Table S1. Table of Cancer Diagnostic Codes

OCR[1] Topographical Codes		
ICD-O-3[2]	Head and Neck	C00, C01, C02, C03, C04, C05, C06, C07, C08, C09, C10, C11, C12, C13, C14, C30, C31, C32
	Esophageal	C15
	Gastric	C16
	Small Intestine	C17
	Colorectal	C18, C19, C20
	Anal	C21
	Hepatobiliary	C22, C23, C24
	Pancreatic	C25
	Gastrointestinal NOS	C26
	Lung, Tracheal and Bronchogenic	C33, C34
	Thymus	C37
	Heart, Mediastinal and Pleural	C38
	Intrathoracic NOS	C39
	Bones, Joints and Articular Cartilage of Limbs	C40, C41
	Hematologic	C42
	Skin	C44
	Peripheral Nervous System	C47
	Retroperitoneal/Peritoneal Tissues	C48
	Muscle, Connective and Subcutaneous Tissues	C49
	Breast	C50
	Female Genital	C51, C52, C53, C54, C55, C56, C57, C58
	Male Genital	C60, C61, C62, C63
	Renal	C64, C65
	Ureterovesicular	C66, C67, C68
	Ocular	C69
	Central Nervous System	C70, C71, C72
	Thyroid	C73
	Adrenal	C74
	Endocrine Gland	C75
	Other	C76
	Unknown Primary Site	C80
OCR Morphologic Codes		
ICD-O-3	Nonmelanoma Skin	80500, 80502, 80503, 80510, 80513, 80513, 80520, 80522, 80523, 80530, 80600, 80702, 80703, 80706, 80713, 80723, 80733, 80743,

		80753, 80762, 80763, 80812, 80823, 80833, 80843, 80901, 80903, 80913, 80923, 80933, 80943, 80953, 80960, 80973
	Melanoma	87203, 87403, 87412, 87413, 87423, 87433, 87443, 87453, 87463, 87703, 87723, 87733, 87743
	Lymphoma	95913, 95963, 96503, 96513, 96523, 96533, 96543, 96553, 96593, 96613, 96623, 96633, 96643, 96653, 96673, 96703, 96713, 96733, 96753, 96783, 96793, 96803, 96843, 96873, 96893, 96903, 96913, 96953, 96983, 96993, 97003, 97013, 97023, 97053, 97083, 97093, 97143, 97163, 97173, 97183, 97193, 97273, 97283, 97293, 99701
	Myeloma	97313, 97323
	Leukemia	98003, 98013, 98053, 98203, 98233, 98263, 98273, 98273, 98311, 98323, 98333, 98343, 98353, 98363, 98373, 98403, 98603, 98613, 98633, 98673, 98703, 98713, 98723, 98733, 98743, 98753, 98763, 98913, 98953, 98963, 98973, 99103, 99203, 99403, 99453, 99463, 99483, 99633, 99643

[1]OCR Ontario Cancer Registry
[2]ICD-O-3 International Classification of Diseases for Oncology, third edition

Table S2. Topographical Descriptions

OCR[1] Topographical Codes		
ICD-O-3	Head and Neck	C00 = LIP
		C01 = BASE OF TONGUE
		C02 = OTHER AND UNSPECIFIED PARTS OF TONGUE
		C03 = GUM
		C04 = FLOOR OF MOUTH
		C05 = PALATE
		C06 = OTHER AND UNSPECIFIED PARTS OF MOUTH
		C07 = PAROTID GLAND
		C08 = OTHER AND UNSPECIFIED MAJOR SALIVARY GLANDS
		C09 = TONSIL
		C10 = OROPHARYNX
		C11 = NASOPHARYNX
		C12 = PYRIFORM SINUS
		C13 = HYPOPHARYNX
		C14 = OTHER AND ILL-DEFINED SITES IN LIP, ORAL CAVITY AND PHARYNX
		C30 = NASAL CAVITY AND MIDDLE EAR
		C31 = ACCESSORY SINUSES
		C32 = LARYNX
	Esophageal	C15 = ESOPHAGUS
	Gastric	C16 = STOMACH
	Small Intestine	C17 = SMALL INTESTINE
	Colorectal	C18 = COLON
		C19 = RECTOSIGMOID JUNCTION
		C20 = RECTUM
	Anal	C21 = ANUS AND ANAL CANAL
	Hepatobiliary	C22 = LIVER AND INTRAHEPATIC BILE DUCTS
		C23 = GALLBLADDER
		C24 = OTHER AND UNSPECIFIED PARTS OF BILIARY TRACT
	Pancreatic	C25 = PANCREAS
	Gastrointestinal NOS	C26 = OTHER AND ILL-DEFINED DIGESTIVE ORGANS
	Lung, Tracheal and Bronchogenic	C33 = TRACHEA
		C34 = BRONCHUS AND LUNG
	Thymus	C37 = THYMUS

