ScienceDirect

Journal of Pain and Symptom Management
Volume 62, Issue 2, August 2021, Pages 267-276

Original Article

Palliative Care Consultation in Hospitalized Patients With COVID-19: A Retrospective Study of Characteristics, Outcomes, and Unmet Needs

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https://doi.org/10.1016/j.jpainsymman.2020.12.015 Get rights and content

Abstract

Context

Few studies have described the characteristics and palliative care needs in hospitalized patients with coronavirus disease 2019 (COVID-19).

Objectives

Describing characteristics, consultation demands, patients' needs, and outcomes of hospitalized patients with COVID-19 who received a palliative care evaluation.

Methods

Retrospective chart review of patients (aged 18+ years) with COVID-19 admitted to an academic quaternary center and seen by the geriatrics and palliative medicine team from March 1st to May 11th, 2020. Socio-demographics, operational metrics, severity of illness, goals of care-advanced care planning documentation, and outcomes were analyzed.

Results

Three hundred seventy-six (17.6%) out of 2138 COVID-19 admissions were seen by the consultation team. Compared with prepandemic situation (September 1st, 2019, to February 29th, 2020), overall new consults (205 vs. 371, $P < 0.001$) significantly increased, particularly in the intensive care unit (ICU; 9.5% vs. 36.9%, $P < 0.001$). For the COVID-19 population, median age was 78 years (interquartile range, 70-87; range, 36-102); 56% were male. LACE score, D-dimer, and C-reactive protein suggested severe disease and increased risk of mortality. Seventy-five percent of consults were for goals of care-advanced care planning, and 9.6% for symptoms. During the index admission, 7.1% had documented advanced directives, and 69.7% became do not resuscitate. Of all deaths, 55.5% were in the ICU, and 87.2% were aged ≥65 years. Underserved minority patients had a disproportionate mortality. Overall consultation mortality (38.3% vs. 70.4%, $P < 0.001$) and ICU mortality (55.2% vs. 78.1%, $P < 0.001$) significantly increased compared with those before COVID-19.

Conclusion

During this pandemic, understanding inpatient specialized palliative care needs and the vulnerable populations driving these causes may encourage health-care agencies and local, state, and federal governments to support the dedicated palliative care workforce.

Previous Next

Key Words

Coronavirus Disease; COVID-19; Palliative Care; Demographics; Resources; Needs

Key Message

This study reports one of the largest retrospective studies of coronavirus disease 2019 (COVID-19) patients seen by an inpatient palliative care team. We describe the characteristics of this population, the surge and unsustainable demand for specialized palliative care resources (particularly in the ICU), and the social disparities among these patients.

Introduction

In 2010, James Downar and Seccareccia described the basic needs for "Palliating a Pandemic." In his article, he described strategies for having providers, locations, and medications available to deliver palliative care for patients that may become critically ill or that were to die because of a pandemic.[1] Although the field of palliative care has grown during the last decade, "with teams present in 85% of medium/large hospitals in the US," there is still a great imbalance between patients in need of palliative care services and the available specialized palliative care work force.[2] Experts in the area have estimated the ratio of patients in need of

palliative care to palliative physicians in the U.S. is 808:1.[3] The current coronavirus disease 2019 (COVID-19) pandemic has highlighted and magnified the imbalance in need-to-workforce ratio.

On March 18, 2020, there were 7038 cases of COVID-19 in the U.S. and up to 97 deaths. By July 1st, 2020, this number had increased to 2,624,873 confirmed cases and 127,299 deaths.[4,5] This left no time for creating a "Palliating a Pandemic" plan, and palliative care teams in this country needed to quickly respond with spur-of-the-moment strategies to provide attention for patients significantly affected by this pandemic. Mortality rates have been especially high among hospitalized patients with certain risk factors: older age, cardiovascular disease, diabetes, chronic respiratory illness, hypertension, cancer—especially when they require ventilator support.[6, 7, 8] Death rates for patients requiring mechanical ventilation have been reported as high as 76.4% for those aged 18 to 65 years and up to 97.2% for those aged 65 years and older,[6,9,10] although these reports did not control for confounding factors such as functional status among older adults.

Owing to these high mortality rates, patients with COVID-19–associated complications would benefit from complex symptom management, dedicated goals of care discussions (GOC), and psychosocial and spiritual support not only for themselves but also for family members and caregivers.[6] Specialized palliative care focuses on these complex needs and should be considered a fundamental part of managing these patients. However, most of the current literature describing palliative care and COVID-19 has focused on the development of a framework to respond to the pandemic, rather than directly addressing actual patient needs and the impact palliative care may have during this crisis.[11, 12, 13, 14, 15] There are few studies describing the population of COVID-19 inpatients seen by palliative care teams, the demand for services, or how palliative care resources have been able to meet these needs.[16,17]

Drawing from a large series of COVID-positive adults admitted to an inpatient medical service at an academic, quaternary care hospital in New York State, we describe the complexity of patients seen by palliative care teams: demographics, comorbid conditions, severity of illness (e.g., LACE score, C-reactive protein [CRP] and D-dimer, intensive care usage), mortality, and requests for and services provided by the inpatient palliative care consult team.

