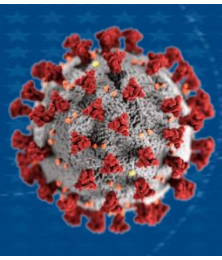
Fact Sheet Supplement:
Use of COVID-19 Convalescent Plasma Therapy in the Department of Veterans Affairs Health Care System



Cooperative Studies Program Epidemiology Analytics Resource (CSPEAR)
Cooperative Studies Program
Office of Research and Development
Department of Veterans Affairs

May 2021

Version: 1.2

U.S. Department of Veterans Affairs
Veterans Health Administration
Cooperative Studies Program

This fact sheet is the result of a joint effort of 2 Cooperative Studies Program Epidemiology Centers.

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Suggested Citation: VA Cooperative Studies Program Epidemiology Analytics Resource. *Fact Sheet: Use of COVID-19 Convalescent Plasma Therapy in the Department of Veterans Affairs Health Care System*. Cooperative Studies Program, Office of Research and Development, Department of Veterans Affairs. 2021.

About CSPEAR
CSPEAR translates VA electronic health record data into brief, scientifically-reliable reports on the health status of Veterans. CSPEAR is a collaborative effort of the Cooperative Studies Program's national network of Epidemiology Centers.

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Acknowledgements
CSPEAR thanks the VA Mayo Clinic EAP providers for their commitment to delivering the best care to the Veterans we serve. We appreciate the work of the VA Informatics and Computing Infrastructure (VINCI) has put into developing the VA COVID-19 Shared Data Resource. We would also like to acknowledge the team behind the creation of the VA COVID Severity Scale - Million Veterans Program (MVP) Data Core, MVP Phenomics Workgroup, and MVP035. This work was conducted under the CSP #2030 study protocol (VA CIRB: E20-10). This material is the result of work supported with resources and the use of facilities at the VA Cooperative Studies Program Epidemiology Centers in Seattle, WA and Boston, MA. The contents do not represent the views of VA or the US Government.

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1 Background

Convalescent plasma (CP) is a promising treatment for coronavirus disease 2019 (COVID-19), caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2). The plasma of recovered patients contains antiviral and anti-inflammatory components that may help others fight the infection.[1] In April 2020, the Veterans Health Administration (VHA) began providing access to CP to hospitalized patients with severe or life-threatening COVID-19, or those at high risk of progressing to severe or life-threatening disease under the Mayo Clinic Expanded Access Program (EAP). [2] An emergency use authorization (EUA) was issued on August 23, 2020. Under EUA, health care providers may give CP treatment to hospitalized patients with COVID-19 based on an individual assessment of potential for risk and benefit.[3] COVID-19 treatment continues to evolve as new science emerges and treatments are approved.

2 Purpose

The purpose of this document is to provide supplementary information to the *Fact Sheet: Use of COVID-19 Convalescent Plasma Therapy in the Department of Veterans Affairs Health Care System*. The fact sheet presents data on the changes over time in the use of CP therapy to treat COVID-19 within VHA. Evidence suggests CP may be more effective when given to less severe patients early in the course of disease.[3] Thus, the fact sheet focuses on trends in CP use in relation to COVID-19 disease severity and timing of CP treatment initiation.

3 Population

The population includes patients meeting the following criteria:

1. Veterans
2. Age ≥18 and ≤110 years; from date of birth to treatment date
3. Inpatient admitted to any VA Medical Center (VAMC) from April 15, 2020 to November 17, 2020
4. Record of a positive test for SARS-CoV-2 infection within 30 days of hospitalization
5. Not labeled as a test patient

4 Data Source

Data were pulled from the VA COVID-19 Shared Data Resource data domain of the VA Corporate Data Warehouse (CDW).[4] A list of CP recipients was provided by the Mayo Clinic EAP and the VA Pathology and Laboratory Medicine Service. The VA COVID-19 Shared Data Resource case definition was used to identify patients who test positive for SARS-CoV-2 infection. The case data in this resource originate from the VA National Surveillance Tool.

5 Methods and Analyses

Descriptive statistics were used to show demographic and clinical characteristics of SARS-CoV-2-positive Veterans over time. Time periods were determined by key dates in the authorization of CP treatment, including the first CP transfusion conducted under the Mayo Clinic EAP in VA on April 15, 2020 and the EUA on August 23, 2020.

Data are presented in 2 sections, which the key differences summarized. Specifically, the 2 sections use different index dates, i.e., the date in which patients met the inclusion criteria (the start of follow-up). The index date was used to group patients into each of the 5 time periods.

Section 7 - CP Patients Only:

a. Population: Hospitalized Veterans treated with COVID-19 CP at a VA medical center

b. Index date: Date of CP treatment initiation; Chosen to show the characteristics of CP patients at the time of transfusion

c. Results: Focus on the trends in CP treatment rates, severity of illness at treatment initiation, and the timing of treatment relative to admission date. Figures comparing severe and non-severe CP patients assess severity at time of treatment initiation.

Section 8 - CP Patients Compared with Non-CP Patients:

a. Population: Hospitalized Veterans who tested positive for SARS-CoV-2 infection and were treated at a VA medical center, including those treated and untreated with CP

b. Index date: Date of the first positive test or the date of the closest inpatient admission in the preceding 30 days, whichever occurred first; Chosen to find an equivalent date for which to compare CP and non-CP patients, as non-CP patients do not have a treatment initiation date

c. Results: Focus on trends over time in disease severity, clinical characteristics, and treatment among patients treated and untreated with CP. Figures comparing CP and non-CP patients assess severity over the course of the hospital stay to ensure comparability.

