

Supplementary Table 1. Demographic, diagnostic, procedural, medication, visit, and laboratory codes utilized in the definition of the cohorts.

Category	Code	Description
T2D		
diagnosis	UMLS:ICD10CM:E11	Type 2 diabetes mellitus
Anti-diabetic medication		
medication	NLM:ATC:A10BJ	Glucagon-like peptide-1 (GLP-1) analogues
medication	NLM:ATC:A10BH	Dipeptidyl peptidase 4 (DPP-4) inhibitors
medication	NLM:ATC:A10BB	Sulfonylureas
medication	NLM:ATC:A10BH	Biguanides
medication	NLM:ATC:A10BK	SGLT-2i
HIV infection		
diagnosis	UMLS:ICD10CM:O98.719	Human immunodeficiency virus [HIV] disease complicating pregnancy, unspecified trimester
diagnosis	UMLS:ICD10CM:Z21	Asymptomatic human immunodeficiency virus [HIV] infection status
diagnosis	UMLS:ICD10CM:B20	Human immunodeficiency virus [HIV] disease
diagnosis	UMLS:ICD10CM:O98.72	Human immunodeficiency virus [HIV] disease complicating childbirth
laboratory	UMLS:LNC:20447-9	HIV 1 RNA [# /volume] (viral load) in Serum or Plasma by NAA with probe detection (at least 20.00 {copies} /mL)
laboratory	UMLS:LNC:25836-8	HIV 1 RNA [# /volume] (viral load) in Specimen by NAA with probe detection (at least 20.00 {copies} /mL)
laboratory	UMLS:LNC:49890-7	HIV 1 RNA [Log # /volume] (viral load) in Specimen by NAA with probe detection (at least 1.30 {Log copies} /mL)
laboratory	UMLS:LNC:62469-2	HIV 1 RNA [Units /volume] (viral load) in Serum or Plasma by NAA with probe detection (at least 20.00 [IU] /mL)
laboratory	UMLS:LNC:29539-4	HIV 1 RNA [Log # /volume] (viral load) in Plasma by Probe with signal amplification (at least 1.30 {log copies} /mL)
laboratory	UMLS:LNC:21008-8	HIV 1 RNA [# /volume] (viral load) in Serum or Plasma by Probe (at least 20.00 {copies} /mL)
laboratory	UMLS:LNC:23876-6	HIV 1 RNA [Units /volume] (viral load) in Plasma by Probe with signal amplification (at least 20.00 [IU] /mL)
laboratory	UMLS:LNC:10351-5	HIV 1 RNA [Units /volume] (viral load) in Serum or Plasma by Probe with amplification (at least 20.00 [IU] /mL)
laboratory	UMLS:LNC:59419-2	HIV 1 RNA [# /volume] (viral load) in Plasma by Probe with signal amplification (at least 20.00 {copies} /mL)
laboratory	UMLS:LNC:29541-0	HIV 1 RNA [Log # /volume] (viral load) in Serum or Plasma by NAA with probe detection (at least 1.30 {log copies} /mL)