Methods

Population and Timeframe

A retrospective chart review was conducted of COVID-19 patients seen by the geriatrics and palliative medicine (GAP) consult service at the highest admitting center of the largest health-care system in New York State.[18] The work was approved by the COVID-19 Research Consortium, and the institutional review board judged it to be of minimal risk and exempt from informed consent.

Electronic medical records from March 1st to May 11th, 2020, corresponding to the first surge of the COVID-19 pandemic in this geographic area, were accessed.[19] Patients aged ≥18 years

with a positive nasopharyngeal polymerase chain reaction test for COVID-19, hospitalized, and seen by the GAP team were included. Clinical course and end results were monitored until August 5th, 2020. Electronic medical record from a comparison group of patients seen by the palliative team during the pre-COVID-19 period, September 1st, 2019, to February 29th, 2020, were accessed to compare operational metrics and outcomes (e.g., clinical load, illness severity, and mortality). Data were collected from the enterprise electronic health record (Sunrise Clinical Manager; Allscripts).

GAP Consultation Team

The GAP consult team included 5 fulltime equivalent (FTE) board-certified palliative care specialized M.D.s, 2 FTE nurse practitioners, a dedicated social worker and a chaplain.

Data Elements

Demographic and clinical data included age, gender, race, and medical comorbidities. ZIP code was used as a surrogate marker of underserved population status.[20] Data elements related to palliative care included prior documentation of GOC and advanced care planning (ACP) before index admission, code status, orders for palliative care consultation and follow-up notes, and dedicated palliative care social work/chaplaincy referrals. Illness severity was assessed with the LACE index (calculated with length of stay [LOS] during the index admission, acuity of admission [emergency room vs. elective], Charlson Comorbidity Index, and the number of emergency department visits within the last 6 months).[21] LACE score predicts readmission and mortality within 30 days of discharge, with a score ≥10 increasing the risk of death within 6 months of discharge by 6.8-fold among all ages.[21] Additional laboratory data including CRP and D-dimer levels were collected. CRP values above 4.38 mg/dL were considered a marker of severe disease,[22,23] and a D-dimer level >1000 ng/mL is associated with increased mortality.[24] Owing to difficulty verifying the fidelity of data, no other laboratory values were collected. Orders for mechanical ventilation and pressors were also analyzed. Operational metrics (e.g., volume and timing of service delivery) including LOS, time from admission to palliative consult (order logged; date of first consult note), time from consult to discharge, and mortality were examined.

Analysis

Frequencies were calculated for categorical data, and descriptive statistics (average, standard deviation, median, interquartile range [IQR], range) were used for continuous variables. Outcomes/operational metrics categories were compared between consults seen during the peak of COVID-19 (i.e., April 2020) and six months before COVID-19. Student's t-test or Mann-Whitney U for continuous data and χ^2 or z-ratios for proportions for categorical data were used to compare. Analyses were performed using *jamovi* (version 1.2), a program that works in tandem with R Statistical Software (The jamovi project, 2020).

Results

Overall COVID-19 vs. Palliative Care Consultation Metrics

During the period between March 1st and May 5th, 2138 patients were admitted with a diagnosis of COVID-19. Of these, 435 (20.3%) were admitted to the intensive care unit (ICU). The GAP team was consulted on 376 cases out of the 2138 total admitted (17.6%). Over 76% of these initial consults (n = 288) and 395 follow-up visits were completed during the month of April (peak of COVID-19 in New York State; Figs. 1 and 2).[19] A large number, 184, were seen in the ICU (48.9% of the total number of consults seen by the GAP team). Up to the study's end, median time from admission to consult was 5 days (IQR, 2-12), and from consult to discharge, 5 days (IQR, 2-11). Median LOS was 10.5 (IQR, 7-21) days for patients seen by the GAP team, and overall median ICU LOS was 14 days (IQR, 5.3-22). For comparison, monthly operational metrics and main outcomes for COVID-19 and non–COVID-19 cases seen during this study time frame are presented in Table 1. As noted in the methods, at the end of the study period, LOS, consult-to-discharge, and disposition were not available for 58 patients (40 were still in the ICU). However, their poststudy outcomes are presented in Table 2.

