Supplementary Online Content

Nemani K, Williams SZ, Olfson M, et al. Association between the use of psychotropic medications and the risk of COVID-19 infection among long-term inpatients with serious mental illness in a New York State–wide psychiatric hospital system. *JAMA Netw Open.* 2022;5(5):e2210743. doi:10.1001/jamanetworkopen.2022.10743
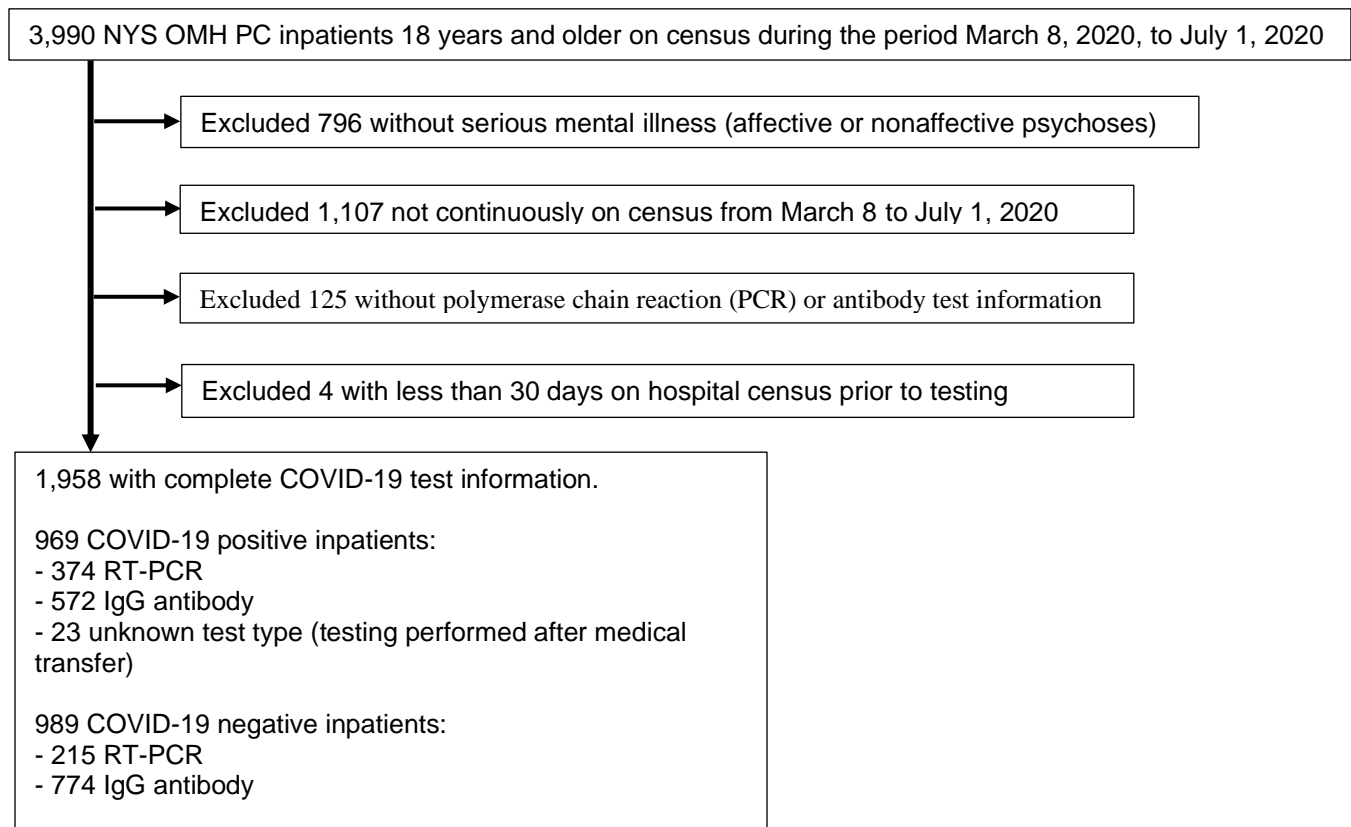
This supplementary material has been provided by the authors to give readers additional information about their work.

eFigure. Study Profile

3,990 NYS OMH PC inpatients 18 years and older on census during the period March 8, 2020, to July 1, 2020

→ Excluded 796 without serious mental illness (affective or nonaffective psychoses)

→ Excluded 1,107 not continuously on census from March 8 to July 1, 2020

→ Excluded 125 without polymerase chain reaction (PCR) or antibody test information

→ Excluded 4 with less than 30 days on hospital census prior to testing

1,958 with complete COVID-19 test information.