Heart, Mediastinal and Pleural	C38 = HEART, MEDIASTINUM, AND PLEURA	
Intrathoracic NOS	C39 = OTHER AND ILL-DEFINED SITES WITHIN RESPIRATORY SYSTEM AND INTRATHORACIC ORGANS	
Bones, Joints and Articular Cartilage of Limbs	C40 = BONES, JOINTS AND ARTICULAR CARTILAGE OF LIMBS	
	C41 = BONES, JOINTS AND ARTICULAR CARTILAGE OF OTHER AND UNSPECIFIED SITES	
Hematologic	C42 = HEMATOPOIETIC AND RETICULOENDOTHELIAL SYSTEMS	
Skin	C44 = SKIN	
Peripheral Nervous System	C47 = PERIPHERAL NERVES AND AUTONOMIC NERVOUS SYSTEM	
Retroperitoneal/Peritoneal Tissues	C48 = RETROPERITONEUM AND PERITONEUM	
Muscle, Connective and Subcutaneous Tissues	C49 = CONNECTIVE, SUBCUTANEOUS AND OTHER SOFT TISSUES	
Breast	C50 = BREAST	
Female Genital	C51 = VULVA	
	C52 = VAGINA	
	C53 = CERVIX UTERI	
	C54 = CORPUS UTERI	
	C55 = UTERUS, NOS	
	C56 = OVARY	
	C57 = OTHER AND UNSPECIFIED FEMALE GENITAL ORGANS	
	C58 = PLACENTA	
Male Genital	C60 = PENIS	
	C61 = PROSTATE GLAND	
	C62 = TESTIS	
	C63 = OTHER AND UNSPECIFIED MALE GENITAL ORGANS	
Renal	C64 = KIDNEY	
	C65 = RENAL PELVIS	
Ureterovesicular	C66 = URETER	
	C67 = BLADDER	
	C68 = OTHER AND UNSPECIFIED URINARY ORGANS	

	Ocular	C69 = EYE AND ADNEXA
	Central Nervous System	C70 = MENINGES
		C71 = BRAIN
		C72 = SPINAL CORD, CRANIAL NERVES, AND OTHER PARTS OF CENTRAL NERVOUS SYSTEM
	Thyroid	C73 = THYROID GLAND
	Adrenal	C74 = ADRENAL GLAND
	Endocrine Gland	C75 = OTHER ENDOCRINE GLANDS AND RELATED STRUCTURES
	Other	C76 = OTHER AND ILL-DEFINED SITES
	Unknown Primary Site	C80 = UNKNOWN PRIMARY SITE

