

Supplement 1

ICD-10 Code Descriptions

- U07.1 - COVID-19, Virus identified
- Z86.16 - Personal history of COVID-19
- J12.82 - Pneumonia due to Coronavirus disease 2019
- J18.0 Bronchopneumonia, unspecified organism
- J18.1 Lobar pneumonia, unspecified organism
- J18.8 Other pneumonia, unspecified organism
- J18.9 Pneumonia, unspecified organism
- Z20.822 - Contact with and (suspected) exposure to COVID-19

Infection Criteria

A patient was identified as having a SARS-CoV-2 infection after full vaccination if they had a positive SARS-CoV-2 PCR laboratory test result or first instance of U07.1 ICD-10 code at least 14 days after their final dose. Where a patient had a positive SARS-CoV-2 PCR laboratory test, the collection date was used as the date of infection. If a patient had only one instance of U07.1 and no positive laboratory test, we used the diagnosis date. If the patient had multiple instances of U07.1 and no positive laboratory test, we applied the following criteria to determine date of infection:

1. No instances of Z20.822 and J12.82: use the earliest instance of U07.1
2. Z20.822 present: use the earliest instance of U07.1 with Z20.822 in the prior 14 days
3. J12.82 present: use the earliest instance of U07.1 with J12.82 in the following 14 days

These criteria were applied to verify the correct infection date and account for possible coding errors. Cases of reinfection were excluded, as there were no laboratory-confirmed cases of reinfection in our data and there were cases in which U07.1 was used on an ongoing basis for patients with a prior COVID-19 diagnosis making it impossible to identify true reinfections.

Hospitalized Infection Criteria

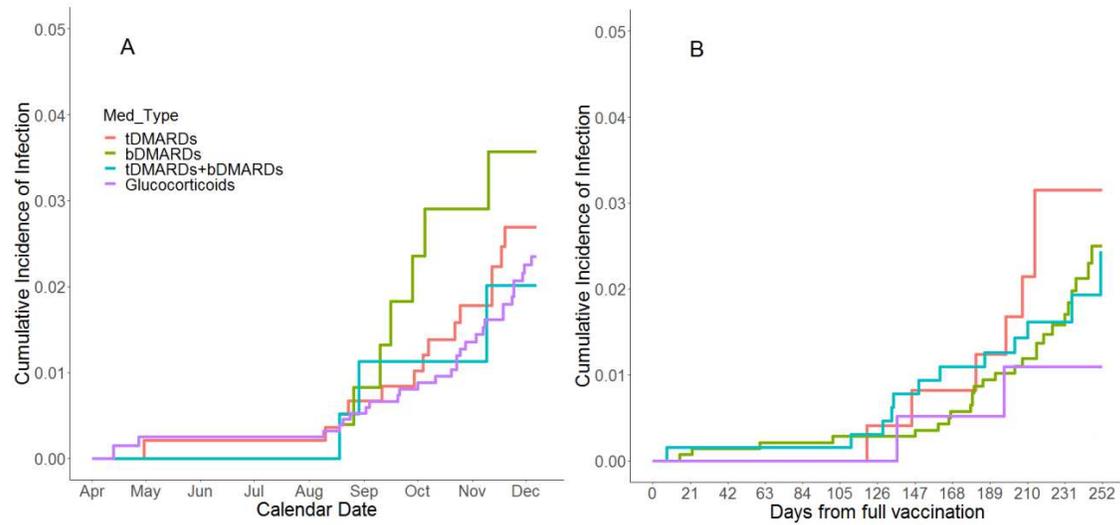
Between March 1st and June 1st hospitalized infection was determined based on chart review. Between January 1st and March 1st, and after June 1st hospitalized infection was determined using ICD-10 diagnosis codes with the criteria below.

A patient was identified as having a COVID-19 hospitalization if they met the criteria for infection listed above and had:

1. An instance of J12.82 or M35.81
2. An instance of J18.0, J18.1, J18.8, and J18.9 within 7 days of U07.1 with an inpatient or emergency designation

Supplement 2

Figure. Unadjusted CI curves by immunosuppressants types of SARS-CoV-2 infection based on calendar time (A). Unadjusted CI curves by immunosuppressants types of SARS-CoV-2 infection based on vaccination time (B).



Supplement 3**Table. Medication List**

Traditional DMARDs	Biological DMARDs	Glucocorticoids
Penicillamine	Daclizumab	Dexamethasone
Sodium aurothiomalate	Ocrelizumab	hydrocortisone
sulfasalazine	Satralizumab	Methylprednisolone
mesalazine	Efalizumab	prednisolone
mesalamine	Abatacept	Prednisone
olsalazine	Anifrolumab	Prednisone delayed-release
balsalazide	Basiliximab	
5-ASA	Belatacept	
5-aminosalicylic acid	Adalimumab	
Azathioprine	belatacept	
6-mercaptopurine	Belimumab	
Voclosporin	Bimekizumab	
pomalidomide	Brodalumab	
Carfilzomib	Certolizumab pegol	
Bortezomib	Dupilumab	
Sirolimus	Etanercept	
Everolimus	Golimumab	
Mycophenolate Mofetil	Guselkumab	
mycophenolic acid	Infliximab	
Tacrolimus	Ixekizumab	
Chloroquine	Natalizumab	
Cyclophosphamide	Risankizumab	
Cyclosporine	Rituximab	
Dapsone	Sarilumab	
Hydroxychloroquine	Secukinumab	
Leflunomide	Tildrakizumab	
lenalidomide	Tocilizumab	
Methotrexate	Ustekinumab	
thalidomide	Vedolizumab	

Doxorubicin	alemtuzumab	
Melphalan flufenamide	Ofatumumab	
Panobinostat	Belantamab mafodotin	
Selinexor	Daratumumab	
melphalan	Elotuzumab	
Carmustine	Idecabtagene vicleucel	
	Isatuximab	
	Mepolizumab	
	Anakinra	
	Canakinumab	
	Avacopan	
	imatinib mesylate	
	Nintedanib	
	Pirfenidone	
	Bosutinib	
	Dasatinib	
	Nilotinib	
	Apremilast	
	Baricitinib	
	Tofacitinib	
	Upadacitinib	
	Ponatinib	