969 COVID-19 positive inpatients:
- 374 RT-PCR
- 572 IgG antibody
- 23 unknown test type (testing performed after medical transfer)

989 COVID-19 negative inpatients:
- 215 RT-PCR
- 774 IgG antibody

eTable 1. Psychotropic Medications Exposure in Full Cohort and by Infection and Death[a]

Psychotropic medication	Total, n (%)	COVID-19 positive, n (%)	COVID-19 death, n (%)
All	1,958 (100·0)	969 (100.0)	38 (100.0)
First-generation antipsychotics	1,198 (61·2)	611 (63.1)	23 (60.5)
Haloperidol	886 (45·2)	453 (46.8)	19 (50.0)
Fluphenazine	274 (14·0)	138 (14.2)	3 (7.9)
Chlorpromazine	134 (6·8)	47 (4.9)	0 (0·0)
Perphenazine	37 (1·9)	20 (2.1)	0 (0·0)
Loxapine	31 (1·6)	19 (2.0)	0 (0·0)
Prochlorperazine	10 (0·5)	3 (0.3)	0 (0·0)
Thioridazine	5 (0·3)	4 (0.4)	0 (0·0)
Pimozide	1 (0·1)	1 (0.1)	1 (2.6)
Trifluoperazine	1 (0·1)	0 (0·0)	0 (0·0)
Second-generation antipsychotics	1,794 (91·6)	870 (89.8)	33 (86.8)
Olanzapine	860 (43.9)	398 (41.1)	14 (36·8)
Clozapine	712 (36·4)	341 (35.2)	6 (15·8)
Risperidone	377 (19·2)	157 (16.2)	3 (7·9)
Aripiprazole	266 (13·6)	131 (13.5)	3 (7·9)
Quetiapine	262 (13·4)	126 (13.0)	6 (15.8)
Paliperidone	186 (9·5)	67 (6.9)	2 (5.3)
Ziprasidone	56 (2·9)	19 (2.0)	0 (0·0)
Lurasidone	11 (0·6)	3 (0.3)	0 (0·0)
Cariprazine	5 (0·3)	1 (0.1)	0 (0·0)
Pimavanserin	1 (0·1)	0 (0·0)	0 (0·0)
Mood stabilizers	1,043 (53·3)	541 (55·8)	19 (50.0)
Valproic acid	688 (35·1)	363 (37.5)	16 (42·1)
Lithium	375 (19·2)	190 (19.6)	6 (15.8)
Lamotrigine	136 (7·0)	74 (7.6)	2 (5.3)
Topiramate	38 (1·9)	20 (2.1)	0 (0·0)
Antidepressants	547 (27·9)	261 (26.9)	6 (15.8)
Sertraline	145 (7·4)	62 (6.4)	1 (2·6)
Citalopram	134 (6·8)	70 (7.2)	1 (2.6)
Escitalopram	88 (4·5)	47 (4.9)	0 (0·0)
Mirtazapine	82 (4·2)	35 (3.6)	3 (7.9)
Fluoxetine	66 (3·4)	29 (3.0)	0 (0·0)
Venlafaxine	53 (2·7)	26 (2.7)	0 (0·0)
Bupropion	43 (2·2)	16 (1.7)	0 (0·0)
Paroxetine	29 (1·5)	22 (2.3)	1 (2·6)
Fluvoxamine	25 (1·3)	16 (1.7)	0 (0·0)
Duloxetine	18 (0·9)	5 (0.5)	0 (0·0)
Clomipramine	13 (0·7)	6 (0.6)	0 (0·0)
Doxepin	7 (0·4)	0 (0·0)	0 (0·0)
Amitriptyline	3 (0·2)	0 (0·0)	0 (0·0)
Imipramine	3 (0·2)	2 (0.2)	0 (0·0)
Nortriptyline	2 (0·1)	1 (0.1)	0 (0·0)
Benzodiazepines	1,016 (51·9)	502 (51.8)	16 (42·1)
Lorazepam	810 (41·4)	404 (41.7)	12 (31·6)
Clonazepam	420 (21·4)	198 (20.4)	4 (10.5)
Diazepam	19 (1·0)	11 (1.1)	0 (0·0)
Alprazolam	1 (0·1)	1 (0.1)	0 (0·0)
Temazepam	1 (0·1)	1 (0..1)	0 (0·0)

