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Place of Death and End-of-Life Care Utilization among COVID-19 Decedents in a Massachusetts Health Care System

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Dear Editor:

In the United States, coronavirus disease 2019 (COVID-19) deaths have surpassed 240,000. The risk and burden of delivering end-of-life care for patients with COVID-19 may prohibit patients from dying at home. Recent data suggest that most patients with COVID-19 die in the hospital.[1] However, less is known about care intensity at the end-of-life according to place of death among patients who died of COVID-19. Therefore, we characterized end-of-life care by place of death among COVID-19 decedents at Mass General Brigham (MGB), the largest health system in Massachusetts.

Table 1. Characteristics of Coronavirus Disease 2019 Decedents by Place of Death

	All patients (n = *359*)	*Died in hospital* (n = *343*)	*Died outside hospital*[a] (n = *16*)
Age, median (IQR), years	78.1 (68.9–88.0)	77.8 (68.0–87.4)	91.2 (81.2–96.8)
Male	206 (57.4)	197 (57.4)	9 (56.3)
Race			
White	224 (62.4)	209 (60.9)	15 (93.8)
Black	50 (13.9)	50 (14.6)	0 (0)
Latin or Hispanic	53 (14.8)	53 (15.5)	0 (0)
Asian	9 (2.5)	9 (2.6)	0 (0)
Other	7 (2.0)	6 (1.8)	1 (6.3)
Unavailable	16 (4.5)	16 (4.7)	0 (0)
Hospital length of stay, median (IQR), days	8 (4–15)[b]	9 (4–15)	4 (3–7)[b]
ICU admission	210 (59.5)	207 (60.4)	3 (30.0)
Mechanical ventilation or ECMO	151 (42.1)	151 (44.0)	0 (0)
Time on mechanical ventilation or ECMO, median (IQR), days	10 (5–18)	10 (5–18)	0 (0)
ICU length of stay, median (IQR), days	7.3 (1.8–14)	7.4 (1.8–14)	3.6 (2–8.9)
Palliative care or hospice consult	219 (61.0)	211 (61.5)	8 (50.0)
Time to initial consult, median (IQR), days	3 (1–7)[c,d]	3 (1–7)[c]	1.5 (0–3)[d]
CPR performed	19 (5.3)	19 (5.5)	0 (0)[e]
Code status concordant	10 (2.8)	10 (2.9)	0 (0)
Code status discordant	1 (0.3)	1 (0.3)	0 (0)
Unable to determine concordance	8 (2.2)	8 (2.3)	0 (0)

[a]Six patients were not hospitalized.
[b]Six patients who were not hospitalized were excluded from this analysis.
[c]Unable to calculate time to initial consult for six patients who were transferred to MGB from outside hospital.
[d]Unable to calculate time to initial consult for six patients who had outpatient hospice referrals.
[e]Unable to determine if CPR occurred among 12 patients due to incomplete documentation.
CPR, cardiopulmonary resuscitation; ECMO, extracorporeal membrane oxygenation; ICU, intensive care unit; IQR, interquartile range; MGB, Mass General Brigham.

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We performed a retrospective cohort study of adults (≥18 years old) at MGB who died with a diagnosis of COVID-19 between February 18, 2020 and May 18, 2020. We used Epic Reporting Workbench to identify COVID-19 positive decedents and to extract patient sociodemographics and length of stay. Two reviewers (I.S.C. and S.M.S.) conducted manual chart reviews to determine place of death and other clinical characteristics. We report numbers (percentages) for categorical variables and medians (interquartile ranges [IQRs]) for continuous variables. The MGB institutional review board exempted this study from review.

Among 3393 patients diagnosed with COVID-19 across inpatient and outpatient settings, we identified 361 decedents, excluding 2 due to missing place of death. Of 359 deaths (in-hospital 343 [95.5%]; out-of-hospital 16 [4.5%]), 145 (40.4%) died in the intensive care unit (ICU), 119 (33.1%) died in the general ward, 64 (17.8%) died in an inpatient palliative care unit, 13 (3.6%) died in the emergency room, 9 (2.5%) died in a short-term rehab or long-term care facility, and 6 (1.7%) died at home or in assisted living.

Median age was 78.1 (IQR 19.1) and 224 (62.4%) were non-Hispanic white (Table 1). Two hundred nineteen (61%) patients received a hospice or palliative care consultation, and 19 (5.3%) received cardiopulmonary resuscitation (CPR). Among hospitalized patients, median length of stay was 8 (IQR 11) (in-hospital 9 [IQR 11]; out-of-hospital 4 [IQR 4]), and 151 (42.1%) in-hospital decedents vs. 0 (0%) out-of-hospital decedents were intubated.

The vast majority of COVID-19 deaths occurred in-hospital, specifically in the ICU. Compared with 5.2% of patients who died at home nationally,[1] 4.5% of patients in our study died outside the hospital. However, few inpatient decedents received CPR and most received palliative care, likely demonstrating heightened awareness of CPR's ineffectiveness for dying COVID-19 patients[2,3] and institutional efforts to disseminate palliative care best practices.[4,5] Hospitalized patients who died outside the hospital had short lengths of stay and were not intubated, reflecting the small window of opportunity before clinical deterioration precluded hospital discharge.

Our study has several limitations. First, our cohort reflects a single health care system, limiting generalizability. Second, our out-of-hospital sample size was small, limiting out-of-hospital conclusions. Finally, these data represent an early time point in the pandemic, thus care of COVID-19 patients may have changed as the pandemic's characteristics changed. Nevertheless, our study highlights how hospitals served as the primary setting for end-of-life care and palliative care delivery among COVID-19 decedents in the early stages of the pandemic.

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