithromycin, amoxicillin, and lansoprazole, used for *H. pylori* treatment (n=8)
- <2 CNI prescriptions within 210 days before the index date (n=87)
- Hospital discharge within 2 days on or before the index date (n=15)

Kidney transplant recipients on continuous CNI and evidence of an outpatient macrolide co-prescription fill

Figure S2.

Table S1. STROBE checklist.[32]			
	Item	**Recommendation**	**Section**
Title and abstract	1	(a) Indicate the study's design with a commonly used term in the title or the abstract	Abstract
		(b) Provide in the abstract an informative and balanced summary of what was done and what was found	Abstract
Introduction			
Background/rationale	2	Explain the scientific background and rationale for the investigation being reported	Introduction
Objectives	3	State specific objectives, including any prespecified hypotheses	Introduction
Methods			
Study design	4	Present key elements of study design early in the paper	Methods
Setting	5	Describe the setting, locations, and relevant dates, including periods of recruitment, exposure, follow-up, and data collection	Methods
Participants	6	(a) Give the eligibility criteria, and the sources and methods of selection of participants. Describe methods of follow-up	Methods
		(b) For matched studies, give matching criteria and number of exposed and unexposed	Not applicable
Variables	7	Clearly define all outcomes, exposures, predictors, potential confounders, and effect modifiers. Give diagnostic criteria, if applicable	Methods
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	Methods
Bias	9	Describe any efforts to address potential sources of bias	Methods
Study size	10	Explain how the study size was arrived at	Figure S1
Quantitative variables	11	Explain how quantitative variables were handled in the analyses. If applicable, describe which groupings were chosen and why	Methods
Statistical methods	12	(a) Describe all statistical methods, including those used to control for confounding	Methods
		(b) Describe any methods used to examine subgroups and interactions	Methods
		(c) Explain how missing data were addressed	Methods
		(d) If applicable, explain how loss to follow-up was addressed	Methods
		(e) Describe any sensitivity analyses	Methods

Table S1. STROBE checklist (continued).			
	Item	**Recommendation**	**Section**
Results			
Participants	13	(a) Report numbers of individuals at each stage of study—e.g. numbers potentially eligible, examined for eligibility, confirmed eligible, included in the study, completing follow-up, and analysed	Methods
		(b) Give reasons for non-participation at each stage	Methods
		(c) Consider use of a flow diagram	Figure S1
Descriptive data	14	(a) Give characteristics of study participants (e.g. demographic, clinical, social) and information on exposures and potential confounders	Results Table 1
		(b) Indicate number of participants with missing data for each variable of interest	Table 1
		(c) Summarise follow-up time (e.g. average and total amount)	Results
Outcome data	15	Report numbers of outcome events or summary measures over time	Results
Main results	16	(a) Give unadjusted estimates and, if applicable, confounder-adjusted estimates and their precision (e.g. 95% confidence interval). Make clear which confounders were adjusted for and why they were included	Results
		(b) Report category boundaries when continuous variables were categorized	Results
		(c) If relevant, consider translating estimates of relative risk into absolute risk for a meaningful time period	Not applicable
Other analyses	17	Report other analyses done—e.g. analyses of subgroups and interactions, and sensitivity analyses	Not applicable
Discussion			
Key results	18	Summarise key results with reference to study objectives	Discussion
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	Discussion
Interpretation	20	Give a cautious overall interpretation of results considering objectives, limitations, multiplicity of analyses, results from similar studies, and other relevant evidence	Discussion
Generalisability	21	Discuss the generalisability (external validity) of the study results	Discussion
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	Acknowledgements and Disclosures