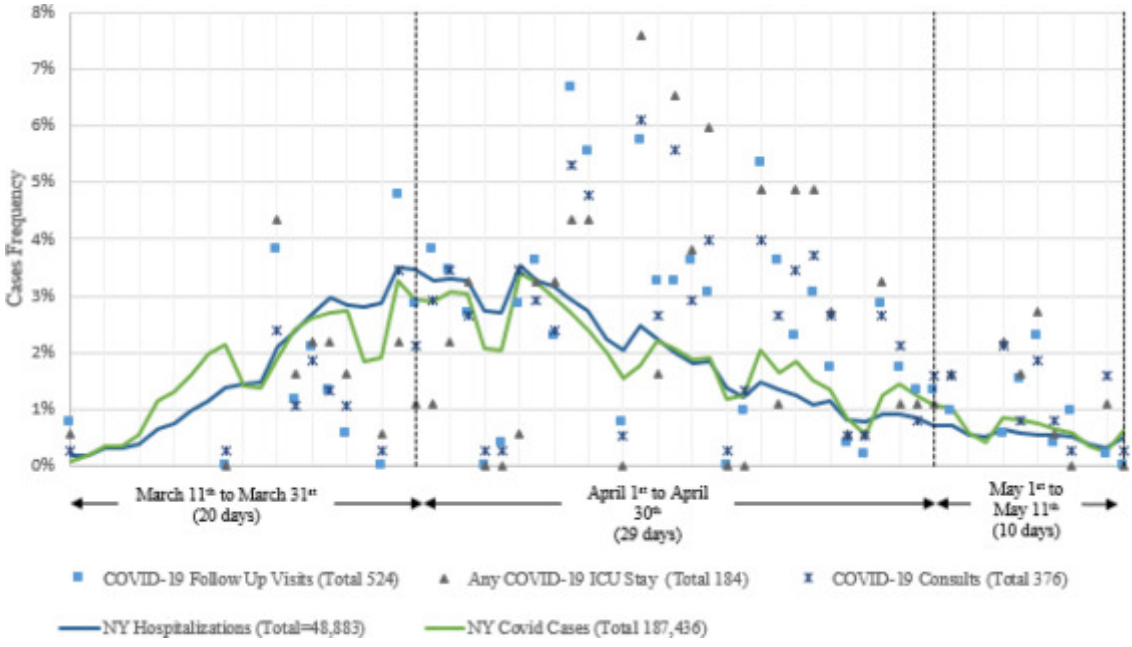

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Fig. 1. Relative frequency of COVID-19 metrics comparing New York State with study site. Relative frequencies were calculated as the ratio between the number of cases per day and the total number of cases during the study period. The month of April represents the highest increase in relative frequencies for COVID-19 new consults, follow-up visits, and ICU admissions which correlates with the highest increase in relative frequencies for COVID-19 cases and hospitalization in New York State. Notice also that when the curve for New York State cases drops, the operational metrics for the study site also decrease.