laboratory	UMLS:LNC:41498-7	HIV 1 RNA [# /volume] (viral load) in Cerebral spinal fluid by NAA with probe detection (at least 20.00 {copies} /mL)
laboratory	UMLS:LNC:41497-9	HIV 1 RNA [Log # /volume] (viral load) in Cerebral spinal fluid by NAA with probe detection (at least 1.30 {Log_copies} /mL)
laboratory	UMLS:LNC:70241-5	HIV 1 RNA [# /volume] (viral load) in Plasma by Probe and target amplification method detection limit = 20 copies/mL (at least 20.00 {copies} /mL)
laboratory	UMLS:LNC:51780-5	HIV 1 RNA [Log # /volume] (viral load) in Serum or Plasma by Probe and target amplification method detection limit = 0.5 log copies/mL (at least 1.30 {Log_copies} /mL)
laboratory	UMLS:LNC:25835-0	HIV 1 RNA [Presence] in Serum or Plasma by NAA with probe detection (labResult: Positive)
laboratory	UMLS:LNC:5017-9	HIV 1 RNA [Presence] in Blood by NAA with probe detection (labResult: Positive)
laboratory	UMLS:LNC:5018-7	HIV 1 RNA [Presence] in Specimen by NAA with probe detection (labResult: Positive)
laboratory	UMLS:LNC:47359-5	HIV 1 RNA [Presence] in Serum or Plasma from Donor by Probe with amplification (labResult: Positive)
laboratory	UMLS:LNC:42917-5	HIV 1 RNA [Presence] in Cerebral spinal fluid by NAA with probe detection (labResult: Positive)
laboratory	UMLS:LNC:41513-3	HIV 1 RNA [# /volume] (viral load) in Serum or Plasma by Probe with amplification detection limit = 400 copies/mL (at least 20.00 {copies} /mL)
laboratory	UMLS:LNC:41514-1	HIV 1 RNA [Log # /volume] (viral load) in Serum or Plasma by Probe with amplification detection limit = 2.6 log copies/mL (at least 1.30 {Log_copies} /mL)
laboratory	UMLS:LNC:41515-8	HIV 1 RNA [# /volume] (viral load) in Serum or Plasma by Probe with amplification detection limit = 75 copies/mL (at least 20.00 {copies} /mL)
laboratory	UMLS:LNC:41516-6	HIV 1 RNA [Log # /volume] (viral load) in Serum or Plasma by Probe with amplification detection limit = 1.9 log copies/mL (at least 1.30 {Log_copies} /mL)
laboratory	UMLS:LNC:48510-2	HIV 1 RNA [Log # /volume] (viral load) in Serum or Plasma by Probe and target amplification method detection limit = 1.7 log copies/mL (at least 1.30 {Log_copies} /mL)
laboratory	UMLS:LNC:48511-0	HIV 1 RNA [# /volume] (viral load) in Serum or Plasma by Probe and target amplification method detection limit = 50 copies/mL (at least

		20.00 {copies}/mL)
laboratory	UMLS:LNC:48552-4	HIV 1 RNA [Log #/volume] (viral load) in Serum or Plasma by Probe and target amplification method detection limit = 2.6 log copies/mL (at least 1.30 {Log_copies}/mL)
laboratory	UMLS:LNC:21333-0	HIV 1 RNA [#volume] in Serum (at least 20.00 {copies}/mL)
History of solid organ transplant		
diagnosis	UMLS:ICD10CM:T86	Complications of transplanted organs and tissue
diagnosis	UMLS:ICD10CM:C80.2	Malignant neoplasm associated with transplanted organ
diagnosis	UMLS:ICD10CM:Z94	Transplanted organ and tissue status
procedure	UMLS:ICD9CM:33.5	Lung transplant
procedure	UMLS:CPT:1006332	Heart/Lung Transplantation Procedures
procedure	UMLS:CPT:1006036	Lung Transplantation Procedures
procedure	UMLS:ICD10PCS:0BY	Transplantation
diagnosis	UMLS:ICD10CM:T86.81	Complications of lung transplant
diagnosis	UMLS:ICD10CM:T86.3	Complications of heart-lung transplant
diagnosis	UMLS:ICD10CM:Z94.2	Lung transplant status
diagnosis	UMLS:ICD10CM:Z94.3	Heart and lungs transplant status
procedure	UMLS:SNOMED:313039003	Solid organ transplant
procedure	UMLS:CPT:1008098	Renal Transplantation Procedures
procedure	UMLS:ICD10PCS:0TY	Transplantation
procedure	UMLS:ICD10PCS:BT49	Urinary System / Ultrasonography / Kidney Transplant
diagnosis	UMLS:ICD10CM:T86.1	Complications of kidney transplant
diagnosis	UMLS:ICD10CM:Z94.0	Kidney transplant status
procedure	UMLS:ICD10PCS:02YA0Z0	Transplantation of Heart, Allogeneic, Open Approach
diagnosis	UMLS:ICD10CM:T86.2	Complications of heart transplant
diagnosis	UMLS:ICD10CM:Z94.1	Heart transplant status
procedure	UMLS:SNOMED:313039003	Solid organ transplant
procedure	UMLS:CPT:1007944	Pancreas Transplantation Procedures
procedure	UMLS:ICD10PCS:02Y	Transplantation
procedure	UMLS:ICD10PCS:0FY	Transplantation
procedure	UMLS:SNOMED:62438007	Transplantation of pancreas
procedure	UMLS:ICD10PCS:0UY	Transplantation
procedure	UMLS:CPT:1007811	Liver Transplantation Procedures
procedure	UMLS:ICD10PCS:0FY	Transplantation
procedure	UMLS:SNOMED:18027006	Transplantation of liver
diagnosis	UMLS:ICD10CM:T86.4	Complications of liver transplant

