COVID in Nursing Homes

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COVID in nursing homes

- To review the epidemiology and clinical features of COVID-19 in residents of long term care
- To discuss what we know and don't know about why COVID-19 spreads so easily in long term care
- To discuss short and long term changes that are needed to prevent and manage outbreaks

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Long term care in Ontario

- Ontario has 14M people, of whom 2.6M are 65 years and over
  - 77,257 beds in 623 regulated long term care homes
  - Government licensed, require 3 hours of nursing care daily, no IVs/Vents
  - Residential (not rehab or transitional); a few respite beds
  - Median age 87 years; 90% with cognitive impairment, 86% with need for intensive support with ADL
  - 30,000 beds in homes which require redevelopment (4 bed rooms, shared bathrooms for 8, small and very crowded)
  - 58% for profit; 24% not-for-profit; 16% municipal
- Other
  - 1233 retirement homes (regulated since 2010) - ~120,000 beds; highly variable degree of support (no medical care)

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Pre-existing issues

- Progressively increasing age and care needs in residents
- Low-wage, unstable employment
  - Few nursing staff, mostly personal support workers
- Very crowded conditions for both residents and staff
- Infection prevention programs, but very limited expertise & training, especially in smaller homes
  - Post-SARS, IPAC programs initiated, but not well resourced
- Limited and highly variable medical care

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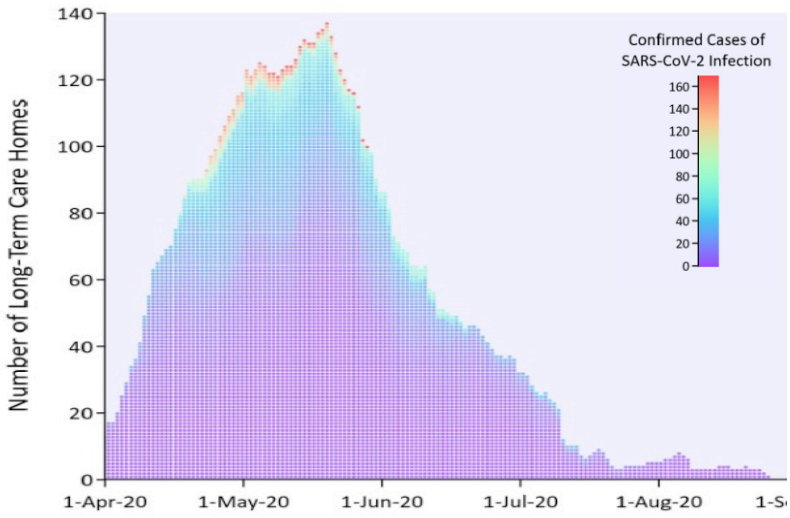
LTC outbreaks, wave 1



Of 77,000 residents:

5984 dx'd infections
1910 deaths

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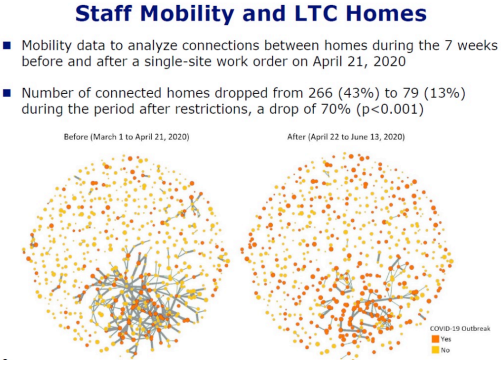
Wave 1 & Post Wave-1 interventions

- Pandemic pay for workers; MOHLTC increased pay for some groups
- Limited work to a single healthcare facility
- Stabilized PPE supply
- Linked LTC homes to hospitals for support
- Stopped new admissions to 3 and 4 bed rooms
- Improved screening for symptoms
- Improved adherence to testing ill residents
- Education
- Bi-weekly NP screening for staff



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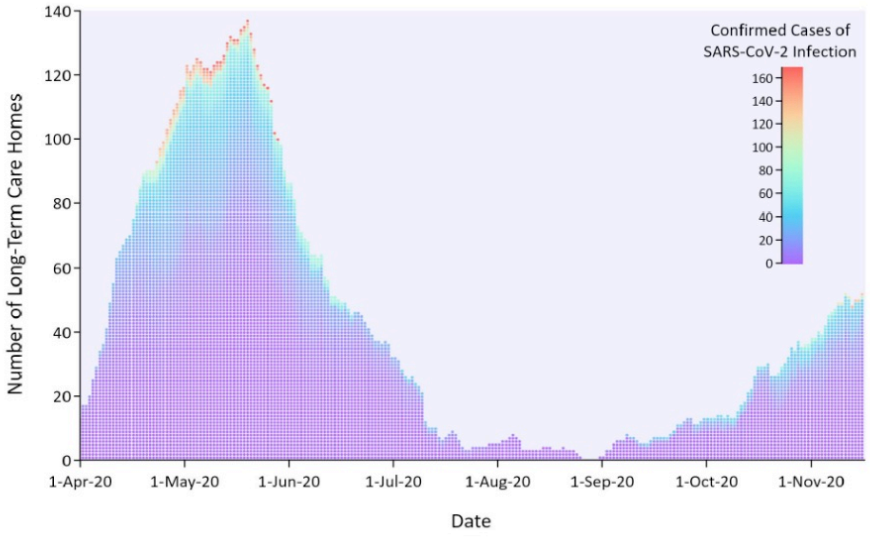
LTC outbreaks, wave 1 and 2