Table S3. Morphologic Descriptions

OCR Morphologic Codes		
ICD-O-3	Nonmelanoma Skin	80500 = Papilloma, NOS
		80502 = Papillary carcinoma in situ
		80503 = Papillary carcinoma, NOS
		80510 = Verrucous papilloma
		80513 = Verrucous carcinoma, NOS
		80520 = Squamous cell papilloma, NOS
		80522 = Papillary squamous cell carcinoma, noninvasive
		80523 = Papillary squamous cell carcinoma
		80530 = Squamous cell papilloma, inverted
		80600 = Squamous papillomatosis
		80702 = Squamous cell carcinoma in situ, NOS
		80703 = Squamous cell carcinoma, NOS
		80706 = Squamous cell carcinoma, metastatic, NOS
		80713 = Squamous cell carcinoma, keratinizing, NOS
		80723 = Squamous cell carcinoma, large cell, nonkeratinizing, NOS
		80733 = Squamous cell carcinoma, small cell, nonkeratinizing
		80743 = Squamous cell carcinoma, spindle cell
		80753 = Squamous cell carcinoma, adenoid
		80762 = Squamous cell carcinoma in situ with questionable stromal invasion
		80763 = Squamous cell carcinoma, microinvasive
		80823 = Lymphoepithelial carcinoma
		80833 = Basaloid squamous cell carcinoma
		80843 = Squamous cell carcinoma, clear cell type
		80901 = Basal cell tumor
		80903 = Basal cell carcinoma, NOS
		80913 = Multifocal superficial basal cell carcinoma
		80923 = Infiltrating basal cell carcinoma, NOS
		80933 = Basal cell carcinoma, fibroepithelial
		80943 = Basosquamous carcinoma
		80953 = Metatypical carcinoma
		80960 = Intraepidermal epithelioma of Jadassohn
		80973 = Basal cell carcinoma, nodular
	Melanoma	87203 = Malignant melanoma, NOS

			87403 = Malignant melanoma in junctional nevus
			87412 = Precancerous melanosis, NOS
			87413 = Malignant melanoma in precancerous melanosis
			87423 = Lentigo maligna melanoma
			87433 = Superficial spreading melanoma
			87443 = Acral lentiginous melanoma, malignant
			87453 = Desmoplastic melanoma, malignant
			87463 = Mucosal lentiginous melanoma
			87703 = Mixed epithelioid and spindle cell melanoma
			87723 = Spindle cell melanoma, NOS
			87733 = Spindle cell melanoma, type A
			87743 = Spindle cell melanoma, type B
		Lymphoma	95913 = Malignant lymphoma, non-Hodgkin, NOS
			95963 = Composite Hodgkin and non-Hodgkin lymphoma
			96503 = Hodgkin lymphoma, NOS
			96513 = Hodgkin lymphoma, lymphocyte-rich
			96523 = Hodgkin lymphoma, mixed cellularity, NOS
			96533 = Hodgkin lymphoma, lymphocyte depletion, NOS
			96543 = Hodgkin lymphoma, lymphocyte depletion, diffuse fibrosis
			96553 = Hodgkin lymphoma, lymphocyte depletion, reticular
			96593 = Hodgkin lymphoma, nodular lymphocyte predominance
			96613 = Hodgkin granuloma
			96623 = Hodgkin sarcoma
			96633 = Hodgkin lymphoma, nodular sclerosis, NOS
			96643 = Hodgkin lymphoma, nodular sclerosis, cellular phase
			96653 = Hodgkin lymphoma, nodular sclerosis, grade 1
			96673 = Hodgkin lymphoma, nodular sclerosis, grade 2
			96703 = Malignant lymphoma, small B lymphocytic, NOS
			96713 = Malignant lymphoma, lymphoplasmacytic
			96733 = Mantle cell lymphoma
			96753 = Malignant lymphoma, mixed small and large cell, diffuse
			96783 = Primary effusion lymphoma
			96793 = Mediastinal large B cell lymphoma
			96803 = Malignant lymphoma, large B cell, diffuse, NOS
			96843 = Malignant lymphoma, large B cell, diffuse, immunoblastic, NOS