[a]Patients can be prescribed multiple medications both within and across psychopharmacologic classes.

eTable 2. *ICD-9/10* Category Codes Used to Identify Medical Conditions and Psychiatric Diagnoses

Condition	*ICD-9/10* category code
Bipolar disorder	F30* or F31*
Chronic respiratory disease	J43-J45
Delusional disorder	F22
Diabetes	E08-11, E13
Heart disease	I21-I25, I30-I52
Hypertension	I10, I11, I15, I16
Major depressive disorder with psychotic features	F2.3 or F33.3
Schizoaffective disorder	F25*
Schizophrenia	F20*

eTable 3. Incidence and Adjusted Odds Ratios of COVID-19 Infection by Psychotropic Medication Exposure in Patients with PCR Testing

Psychotropic medication	COVID-19 positive n (%)	Medications only OR (95% CI)	Age-Sex Adjusted OR (95% CI)	Fully Adjusted[a] OR (95% CI)
All (n=1,363)	374 (27.4)	--	--	--
First generation antipsychotic				
Haloperidol (n=610)	177 (29.0)	1.04 (0.81, 1.35)	1.24 (0.87, 1.46)	0.84 (0.62, 1.13)
Fluphenazine (n=187)	51 (27.3)	0.93 (0.64,1.35)	0.96 (0.66,1.39)	0.81 (0.53,1.22)
Chlorpromazine (n=101)	14 (13.9)	0.42 (0.23,0.75)	0.45 (0.24,0.82)	0.71 (0.37,1.37)
Second generation antipsychotic				
Olanzapine (n=618)	156 (25.2)	0.67 (0.52,0.88)	0.70 (0.54,0.92)	0.85 (0.62,1.16)
Clozapine (n=493)	122 (24.8)	0.62 (0.47,0.82)	0.73 (0.55,0.98)	0.99 (0.70,1.39)
Risperidone (n=282)	62 (22.0)	0.68 (0.48,0.94)	0.69 (0.50,0.97)	0.78 (0.53,1.13)
Aripiprazole (n=174)	39 (22.4)	0.68 (0.46,1.01)	0.77 (0.52,1.14)	0.67 (0.43,1.04)
Quetiapine (n=185)	49 (26.5)	0.84 (0.58,1.21)	0.85 (0.59,1.23)	0.75 (0.49,1.15)
Paliperidone (n=144)	25 (17.4)	0.51 (0.32,0.81)	0.54 (0.34,0.87)	0.55 (0.33,0.92)
Mood stabilizers				
Valproic acid (n=467)	142 (30.4)	1.40 (1.08,1.82)	1.41 (1.09,1.83)	1.57 (1.15,2.13)
Lithium (n=261)	76 (29.1)	1.22 (0.90,1.67)	1.28 (0.93,1.75)	1.10 (0.77,1.58)
Lamotrigine (n=99)	37 (37.4)	1.88 (1.21,2.92)	1.83 (1.17,2.87)	2.05 (1.20,3.49)

[a]The fully adjusted odds ratios control for age, sex, race/ethnicity, facility size, hospital region, BMI, chronic respiratory disease, diabetes, hypertension, heart disease, and exposure to medications in the model.