When treat and release fails:

characteristics and outcomes of COVID-19 patients who return to the emergency department after discharge.

An observational study by the

Canadian COVID-19 Emergency Department Rapid Response Network (CCEDRRN)

March 9, 2023

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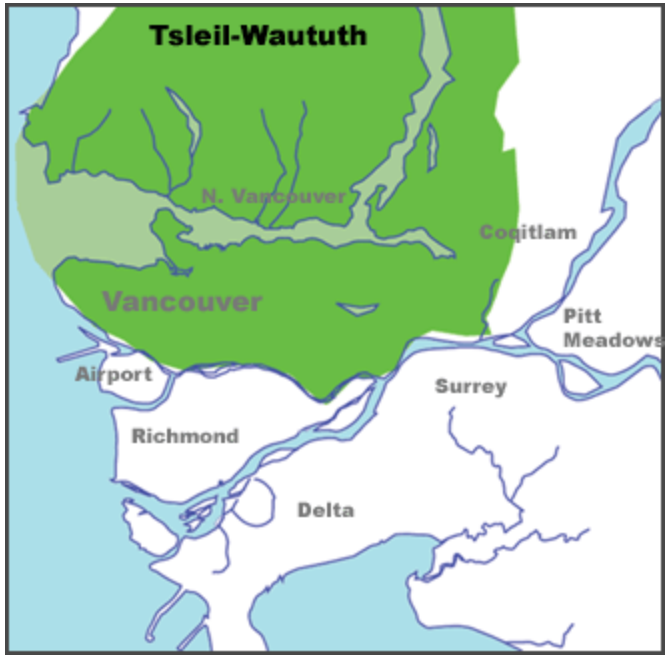
Land Acknowledgement

- We would like to acknowledge that we are gathered today on the traditional territories of the Musqueam, Squamish and Tsleil-Waututh peoples.



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Disclosure

- Operating funds from non-profit organizations or foundations.
- No financial conflicts of interest.

BC AHSN British Columbia Academic Health Science Network

SHRF Saskatchewan Health Research Foundation

Ontario Ministry of Training, Colleges and Universities

Genome British Columbia

Fondation CHU de Québec

Public Health Agency of Canada

CIHR IRSC Canadian Institutes of Health Research / Instituts de recherche en santé du Canada

COVID-19 Immunity Task Force / Groupe de travail sur l'immunité face à la COVID-19

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Objectives

Main:

To describe and compare the characteristics and outcomes of patients with COVID-19 who have unscheduled ED return visits related to COVID-19.

Secondary:

- 72 hour ED return visits related to COVID-19.
- To identify risk factors associated with having multiple COVID-19-related ED visits.