		96873 = Burkitt lymphoma, NOS
		96893 = Splenic marginal zone B cell lymphoma
		96903 = Follicular lymphoma, NOS
		96913 = Follicular lymphoma, grade 2
		96953 = Follicular lymphoma, grade 1
		96983 = Follicular lymphoma, grade 3
		96993 = Marginal zone B cell lymphoma, NOS
		97003 = Mycosis fungoides
		97013 = Sezary syndrome
		97023 = Mature T cell lymphoma, NOS
		97053 = Angioimmunoblastic T cell lymphoma
		97083 = Subcutaneous panniculitis-like T cell lymphoma
		97093 = Cutaneous T cell lymphoma, NOS
		97143 = Anaplastic large cell lymphoma, T cell and Null cell type
		97163 = Hepatosplenic (gamma-delta) cell lymphoma
		97173 = Intestinal T cell lymphoma
		97183 = Primary cutaneous CD30+ T cell lymphoproliferative disorder
		97193 = NK/T-cell lymphoma, nasal and nasal-type
		97273 = Precursor cell lymphoblastic lymphoma, NOS
		97283 = Precursor B cell lymphoblastic lymphoma
		97293 = Precursor T cell lymphoblastic lymphoma
		99701 = Lymphoproliferative disorder, NOS
	Myeloma	97313 = Plasmacytoma, NOS
		97323 = Multiple myeloma
	Leukemia	98003 = Leukemia, NOS
		98013 = Acute leukemia, NOS
		98053 = Acute biphenotypic leukemia
		98203 = Lymphoid leukemia, NOS
		98233 = B cell chronic lymphocytic leukemia/small lymphocytic lymphoma
		98263 = Burkitt cell leukemia
		98273 = Adult T cell leukemia/lymphoma (HTLV-1 positive)
		98311 = T cell large granular lymphocytic leukemia
		98323 = Prolymphocytic leukemia, NOS
		98333 = Prolymphocytic leukemia, B cell type
		98343 = Prolymphocytic leukemia, T cell type
		98353 = Precursor cell lymphoblastic leukemia, NOS

		98363 = Precursor B cell lymphoblastic leukemia
		98373 = Precursor T cell lymphoblastic leukemia
		98403 = Acute myeloid leukemia, M6 type
		98603 = Myeloid leukemia, NOS
		98613 = Acute myeloid leukemia, NOS
		98633 = Chronic myeloid leukemia, NOS
		98673 = Acute myelomonocytic leukemia
		98703 = Acute basophilic leukemia
		98713 = Acute myeloid leukemia with abnormal marrow eosinophils
		98723 = Acute myeloid leukemia, minimal differentiation
		98733 = Acute myeloid leukemia without maturation
		98743 = Acute myeloid leukemia with maturation
		98753 = Chronic myelogenous leukemia, BCR/ABL positive
		98763 = Atypical chronic myeloid leukemia, BCR/ABL negative
		98913 = Acute monocytic leukemia
		98953 = Acute myeloid leukemia with multilineage dysplasia
		98963 = Acute myeloid leukemia, t(8
		98973 = Acute myeloid leukemia, 11q23 abnormalities
		99103 = Acute megakaryoblastic leukemia
		99203 = Therapy-related acute myeloid leukemia, NOS
		99403 = Hairy cell leukemia
		99453 = Chronic myelomonocytic leukemia, NOS
		99463 = Juvenile myelomonocytic leukemia
		99483 = Aggressive NK-cell leukemia
		99633 = Chronic neutrophilic leukemia
		99643 = Hypereosinophilic syndrome

SDC, Materials and Methods. Checklist of recommendations for reporting of observational studies using the REporting of studies Conducted using Observational Routinely-collected health Data (RECORD) Statement (1)