For the purposes of these analyses, each individual patient is counted once. For those with multiple admissions during the time period:

- Patients transfused with CP: Use the first admission where CP was administered
- Patients not transfused with CP: Use the first admission within 30 days of SARS-CoV-2-positive test

Disease severity was determined using the VA COVID-19 Severity Scale, which defines severe illness as treatment with high-flow oxygen, mechanical ventilation, intubation, dialysis, vasoactive or inotropic infusion, or extracorporeal membrane oxygenation.[5]

6 Results: CP Patients Only

Results in this section are restricted to the 1,923 hospitalized Veterans who initiated COVID-19 CP treatment between 4/15/20 and 11/17/20 in a VA medical center. The population is stratified into 5 groups based on their index date, defined as the date of CP treatment initiation.

Table 1. Number (%) of SARS-CoV-2-positive inpatients who initiated CP treatment within each time period

Time Period	SARS-CoV-2-Positive Inpatients Who Initiated CP Treatment within Time Period
Early EAP (04/15/20-05/27/20)	178 (9.3%)
Mid EAP (05/28/20–07/09/20)	307 (16.0%)
Late EAP (07/10/20–08/22/20)	571 (29.7%)
Early EAU (08/23/20–10/01/20)	297(15.4%)
Late EAU (10/02/20–11/17/20)	570 (29.6%)
Total	1,923 (100.0%)

Table 2. Demographics of SARS-CoV-2-positive inpatients treated with CP

Characteristic	SARS-CoV-2-Positive Inpatients Treated with CP (N=1,923)
Age (years)	
Mean (SD)	69.3 (12.3)
Median (IQR)	71 (63, 76)
Age group (years), n(%)	
18-34	17 (0.9%)
35-44	65 (3.4%)
45-54	158 (8.2%)
50-64	320 (16.6%)
65-74	747 (38.9%)
75-84	416 (21.6%)
85+	200 (10.4%)
Sex, n(%)	
Female	71 (3.7%)
Male	1,852 (96.3%)
Primary Race, n(%)	
American Indian/Alaska Native	20 (1.0%)
Asian	22 (1.2%)
Black or African American	525 (27.3%)
Native Hawaiian/Pacific Islander	18 (0.9%)
White	1,207 (62.8%)
Unknown	131 (6.8%)
Ethnicity, n(%)	
Hispanic or Latino	208 (10.8%)
Not Hispanic or Latino	1,661 (86.4%)
Unknown	54 (2.8%)
Region, n(%)	
Continental	588 (30.6%)
Northeast	356 (18.5%)
Pacific	200 (10.4%)
Southeast	779 (40.5%)

Table 3. Clinical characteristics of SARS-CoV-2-positive inpatients treated with CP over time

Characteristic	SARS-CoV-2-Positive Inpatients Treated with CP (N=1,973)				
	Expanded Access Program			Emergency Use Authorization	
	Apr 15 – May 27 n (%) (n=178)	May 28 – Jul 9 n (%) (n=307)	Jul 10 – Aug 22 n (%) (n=571)	Aug 23 – Oct 1 n (%) (n=297)	Oct 2 – Nov 17 n (%) (n=570)
Severe illness at the time of CP transfusion*	98 (53.8%)	92 (28.9%)	138 (23.5%)	61 (19.6%)	80 (13.8%)
Severe illness at any point over the hospital stay*	120 (65.9%)	142 (44.7%)	232 (39.5%)	106 (34.0%)	176 (30.4%)
Charlson comorbidity index (CCI) in past 2 years - Median (IQR)	3.0 (1.2, 5.0)	2.0 (1.0, 5.0)	2.0 (1.0, 4.0)	3.0 (1.0, 5.0)	3.0 (1.0, 5.0)
Missing	4 (2.2%)	10 (3.3%)	13 (2.3%)	7 (2.4%)	14 (2.5%)
Admitted to ICU within 60 days	142 (81.6%)	214 (72.1%)	349 (62.5%)	186 (64.1%)	360 (64.7%)
Missing	4 (2.2%)	10 (3.3%)	13 (2.3%)	7 (2.4%)	14 (2.5%)
Length of hospital stay (days)					
Mean (SD)	26.1 (24.0)	17.0 (14.2)	16.3 (13.9)	14.3 (11.4)	13.0 (11.5)
Median (IQR)	20.0 (10.0, 34.0)	13.0 (8.0, 21.0)	12.0 (7.0, 20.0)	12.0 (6.0, 19.0)	10.0 (6.0, 16.8)
0-2	<11**	<11**	<11**	<11**	20 (3.5%)
3-7 days	23 (12.9%)	65 (21.2%)	153 (26.8%)	86 (28.9%)	201 (35.3%)
>7 days	155 (87.1%)	238 (77.5%)	411 (72.0%)	201 (67.7%)	349 (61.2%)
Medications during hospital stay					
Angiotensin-converting enzyme (ACE) inhibitors	38 (21.8%)	65 (21.9%)	142 (25.5%)	69 (23.8%)	123 (22.1%)
Anticoagulant	172 (98.9%)	291 (98.0%)	549 (98.4%)	282 (97.2%)	546 (98.2%)
Angiotensin II receptor blockers (ARB)	19 (10.9%)	49 (16.5%)	86 (15.4%)	47 (16.2%)	108 (19.4%)
Azithromycin	87 (50.0%)	131 (44.1%)	242 (43.4%)	117 (40.3%)	249 (44.8%)
Corticosteroids	65 (37.4%)	185 (62.3%)	460 (82.4%)	251 (86.6%)	449 (80.8%)
Hydroxychloroquine	43 (24.7%)	<11**	<11**	<11**	<11**
Remdesivir	66 (37.9%)	233 (78.5%)	479 (85.8%)	243 (83.8%)	491 (88.3%)
Tocilizumab	53 (30.5%)	35 (11.8%)	71 (12.7%)	13 (4.5%)	14 (2.5%)
Missing	4 (2.2%)	10 (3.3%)	13 (2.3%)	7 (2.4%)	14 (2.5%)