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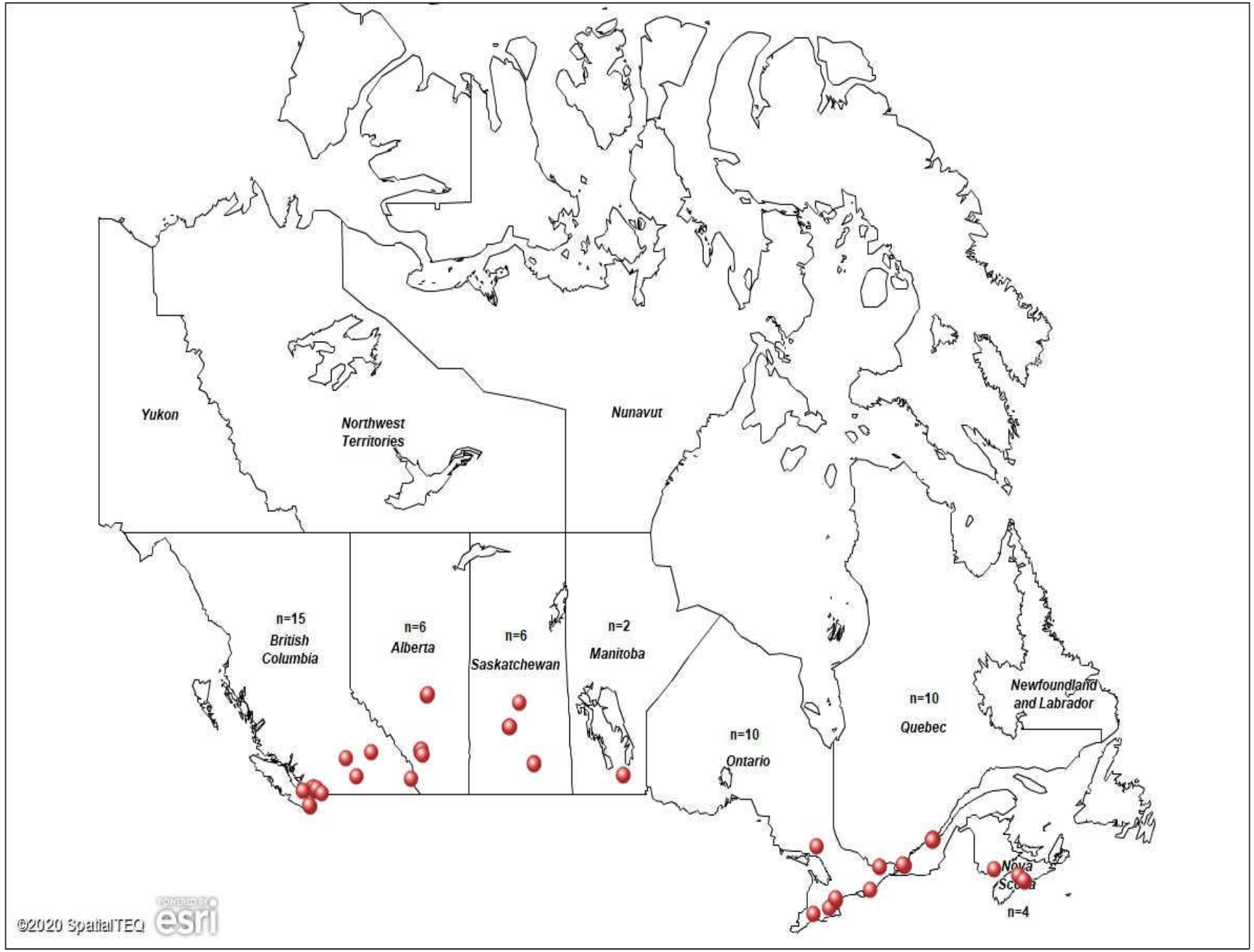
Methods

