

Supplemental Appendix

eBox 1. Non-infectious and infectious uveitis ICD-10 codes used for inclusion and exclusion criteria

Diagnosis	ICD-10 codes
Non-infectious Uveitis	
Sarcoid iridocyclitis	D86.83
Anterior Uveitis:	
Unspecified iridocyclitis	H20.9
Secondary noninfectious iridocyclitis	H20.04x
Chronic iridocyclitis	H20.1x
Recurrent acute iridocyclitis	H20.02x
Unspecified acute and subacute iridocyclitis	H20.00
Primary iridocyclitis	H20.01x
Intermediate Uveitis:	
Posterior cyclitis	H30.2x
Posterior Uveitis/Panuveitis:	
Retinal vasculitis	H35.06x
Vogt-Koyanagi-Harada (VKH)	H20.82x, H30.81x
Panuveitis	H44.11x
Sympathetic uveitis	H44.13x
Focal chorioretinal inflammation	H30.01x
Focal chorioretinal inflammation of posterior pole	H30.02x
Focal chorioretinal inflammation, macular/paramacular	H30.03x
Focal chorioretinal inflammation, peripheral	H30.04x
Acute posterior multifocal placoid pigment epitheliopathy	H30.14x
Other chorioretinal inflammations	H30.89x
Unspecified chorioretinal inflammation	H30.9x
Choroidal dystrophy (central areolar) (generalized) (peripapillary)	H31.22
Other specified disorders of choroid	H31.8
Infectious Uveitis	
Zoster ocular disease	B02.3x
Herpesviral ocular disease	B00.5x
Secondary syphilitic oculopathy	A51.43
Gonococcal iridocyclitis	A54.32
Histoplasmosis	B39.9, B39.4
Chorioretinal disorders in diseases classified elsewhere	H32
Toxoplasmosis	P37.1x, B58.x
Secondary infectious iridocyclitis	H20.03x
Endophthalmitis	H44.00x, H44.19, H44.12x
Lens-induced iridocyclitis	H20.2x
Disseminated chorioretinal inflammation	H30.10x, H30.11x, H30.12x, H30.13x
Cytomegaloviral disease	B25.9
Injury of eye and orbit	S05.x
Tuberculous chorioretinitis	A18.53
Tuberculosis	A15.x, A17.x, A18.x, A19.x

Syphilis Lyme disease Hypopyon Fuchs' heterochromic cyclitis Adverse effect of ophthalmological drugs and preparations Adverse effect of rifampicins	A50.x-A52.x A69.2x H20.05x H20.81x T49.5X5A T36.6X5A
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eBox 2. ICD-10 codes used to identify COVID-19 comorbidity risk factors for severe disease, hospitalization, or death

Condition	ICD-10 codes
Cancer	C00.x-C26.x, C30.x-C34.x, C37.x-C41.x, C43.x, C45.x-C58.x, C60.x-C76.x, C81.x-C85.x, C88.x, C90.x-C97.x (malignancy) C77.x-C80.x (metastatic solid tumor)
Chronic kidney diseases	I12.xx, I13.xx, (hypertensive renal disease) N03.2-N03.7, (chronic nephritic syndrome) N05.2-N05.7, (unspecified nephrotic syndrome) N18.xx, N19.x, (chronic kidney disease and failure) N25.0, (impaired renal tubular function) Z49.xx, (dialysis) Z99.2 (dependence on renal dialysis) Q61.x (cystic kidney disease), E10.2, E11.2, E12.2, E13.2, E14.2 (DM with renal complications)
Chronic lung diseases	I27.8, I27.9, (pulmonary heart disease) J40.x, J41.x, J42.x, (chronic bronchitis) J43.x, J44.x, (COPD) J47.x, (bronchiectasis) J60.x, J61.x, J62.x, J63.x, J64.x, J65.x, J66.x, J67.x, (pneumoconiosis/pneumonitis) J68.4, J70.1, J70.3 (chronic respiratory conditions due to external agents) J84.x (interstitial pulmonary diseases) E84.0 (cystic fibrosis with pulmonary manifestations)
Asthma	J45.x, J46.x
Cardiovascular diseases	109.81 (rheumatic heart failure) I11.0, I13.0, I13.2, (hypertensive heart disease with heart failure) I21.x, I22.x, I23.x, I25.x, (ischemic – excluding angina and other acute ischemic heart disease) I42.x, I43.x, (cardiomyopathy) I50.x (heart failure)
Hypertension	I10.x, I11.x, I12.x, I13.xx, I15.x