**Severity as defined by the VA COVID Severity Scale: https://vhacdwdwhweb100.vha.med.va.gov/phenotype/index.php/COVID_Severity_Scale*

***To protect patient privacy, all counts less than 11 have been reported as '<11'.*

Table 4. CP treatment characteristics among SARS-CoV-2-positive inpatients

Treatment characteristic	SARS-CoV-2-Positive Inpatients Treated with CP (N=1,923)				
	Expanded Access Program			Emergency Use Authorization	
	Apr 15 – May 27 n (%) (n=178)	May 28 – Jul 9 n (%) (n=307)	Jul 10 – Aug 22 n (%) (n=571)	Aug 23 – Oct 1 n (%) (n=297)	Oct 2 – Nov 17 n (%) (n=570)
Received CP under the Mayo Clinic EAP, n (%)	167 (93.8%)	270 (88.0%)	507 (88.8%)	18 (6.1%)	<11*
Received CP within intensive care unit (ICU), n (%)	111 (62.4%)	154 (50.2%)	254 (44.5%)	145 (48.8%)	276 (48.4%)
Time from admission to CP transfusion (days)					
Mean (SD)	7.5 (7.8)	3.3 (3.2)	3.4 (3.3)	2.8 (2.9)	2.2 (2.1)
Median (IQR)	5.0 (2.0, 9.0)	3.0 (1.0, 4.0)	2.0 (1.0, 4.0)	2.0 (1.0, 4.0)	1.0 (1.0, 3.0)
0-2	58 (32.6%)	148 (48.2%)	293 (51.3%)	186 (62.6%)	414 (72.6%)
3-7 days	61 (34.3%)	142 (46.3%)	235 (41.2%)	95 (32.0%)	142 (24.9%)
>7 days	59 (33.1%)	17 (5.5%)	43 (7.5%)	16 (5.4%)	14 (2.5%)

**To protect patient privacy, all counts less than 11 have been reported as '<11'.*

Table 5. CP treatment characteristics among SARS-CoV-2-positive inpatients, by severity status at the time of CP transfusion

Treatment characteristic	SEVERE at the time of transfusion SARS-CoV-2-Positive Inpatients Treated with CP					NON-SEVERE at the time of transfusion SARS-CoV-2-Positive Inpatients Treated with CP				
	Expanded Access Program			Emergency Use Authorization		Expanded Access Program			Emergency Use Authorization	
	Apr 15 – May 27 n (%)	May 28 – Jul 9 n (%)	Jul 10 – Aug 22 n (%)	Aug 23 – Oct 1 n (%)	Oct 2 – Nov 17 n (%)	Apr 15 – May 27 n (%)	May 28 – Jul 9 n (%)	Jul 10 – Aug 22 n (%)	Aug 23 – Oct 1 n (%)	Oct 2 – Nov 17 n (%)
	(n=98)	(n=92)	(n=138)	(n=61)	(n=80)	(n=80)	(n=215)	(n=433)	(n=236)	(n=490)
Received CP under the Mayo Clinic EAP, n (%)	90 (91.8%)	80 (87.0%)	125 (90.6%)	4 (6.6%)	0 (0.0%)	77 (96.3%)	190 (88.4%)	382 (88.2%)	14 (5.9%)	0 (0.0%)
Received CP within intensive care unit (ICU), n (%)	76 (77.6%)	68 (73.9%)	96 (69.6%)	45 (73.8%)	57 (71.3%)	35 (43.8%)	86 (40.0%)	158 (36.5%)	100 (42.4%)	219 (44.7%)
Time from admission to CP transfusion (days)										
Mean days (SD)	10.1 (9.1)	4.2 (4.3)	4.2 (4.3)	3.4 (3.0)	2.6 (2.5)	4.2 (3.8)	2.8 (2.4)	3.1 (2.9)	2.7 (2.9)	2.1 (2.0)
Median days (IQR)	7.0 (3.2, 14.0)	3.0 (2.0, 5.0)	3.0 (2.0, 5.0)	2.0 (1.0, 5.0)	2.0 (1.0, 3.0)	3.0 (1.0, 6.0)	2.0 (1.0, 4.0)	2.0 (1.0, 4.0)	2.0 (1.0, 3.2)	1.0 (1.0, 3.0)
0-2 days	21 (21.4%)	29 (31.5%)	60 (43.5%)	33 (54.1%)	53 (66.3%)	37 (46.3%)	119 (55.3%)	233 (53.8%)	153 (64.8%)	361 (73.7%)
3-7 days	31 (31.6%)	53 (57.6%)	62 (44.9%)	23 (37.7%)	24 (30.0%)	30 (37.5%)	89 (41.4%)	173 (40.0%)	72 (30.5%)	118 (24.1%)
>7 days	46 (47.0%)	<11*	16 (11.6%)	<11*	<11*	13 (16.2%)	<11*	27 (6.2%)	11 (4.7%)	11 (2.2%)