- **Design:** Retrospective cohort study study enrolling patients presenting to 47 EDs in 7 provinces from March 1, 2020 to March 31, 2022.
- **Ethics:** Waiver for informed consent for enrolment enabling capture of a complete sample.
- **Population:** Consecutive eligible patients with COVID-19
- **Data collection:** Retrospective chart review. COVID-19-related ED visits within 30 days are used to group patients.
- **Analysis:** Summary statistics and multivariable logistic regression.
- **Patient engagement:** Patient partners from across Canada reviewed and provided input into the protocol.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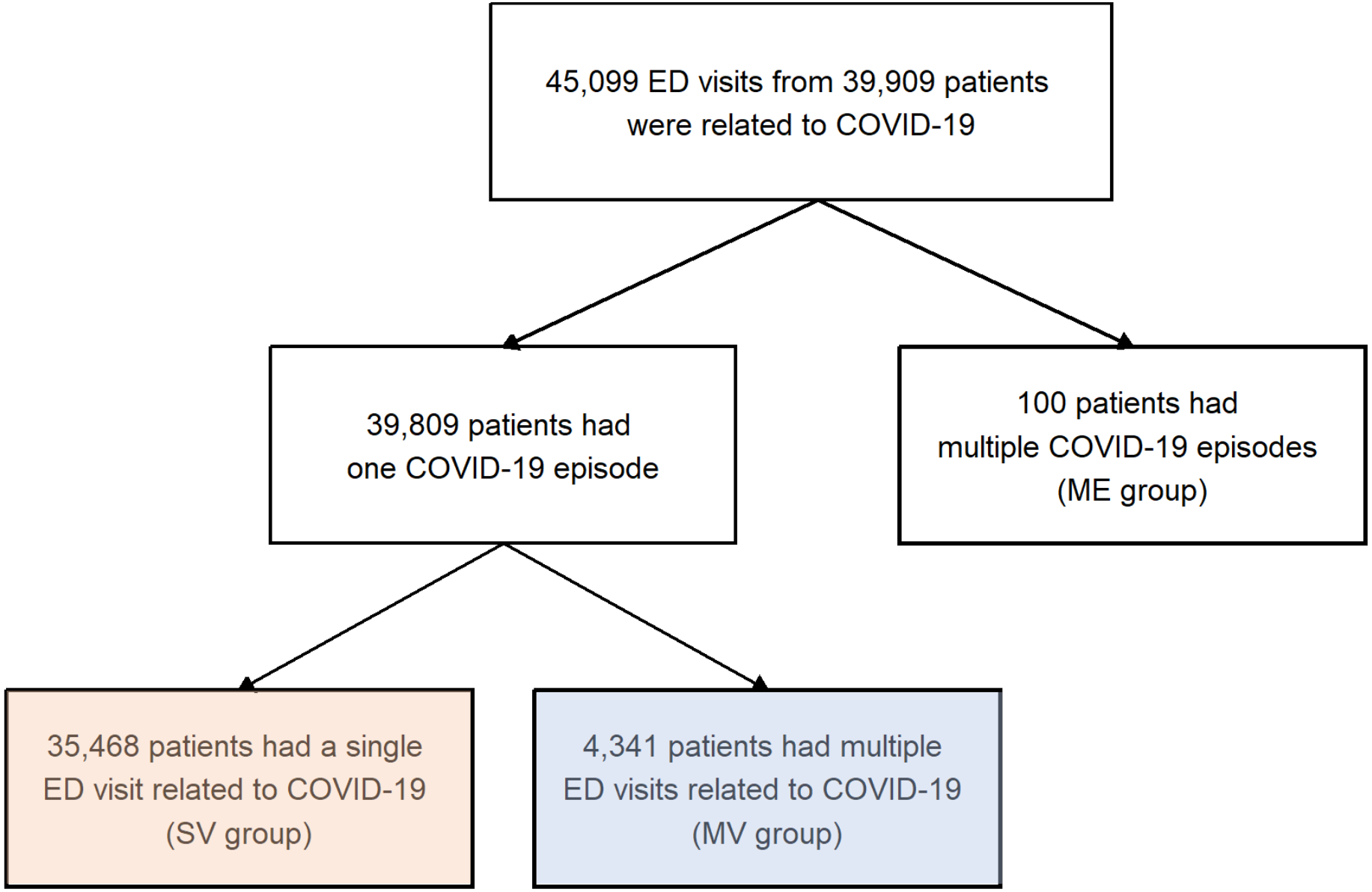

Focus of this presentation

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Characteristics at First Visit by Group

Characteristics	Single Visit (SV) (n=35,468)	Multiple Visit (MV) (n=4,341)
Age in years, median (SD)	53 (21)	53 (19)
Female	48.8%	46.3%
Pregnant	3.3%	4.4%
Top Comorbidities		
Hypertension	27.6%	26.4%
Diabetes	15.1%	15.1%
Dyslipidemia	14.5%	13.3%
Mental health diagnosis	11.0%	12.2%
Asthma	6.9%	8.8%
WHO Severe Disease at ED Arrival	30.3%	25.4%

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Characteristics at First Visit by Group