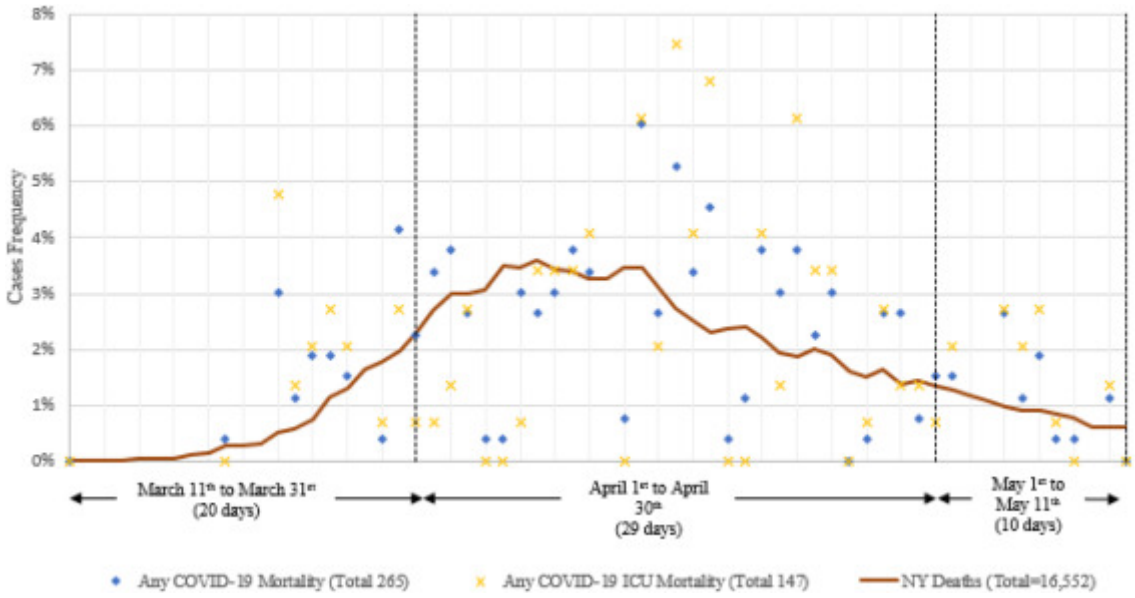

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Fig. 2. Relative frequency of COVID-19 metrics comparing New York State with study site. Relative frequencies were calculated as the ratio between the number of cases per day and the total number of cases during the study period. As also seen in Fig. 1, case frequencies for mortality data reach its peak during the month of April for both New York State and the study site.

Table 1. Operational Metrics/Outcomes for COVID-19 and Non–COVID-19 Cases Seen by the GAP Team (March 1st to May 11th, 2020)[a]

Operational Metrics/Outcomes	March 2020, No. (%)	April 2020,[c] No. (%)	May 1st–May 11th, 2020, No. (%)
No. of consults/mo	187	371	51
No. of COVID-19 consults/mo	53 (28.3)	288 (77.6)	35 (68.6)
No. of follow-up visits/mo	410	506	56
No. of COVID-19 follow-up visits/mo	91 (22.2)	395 (78)	36 (64.3)
Overall admission to consult, median	3	5	5
COVID-19 admission to consult, median	4	5	7.5

Operational Metrics/Outcomes	March 2020, No. (%)	April 2020,[c] No. (%)	May 1st–May 11th, 2020, No. (%)
Overall consult to discharge	5	4	4
COVID-19 consult to discharge	5	5.7	4
Overall LOS[b]	11	12	9
Overall COVID-19 LOS[b]	10	12	10.5
Overall ICU LOS[b]	11	13	16
ICU COVID-19 LOS[b]	10	14	17.5
Any ICU stay	37 (19.8)	136 (36.7)	19 (37.3)
Any COVID-19 ICU stay	30 (16)	136 (36.7)	18 (35.3)
All mortality	102 (54.5)	243 (65.5)	31 (60.7)
Any COVID-19 mortality	44 (23.5)	197 (53)	24 (47)
All ICU mortality	30 (16)	105 (28.3)	18 (35.3)
Any COVID-19 ICU mortality	25 (13.4)	105 (28.3)	17 (33.3)

Abbreviations: COVID-19 = coronavirus disease 2019; GAP = geriatrics and palliative medicine; LOS = length of Stay.

a Up to May 11th, for 58 patients, from which 40 were still in the ICU, outcomes such as consult to discharge, disposition, and LOS were not available because they had not completed their hospital course. However, their outcomes were followed up to August 5th, 2020, and they are presented on Table 2.

b LOS begins with admission time and ends with discharge time, time at death, or midnight on the last day of data collection for the study. It does not include time in the emergency department.

c Peak of COVID-19 in NYC.[19]

Table 2. Outcomes up to August 5th, 2020, for Patients With COVID-19 Seen by the GAP Team that Were Still Hospitalized at the End of the Study Period

Operational Metric/Outcomes	No (%)

Operational Metric/Outcomes	No (%)
No.	58
No. of follow-up visits	44
Consult to discharge average	31
LOS,[a] average	41.9
Any ICU stay	40 (69)
All mortality	22 (37.9)
All ICU mortality	17 (29.3)
Discharge disposition	
Home	7 (12.1)
Rehabilitation center	22 (37.9)
Nursing home	0
Expired	22 (37.9)
Home with hospice[a]	3 (5.2)
Inpatient hospice[b]	1 (1.7)
Other	1 (1.7)
Admitted	2 (3.4)

Abbreviations: COVID-19 = coronavirus disease 2019; GAP = geriatrics and palliative medicine; LOS = length of stay; ICU = intensive care unit.

LOS begins with admission time and ends with discharge time, time of death, or midnight on the last day of data collection for the study. It does not include time in the emergency department.

a

For this study, hospice, refers to an insurance benefit provided in the U.S. for patients believed to have a terminal illness process (with a possible life expectancy of less than 6 months) and where disease-modifying treatments are not possible or looked for by the patient. This benefit provides support services that are delivered by a multidisciplinary team and that focus on improving quality of life. Hospice care is provided wherever a patient resides.

b

Inpatient hospice care refers to services provided by this insurance program, in a specialized facility, for patients having intractable symptoms that otherwise cannot be provided wherever they reside.