diagnosis	UMLS:ICD10CM:Z94.4	Liver transplant status
procedure	UMLS:ICD10PCS:0DY	Transplantation
PD-1/PD-L1 treatment		
medication	NLM:RXNORM:1597876	nivolumab
medication	NLM:RXNORM:1547545	pembrolizumab
medication	NLM:RXNORM:2058826	cemiplimab
medication	NLM:RXNORM:1792776	atezolizumab
medication	NLM:RXNORM:1875534	avelumab
medication	NLM:RXNORM:1919503	durvalumab

Supplementary Table 2. Definitions of covariates coding used in this study.

Code	Description
AI	Age at Index
2106-3	White
UNK	Unknown Race
F	Female
2054-5	Black or African American
M	Male
2131-1	Other Race
2028-9	Asian
E11.2	Type 2 diabetes mellitus with kidney complications
E11.3	Type 2 diabetes mellitus with ophthalmic complications
E11.4	Type 2 diabetes mellitus with neurological complications
E11.5	Type 2 diabetes mellitus with circulatory complications
Z99.2	Dependence on renal dialysis
N18	Chronic kidney disease (CKD)
J40-J4A	Chronic lower respiratory diseases
I10	Essential (primary) hypertension
E78	Disorders of lipoprotein metabolism and other lipidemias
I25	Chronic ischemic heart disease
I60-I69	Cerebrovascular diseases
C00-D49	Neoplasms
J62.8	Pneumoconiosis due to other dust containing silica
M05	Rheumatoid arthritis with rheumatoid factor
M06	Other rheumatoid arthritis
M32	Systemic lupus erythematosus (SLE)
L40.5	Arthropathic psoriasis
M35.0	Sjögren syndrome
H02	CORTICOSTEROIDS FOR SYSTEMIC USE
R03BA	Glucocorticoids
L04AB	Tumor necrosis factor alpha (TNF-alpha) inhibitors
L04AC	Interleukin inhibitors
C10AA	HMG CoA reductase inhibitors
9083	BMI
9037	HbA1c
Z59	Problems related to housing and economic circumstances (Includes homelessness, inadequate housing, housing instability, poverty,

	low income, and other economic hardships)
Z55	Problems related to education and literacy (Includes illiteracy, low educational attainment, school-related difficulties, and other educational problems)
Z56	Problems related to employment and unemployment (Includes unemployment, job insecurity, stressful work schedules, workplace conflicts, and other employment-related difficulties)
Z57	Occupational exposure to risk factors (Includes exposure to physical, chemical, biological, ergonomic, and other workplace hazards)
F10	Alcohol related disorders (Includes alcohol use disorder and other alcohol-related mental and behavioral disorders)
F17	Nicotine dependence (Includes tobacco or nicotine dependence. This variable was used as a proxy for smoking exposure but does not necessarily indicate current smoking status)

Supplementary Table 3. Definitions of outcomes coding used in this study.

Code	Description
TB	
UMLS:ICD10CM:A15	Pulmonary tuberculosis
UMLS:ICD10CM:A17	Tuberculosis of nervous system
UMLS:ICD10CM:A18	Tuberculosis of other organs
UMLS:ICD10CM:A19	Miliary tuberculosis
Respiratory Tuberculosis	
UMLS:ICD10CM:A15	Respiratory tuberculosis
Tuberculosis of Other Organs	
UMLS:ICD10CM:A18	Extrapulmonary tuberculosis

Supplementary Table 4. Pre-match baseline characteristics of GLP-1RA and other antidiabetic medication cohorts.