Characteristics	Single Visit (SV) (n=35,468)	Multiple Visit (MV) (n=4,341)
Vaccination Status: Boosted/Full	1.3%	1.8%
Partially	1.2%	1.3%
Unvaccinated	63.0%	65.9%
Unknown	34.5%	32.0%
Mode of Arrival: Ambulance	42.6%	37.7%
Hospital Intubation	4.2%	0.3%
ED Disposition: Admitted	39.6%	16.0%
Discharged	57.3%	79.7%
Left without completion of care	0.3%	0.8%
Died in ED	0.2%	0%

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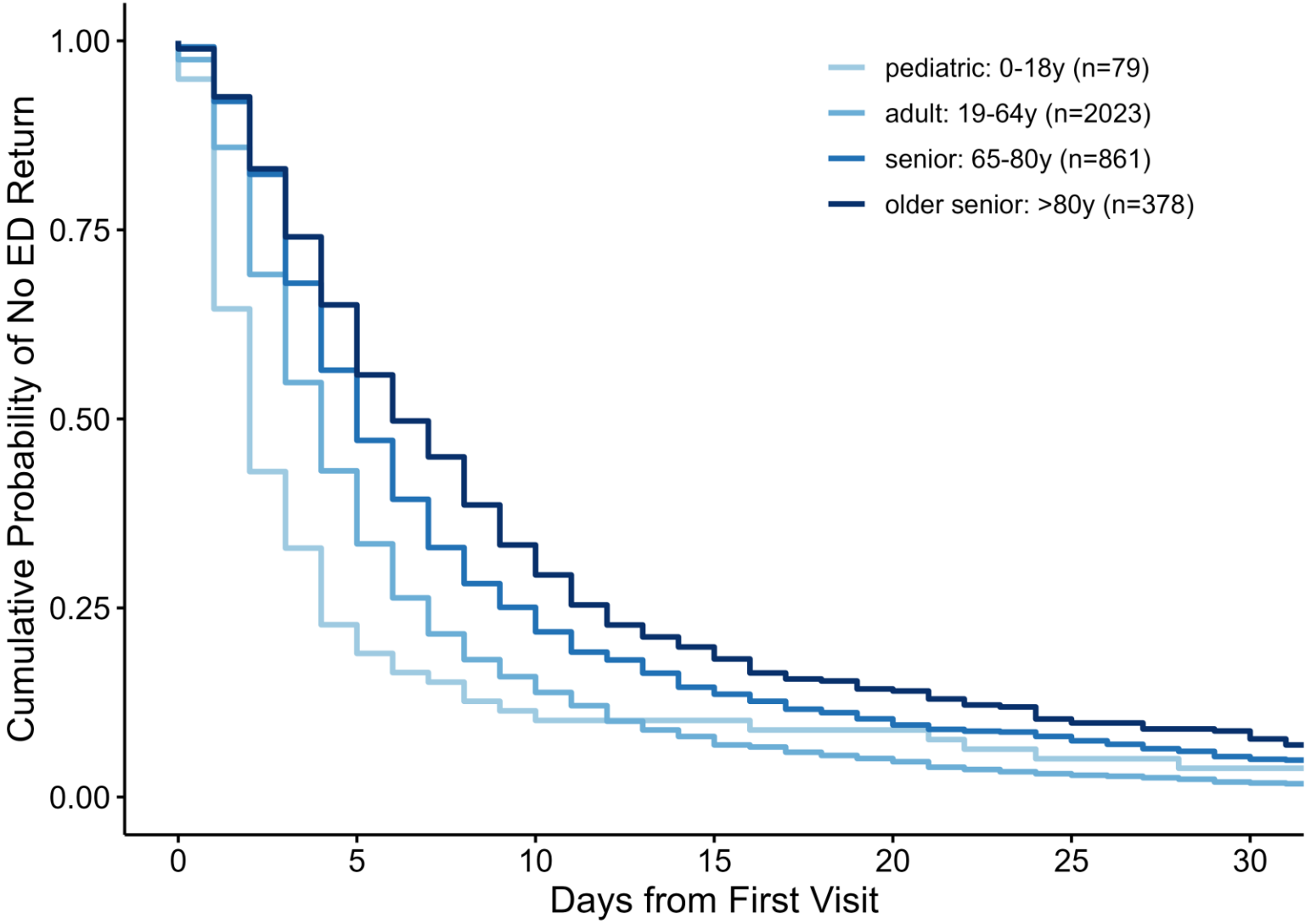
Younger Patients Had Shorter Times to Return than Older Patients