Demographics and Outcomes

Demographic and medical characteristics of COVID-19 patients seen by the GAP team are presented in Table 3. Median age was 78 years (IQR, 70-87; range, 36-102), 56% were male, 47.3% were white, 17.8% Hispanic or Latino, and 13% were African American. Most patients were English-speaking; however, up to 10% were Spanish speakers, and over 20% of these patients resided in underserved areas.[23] Median LACE score was 11 (IQR, 9-13), and median D-dimer and CRP at the time of consult were 1832 ng/mL and 12.9 mg/dL, respectively. Mechanical ventilation and pressor support were common among these patients (Table 3).

Table 3. Demographic Characteristics and Illness Severity Markers of Patients Hospitalized With COVID-19 Seen by the GAP Consult Team

Demographic Information	No. (%)
Total no.	376
Age, median (IQR) [range]	78 (70-87) [36-102], y
Sex	
Male	212 (56)
Female	164 (44)
Race[a]	
White	178 (47.3)
Asian	40 (10.6)
African American	49 (13)
Other/multiracial	4 (1.1)
Unknown	105 (27.9)
Ethnicity[a]	
Hispanic or Latino	67 (17.8)
Non-Hispanic or Latino	301 (80.1)
Unknown	8 (2.1)
Language[a]	
English	292 (77.7)
Spanish	38 (10.1)
Other	46 (12.2)
Underserved population[b]	77 (20.5)

Demographic Information	No. (%)
Underserved population race[a,b]	
White	16 (20.8)
Asian	5 (6.5)
African American	24 (31.2)
Unknown	32 (41.5)
Underserved population ethnicity[a,b]	
Hispanic or Latino	24 (31.2)
Non-Hispanic or Latino	50 (64.9)
Unknown	3 (3.9)
LACE, median (IQR)[c]	11 (9–13)
CRP mg/dl, median (IQR)	12.9 (6.2–22.6)
D-dimer ng/ml, median (IQR)	1832 (656.3–3419.3)
Any pressors	191 (50.8)
Mechanical ventilation[d]	196 (52.1)
Discharge disposition[e]	
Home	24 (6.4)
Rehabilitation center	20 (5.3)
Nursing home	0 (0.0)
Expired	243 (64.6)
Home with hospice[f]	8 (2.1)
Inpatient hospice[g]	19 (5.1)
Other	4 (1.1)
Admitted	58 (15.4)

Abbreviations: COVID-19 = coronavirus disease 2019; GAP = geriatrics and palliative medicine; IQR = interquartile range; CRP = C-reactive protein.

a
Race and language data were collected by self-report in prespecified fixed categories.

b
Medically underserved areas/populations are areas or populations designated by Health Resource and Service Administration (HRSA) as having too few primary care providers, high infant mortality,

high poverty, or a high elderly population.[20]

c

LACE index evaluates length of stay (L), acuity of the admission (A), comorbidity of the patient (C) and emergency department use in the duration of 6 months before admission. It predicts short-term and long-term frequent admissions and short-term and medium-term mortality with a score ≥10 increasing the risk of death within 6 months of discharge by 6.8-fold among all ages.[21]

d

Defined as any patient with any other for intubation or mechanical ventilation.

e

Discharge disposition up to May 11th. Follow-up discharge disposition for patients still admitted to the hospital after May 11th are presented on Table 2.

f

For this study, hospice, refers to an insurance benefit provided in the U.S. for patients believed to have a terminal illness process (with a possible life expectancy of less than 6 months) and where disease-modifying treatments are not possible or looked for by the patient. This benefit provides support services that are delivered by a multidisciplinary team and that focus on improving quality of life. Hospice care is provided wherever a patient resides.

g

Inpatient hospice care refers to services provided by this insurance program, in a specialized facility, for patients having intractable symptoms that otherwise cannot be provided wherever they reside.

Overall total and ICU mortality for the COVID-19 population were 448 (21%) and 226 (52%), respectively. The GAP team consulted on 265 (59.2%) of the total number of patients that died from COVID-19; this resulted in the 70.5% mortality rate of all COVID patients seen in palliative consultation. Over half of these cases expired in the ICU. The GAP team consulted on 147 (65%) of the 226 ICU mortalities. Most of these deaths, 86.4%, occurred in patients aged ≥65 years (IQR, 69-86; range, 37-102); 68% were male. One hundred twenty-two (46%) of these patients were identified as white, 51 (19.2%) as Hispanic or Latino, and 32 (12.1%) as African Americans. Finally, there were 59 (22.2%) patients that died and were both part of minorities and underserved areas (Table 4).