**To protect patient privacy, all counts less than 11 have been reported as '<11'.*

Table 6. Changes in CP treatment rate* over time among all SARS-CoV-2-positive inpatients, by region

Region	Apr 15 – May 27		May 28 – Jul 9		Jul 10 – Aug 22		Aug 23 – Oct 1		Oct 2 – Nov 17	
	n treated with CP	CP treatment per 100 person-days	n treated with CP	CP treatment per 100 person-days	n treated with CP	CP treatment per 100 person-days	n treated with CP	CP treatment per 100 person-days	n treated with CP	CP treatment per 100 person-days
Continental	24	1.8	117	3.9	207	3.0	78	2.6	162	2.7
Northeast	99	1.3	38	0.9	44	1.3	44	1.4	131	1.8
Pacific	18	1.3	48	1.3	77	1.6	20	1.1	37	1.2
Southeast	37	1.0	104	1.7	243	2.0	131	1.9	264	3.1
Overall	**178**	**1.3**	**307**	**1.8**	**571**	**2.1**	**271**	**1.8**	**594**	**2.4**

**CP treatment rate is defined as the number of patients who initiated CP therapy divided by the total number of person-days SARS-CoV-2-positive inpatients were 'at risk' of being treated*

Table 7. CP treatment rate in VA Medical Centers over time, among VAMCs treating over 10 patients with CP

VA Medical Center (Station number) City, State	Total treated with CP	**CP treatment rate*** (CP treatment per 100 person-days)	**CP treatment rate* (CP treatment per 100 person-days)**				
			Expanded Access Program			Emergency Use Authorization	
			Apr 15 – May 27	May 28 – Jul 9	Jul 10 – Aug 22	Aug 23 – Oct 1	Oct 2 – Nov 17
(437) Fargo, ND	12	2.6	0.0	0.0	0.0	1.0	4.6
(438) Sioux Falls SD	19	4.5	6.7	2.1	7.3	1.7	5.5
(509) Augusta, GA	65	4.2	2.5	5.1	5.7	4.2	6.3
(512) Baltimore, MD	22	1.4	1.4	0.5	3.7	0.6	3.9
(516) Bay Pines, FL	17	0.9	0.8	1.3	1.0	0.0	0.9
(526) Bronx, NY	11	1.6	1.6	0.0	2.0	22.2	6.8
(528) Buffalo, NY	13	0.8	1.5	0.2	0.0	0.5	1.5
(534) Charleston, SC	56	7.6	0.0	5.7	9.4	5.2	24.0
(537) Chicago, IL	15	1.0	1.6	0.7	1.3	0.0	0.4
(544) Columbia, SC	61	6.3	0.0	6.4	8.6	5.1	11.4
(546) Miami, FL	13	1.3	0.0	2.6	1.5	0.0	0.0
(549) Dallas TX	32	1.0	2.2	1.6	1.3	0.6	0.8
(558) Durham, NC	14	1.3	0.0	0.9	1.0	0.0	4.3
(564) Fayetteville, AR	40	11.8	0.0	17.9	12.9	11.5	15.1
(573) Gainesville, FL	53	2.0	0.0	1.6	2.6	1.7	3.5
(578) Hines, IL	23	1.4	0.7	1.7	1.7	0.6	2.5
(580) Houston, TX	99	3.7	3.0	6.2	3.6	2.1	2.9
(583) Indianapolis, IN	24	1.8	3.5	1.0	0.5	0.9	0.7
(586) Jackson, MS	11	1.0	2.6	1.2	0.9	1.0	0.8
(589) Kansas City, MO	60	2.5	1.4	1.8	1.1	3.0	3.9
(593) Las Vegas, NV	50	2.9	5.0	4.2	4.0	2.1	1.7
(595) Lebanon, PA	12	4.1	7.3	2.9	9.1	0.0	3.6
(596) Lexington, KY	85	12.0	2.4	6.0	6.6	8.5	19.8
(598) Little Rock, AR	23	1.7	4.9	0.7	0.6	2.3	4.6
(605) Loma Linda, CA	15	1.2	1.8	2.3	1.1	0.6	0.8
(607) Madison, WI	27	3.8	5.1	3.8	3.0	2.7	4.6