- MV Group (n=4,341)
  - Average of 2.2 visits per patient
  - 2.4% of patients had >4 visits
  - Median days between 1st and 2nd visit: 4 [IQR=2,8]
  - Older patients take longer to return
- Among all 23,790 discharged patients in SV & MV groups: **7.2%** returned within 72 hours



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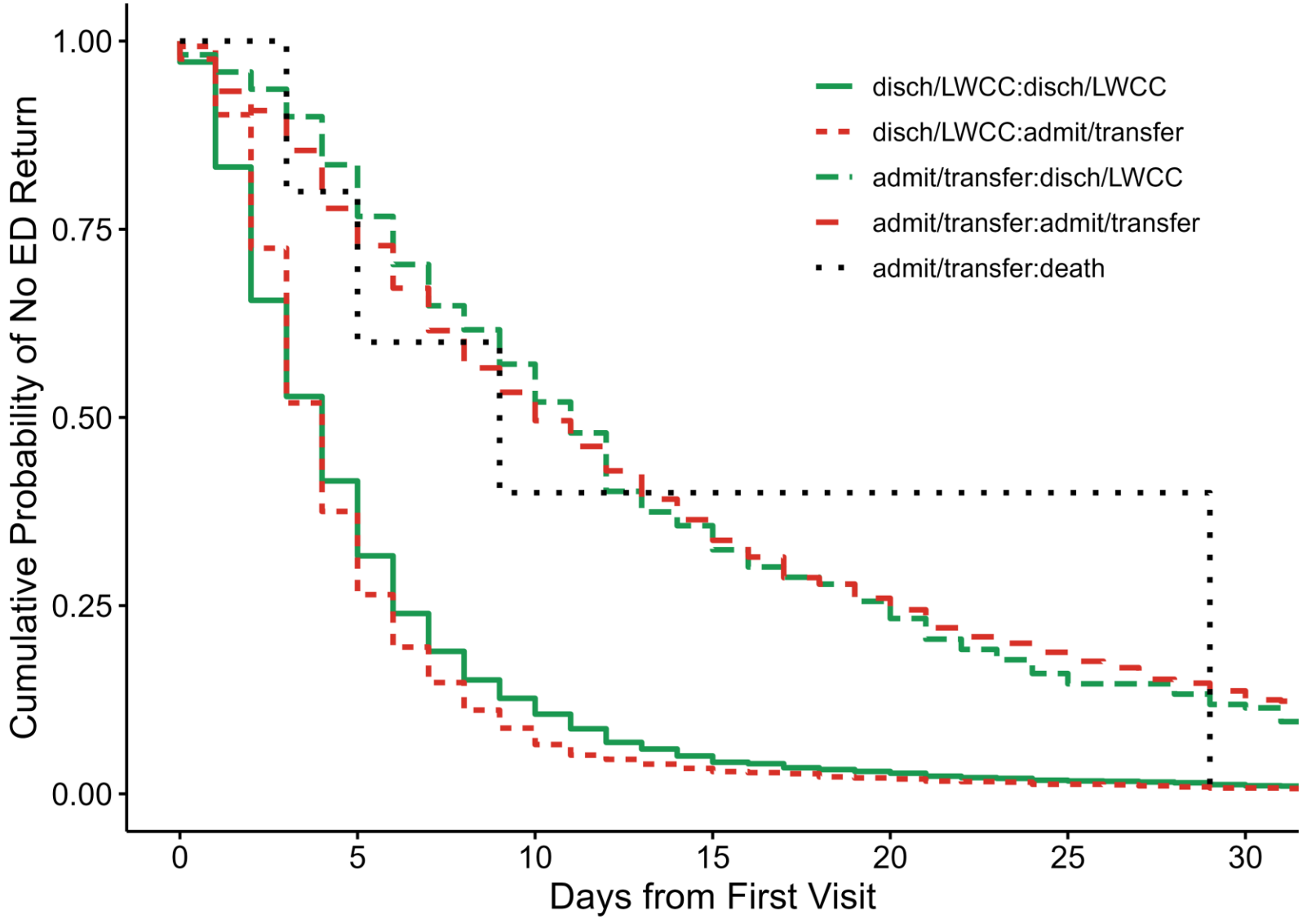
Time to Return was Similar for Those with the Same Disposition on Return Visit