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What happened in wave 2? Case fatality rate in residents declined

- Wave 1: 1910/5987=32%
- Wave 2: 543/3304=16%

- Why?
- Less screening in Wave 1 (missed asymptomatic/pauci-symptomatic cases)
- More hospital admissions
- Better medical care in long term care, plus dexamethasone, hydration

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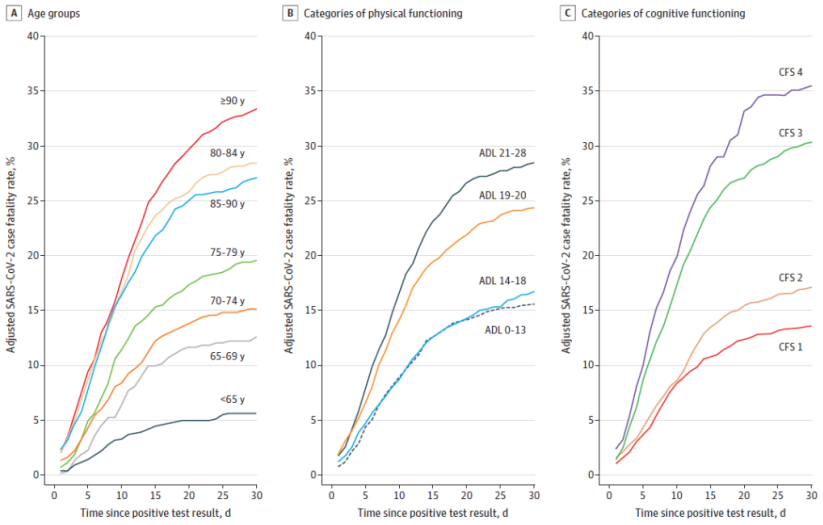
Risk factors for mortality in LTC residents



Other risk factors:

Male (1.4)
White race (1.2)
Kidney disease (1.3)
Type 2 diabetes (1.2)

Orestis JAMA int med 2021 (ahead of print)

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What happened in wave 2?

- Fewer outbreaks relative to number of community cases, smaller, more focused in staff, case fatality in residents has decreased
- Challenges
  - Staff exposures at work (small break/lunch/locker room; car pools to work; failure to recognize staff to staff transmission)
  - Failure to recognize and test individual resident cases
  - Delays in testing
- Challenges (2)
  - Still some explosive outbreaks
  - Long tails of additional cases (staff and residents)

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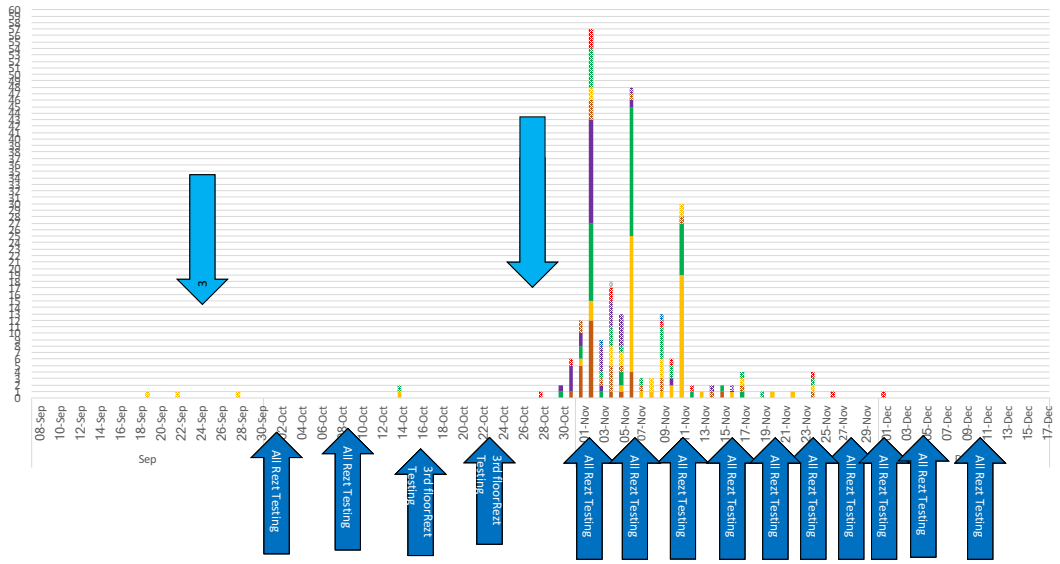