VA Medical Center (Station number) City, State	Total treated with CP	**CP treatment rate*** (CP treatment per 100 person-days)	**CP treatment rate* (CP treatment per 100 person-days)**				
			Expanded Access Program			Emergency Use Authorization	
			Apr 15 – May 27	May 28 – Jul 9	Jul 10 – Aug 22	Aug 23 – Oct 1	Oct 2 – Nov 17
(612) Martinez, CA	23	4.0	0.0	6.7	2.4	3.7	12.2
(613) Martinsburg, WV	12	2.0	0.0	1.5	1.6	0.0	5.6
(614) Memphis, TN	50	2.8	1.6	1.4	4.0	3.7	4.7
(618) Minneapolis, MN	24	1.2	0.6	0.5	0.3	1.5	2.4
(621) Mountain Home, TN	16	1.9	0.0	0.0	1.0	2.1	4.1
(623) Muskogee, OK	37	2.6	4.1	3.6	2.0	3.6	6.2
(626) Nashville, TN	19	1.0	0.0	0.8	0.5	1.5	3.3
(635) Oklahoma City, OK	78	3.9	3.7	3.5	3.3	3.7	7.9
(636) Omaha, NE	69	3.3	2.2	1.7	4.6	3.6	5.5
(637) Asheville, NC	14	1.7	0.6	0.0	2.6	5.1	3.4
(642) Philadelphia, PA	13	1.4	1.2	1.3	2.5	1.3	2.3
(644) Phoenix, AZ	14	0.5	2.8	1.0	0.3	0.3	0.4
(646) Pittsburgh, PA	12	1.7	0.0	13.3	1.7	0.0	1.5
(652) Richmond, VA	25	3.8	0.0	0.9	7.6	4.7	18.9
(654) Reno, NV	24	3.3	0.0	0.9	2.0	2.3	7.5
(657) Saint Louis, MO	22	1.5	1.7	0.7	1.3	1.1	4.0
(658) Salem, VA	51	8.5	0.0	4.2	3.9	9.2	19.8
(659) Salisbury, NC	11	2.6	7.9	3.2	3.9	4.8	1.5
(671) San Antonio, TX	179	4.9	1.6	6.5	4.8	3.1	11.3
(673) Tampa, FL	14	0.5	1.8	0.0	0.9	0.2	0.2
(674) Temple, TX	23	1.9	0.0	0.0	0.9	4.3	6.7
(675) Orlando, FL	55	2.8	1.6	1.2	2.0	2.3	8.2
(688) Washington, DC	19	1.3	1.1	2.0	1.6	0.6	1.3
(691) Los Angeles, CA	26	1.6	2.3	1.5	1.3	1.4	3.2
(693) Wilkes-Barre, PA	12	3.4	4.3	1.7	0.0	0.0	10.0
(695) Milwaukee, WI	23	1.3	1.1	0.9	1.9	2.4	1.6

**CP treatment rate is defined as the number of patients treated with CP divided by the total number of patient-days SARS-CoV-2-positive inpatients were 'at risk' of being treated*

7 Results: CP Patients Compared with Non-CP Patients

In this section, results are presented for the 12,303 SARS-CoV-2-positive Veterans who were hospitalized at a VA medical center between 4/15/20 and 11/17/20. The population is stratified into 5 groups based on their index date, defined as the date of the first positive test or the closest inpatient admission in the preceding 30 days, whichever occurred first. Twenty-seven patients treated with CP are excluded from this section because their index date occurred prior to 4/15/20.

Table 8. Number (%) of SARS-CoV-2-positive inpatients with an index date within each time period, by CP treatment status

	SARS-CoV-2-Positive Inpatients with Index Date within Time Period		
Time Period	**Total**	**Treated with CP**	**Untreated with CP**
Early EAP (04/15/20-05/27/20)	1,609 (13.1%)	173 (9.1%)	1,436 (13.8%)
Mid EAP (05/28/20–07/09/20)	2,222 (18.1%)	394 (20.8%)	1,828 (17.6%)
Late EAP (07/10/20–08/22/20)	2,819 (22.9%)	496 (26.2%)	2,323 (22.3%)
Early EAU (08/23/20–10/01/20)	1,727 (14.0%)	314 (16.6%)	1,413 (13.6%)
Late EAU (10/02/20–11/17/20)	3,926 (31.9%)	519 (27.4%)	3,407 (32.7%)
Total	**12,303 (100.0%)**	**1,896 (100.0%)**	**10,407 (100.0%)**

Table 9. Demographics of SARS-CoV-2-positive inpatients

Characteristic	SARS-CoV-2-Positive Inpatients		
	Total (N=12,302)	Treated with CP (N=1,896)	Untreated with CP (N=10,406)
Age (years)			
Mean (SD)	67.8 (14.5)	69.3 (12.3)	67.5 (14.9)
Median (IQR)	70 (60, 76)	71 (63, 76)	70 (60,76)
18-34	393 (3.2%)	17 (0.9%)	376 (3.6%)
35-44	544 (4.4%)	64 (3.4%)	480 (4.6%)
45-54	1,045 (8.5%)	157 (8.3%)	888 (8.5%)
50-64	2,253 (18.3%)	312 (16.4%)	1,941 (18.7%)
65-74	4,303 (35.0%)	738 (38.9%)	3,565 (34.3%)
75-84	2,376 (19.3%)	411 (21.7%)	1,965 (18.9%)
85+	1,388 (11.3%)	197 (10.4%)	1,191 (11.4%)
Sex			
Female	778 (6.3%)	71 (3.7%)	707 (6.8%)
Male	11,524 (93.7%)	1,825 (96.3%)	9,699 (93.2%)
Primary Race			
American Indian/Alaska Native	117 (1.0%)	20 (1.1%)	97 (0.9%)
Asian	86 (0.7%)	22 (1.2%)	64 (0.6%)
Black or African American	3,785 (30.8%)	509 (26.8%)	3,276 (31.5%)
Native Hawaiian/Pacific Islander	112 (0.9%)	18 (0.9%)	94 (0.9%)
White	7,313 (59.4%)	1,197 (63.1%)	6,116 (58.8%)
Unknown	889 (7.2%)	130 (6.9%)	759 (7.3%)
Ethnicity			
Hispanic or Latino	1,160 (9.4%)	205 (10.8%)	955 (9.2%)
Not Hispanic or Latino	10,699 (87.0%)	1,637 (86.3%)	9,062 (87.1%)
Unknown	443 (3.6%)	54 (2.9%)	389 (3.7%)
Region			
Continental	2,573 (20.9%)	586 (30.9%)	1,987 (19.1%)
Northeast	3,402 (27.7%)	342 (18.0%)	3,060 (29.4%)
Pacific	1,827 (14.8%)	199 (10.5%)	1,628 (15.6%)
Southeast	4,500 (36.6%)	769 (40.6%)	3,731 (35.9%)