- MV Group (n=4,341)
  - 3,497 discharged/left without completion of care at 1st visit
  - 49.3% of discharged patients returned within 72 hours
  - 29.9% of patients had acuity worsen between 1st & 2nd visit
  - Similar time to return by 2nd visit disposition
  - 4.8% died at 2nd visit



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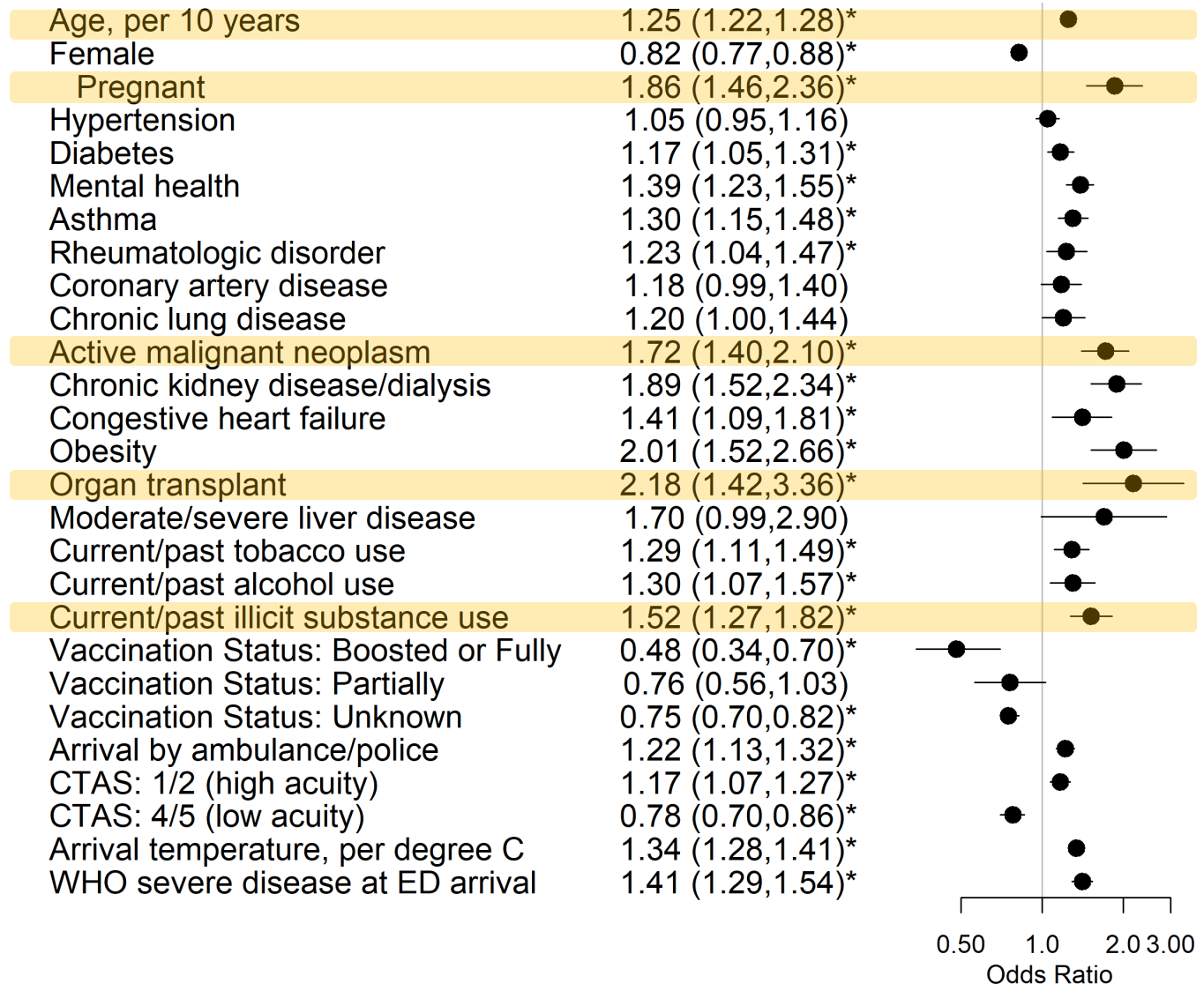
Being a Return Visitor was Associated with Multiple Factors