Variables	GLP-1RA	SU	SMD	GLP-1RA	Metformin	SMD	GLP-1RA	DPP-4i	SMD	GLP-1RA	SGLT-2i	SMD
Sample size in each cohort, n	686,165	1,091,567		360,815	2,456,002		804,403	769,075		773,349	795,806	
Age, years												
Mean (SD)	56.8 (13.4)	62.7 (13.5)	0.439	58.3 (13.2)	59.8 (14.2)	0.111	57.1 (13.2)	64.1 (13.3)	0.528	57.3 (13.4)	63.2 (12.8)	0.454
Sex, n (%)												
Female	359,399 (52.4)	462,640 (43.1)	0.187	189,641 (52.6)	1,083,967 (44.5)	0.161	416,544 (51.8)	355,132 (46.2)	0.112	407,725 (52.7)	309,437 (38.9)	0.281
Male	280,092 (40.8)	544,043 (50.7)	0.199	147,422 (40.9)	1,195,432 (49.1)	0.167	335,787 (41.7)	376,741 (49)	0.146	314,726 (40.7)	436,988 (54.9)	0.287
Race, n (%)												
White	413,617 (60.3)	580,887 (54.1)	0.125	222,648 (61.7)	1,272,627 (52.3)	0.191	488,887 (60.8)	353,790 (46)	0.299	467,087 (60.4)	421,688 (53)	0.15
Black or African American	109,164 (15.9)	149,149 (13.9)	0.057	53,762 (14.9)	354,687 (14.6)	0.009	136,291 (16.9)	98,825 (12.9)	0.115	127,115 (16.4)	104,724 (13.2)	0.092
Asian	27,730 (4)	74,200 (6.9)	0.126	14,293 (4)	171,853 (7.1)	0.136	29,504 (3.7)	78,132 (10.2)	0.258	30,026 (3.9)	62,253 (7.8)	0.168
Other Race	30,518 (4.4)	39,181 (3.7)	0.04	14,433 (4)	103,950 (4.3)	0.014	34,571 (4.3)	25,505 (3.3)	0.051	33,049 (4.3)	31,666 (4)	0.015
Unknown Race	95,660 (13.9)	216,921 (20.2)	0.167	50,810 (14.1)	500,128 (20.6)	0.172	104,331 (13)	204,022 (26.5)	0.346	105,381 (13.6)	166,128 (20.9)	0.193
Body mass index, kg/m²												
Mean (SD)	36.7 (8.2)	32.6 (7.6)	0.525	36.6 (8.2)	33.4 (8)	0.406	36.7 (8.2)	31.6 (7.5)	0.64	36.7 (8.2)	32.3 (7.5)	0.569
< 20, n (%)	27,540 (3.3)	80,618 (6.7)	0.156	2,605 (0.6)	27,682 (1.1)	0.05	6,515 (0.7)	14,363 (1.7)	0.09	6,401 (0.7)	15,962 (1.7)	0.09
≥ 25, n (%)	388,384 (56.6)	423,642 (39.5)	0.348	179,326 (49.7)	920,025 (37.8)	0.241	462,642 (57.5)	299,404 (38.9)	0.379	442,609 (57.2)	382,180 (48)	0.185
Hemoglobin A1c, %												
Mean (SD)	8 (2.1)	8.4 (2.1)	0.183	214,655 (50.4)	1,167,164 (44.8)	0.003	8.1 (2.1)	8.2 (2)	0.064	8.2 (2.1)	8.1 (1.9)	0.031
≥ 9, n (%)	123,510 (18.0)	168,101 (15.4)	0.071	52,319 (14.5)	250,513 (10.2)	0.130	164,902 (20.5)	123821 (16.1)	0.116	164,724 (21.3)	135,287 (17.0)	0.110
Socioeconomic and lifestyle factors, n (%)												
Problem related to housing and economic circumstances	6,681 (0.8)	6,781 (0.6)	0.029	2,776 (0.7)	16,241 (0.6)	0.004	7,159 (0.8)	3,867 (0.5)	0.043	6,330 (0.7)	9,486 (1)	0.032
Problem related to employment and unemployment	1,480 (0.2)	1,246 (0.1)	0.02	611 (0.1)	3,489 (0.1)	0.003	1,557 (0.2)	793 (0.1)	0.022	1,477 (0.2)	1,568 (0.2)	0
Problem related to education and literacy	836 (0.1)	701 (0.1)	0.015	419 (0.1)	1,663 (0.1)	0.012	913 (0.1)	565 (0.1)	0.012	813 (0.1)	1,600 (0.2)	0.022