Table 10. Clinical characteristics of SARS-CoV-2-positive inpatients over time

Characteristic	Treated with CP					Untreated with CP				
	Expanded Access Program			Emergency Use Authorization		Expanded Access Program			Emergency Use Authorization	
	Apr 15 – May 27 n (%) (n=173)	May 28 – Jul 9 n (%) (n=394)	Jul 10 – Aug 22 n (%) (n=496)	Aug 23 – Oct 1 n (%) (n=314)	Oct 2 – Nov 17 n (%) (n=519)	Apr 15 – May 27 n (%) (n=1,436)	May 28 – Jul 9 n (%) (n=1,828)	Jul 10 – Aug 22 n (%) (n=2,323)	Aug 23 – Oct 1 n (%) (n=1,412)	Oct 2 – Nov 17 n (%) (n=3,407)
Severe illness at any point over the hospital stay	106 (58.2%)	178 (56.0%)	201 (34.2%)	104 (33.3%)	173 (29.9%)	260 (18.1%)	201 (11.0%)	240 (10.3%)	121 (8.6%)	381 (11.2%)
Charlson comorbidity index (CCI) in past 2 years – Median (IQR)	3.0 (1.2, 5.0)	2.0 (1.0, 5.0)	2.0 (1.0, 4.0)	3.0 (1.0, 5.0)	3.0 (1.0, 5.0)	3.0 (1.0, 5.0)	2.0 (1.0, 4.0)	2.0 (0.0, 4.0)	2.0 (1.0, 4.0)	2.0 (1.0, 5.0)
Missing	3 (1.7%)	12 (3.0%)	11 (2.2%)	10 (3.2%)	11 (2.1%)	39 (2.7%)	49 (2.7%)	73 (3.1%)	58 (4.1%)	95 (2.8%)
Admitted to ICU within 60 days	133 (78.2%)	270 (70.7%)	304 (62.7%)	193 (63.5%)	508 (64.2%)	555 (39.7%)	576 (32.4%)	729 (32.4%)	501 (37.0%)	1,172 (35.39%)
Missing	3 (1.7%)	12 (3.0%)	11 (2.2%)	10 (3.2%)	11 (2.1%)	39 (2.7%)	49 (2.7%)	73 (3.1%)	58 (4.1%)	95 (2.8%)
Length of hospital stay (days)										
Mean (SD)	23.1 (19.4)	17.1 (14.1)	15.9 (13.5)	13.8 (11.1)	13.0 (11.5)	11.9 (14.5)	8.8 (11.2)	8.6 (11.1)	7.9 (10.1)	7.7 (8.9)
Median (IQR)	17.0 (10.0, 31.0)	13.0 (8.0, 21.0)	12.0 (7.0, 20.0)	11.0 (6.0, 18.0)	10.0 (6.0, 16.5)	7.0 (3.0, 14.0)	5.0 (2.0, 11.0)	5.0 (2.0, 10.5)	5.0 (3.0, 9.0)	5.0 (3.0, 9.0)
0-2	<11*	<11*	<11*	11 (3.5%)	19 (3.7%)	262 (18.3%)	494 (27.0%)	612 (26.4%)	351 (24.8%)	785 (23.0%)
3-7 days	24 (13.9%)	88 (22.3%)	135 (27.2%)	95 (30.3%)	186 (35.8%)	493 (34.3%)	663 (36.3%)	888 (38.2%)	604 (42.8%)	1,542 (45.3%)
>7 days	149 (86.1%)	300 (76.2%)	356 (71.8%)	208 (66.2%)	314 (60.5%)	681 (47.4%)	671 (36.7%)	823 (35.4%)	457 (32.4%)	1,080 (31.7%)
Medications during hospital stay										
ACE inhibitor	38 (22.4%)	81 (21.2%)	125 (25.8%)	76 (25.0%)	111 (21.9%)	307 (22.0%)	434 (24.4%)	559 (24.8%)	343 (25.3%)	909 (27.4%)