Table S2. Databases and coding definitions for inclusion/exclusion criteria, baseline characteristics, and outcome measurements.		
Variable	**Database**	**Codes**
Inclusion Criteria		
Kidney transplantation	NARP, SARP	Variables: Modality = Transplant; Incident = 1; Numinctrans = 1 Transdate1 = Date of first transplant
Exclusion Criteria		
Age	AH	Population Registry
Kidney transplantation	NARP, SARP	As above
	AH (since 1994)	CCI code: 1PC85
		ICD-9-CM: 5569
		CCP codes: 67.4, 67.59, 67.5
Other organ transplant	AH	Pancreas transplant	CCI: 1OJ85
			ICD-9-CM: 528 (includes 5280, 5281, 5282, 5283, 5284, 5285, 5286)
			CCP: 64.8
		Liver transplant	CCI: 1OA85
			ICD-9-CM: 505 (includes 5051, 5059)
			CCP: 62.49, 62.4
		Bowel transplant	CCI: 1NK85, 1NP85
			ICD-9-CM: 4697
			CCP: 58.99
		Multi-visceral transplant	CCI: 1HY85, 1OK85
			ICD-9-CM: 336
			CCP: 45.6
		Lung transplant	CCI: 1GR85, 1GT85
			ICD-9-CM: 335 (includes 3350, 3351, 3352)
			CCP: 45.5
		Heart transplant	CCI: 1HZ85
			ICD-9-CM: 3751
			CCP: 49.5
Graft failure (dialysis, transplant)	NARP, SARP		
Mortality	AH	Alberta Vital Statistics	
CNI/Antibiotic prescription	PIN		
Hospital admission	AH		

Table S2. Databases and coding definitions for inclusion/exclusion criteria, baseline characteristics, and outcome measurements (continued).		
Baseline Characteristics	**Database**	**Codes**
Demographics		
Age, Sex, SES, Residence	AH	Population Registry
Kidney-related Characteristics		
Dialysis modality	NARP, SARP	Variable: Modality = Hemodialysis, Peritoneal dialysis, Pre-care (Pre-emptive)
	AH	Hemodialysis: ≥2 outpatient claims 90 days apart CCP: 13.99A, 13.99B, 13.99O, 13.99OA 1 hospitalization or claim: CCP: 51.95 (must be outpatient) CCI: 1PZ21HQBR, 1PZ21HQBS Peritoneal dialysis: ≥2 outpatient claims 90 days apart CCP: 13.99C, 13.99D, 13.99OA 1 hospitalization or claim: 66.98 (must be outpatient) CCI: 1PZ21HPD4
Dialysis/Transplant duration	NARP, SARP	Variable: Duration
Site of transplantation	NARP, SARP	Variable: Program
Laboratory data	AKDN	

Co-morbidities	**Database**	**Codes**	**Validation**
Hypertension[47]	AH	1 hospitalization or 2 claims in 2 years or less: ICD-9-CM: 401-405 ICD-10: I10-I13, I15	ICD-9-CM: Sn 79%, PPV 95% ICD-10: Sn 68%, PPV 93%[56]
Diabetes mellitus[46]	AH	1 hospitalization or 2 claims in 2 years or less: ICD-9-CM: 250 ICD-10: E10-E14	ICD-9-CM: Sn 86%, PPV 80%
Myocardial infarction[57]	AH	1 hospitalization: ICD-9-CM: 410 ICD-10: I21, I22	ICD-9-CM: Sn 89%, PPV 89%
Percutaneous coronary intervention[58]	AH	CCI: 1IJ50, 1IJ54GQ-AZ, 1IJ57GQ CCP: 51.59C, 51.59D, 51.59E, 51.59F	CCI: PPV 94-96%
Coronary artery bypass graft[58]	AH	CCI: 1IJ76 CCP: 48.11, 48.12, 48.13, 48.14, 48.15, 48.19	CCI: PPV 97-98%
Chronic heart failure[44,56]	AH	1 hospitalization or 2 claims in 2 years or less: ICD-9-CM: 398.91, 402.01, 402.11, 402.91, 404.01, 404.03, 404.11, 404.13, 404.91, 404.93, 425.4-425.9, 428 ICD-10: I09.9, I25.5, I42.0, I42.5-I42.9, I43, I50	ICD-9-CM: Sn 72%, PPV 91% ICD-10: Sn 69%, PPV 90%
Atrial fibrillation[59]	AH	1 hospitalization or 2 claims in 2 years or less: ICD-9 CM: 427.3 ICD-10: I48.0	ICD-9-CM: Sn 84%, PPV 89%