Obesity (BMI≥30)	E66.xx
Diabetes mellitus	E10.xx (DM1), E11.xx (DM2), E12.xx (malnutrition DM), E13.xx (other DM), E14.xx (unspecified DM), O24.xx (GDM)
Solid organ transplantation	Z94.xx
Cerebrovascular disease	G45.x, G46.x, (TIA/vascular syndromes) H34.0x, H34.1x (transient or central retinal artery occlusion) I60.x, I61.x, I62.x, I63.x, I64.x, I65.x, I66.x, I67.x, I68.x I69.x (cerebrovascular diseases – stroke, hemorrhage, infarction, occlusion, stenosis)
HIV/AIDS	B20.x, B97.35, R75.x, Z21.x
Autoimmune disease	M02.9, (Reactive arthritis) M05.x, M06.x, (rheumatoid arthritis) M07.x, (psoriatic and enteropathic arthritis) M08.xx, M09.x, (juvenile arthritis) M10.x, (gout) M30.x, (Polyarteritis nodosa) M31.3, (Wegener's) M31.5, M31.6, M35.3, (polymyalgia rheumatica) M32.1, M32.8, M32.9, L93.x (SLE) M33.x, (dermatopolymyositis) M34.x, (systemic sclerosis) M35.0, (Sjogren's) M35.2, (Behcet's) M45.x, (ankylosing spondylitis) M47.819, (Undifferentiated spondyloarthropathy) M94.1 (Relapsing polychondritis) G35.x, (multiple sclerosis) G61.0, (Guillain-Barré) G70.0, (myasthenia gravis) D59.1, (autoimmune hemolytic anemia) D86.x, (sarcoidosis) K50.x, K51.x, (Crohn's and ulcerative colitis) K75.4, (autoimmune hepatitis) L80.x, (vitiligo) L63.x, (alopecia areata) L40.x, (psoriasis vulgaris) L10.x, L12.x, (pemphigus and pemphigoid) K90.0, (Celiac disease) E06.3, (autoimmune thyroiditis) D69.3, (Immune thrombocytopenic purpura) E27.1, (primary adrenocortical insufficiency) E31.0, (autoimmune polyglandular failure) K74.3 (primary biliary cirrhosis) N05.8, N05.9 (Tubulointerstitial nephritis)
Liver disease (moderate or severe)	I85.0, I85.9, I86.4, I98.2, I98.3, (Esophageal or gastric varices – signs of severe liver disease)

	<p>K70.4, K71.1, K72.1, K72.9, (hepatic failure) K76.5, (hepatic veno-occlusive disease) K76.6, (portal hypertension) K76.7 (hepatorenal syndrome)</p>
Neurologic conditions	<p>F00.xx, F01.xx, F02.xx, F03.xx, F04.x, G13.8, F05.x, F06.1, F06.8, G30.x, G31.x, G94.x, R41.81, R54.x, (Alzheimer's/dementia)</p> <p>G20.x, (Parkinson's) G10.x, (Huntington's) G11.xx, (hereditary ataxia) G12.2x, (motor neuron disease) G35.x, (multiple sclerosis) G61.0, (Guillain-Barré) G70.0, (myasthenia gravis) G80.x, (cerebral palsy) G81.x, G82.x, (hemiplegia, paraplegia, or quadriplegia)</p>
Hemoglobin disorders (sickle cell disease or thalassemia)	<p>D56.x, (thalassemia) D57.xx (sickle cell disorders)</p>
Pregnancy Check for any pregnancy or delivery related codes during COVID risk period.	<p>Oxx.xxx, Z33.x, Z34.xx, Z35.x, Z37.x, Z38.xx, Z39.0, Z3A.xx</p>
Smoking Check for codes one year prior to index through risk period	<p><u>ICD-10 codes</u> Z71.6, (tobacco abuse counseling) Z72.0, (tobacco use) F17.xxx, (Nicotine dependence) O99.33x, (smoking tobacco use complicating pregnancy) T65.2xx (toxic effect of tobacco product) Z87.891 (personal history of nicotine dependence)</p> <p><u>HCPCS/CPT codes:</u> 99406, 99407, (smoking and tobacco cessation counseling visit) S9453, S9075, (smoking cessation classes) G9276, G8455, G9902, G9906, G9908, G9909, 1034F, 1035F, 4000F, 4001F, 4004F (current tobacco use) G9275, G8457, G9903, 1036F (documentation of NO current tobacco use)</p> <p><u>Medications:</u> varenicline tartrate (Chantix) bupropion hydrochloride (Zyban only) nicotine (any drug containing nicotine including patch, gum, etc.)</p>

Unless otherwise noted, looking for comorbidity codes in one year prior to index date.

eBox 3. Immunosuppressive medication categories

Immunosuppressive medication category	Medication generic names
<p>Systemic corticosteroids</p> <p>Routes: oral, intravenous</p>	<p>Prednisone Prednisolone Methylprednisolone Dexamethasone Triamcinolone Hydrocortisone Budesonide Cortisone acetate Betamethasone</p>
<p>Disease modifying anti-rheumatic drugs (DMARDs)</p> <p>Routes: oral, intravenous, injection, subcutaneous</p>	<p>Methotrexate Azathioprine Mycophenolate mofetil Mycophenolic acid Cyclosporine Leflunomide Tacrolimus</p>
<p>Tumor necrosis factor alpha (TNF-α) inhibitors</p> <p>Routes: intravenous, subcutaneous</p>	<p>Etanercept Infliximab Afelimomab Adalimumab Certolizumab pegol Golimumab</p>
<p>Interleukin-6 (IL-6) inhibitors</p> <p>Routes: intravenous, subcutaneous</p>	<p>Sarilumab Tocilizumab Siltuximab Satralizumab</p>
<p>Other biologic immunosuppressive therapies</p> <p>Routes: intravenous, intramuscular, subcutaneous</p>	<p>Rituximab Abatacept Ocrelizumab Ixekizumab Secukinumab Brodalumab Ustekinumab Guselkumab Risankizumab Tildrakizumab Dupilumab Omalizumab Belimumab Alefacept Efalizumab Natalizumab Eculizumab Belimumab Vedolizumab Alemtuzumab Emapalumab</p>

	<p>Ravulizumab Inebilizumab Anakinra Rilonacept Canakinumab Daclizumab Basiliximab Interferon beta-1a Interferon beta-1b Peginterferon beta-1a Ofatumumab</p>
<p>Other non-biologic immunosuppressive drugs Routes: oral, intravenous, subcutaneous</p>	<p>Sulfasalazine Apremilast Tofacitinib Baricitinib Ruxolitinib Immunoglobulin Fingolimod Teriflunomide Ozanimod Cladribine Siponimod Upadacitinib Filgotinib Dimethyl fumarate Cyclophosphamide Glatiramer acetate Mercaptopurine Diroximel fumarate Monomethyl fumarate</p>