	Item No	STROBE items	RECORD items	Reported
Title and abstract	1	(a) Indicate the study's design with a commonly used term in the title or the abstract. (b) Provide in the abstract an informative and balanced summary of what was done and what was found.	(1.1) The type of data used should be specified in the title or abstract. When possible, the name of the databases used should be included. (1.2) If applicable, the geographic region and time frame within which the study took place should be reported in the title or abstract. (1.3) If linkage between databases was conducted for the study, this should be clearly stated in the title or abstract.	1.1 Title/Abstract 1.2 Abstract 1.3 Abstract
Introduction				
Background/ rationale	2	Explain the scientific background and rationale for the investigation being reported.		Introduction (pg 4-5)
Objectives	3	State specific objectives, including any prespecified hypotheses.		Abstract/Introducti on (pg. 5)
Methods				
Study design	4	Present key elements of study design early in the paper.		Methods (pg. 6)
Setting	5	Describe the setting, locations, and relevant dates, including periods of recruitment, exposure, follow-up, and data collection.		Methods (pg. 6)
Participants	6	(a) Give the eligibility criteria, and the sources and methods of selection of participants. Describe methods of follow-up. (b) For matched studies, give matching criteria and number of exposed and unexposed.	(6.1) The methods of study population selection (such as codes or algorithms used to identify subjects) should be listed in detail. If this is not possible, an explanation should be provided. (6.2) Any validation studies of the codes or algorithms used to select the population should be referenced. If validation was conducted for this study and not published elsewhere, detailed methods and results should be provided. (6.3) If the study involved linkage of databases, consider use of a flow diagram or other graphical display to demonstrate the data linkage process, including the number of individuals with linked data at each stage.	6.1 Methods (pg. 6) 6.2 Methods (pg. 7) 6.3 N/A
Variables	7	Clearly define all outcomes, exposures, predictors, potential confounders, and effect modifiers. Give diagnostic criteria, if applicable.	(7.1) A complete list of codes and algorithms used to classify exposures, outcomes, confounders, and effect modifiers should be provided. If these cannot be reported, an explanation should be provided.	Appendix A

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 1 group.		Methods (pg. 6)
Bias	9	Describe any efforts to address potential sources of bias.		Methods (pg. 8)
Study size	10	Explain how the study size was arrived at.		Methods (pg 6) and Figure 1
Quantitative variables	11	Explain how quantitative variables were handled in the analyses. If applicable, describe which groupings were chosen and why.		Methods (pg. 8)
Statistical methods	12	(a) Describe all statistical methods, including those used to control for confounding. (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.		Methods (pg. 8)
Data access and cleaning methods	N/A		(12.1) Authors should describe the extent to which the investigators had access to the database population used to create the study population. (12.2) Authors should provide information on the data cleaning methods used in the study.	Methods (pg. 6)
Linkage	N/A		(12.3) State whether the study included person-level, institutional-level, or other data linkage across 2 or more databases. The methods of linkage and methods of linkage quality evaluation should be provided.	Methods (pg. 6 - 7)
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 analyzed. (b) Give reasons for nonparticipation at each stage. (c) Consider use of a flow diagram.	(13.1) Describe in detail the selection of the persons included in the study (ie, study population selection), including filtering based on data quality, data availability, and linkage. The selection of included persons can be described in the text and/or by means of the study flow diagram.	Figure 1
Descriptive data	14	(a) Give characteristics of study participants (eg, demographic, clinical, social) and information on exposures and potential confounders. (b) Indicate number of participants with missing data for each variable of interest. (c) Summarize follow-up time (eg, average and total amount).		Results (pg. 8 – 9)
Outcome data	15	Report numbers of outcome events or summary measures over time.		Results (pg. 9), Table 3
Main results	16	(a) Give unadjusted estimates and, if applicable, confounder-adjusted estimates and their precision (eg, 95%		Results (pg. 9 – 10), Table 3

		confidence interval). Make clear which confounders were adjusted for and why they were included. (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).		Results (pg. 11)
Key results	18	Summarize key results with reference to study objectives.		Key Findings
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.	(19.1) Discuss the implications of using data that were not created or collected to answer the specific research question(s). Include discussion of misclassification bias, unmeasured confounding, missing data, and changing eligibility over time, as they pertain to the study being reported.	Discussion (pg. 16)
Interpretation	20	Give a cautious overall interpretation of results considering objectives, limitations, multiplicity of analyses, results from similar studies, and other relevant evidence.		Discussion (pg. 12 – 16)
Generalizability	21	Discuss the generalizability (external validity) of the study results.		Discussion (pg. 16)
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.		Acknowledgments (pg. 17)
Accessibility of protocol, raw data, and programming code	N/A		(22.1) Authors should provide information on how to access any supplemental information such as the study protocol, raw data, or programming code.	Appendix A, Methods (pg. 6), Available upon request

Benchimol EI, Smeeth L, Guttmann A, et al. The REporting of studies Conducted using Observational Routinely-collected health Data (RECORD) Statement. *PLoS Med*. 2015;12:e1001885.