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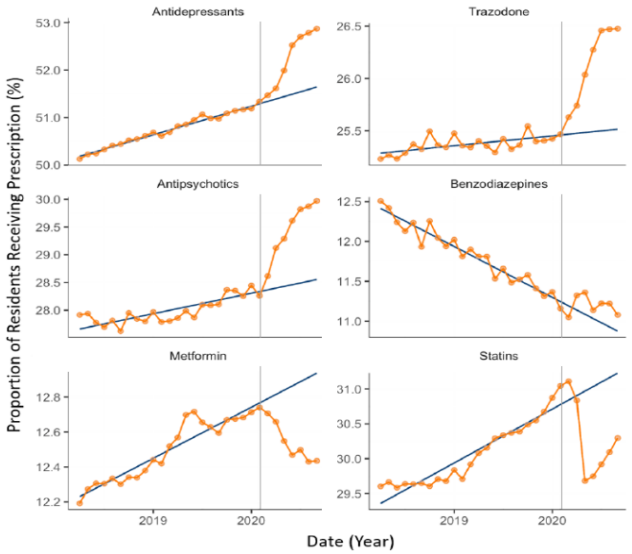
Psychotropic Prescribing to Residents



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Why challenges in long term care?

- Non-modifiable
  - Frail elderly population with very high case fatality rate
  - COVID-19 (like other infections) may present atypically, and many residents cannot describe and/or have other reasons for symptoms
  - Hands on care with close contact required
  - Contact and socialization are very important
- Modifiable
  - Many buildings are old and crowded
  - High degree of mixing of large populations
  - Staffing shortages are chronic, and there is intense pressure for staff to come to work
  - Inadequate education, training, policies, PPE supply

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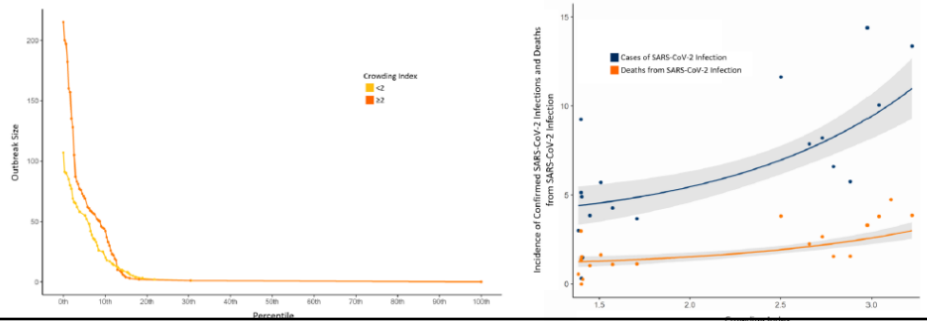
LTC Home Crowding and COVID-19

- Retrospective cohort study of all LTC homes from Mar 29-May 20, 2020
- Crowding index (mean residents per room & bathroom) associated with increased incidence of infection (RR = 1.73) and mortality (RR = 1.69)
- Converting all 4-bed rooms to 2-bed rooms would have averted 998 COVID-19 cases (19.1%) and 263 COVID-19 deaths (18.1%)
- Would require 5,070 new 2-bed rooms



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Is There a Link between Nursing Home Reported Quality and COVID-19 Cases? Evidence from California Skilled Nursing Facilities

Mengying He PhD [a,*], Yumeng Li PhD [b], Fang Fang PhD [a]

[a] Department of Management, College of Business and Economics, California State University, Los Angeles, CA
[b] Biogen, Inc, Cambridge, MA

Multivariate Logistic Regression Results

Covariates	COVID-19 Cases		COVID-19 Deaths	
	OR	95% CI of OR	OR	95% CI of OR
Ownership				
NFP	Reference			
FP	1.49*	0.97, 2.34	1.69*	1.01, 3.00
Quality ratings				
3	Reference			
1	0.83	0.52, 1.33	1.04	0.64, 1.69
2	1.02	0.68, 1.53	1.23	0.80, 1.87
4	0.66**	0.44, 0.98	0.65*	0.42, 1.01
5	0.41***	0.27, 0.62	0.30***	0.18, 0.48
Bed occupancy	1.009***	1.006, 1.012	1.006***	1.003, 1.009
White resident percentage				
≥59.5%	reference			
<59.5%	1.95***	1.49, 2.55	1.64***	1.21, 2.23
Facility age (y)	1.006	0.995, 1.017	1.006	0.993, 1.019