Table S2. Databases and coding definitions for inclusion/exclusion criteria, baseline characteristics, and outcome measurements (continued).			
Co-morbidities	Database	Codes	Validation
Stroke/Transient ischemic attack[60]	AH	1 most responsible or post-admittance hospitalization or 1 claim or 1 most responsible emergency department ACCS: ICD-9-CM: 362.3, 430, 431, 433.x1, 434.x1, 435, 436 ICD-10: G45.0-G45.3, G45.8-G45.9, H34.1, I60, I61, I63, I64	ICD-9-CM: PPV 90% ICD-10: PPV 92%
Peripheral vascular disease[61]	AH	1 hospitalization or 1 claim or 1 ACCS: ICD-9-CM: 440.2 ICD-10: I70.2	ICD-9-CM: Sn 77%, PPV 94%
Cancer, lymphoma[56]	AH	1 hospitalization or 2 claims in 2 years or less: ICD-9-CM: 200-202, 203.0, 238.6 ICD-10: C81-C85, C88, C90.0, C90.2, C96	ICD-9-CM: Sn 66%, PPV 73% ICD-10: Sn 63%, PPV 79%
Cancer, solid tumor without metastasis[56]	AH	1 hospitalization or 2 claims in 2 years or less: ICD-9-CM: 140-172, 174-195 ICD-10: C00-C26, C30-C34, C37-C41, C43, C45-C58, C60-C76, C97	ICD-9-CM: Sn 44%, PPV 57% ICD-10: Sn 46%, PPV 59%
Cancer, metastatic[56]	AH	1 hospitalization or 2 claims in 2 years or less: ICD-9-CM: 196-199 ICD-10: C77-C80	ICD-9-CM: Sn 83%, PPV 89% ICD-10: Sn 81%, PPV 87%
Charlson co-morbidity index[44,62]	AH	Charlson Index Score = Sum of the weights for the comorbid conditions that are present Weights of 1: cerebrovascular disease, congestive heart failure, chronic pulmonary disease, dementia, diabetes without chronic complications, myocardial infarction, mild liver disease, peptic ulcer disease, peripheral vascular disease, rheumatic disease Weighs of 2: cancer, diabetes with chronic complications, paraplegia/hemiplegia, renal disease Weights of 3: moderate/severe liver disease Weights of 6: HIV/AIDS, metastatic solid tumour	

Table S2. Databases and coding definitions for inclusion/exclusion criteria, baseline characteristics, and outcome measurements (continued).				
Drug-related Characteristics	**Database**	**Codes**		
Prescriptions	PIN	Immunosuppression, Antibiotic, Cardiac medications, NSAIDs		
Prescriber	AH	ANES Anesthesiology	MDON	Medical Oncology
		CARD Cardiology	NEPH	Nephrology
		CLIM Internal Medicine	NEUR	Neurology
		CMSP Community Medicine - Specialty	NUSG	Neurosurgery
		CRCM Critical Care Medicine	OBGY	Obstetrics and Gynaecology
		CRSG Cardio and Thoracic Surgery	OCMD	General Practice
		CTSG Cardio and Thoracic	OPHT	Ophthalmology
		DERM Dermatology	ORTH	Orthopaedic Surgery
		E/M Endocrinology/Metabolism	OTOL	Otolaryngology
		EMSP Emergency Medicine - Specialty	PHMD	Physical Medicine and Rehabilitation
		FTER Full Time Emergency Room	PLAS	Plastic Surgery
		GAST Gastroenterology	PSYC	Psychiatry - Specialty
		GEMD Geriatric Medicine	RHEU	Rheumatology
		GNMH Generalists Mental Health Physicians	RSMD	Respiratory Medicine
		GNSG General Surgery	SPMH	Specialists Mental Health Physicians
		GP General Practice	THOR	Thoracic Surgery
		HEM Hematology	UROL	Urology
		IDIS Infectious Diseases	VSSG	Vascular Surgery
		INMD Internal Medicine		
Outcomes	**Database**	**Codes**		
Laboratory investigation	AKDN			
Mortality	AH	Alberta Vital Statistics		
All-cause hospitalization	AH			
Abbreviations: ACCS, Ambulatory Care Classification System; AH, Alberta Health; AKDN, Alberta Kidney Disease Network; CCI, Canadian Classification of Health Interventions; CCP, Canadian Classification of Diagnostic, Therapeutic, and Surgical Procedures; CNI, Calcineurin inhibitor; ICD-9-CM, International Classification of Diseases, Ninth Revision, Clinical Modification; ICD-10, International Statistical Classification of Diseases, Tenth Revision; NARP, Northern Alberta Renal Program; NSAIDs, Nonsteroidal anti-inflammatory drugs; PIN, Pharmaceutical Information Network; PPV, positive predictive value; SARP, Southern Alberta Renal Program; SES, socio-economic status; Sn, sensitivity.				