Table S4: Demographic, cause of organ failure and initial immunosuppression data in transplant recipients 1991 to 2014*

		Kidney (n=410)	Heart (n= 225)	Lung (n=36)	Liver (n=314)	Multi-organ/ Small Bowel (n=14)
						n (%) / Median [IQR]
Demographics						
Males		242 (59.0)	122 (54.2)	14 (38.9)	159 (50.6)	8 (57.1)
Age at transplant (years)		10.7 [6.0-15.0]	5.7 [0.0-12.0]	12.6 [11.0-15.3]	4.8 [0.0-9.0]	4.2 [0.0-8.0]
Donor Type	Living	177 (43.2)	0 (0.0)	0 (0.0)	99 (31.4)	0 (0.0)
	Deceased	233 (56.8)	225 (100.0)	36 (100.0)	215 (68.5)	14 (100.0)
Receipt of tacrolimus		228 (55.6)	147 (65.3)	27 (75.0)	204 (65.0)	12 (85.7)
Induction Medication	Thymoglobulin (ATG)	106 (25.9)	146 (64.9)	<6†	32 (10.2)	11 (78.6)
	Basiliximab (Simulect)	42 (10.2)	13 (5.8)	10 (27.8)	40 (12.7)	<6†
Cause of Disease	Congenital/ Genetic	14 (3.4)	59 (26.2)	18 (50.0)	72 (22.9)	0 (0.0)
	Acquired	13 (3.2)	60 (26.7)	<6†	28 (8.9)	0 (0.0)
	Other	6 (1.5)	0 (0.0)	0 (0.0)	19 (6.1)	0 (0.0)

*This data reflects 999 transplant recipients (including some individuals subsequently excluded from the final analysis for any of: 1) invalid Ontario Health Insurance Plan (OHIP) number; 2) non-Ontario residence; or 3) previous malignancy or bone marrow transplant). †Cells with 5 or fewer individuals have been suppressed to due to provincial regulations regarding reidentification risk with administrative data linkages.

Table S5: Time-stratified hazard ratios for solid cancer and PTLD/lymphoma incidence

	0 – 1 Years		1 – 5 Years		5 – 10 Years		> 10 Years	
Solid Cancer Incidence								
Number of transplant recipients at risk (n)	951		814		586		353	
Absolute Event Rate (per 1000 PY)								
Transplanted (95%CI)	5.78	(2.41, 13.8)	2.78	(1.50, 5.16)	0.57	(0.18, 1.77)	0.73	(0.27, 1.93)
Nontransplanted (95% CI)	0.14	(0.13, 0.15)	0.11	(0.10, 0.11)	0.08	(0.08, 0.09)	0.20	(0.19, 0.20)
Unadjusted HR	40.9	(16.7, 100.0)	22.0	(11.8, 41.2)	6.00	(1.93, 18.6)	3.01	(1.13, 8.02)
Adjusted HR*	43.2	(17.7, 105.8)	23.9	(12.8, 44.8)	6.77	(2.19, 21.0)	3.66	(1.37, 9.75)
PTLD/Lymphoma Incidence								
Absolute Event Rate (per 1000 PY)								
Transplanted (95%CI)	25.4	(16.8, 38.4)	4.17	(2.51, 6.91)	3.04	(1.87, 4.96)	1.63	(0.85, 4.14)
Nontransplanted (95% CI)	0.04	(0.03, 0.04)	0.04	(0.03, 0.04)	0.03	(0.02, 0.03)	0.03	(0.03, 0.04)
Unadjusted HR	552.9	(330.0, 926.5)	98.3	(57.9, 166.8)	91.4	(54.8, 152.2)	41.1	(21.2, 79.6)
Adjusted HR*	555.9	(331.6, 931.6)	99.8	(58.7, 169.6)	93.9	(56.3, 156.7)	42.7	(21.9, 83.0)

Adjusted for age at transplant, sex, and year of transplantation.