Problem related to occupational exposure to risk factors	294 (0)	270 (0)	0.008	157 (0)	670 (0)	0.006	300 (0)	225 (0)	0.004	285 (0)	321 (0)	0.001
Alcohol related disorders	10,957 (1.3)	18,026 (1.5)	0.015	4,675 (1.1)	43,968 (1.7)	0.05	12,056 (1.3)	9,418 (1.1)	0.02	11,009 (1.3)	17,830 (1.9)	0.053
Nicotine dependence	60,067 (7.2)	78,527 (6.5)	0.027	26,099 (6.1)	181,258 (7)	0.034	67,339 (7.5)	44,649 (5.3)	0.089	63,526 (7.2)	76,189 (8.2)	0.036
Comorbidities, n (%)												
Hypertension	360,356 (52.5)	493,761 (46)	0.131	166,493 (46.1)	994,249 (40.9)	0.107	432,430 (53.8)	374,295 (48.7)	0.102	417,158 (53.9)	435,825 (54.8)	0.016
Dyslipidemia	339,241 (49.4)	432,251 (40.3)	0.185	154,556 (42.8)	838,628 (34.5)	0.173	404,773 (50.3)	340,733 (44.3)	0.121	389,334 (50.3)	425,971 (53.5)	0.064
Malnutrition	3,692 (0.4)	10,761 (0.9)	0.055	2,097 (0.5)	21,404 (0.8)	0.041	3,972 (0.4)	9,583 (1.1)	0.079	3,750 (0.4)	13,380 (1.4)	0.105
Chronic lower respiratory diseases	97,393 (14.2)	110,043 (10.3)	0.121	45,696 (12.7)	235,354 (9.7)	0.095	113,421 (14.1)	83,271 (10.8)	0.099	110,261 (14.3)	113,525 (14.3)	0
Chronic ischemic heart disease	84,291 (12.3)	137,860 (12.8)	0.017	45,753 (12.7)	250,668 (10.3)	0.075	101,258 (12.6)	112,365 (14.6)	0.059	91,546 (11.8)	186,900 (23.5)	0.309
Neoplasms	94,693 (13.8)	127,689 (11.9)	0.057	42,933 (11.9)	260,370 (10.7)	0.038	110,907 (13.8)	102,365 (13.3)	0.014	109,587 (14.2)	116,740 (14.7)	0.014
Chronic kidney disease	65,231 (9.5)	106,004 (9.9)	0.012	44,106 (12.2)	113,418 (4.7)	0.275	79,550 (9.9)	107,074 (13.9)	0.125	77,213 (10)	132,517 (16.7)	0.197
Cerebrovascular diseases	31,631 (4.6)	64,015 (6)	0.061	17,144 (4.8)	126,063 (5.2)	0.02	37,467 (4.7)	57,310 (7.5)	0.117	36,144 (4.7)	64,282 (8.1)	0.14
Other rheumatoid arthritis	9,135 (1.3)	9,650 (0.9)	0.041	4,715 (1.3)	20,383 (0.8)	0.046	10,359 (1.3)	7,958 (1)	0.024	10,301 (1.3)	10,028 (1.3)	0.006
Rheumatoid arthritis with rheumatoid factor	3,127 (0.5)	2,426 (0.2)	0.039	1,508 (0.4)	5,320 (0.2)	0.035	3,621 (0.5)	2,195 (0.3)	0.027	3,526 (0.5)	3,361 (0.4)	0.005
Arthropathic psoriasis	3,172 (0.5)	2,071 (0.2)	0.047	1,479 (0.4)	4,787 (0.2)	0.039	3,685 (0.5)	1,573 (0.2)	0.044	3,473 (0.4)	2,385 (0.3)	0.024
Dependence on renal dialysis	2,855 (0.4)	4,930 (0.5)	0.007	2,869 (0.8)	1,476 (0.1)	0.113	3,074 (0.4)	6,933 (0.9)	0.065	3,634 (0.5)	1,920 (0.2)	0.038
Systemic lupus erythematosus	2,657 (0.4)	1,966 (0.2)	0.038	1,358 (0.4)	4,762 (0.2)	0.034	2,917 (0.4)	1,819 (0.2)	0.023	2,803 (0.4)	2,456 (0.3)	0.009
Sjögren syndrome	2,288 (0.3)	1,669 (0.2)	0.036	1,075 (0.3)	3,936 (0.2)	0.028	2,554 (0.3)	1,935 (0.3)	0.012	2,490 (0.3)	2,272 (0.3)	0.007
Pneumoconiosis due to other dust containing silica	25 (0)	49 (0)	0.001	17 (0)	78 (0)	0.002	30 (0)	29 (0)	0	30 (0)	44 (0)	0.002
Type 2 diabetes related complication, n (%)												
Kidney complications	75,201 (9)	102,149 (8.5)	0.019	43,466 (10.2)	115,772 (4.4)	0.222	87,001 (9.7)	95,814 (11.4)	0.057	83,496 (9.5)	142,170 (15.3)	0.176
Ophthalmic complications	33,745 (4)	34,947 (2.9)	0.063	16,357 (3.8)	49,732 (1.9)	0.116	39,343 (4.4)	31,918 (3.8)	0.029	38,844 (4.4)	41,367 (4.5)	0.001
Neurological complications	85,977 (10.3)	96,671 (8)	0.079	42,866 (10.1)	148,766 (5.7)	0.162	101,098 (11.3)	77,274 (9.2)	0.067	98,256 (11.2)	107,704 (11.6)	0.013
Circulatory complications	37,306 (4.5)	38,981 (3.2)	0.064	17,709 (4.2)	63,957 (2.5)	0.095	43,436 (4.8)	30,766 (3.7)	0.058	39,898 (4.5)	58,420 (6.3)	0.077
Medication, n (%)												