- Outcome: COVID-19-return
  - Comparator Group: SV that didn't die or wasn't admitted
- Older age, pregnancy, active cancer, kidney disease, organ transplantation and substance use history had higher ORs
- Suggestion of lower ORs for vaccinated, but lots of Unknowns



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Limitations

- Retrospective data
- ED visits, hospitalizations, and deaths are limited to CCEDRRN hospitals
- Return ED visits were based on 30 days
- No data on long-COVID related ED visits
- Vaccination data not provided by provincial registries, vaccination status likely underreported

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Conclusions

- A high proportion (7.2%) of discharged COVID-19 patients returned to the ED within 72 hours during the first two pandemic years, incurring substantial resources.
- ED return visits were associated with multiple factors. Older age, pregnancy, active cancer, kidney disease, organ transplantation and substance use history were associated with having an ED return.
- Understanding the reasons for unscheduled ED return visits would be a useful focus for future studies to help develop or study interventions for prevention, including alternative short-term follow up options to reduce ED strain.

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Lessons Learned

- Takes a tremendous amount of effort and money to mobilize a registry across diverse sites and province.
- Standardization of data collection for RA's across sites with varied medical record systems vital for data integrity.
- Researchers and clinicians are highly motivated to do extraordinary work during a pandemic.
- Exceptional leadership, governance, and communication required to be successful.
- Data sharing between provinces and linkage with provincial databases are challenging.

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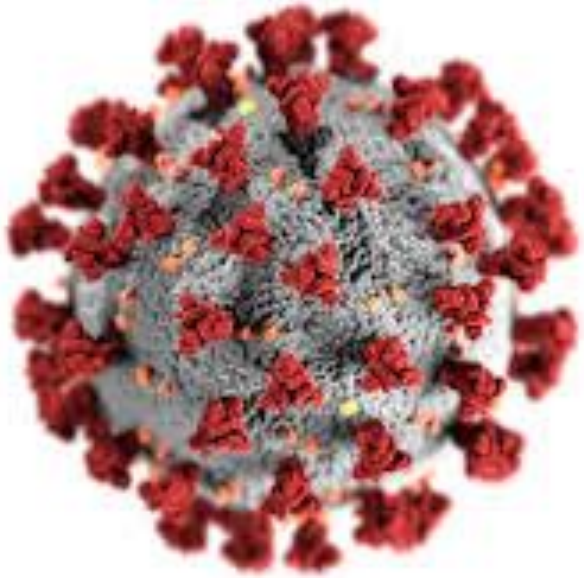

Thank you.

This network is dedicated to you, our colleagues in medicine, nursing, and allied health who have been on the front lines of this pandemic from day one, staffing our ambulances, Emergency Departments, ICUs and hospitals, and bravely facing the risks of COVID-19 in order to look after our fellow citizens and one another.