Characteristic	Treated with CP					Untreated with CP				
	Expanded Access Program			Emergency Use Authorization		Expanded Access Program			Emergency Use Authorization	
	Apr 15 – May 27 n (%) (n=173)	May 28 – Jul 9 n (%) (n=394)	Jul 10 – Aug 22 n (%) (n=496)	Aug 23 – Oct 1 n (%) (n=314)	Oct 2 – Nov 17 n (%) (n=519)	Apr 15 – May 27 n (%) (n=1,436)	May 28 – Jul 9 n (%) (n=1,828)	Jul 10 – Aug 22 n (%) (n=2,323)	Aug 23 – Oct 1 n (%) (n=1,412)	Oct 2 – Nov 17 n (%) (n=3,407)
Anticoagulant	168 (98.8%)	375 (98.2%)	477 (98.4%)	295 (97.0%)	499 (98.2%)	1,319 (94.4%)	1,647 (92.6%)	2,104 (93.5%)	1,248 (92.2%)	3,098 (93.5%)
ARB	18 (10.6%)	63 (16.5%)	75 (15.5%)	46 (15.1%)	103 (20.3%)	163 (11.7%)	220 (12.4%)	340 (15.1%)	198 (14.6%)	522 (15.8%)
Azithromycin	79 (46.5%)	174 (45.6%)	212 (43.7%)	113 (37.2%)	233 (45.9%)	381 (27.3%)	432 (24.3%)	611 (27.2%)	350 (25.9%)	898 (27.1%)
Corticosteroids	57 (33.5%)	272 (71.2%)	400 (82.5%)	259 (85.2%)	409 (80.5%)	338 (24.2%)	735 (41.3%)	1,161 (51.6%)	731 (54.0%)	2,091 (63.1%)
Hydroxychloroquine	20 (11.8%)	<11*	<11*	<11*	<11*	137 (9.8%)	<11*	25 (1.1%)	<11*	33 (1.0%)
Remdesivir	78 (45.9%)	312 (81.7%)	410 (84.5%)	257 (84.5%)	450 (88.6%)	151 (10.8%)	485 (27.3%)	698 (31.0%)	496 (36.6%)	1,677 (50.6%)
Tocilizumab	44 (25.9%)	49 (12.8%)	56 (11.6%)	13 (4.3%)	12 (2.4%)	74 (5.3%)	40 (2.2%)	51 (2.3%)	4 (0.3%)	4 (0.1%)
Missing	3 (1.7%)	12 (3.0%)	11 (2.2%)	10 (3.2%)	11 (2.1%)	39 (2.7%)	49 (2.7%)	73 (3.1%)	58 (4.1%)	95 (2.8%)

**To protect patient privacy, all counts less than 11 have been reported as '<11'.*

Table 11. Length of hospital stay over time by severity and CP treatment status

Length of hospital stay	SEVERE at any point during hospital stay SARS-CoV-2-Positive Inpatients					NON-SEVERE at any point during hospital stay SARS-CoV-2-Positive Inpatients				
	Expanded Access Program			Emergency Use Authorization		Expanded Access Program			Emergency Use Authorization	
	Apr 15 – May 27	May 28 – Jul 9	Jul 10 – Aug 22	Aug 23 – Oct 1	Oct 2 – Nov 17	Apr 15 – May 27	May 28 – Jul 9	Jul 10 – Aug 22	Aug 23 – Oct 1	Oct 2 – Nov 17
Treated with CP	(n=106)	(n=178)	(n=201)	(n=104)	(n=173)	(n=67)	(n=216)	(n=295)	(n=210)	(n=346)
Mean days (SD)	28.8 (21.3)	22.7 (16.1)	22.6 (16.4)	19.2 (13.6)	20.4 (14.8)	14.2 (11.5)	12.5 (10.1)	11.3 (8.6)	11.2 (8.5)	9.3 (6.8)
Median days (IQR)	23.0 (15.0, 35.0)	17.5 (12.0, 27.8)	17.0 (12.0, 29.0)	16.5 (10.0, 23.2)	18.0 (11.0, 25.0)	10.0 (7.5, 15.5)	10.0 (6.0, 15.2)	9.0 (5.5, 14.0)	8.5 (5.2, 14.0)	7.0 (5.0, 11.0)
Categories, n (%)										
0-2 days	<11*	<11*	<11*	<11*	<11*	<11*	<11*	<11*	<11*	16 (4.6%)
3-7 days	<11*	15 (8.4%)	16 (8.0%)	14 (13.5%)	23 (13.3%)	17 (25.4%)	73 (33.8%)	119 (40.3%)	81 (38.6%)	163 (47.1%)
>7 days	99 (93.4%)	162 (91.0%)	185 (92.0%)	88 (84.6%)	147 (85.0%)	50 (74.6%)	138 (63.9%)	171 (58.0%)	120 (57.1%)	167 (48.3%)
Untreated with CP	(n=260)	(n=201)	(n=240)	(n=121)	(n=381)	(n=1,176)	(n=1,627)	(n=2,083)	(n=1,291)	(n=3,026)
Mean days (SD)	18.7 (18.2)	18.6 (17.8)	16.4 (14.3)	17.7 (17.5)	15.9 (13.3)	10.3 (13.0)	7.6 (9.4)	7.7 (10.2)	6.9 (8.6)	6.7 (7.6)
Median days (IQR)	14.0 (7.0, 22.0)	13.0 (7.0, 26.0)	13.0 (6.0, 21.2)	12.0 (6.0, 24.0)	12.0 (6.0, 22.0)	6.0 (3.0, 12.0)	5.0 (2.0, 10.0)	5.0 (2.0, 9.0)	5.0 (2.0, 8.0)	5.0 (2.0, 8.0)
Categories, n (%)										
0-2 days	16 (6.2%)	20 (10.0%)	15 (6.2%)	<11*	22 (5.8%)	246 (20.9%)	474 (29.1%)	597 (28.7%)	344 (26.7%)	763 (25.2%)
3-7 days	58 (22.3%)	36 (17.9%)	65 (27.1%)	28 (23.1%)	90 (23.6%)	435 (37.0%)	627 (38.6%)	823 (39.5%)	576 (44.6%)	1,452 (48.0%)
>7 days	186 (71.5%)	145 (72.1%)	160 (66.7%)	86 (71.1%)	269 (70.6%)	495 (42.1%)	526 (32.3%)	663 (31.8%)	371 (28.7%)	811 (26.8%)