HMG CoA reductase inhibitors	319,168 (38.2)	346,073 (28.7)	0.204	117,303 (27.5)	579,455 (22.2)	0.123	359,576 (40)	289,010 (34.4)	0.116	343,426 (39.1)	417,675 (44.9)	0.119
Systemic corticosteroids use	179,839 (26.2)	197,319 (18.4)	0.189	79,997 (22.2)	415,916 (17.1)	0.128	215,508 (26.8)	159,900 (20.8)	0.141	203,829 (26.4)	195,697 (24.6)	0.041
Inhaled corticosteroid	128,382 (18.7)	116,725 (10.9)	0.222	53,286 (14.8)	240,037 (9.9)	0.15	154,529 (19.2)	101,256 (13.2)	0.165	148,289 (19.2)	128,500 (16.1)	0.08
TNF-alpha inhibitors	3,415 (0.5)	2,116 (0.2)	0.051	1,468 (0.4)	4,450 (0.2)	0.041	3,977 (0.5)	1,723 (0.2)	0.045	3,889 (0.5)	2,328 (0.3)	0.033
Interleukin inhibitors	2,194 (0.3)	913 (0.1)	0.052	941 (0.3)	2,417 (0.1)	0.038	2,505 (0.3)	803 (0.1)	0.045	2,325 (0.3)	1,452 (0.2)	0.024

DPP-4i, dipeptidyl peptidase 4 inhibitor; GLP-1RA, glucagon-like peptide-1 receptor agonist; HMG CoA, 3-hydroxy-3-methylglutaryl coenzyme A; SMD, standardized mean difference;

SGLT2i, sodium-glucose cotransporter 2 inhibitor; SU, sulfonylurea, TNF; tumor necrosis factor alpha

Supplementary Table 5. Hazard ratio of pulmonary tuberculosis between GLP-1RA and other comparator groups.

Comparator	Events (n)	Rate (‰)	Events (n)	Rate (‰)	HR (95% CI)	E-value (95% LCL)
GLP-1RA (n = 613,371) vs. SU (n = 613,371)	307	0.50	806	1.31	0.49 (0.43,0.55)	3.5 (3.0)
GLP-1RA (n = 359,310) vs. Metformin (n = 359,310)	163	0.45	375	1.04	0.52 (0.43,0.63)	3.3 (2.6)
GLP-1RA (n =533,713) vs. DPP-4i (n = 533,713)	287	0.54	726	1.36	0.49 (0.43,0.56)	3.5 (3.0)
GLP-1RA (n = 574,060) vs. SGLT2i (n = 574,060)	381	0.66	448	0.78	0.80 (0.69,0.91)	1.8 (1.4)

CI, confidence interval; DPP-4i, dipeptidyl peptidase 4 inhibitor; GLP-1RA, glucagon-like peptide-1 receptor agonist; HR, hazard ratio; LCL, lower confidence limit; SU, sulfonylurea; SGLT2i, sodium-glucose cotransporter 2 inhibitor

Supplementary Table 6. Hazard ratio of extrapulmonary tuberculosis between GLP-1RA and other comparator groups.

