

Canadian Prospective Cohort of 1-year outcomes in critically ill patients with COVID-19 and their family caregivers

Preliminary Report on Causes of Death in the ICU cohort



INTRODUCTION

COVID-19 is a multisystem disease with high mortality in those who are critically ill. A detailed evaluation of the cause of death and process of end of life care are not well described.

OBJECTIVES

- To create a granular dataset of Canadian COVID-19 patients and family caregivers through multidimensional follow-up to 5-years
- To describe timing and detailed cause of death in critically ill COVID-19 patients.

Hypothesis: For critically ill COVID-19 non-survivors, we hypothesize that age, level of life support and duration of stay in the ICU will determine cause of death.

METHOD

- Inclusion criteria: patients aged 16 and older with documented COVID-19 disease and family caregivers
- Exclusion criteria: if moribund or unable to participate in follow-up.
- Total enrollment was 2166: ICU patients 388/caregivers 78.
- Standardized in-person/virtual/phone follow-up was performed at 7 days and 1,3,6,9,12 months after ICU discharge.



RESULTS

Table 1. Baseline characteristics of the ICU cohort Median [IQR].

	Baseline Characteristics
N	305
Age	52 [45,61]
M (n, %)	169, 67%
APACHE II	14[10-17]
LIS on admission	3 [3-4]
MODS on admission	10[7-11]
ICU LOS (days)	16[8-36]

Table 3. Baseline characteristics of ICU Non Survivors by Cause of Death Median [IQR]

	Intractable Hypoxemia	Multiple Organ Dysfunction	Refractory Shock	Withdrawal of life sustaining treatment
n	9	6	22	24
APACHE II	15 [14, 18]	15 [14, 17]	14 [10, 17]	16 [11, 22]
MODS	11 [7, 12]	11 [11, 11]	10 [8, 12]	11 [10, 12]
RRT (%)	2 (22)	3 (50)	15 (68)	8 (33)
Deep coma (days)	17 [16, 17]	17[9, 22]	15 [12, 26]	18 [8, 25]
MV Days	12 [8, 17]	X [X, X]	15 [10, 23]	24 [18, 31]
ICU LOS (days)	21 [18, 26]	18 [10, 40]	16 [12, 30]	29 [17, 39]

Table 4. Median time to ICU Death for ICU Non Survivors by Cause of Death Median [IQR]

	ECMO	Mechanical ventilation
Intractable Hypoxemia	39 [29, 50]	17 [17, 21]
Multiple Organ Dysfunction	18 [7, 47]	18 [18, 18]
Refractory Shock	16 [13, 23]	12 [7, 36]
Withdrawal of life sustaining treatment	29 [16, 44]	22 [15, 33]
Other	43[36, 52]	36 [20, 51]

Table 2. Causes of ICU Death n (%)

Causes of death	n, %
Intractable hypoxemia n, %	9(11%)
Multiple organ dysfunction	6 (7.7%)
Refractory shock	22 (28.2%)
WLST	24 (30.8%)
Other	17(22%)

CONCLUSION

In this preliminary descriptive sample of COVID ICU non-survivors we found the following:

- Mortality was high and the largest proportion of deaths occurred during week 3 of ICU
- The most prevalent causes of death were WLST and refractory shock.
- The highest proportion of RRT was in the refractory shock group.
- The WLST group had the longest ICU LOS and this may warrant further discussion about timing of goals of care conversation

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ACKNOWLEDGEMENTS

Supported by CIHR, Canadian Frailty Network, COVID-19 Immunity Task Force, University of Toronto

REFERENCES

Lorusso R, De Piero ME, Mariani S, et al. In-hospital and 6-month outcomes in patients with COVID-19 supported with extracorporeal membrane oxygenation (EuroECMO-COVID): a multicentre, prospective observational study. *Lancet Respir Med* 2023;11:151-62.

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