Table 4. Mortality of Patients Hospitalized With COVID-19 Seen by the GAP Consult Team up to Last Date of Follow-up (August 8th, 2020)

Number Survivors and Nonsurvivor	**No. (%)**
Total	376

Number Survivors and Nonsurvivor	No. (%)
All mortality	265 (70.5)
Age mortality, median (IQR) [range]	77 (69-86) [37-102]
ICU mortality	147 (55.3)
Race[a] mortality	
White	122 (46)
Asian	28 (10.6)
African American	32 (12.1)
Other/multiracial	2 (0.8)
Unknown/secline	81 (30.6)
Ethnicity[a] mortality	
Hispanic or Latino	51 (19.2)
Non-Hispanic or Latino	208 (78.5)
Unknown	6 (2.3)
Language[a] mortality	
English	202 (76.2)
Spanish	29 (11)
Other	34 (12.9)
Underserved[b] population mortality	
White	12 (4.5)
African American	14 (5.3)
Hispanic/Latino	20 (7.5)
Other/unknown	25 (9.4)

Abbreviations: COVID-19 = coronavirus disease 2019; GAP = geriatrics and palliative medicine; IQR = interquartile range; ICU = intensive care unit.

a Race, ethnicity, and language data were collected by self-report in prespecified fixed categories.

b Medically underserved areas/populations are areas or populations designated by Health Resource and Service Administration (HRSA) as having too few primary care providers, high infant mortality, high poverty, or a high elderly population.[20]

Reasons for Palliative Care Consultation

Seventy-five percent of consults seen by the GAP team were for GOC or ACP, 9.6% for symptoms, and 15.2% for both. Only 27 (7.1%) of these patients had a previously documented advanced directive. During the index admission, 69.7% became do not resuscitate.

Palliative Care Services Rendered

Of the referred patients, 14% were seen by the palliative care social worker, and 7.7% by the GAP team dedicated chaplain. Specialized palliative care social work services were active in assessing social needs, rapport building, providing active listening and emotional support, referring for resources (e.g., bereavement, home health aide hiring), and facilitating audiovisual communication between patients and families (which was limited because of COVID-19 inpatient visitation guidelines). Chaplaincy referrals were predominantly virtual, using audiovisual platforms to provide emotional, existential, and spiritual support for patients and families.

Pre-COVID vs. COVID-19 Operational Metrics

During the pre-COVID pandemic period, the GAP team saw a median of 205 (IQR, 197-215) new consults and completed a median of 2 (IQR, 0-4) follow-up visits per patient. Median time to consult and consult-to-discharge were 4 and 7 days, respectively. Median LOS was 12 days, and overall consultation mortality was 38.3%. The median number of consults in the ICU was 19.5 (9.5%). The typical patient seen by the GAP team was aged >65 years (77.2% of all consults), and about 40.9% were of racial/ethnic minorities.

Operational metrics compared between the two time periods (six months before COVID-19 and during COVID-19 [i.e., April 2020]) show a significant increase in volume of new consults (204.2 vs. 371, $P < 0.001$), any ICU stay (9.5% vs. 36.9%, $P < 0.001$), overall mortality (38.3% vs. 70.4%, $P < 0.001$), and ICU mortality (55.2% vs. 78.1%, $P < 0.001$). Compared with the pre-COVID-19 time period, the April 2020 patients had lower LACE scores (13.8 vs. 11, $P < 0.001$), experienced longer interval from admission to consultation (6.7 vs. 8.1, $P = .04$), and a shorter interval from consultation to discharge (10.8 vs. 7.2, $P < 0.001$); number of follow-up visits was significantly lower during the pandemic (3 vs. 1.4, $P < 0.001$).

Table 5 highlights the differences between the pre–COVID-19 period and the height of the pandemic. Of note, during this entire time, the number of FTEs and ancillary providers that comprised the GAP team remained the same.

Table 5. Comparison of Operational Metrics for Pre-COVID-19 and COVID-19[b] Time Period

Operational Metric/Outcomes	Pre–COVID-19	COVID-19 (April)[e]	*P* value

Operational Metric/Outcomes	Pre-COVID-19			COVID-19 (April)[b]			*P* value
	Median (IQR)	Mean	SD	Median (IQR)	Mean	SD	
	Median (IQR)	**Mean**	**SD**	**Median (IQR)**	**Mean**	**SD**	
Number of new consults[a]	205 (197–215)	204.2	14.9	—	371	—	<0.001
LACE[c]	14 (12–16)	13.8	3	11 (9–13)	11	2.9	<0.001
Time from admission to consult (days)	4 (1–8)	6.7	11.9	5 (2–13)	8.1	9.7	0.04
Consult to discharge	7 (3–13)	10.8	13.3	4 (2–10)	7.2	7.9	<0.001
Median number of follow-ups per patient	2 (0–4)	3	4.4	1 (0–2)	1.4	1.8	<0.001
Total LOS[d]	12 (7–22)	17.6	20.5	12 (6–20)	15.3	13.6	0.08
ICU LOS	8 (3–22)	15.2	17.2	13 (5–20)	14.6	11.5	0.21
		No.	%		No.	%	
Any ICU stay							<0.001
No		1109	90.5		234	63.1	
Yes	19.5 (17.5–21.5)	116	9.5		137	36.9	
In-hospital mortality							<0.001
Expired		469	38.3		261	70.4	
Survived		756	61.7		110	29.6	
ICU mortality							<0.001
Expired		64	55.2		107	78.1	
Survived		52	44.8		30	21.9	