**To protect patient privacy, all counts less than 11 have been reported as '<11'.*

Table 12. Medications during stay over time by severity and CP treatment status

Medications received during hospital stay	SEVERE at any point during hospital stay SARS-CoV-2-Positive Inpatients					NON-SEVERE at any point during hospital stay SARS-CoV-2-Positive Inpatients				
	Expanded Access Program			Emergency Use Authorization		Expanded Access Program			Emergency Use Authorization	
	Apr 15 – May 27 n (%)	May 28 – Jul 9 n (%)	Jul 10 – Aug 22 n (%)	Aug 23 - Oct 1 n (%)	Oct 2 – Nov 17 n (%)	Apr 15 – May 27 n (%)	May 28 – Jul 9 n (%)	Jul 10 – Aug 22 n (%)	Aug 23 – Oct 1 n (%)	Oct 2 – Nov 17 n (%)
Treated with CP	(n=106)	(n=178)	(n=201)	(n=104)	(n=173)	(n=67)	(n=216)	(n=295)	(n=210)	(n=346)
ACE inhibitor	17 (16.5%)	35 (20.4%)	45 (23.0%)	26 (26.5%)	41 (24.3%)	21 (31.3%)	46 (21.9%)	80 (27.7%)	50 (24.3%)	70 (20.7%)
Anticoagulant	102 (99.0%)	169 (98.3%)	190 (96.9%)	96 (98.0%)	167 (98.8%)	66 (98.5%)	206 (98.1%)	287 (99.3%)	199 (96.6%)	332 (97.9%)
ARB	<11*	26 (15.1%)	27 (13.8%)	11 (11.2%)	32 (18.9%)	<11*	37 (17.6%)	48 (16.6%)	35 (17.0%)	71 (20.9%)
Azithromycin	54 (52.4%)	75 (43.6%)	88 (44.9%)	38 (38.8%)	84 (49.7%)	25 (37.3%)	99 (47.1%)	124 (42.9%)	75 (36.4%)	149 (44.0%)
Corticosteroids	37 (35.9%)	122 (70.9%)	161 (82.1%)	79 (80.6%)	139 (82.3%)	20 (29.9%)	150 (71.4%)	239 (82.7%)	180 (87.4%)	270 (79.7%)
Hydroxychloroquine	15 (14.6%)	<11*	<11*	<11*	<11*	<11*	<11*	<11*	<11*	<11*
Remdesivir	52 (50.5%)	133 (77.3%)	164 (83.7%)	78 (79.6%)	146 (86.4%)	26 (38.8%)	179 (85.2%)	246 (85.1%)	179 (86.9%)	304 (89.7%)
Tocilizumab	34 (33.0%)	39 (22.7%)	38 (19.4%)	11 (11.2%)	11 (6.5%)	<11*	<11*	18 (6.2%)	<11*	<11*
Missing	3 (2.8%)	6 (3.4%)	5 (2.5%)	6 (5.8%)	4 (2.3%)	0 (0.0%)	6 (2.8%)	6 (2.0%)	4 (1.9%)	7 (2.0%)
Untreated with CP	(n=260)	(n=201)	(n=240)	(n=121)	(n=381)	(n=1,176)	(n=1,627)	(n=2,083)	(n=1,291)	(n=3,026)
ACE inhibitor	47 (18.6%)	42 (21.7%)	41 (17.7%)	25 (21.7%)	85 (23.1%)	260 (22.7%)	392 (24.7%)	518 (25.7%)	318 (25.7%)	824 (28.0%)
Anticoagulant	239 (94.5%)	183 (94.3%)	219 (94.4%)	110 (95.7%)	349 (94.8%)	1,080 (94.4%)	1,464 (92.4%)	1,885 (93.4%)	1,138 (91.9%)	2,749 (93.4%)
ARB	25 (9.9%)	25 (12.9%)	24 (10.3%)	15 (13.0%)	43 (11.7%)	138 (12.1%)	195 (12.3%)	316 (15.7%)	183 (14.8%)	479 (16.3%)
Azithromycin	84 (33.2%)	52 (26.8%)	69 (29.7%)	37 (32.2%)	128 (34.8%)	297 (26.0%)	380 (24.0%)	542 (26.9%)	313 (25.3%)	770 (26.2%)
Corticosteroids	78 (30.8%)	100 (51.6%)	129 (55.6%)	78 (67.8%)	272 (73.9%)	260 (22.7%)	635 (40.1%)	1,032 (51.1%)	653 (52.7%)	1,819 (61.8%)
Hydroxychloroquine	48 (19.0%)	<11*	<11*	<11*	<11*	89 (7.8%)	<11*	22 (1.1%)	<11*	27 (0.9%)
Remdesivir	48 (19.0%)	79 (40.7%)	97 (41.8%)	58 (50.4%)	213 (57.9%)	103 (9.0%)	406 (25.6%)	601 (29.8%)	438 (35.4%)	1,464 (49.7%)
Tocilizumab	37 (14.6%)	25 (12.9%)	27 (11.6%)	<11*	<11*	37 (3.2%)	15 (1.0%)	24 (1.2%)	<11*	<11*
Missing	7 (2.7%)	7 (3.5%)	8 (3.3%)	6 (5.0%)	13 (3.4%)	32 (2.7%)	42 (2.6%)	65 (3.1%)	52 (4.0%)	82 (2.7%)

**To protect patient privacy, all counts less than 11 have been reported as '<11'.*

8 References

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