

Frailty, age and outcomes of hospitalized adults differ across waves of the COVID-19 pandemic; a report from the CIRN SOS Network

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Introduction

The CIRN Serious Outcomes Surveillance Network was established in 2009 to support Canada's pandemic preparedness, conducting active surveillance for influenza and now COVID-19.

Focus on burden of disease, outcomes, and Vaccine Effectiveness (VE). Particular interest in measures relevant to older adults.

Frailty is a holistic measure of health status which influences risk, disease expression, and outcomes of illnesses including COVID-19.

Objective

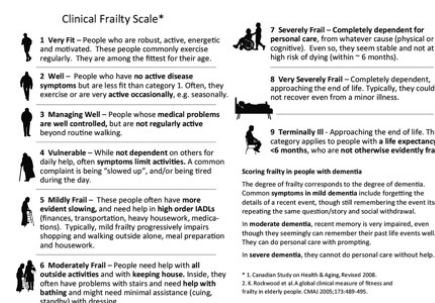
Here we report characteristics, including frailty, and outcomes of adults admitted to Canadian Immunization Research Network (CIRN) Serious Outcomes Surveillance (SOS) Network hospitals with COVID-19 during pandemic waves 1-5.

Methods

Active surveillance for COVID-19 illness in adults (≥ 16 years of age) was conducted starting in March 2020; enrollments prior to February 28, 2022 are reported here. NP swab obtained for PCR testing from all patients with an admitting diagnosis of COVID-19, CAP, exacerbation of COPD/asthma, unexplained sepsis, any respiratory diagnosis or symptom.

Clinical and demographic measures included comorbidities, medications, frailty (Clinical Frailty Scale), and outcomes.

Descriptive analyses stratified by wave and site.



Results

Figure 1. Epi curve by province.

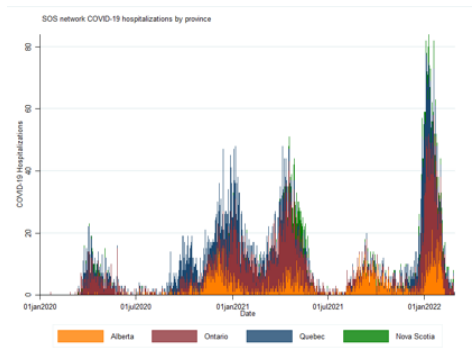
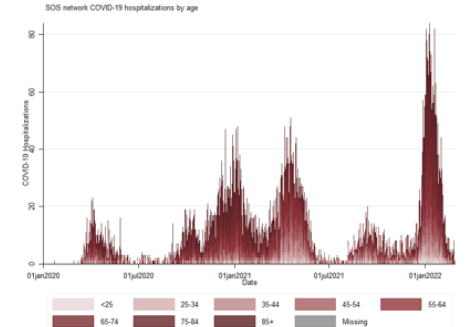


Figure 2. Epi curve by age.



W1: March 1 - August 31/2020
W2: Sept 1, 2020 - Feb 28, 2021
W3: Mar 1, 2021 - Aug 31, 2021
W4: Sept 1, 2021 - Nov 31, 2021
W5: Dec 1, 2021 - Feb 28, 2022

Table 1. Clinical characteristics of COVID-19 cases by wave. Missing values excluded in descriptive analyses.

All admitted patients with laboratory-confirmed COVID-19						
	Wave 1 N = 731	Wave 2 N = 2922	Wave 3 N = 2453	Wave 4 N = 694	Wave 5 N = 2796	Total N = 9587
Age	68.8	71.4	59.7	59.9	68.8	66.6
Mean (95% CI)	(67.6-70.1)	(70.8-72.0)	(59.0-60.4)	(58.6-61.3)	(68.1-69.5)	(66.3-67.0)
% Over 65	61.1%	69.2%	42.5%	43.2%	66.6%	57.9%
Frailty Scale	4.2	4.4	3.7	3.9	4.5	4.2
Mean (95% CI)	(4.1-4.3)	(4.4-4.5)	(3.6-3.8)	(3.7-4.1)	(4.4-4.6)	(4.2-4.3)
Length of Stay (days) Mean	21.8	19.8	17.4	16.5	10.7	17.0
	(18.6-24.9)	(18.5-21.0)	(16.4-18.4)	(13.8-19.3)	(6.3-15.0)	(15.8-18.3)
Among Patients who Died						
Age	80.5	80.2	71.9	72.8	78.0	77.9
Mean (95% CI)	(78.6-82.4)	(79.2-81.1)	(70.4-73.5)	(68.2-77.5)	(76.6-79.4)	(77.2- 78.6)
Frailty Scale	5.6	5.4	4.7	5.0	5.3	5.3
Mean (95% CI)	(5.3-5.9)	(5.3-5.5)	(4.5-4.9)	(4.5-5.5)	(5.2-5.5)	(5.2-5.4)
Length of Stay (days) Mean	23.6	16.3	20.5	16.9	13.2	17.1
	(14.8-32.5)	(14.7-17.8)	(18.0-23.0)	(7.6-26.1)	(10.2-16.1)	(15.7-18.6)

Among 9587 patients, mean age by wave was W1:68.8(95%CI:67.6-70.1), W2:71.4(70.8-72.0), W3:59.7(59.0-60.4), W4:59.9(58.6-61.3), and W5:66.8(68.1-69.5).

The full spectrum of frailty was represented in both younger and older age groups. Frailty was highest in W2 and W5, and lowest in W3 and W4. Mortality was higher in W1 (20.8%) and W2 (23.1%) compared with W3 (12.0%), W4 (6.3%), and W5 (12.6%).

Patients who died were older and frailer than the mean in each wave, though in W3-4 the mean CFS of those who died (4.7 and 5.0) was \leq mildly frail.

Conclusions

Frailty and age of patients admitted with COVID-19 to Canadian hospitals decreased in W3 and W4, and outcomes varied across waves. Multiple potential factors: vaccination program targeting, higher vaccine uptake in older age groups and those with multiple medical conditions, introduction of therapeutics, and emergence of Variants of Concern associated with severe illness in younger, less frail, individuals. Frailty is a critical clinical factor in predicting outcomes of COVID-19, which should be considered in research and clinical settings.



COVID-19 IMMUNITY TASK FORCE

GRUPE DE TRAVAIL SUR L'IMMUNITÉ FACE À LA COVID-19

Reference

Andrew MK et al. Older age and frailty are associated with higher mortality but lower ICU admission with COVID-19. Can Geriatr J 2022;25(2):183



Global Influenza Hospital Surveillance Network



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