Abbreviations: COVID-19 = coronavirus disease 2019; IQR = interquartile range; SD = standard deviation; LOS = length of stay; ICU = intensive care unit.

P values calculated using independent samples *t*-test or Mann-Whitney U for continuous data and χ^2 or z-ratio for proportions for categorical data.

a

P value for new consult computed using single-sample t-test with COVID-19 consults inputted as the hypothetical population mean.

b

Up to May 11th, for 58 patients, from which 40 were still in the ICU, outcomes such as consult to discharge, disposition, and LOS were not available because they had not completed their hospital course. However, their outcomes were followed up to August 5th, 2020, and they are presented on Table 2.

c

LACE index evaluates length of stay (L), acuity of the admission (A), comorbidity of the patient (C) and emergency department use in the duration of 6 months before admission. It predicts short-term and long-term frequent admissions and short-term and medium-term mortality with a score ≥10 increasing the risk of death within 6 months of discharge by 6.8-fold among all ages.[21]

d

LOS begins with admission time and ends with discharge time, time at death, or midnight on the last day of data collection for the study. It does not include time in the emergency department.

e

Peak of COVID-19 in NYC.[19]

Discussion

In this study, we report one of the largest series of COVID-19 patients seen by an inpatient palliative care consultation team. Overall, patients were older than 70 years, had severe disease (indicated by high LACE scores, CRP and D-dimer, ICU admission, and orders for mechanical ventilation or pressors), and high mortality. Our experience is similar to smaller studies, with the GAP team caring mainly for those vulnerable and critically ill patients affected by COVID-19. Two small case series have provided a rudimentary description of COVID-19 patients seen by palliative specialists, the interventions provided, and the therapeutic benefits resulting from specialized palliative care.[16,17] Our large case series allows for a more granular analysis of this population and provides a picture of the additional resource demands these patients may create on palliative care consulting teams. At time of writing, few (if any) other studies have emerged describing these elements.

According to the United States Census Bureau, as of July 2019, 69.6%, 19.3%, 17.6%, and 9% of the population in New York State were white, Hispanic or Latino, African American, and Asian, respectively.[25] These data were comparable with the population seen in our study (Table 3). Minority patients had similar demands for inpatient palliative care services as their Caucasian counterparts during the pandemic (178 [47.3] vs. 198 [52.7], $P < 0.30$). However, this represented a significant increase when compared with the pre-COVID time frame (40.9 vs. 52.7%, $P < 0.001$). Patients coming from underserved areas represented 20.5% of the COVID-19 patients seen by the GAP team, and 68.9% were minorities (Table 3). These underserved minority patients accounted for a disproportionate burden of all mortality when compared with other groups (22.2% vs. 4.5%, $P < 0.001$). This surge in demand for palliative care services warrants further study to determine what needs are/are not being met for these

minority/underserved groups and identifying the best resources to improve care for these patients.[26,27]

Among interdisciplinary team members, palliative care social workers play an important role in addressing psychosocial aspects of critical illness.[28] However, data from 2012 to 2016 show that many palliative care teams lack social workers, with availability of this fundamental aspect of care varying from 58% to 69%, respectively.[29,30] In this study, the dedicated GAP social worker was involved on 14% of palliative consultations for hospitalized COVID-19 patients. Utilization of these services may have been impacted by staffing, demand for services by non–COVID-19 patients, and personal time off to prevent burnout. The main interventions provided by the GAP team social worker were described in our methods, but further research is needed to fully appreciate the duration, frequency, and therapeutic benefit of these interventions. In the setting of a pandemic, palliative care social workers should be available to support palliative care teams and the patients they see.