Comparator	Events (n)	Rate (‰)	Events (n)	Rate (‰)	HR (95% CI)	E-value (95% LCL)
GLP-1RA (n = 613,371) vs. SU (n = 613,371)	104	0.17	220	0.36	0.64 (0.51,0.81)	2.5 (1.8)
GLP-1RA (n = 359,310) vs. Metformin (n = 359,310)	67	0.19	93	0.26	0.90 (0.65,1.23)	1.5 (1.0)
GLP-1RA (n =533,713) vs. DPP-4i (n = 533,713)	92	0.17	182	0.34	0.65 (0.50,0.83)	2.5 (1.7)
GLP-1RA (n = 574,060) vs. SGLT2i (n = 574,060)	115	0.20	132	0.23	0.81 (0.63,1.04)	1.8 (1.0)

CI, confidence interval; DPP-4i, dipeptidyl peptidase 4 inhibitor; GLP-1RA, glucagon-like peptide-1 receptor agonist; HR, hazard ratio; LCL, lower confidence limit; SU, sulfonylurea; SGLT2i, sodium-glucose cotransporter 2 inhibitor

Supplementary Table 7. Hazard ratio of tuberculosis between GLP-1RA and other comparator groups in the US network.

Comparator	Events (n)	Rate (‰)	Events (n)	Rate (‰)	HR (95% CI)	E-value (95% LCL)
GLP-1RA (n = 669,255) vs. SU (n = 669,255)	453	0.68	879	1.31	0.67 (0.60,0.76)	2.4 (2.0)
GLP-1RA (n = 428,580) vs. Metformin (n = 428,580)	277	0.65	485	1.13	0.70 (0.60,0.81)	2.2 (1.8)
GLP-1RA (n = 517,546) vs. DPP-4i (n = 517,546)	427	0.82	648	1.25	0.86 (0.76,0.97)	1.6 (1.2)
GLP-1RA (n = 624,817) vs. SGLT2i (n = 624,817)	498	0.80	504	0.81	0.94 (0.83,1.06)	1.3 (1.0)

CI, confidence interval; DPP-4i, dipeptidyl peptidase 4 inhibitor; GLP-1RA, glucagon-like peptide-1 receptor agonist; HR, hazard ratio; LCL, lower confidence limit; SU, sulfonylurea; SGLT2i, sodium-glucose cotransporter 2 inhibitor

Supplementary Table 8. Sensitivity analysis using an exposure-restricted approach

Comparator	Events (n)	Rate (‰)	Events (n)	Rate (‰)	HR (95% CI)	E-value (95% LCL)
GLP-1RA (n = 212,044) vs. SU (n = 212,044)	196	0.92	416	1.96	0.57 (0.48,0.67)	2.9 (2.4)
GLP-1RA (n = 88,456) vs. Metformin (n = 88,456)	75	0.85	138	1.56	0.67 (0.51,0.89)	2.4 (1.5)
GLP-1RA (n = 163,520) vs. DPP-4i (n = 163,520)	163	1.00	340	2.08	0.56 (0.46,0.67)	3.0 (2.4)
GLP-1RA (n = 145,249) vs. SGLT2i (n = 145,249)	168	1.16	230	1.58	0.70 (0.58,0.86)	2.2 (1.6)

CI, confidence interval; DPP-4i, dipeptidyl peptidase 4 inhibitor; GLP-1RA, glucagon-like peptide-1 receptor agonist; HR, hazard ratio; SU, sulfonylurea; SGLT2i, sodium-glucose cotransporter 2 inhibitor

Supplementary Table 9. Negative control outcome analysis using skin cancer.

Comparator	HR (95% CI)
GLP-1RA vs. SU	0.99 (0.96,1.02)
GLP-1RA vs. Metformin	0.97 (0.93,1.01)
GLP-1RA vs. DPP-4i	1.02 (0.99,1.06)
GLP-1RA vs. SGLT2i	1.03 (0.92,1.16)

CI, confidence interval; DPP-4i, dipeptidyl peptidase 4 inhibitor; GLP-1RA, glucagon-like peptide-1 receptor agonist; HR, hazard ratio; SU, sulfonylurea; SGLT2i, sodium-glucose cotransporter 2 inhibitor

Supplementary Figure 1. Schematic study design.