In our academic medical center, there was a greater demand for specialized palliative care for COVID-19 patients requiring ICU level of care. During the time frame of this study, 42.3% of the total hospital COVID-19 ICU patients were seen in consultation by the GAP team. At the same time, the GAP team provided consultation on 65% (147) of all COVID-19 ICU-related mortalities. These data suggest the need for creating educational strategies and partnerships between ICU and palliative care teams. As most consultations in the ICU were for GOC or ACP, strategies to improve ICU provider's skills in these discussions should be developed and tested. Having the “The Family Meeting as Therapeutic Intervention” is probably the key for developing strategies to support collaborative efforts among these teams.[31]

Our experience reveals a significant increase in demand for specialized palliative care services during a time of public health crisis compared with usual consult volumes (Table 5). In the month of April, the GAP team faced an 81% increase in the number of new consults, up to 83.8% increase in overall mortality, and 41.5% ICU mortality among their caseload seen in consultation. There was a 50% decrease in number of follow-up visits, which may have been the result of increased consultation demand, limited manpower, and the high mortality of the population seen. The increase in consult requests was mainly driven by a need for GOC and ACP discussions. These conversations are not an easy task and are often time-consuming and emotionally draining.[32,33] Inpatient palliative care teams faced challenging times while helping with decision-making and providing support for critically ill patients diagnosed with COVID-19 and their families. These challenges were magnified by restrictions on family visitation and the need to communicate remotely. Further studies may provide insight regarding the content, timing, and quality of such discussion. Furthermore, more research is needed to understand the burnout and/or compassion fatigue these high demands of GOC and ACP discussions may create on palliative care consult teams.

Our existing palliative care team was able to handle the bulk of the increased demand for a limited period. However, in the long run, such a small number of skilled providers is unlikely to be able to meet continuing demands at this level. Creating sustainable staffing models is

fundamental to providing effective care in these situations. Hiring per-diem providers and identifying and educating champions among other disciplines and learners are among the strategies that may improve sustainability for palliative care inpatient teams while responding to a pandemic crisis. Increasing technological resources (e.g., telehealth) and expanding billing models to finance non-face-to-face GOC and ACP encounters may also enhance the viability of inpatient palliative care teams.

Finally, as GOC and ACP were the main reasons for consultation, palliative care teams might in the future be better supported by promoting ACP in the outpatient and community settings. Our study showed that only 27 (7.1%) of these patients had a previously documented advanced directive. In the outpatient or home settings, for patients at risk for poor outcomes - those older than 70 years, and/or with comorbid conditions (mainly cardiovascular disease, diabetes, chronic respiratory illness, hypertension, and cancer) - a more proactive approach towards GOC and ACP should be taken. As an alternative, pre-emptively encouraging these patient to have discussions with their loved ones about having a definitive "cut-off … below which percentage of chance of survival should doctors stop using machines and infinite resources to keep you alive?"[34], instead of when they are already facing challenging – potentially fatal – COVID-19 related complications, may better direct both inpatient providers and hospital resources. Furthermore, for this at-risk population, completing specific forms such as a Health Care Proxy, Medical Orders for Life Sustaining Treatments, or a living will should be considered. Again, education and expanded billing models are needed to achieve better ACP before hospital admission. This will also facilitate inpatient GOC discussions, decision-making for health-care proxies or surrogates, and optimize the viability of inpatient palliative care teams.

Limitations

This study has several limitations. First, the study population only included patients within the New York metropolitan area and, although representative of the diverse communities of the New York City's 5 boroughs and Long Island, may not be generalizable. Second, subgroup descriptive statistics were unadjusted for potential confounders. Finally, our study is a retrospective study; therefore, it is difficult to determine causal effects for the outcomes described.

Conclusion

The peak of COVID-19 in New York State is a perfect example of how a rapid increase in the number of patients with acute, critical illness impacts not only the need for hospital beds, ICU services, and devices but also for palliative care services. Our study describes the surge and unsustainable demand for specialized palliative care resources created by hospitalized patients with COVID-19, the social disparities among this population, and the need for better allocation of resources and support services for the multidisciplinary team of palliative care providers at the front line of this and future pandemics.

Disclosures and Acknowledgment

For this article, from the initial conception and planning to the present, the authors did not receive any financial support from any third parties to support the work.

The authors are supported by the Department of Medicine, Division of Geriatrics and Palliative Medicine at Zucker School of Medicine at Hofstra Northwell; the Center for Health Innovations and Outcomes Research; and NIA, United States grant R21 NR018500, NIA, United States R21 AG061307 and NIA, United States UH3 AG060626. These funding organizations and sources played no role in the design and conduct of the study; no role in the collection, management, analysis, and interpretation of the data; and no role in preparation, review, or approval of the article and decision to submit the manuscript for publication.

The authors would like to thank Sebastian Lopez, M.Sc., and Marta Carnelli, M.Sc., for their help with graphics; Christopher J. Magalee, AS for editing; and Zachary Klein, M.A., and Thomas A. Fasano, M.S. for providing pre–COVID-19 data.

Data Accessibility

All data collected for this research are available through the COVID-19 research consortium data base as well as through the palliative care dashboard created by the Krasnoff Quality Management Institute (KQMI).

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