***$P < .01$; **$P < .05$; *$P < .10$
1107 complete cases contribute this logistic model.

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Nurse Staffing and Coronavirus Infections in California Nursing Homes

Charlene Harrington, PhD, RN[1], Leslie Ross, PhD[1], Susan Chapman, PhD, RN[1], Elizabeth Halifax, PhD, RN[1], Bruce Spurlock, MD[1], and Debra Bakerjian, PhD, FAAN, FAANP, FGSA[1]

	Nursing homes with COVID-19 residents (*N* = 272)		Nursing homes without COVID-19 residents (*N* = 819)		Total nursing homes (*N* = 1,091)		ANOVA
	Mean		Mean		Mean		
	n	(*SD*)	*n*	(*SD*)	*n*	(*SD*)	*F*
RN staffing hprd	265	0.56 (0.52)	770	0.66 (0.64)	1035	0.64 (0.61)	5.788*
Total nurse staffing hprd	265	4.20 (0.94)	770	4.39 (1.20)	1035	4.34 (1.14)	5.409*
CMS medicare-five-star nurse staffing rating	263	2.69 (0.95)	771	2.95 (1.10)	1034	2.88 (1.07)	11.681***
CMS medicare five-star RN staffing rating	263	2.30 (1.05)	771	2.61 (1.20)	1034	2.53 (1.17)	14.522***
Number of health deficiencies	271	15.4 (8.1)	814	12.4 (8.0)	1,085	13.1 (8.1)	29.175***
Number of beds	272	118.1 (70.5)	819	92.4 (48.8)	1,091	98.8 (56.1)	44.650***

Note. ANOVA = analysis of variance; CMS = Centers for Medicare & Medicaid Services; hprd = hours per resident day; RN = registered nurse.
*$p < .05$. **$p < .01$. ***$p < .001$.

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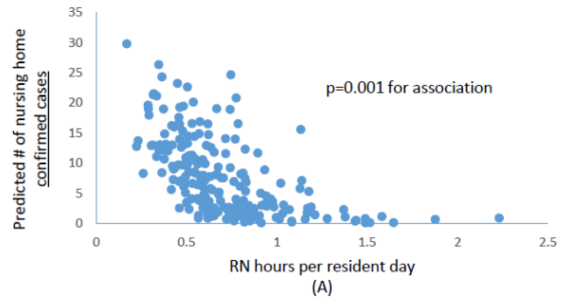
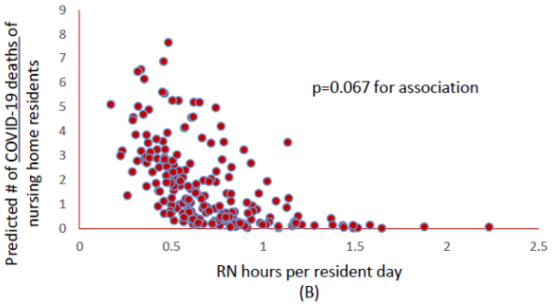
COVID19 cases and deaths in Connecticut nursing home residents:
Facility correlates

Li et al

JAGS (epub ahead of print)





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Measures that work to prevent/mitigate outbreaks

- Adequate (or at least improved) staffing
- Anything that reduces crowding for residents
- Sitters to reduce resident wandering/re-direct
- Anything that helps staff stay home when they are symptomatic, or report symptoms
- Anything that permits staff to protect themselves better in the community
- Anything that supports 6 foot/2M separation of staff/masking of staff
  - Lunch & break rooms, locker rooms
- Anything that improves IPAC practice
- ?? Cohorting/systematic removal to better isolation facilities for symptomatic residents

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Outstanding questions: Airborne spread?

- Explosive nature of outbreaks has led to the belief that small particle, long distance aerosol spread may be important
- In Canada, long and short distance small particle aerosol spread is at least not common in hospitals – BUT long term care homes often have inadequate, poorly-maintained HCAV systems
- Virus has not been detected in air in LTC homes, but it has been detected on "no touch" surfaces
- As always, extraordinarily difficult to separate airborne from "super-spreading" by other routes
- If outbreaks persist post vaccine implementation, further investigation needed

Meyerovitz Ann Intern Med Jan 2021

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What do we need in the long term? Non-IPAC

1. Reduce size and crowding in long term care
   - Re-thinking the size and organization of long term care
2. Promote staff entry and retention by improving work conditions
3. Improve physician involvement
4. Guarantee paid sick leave

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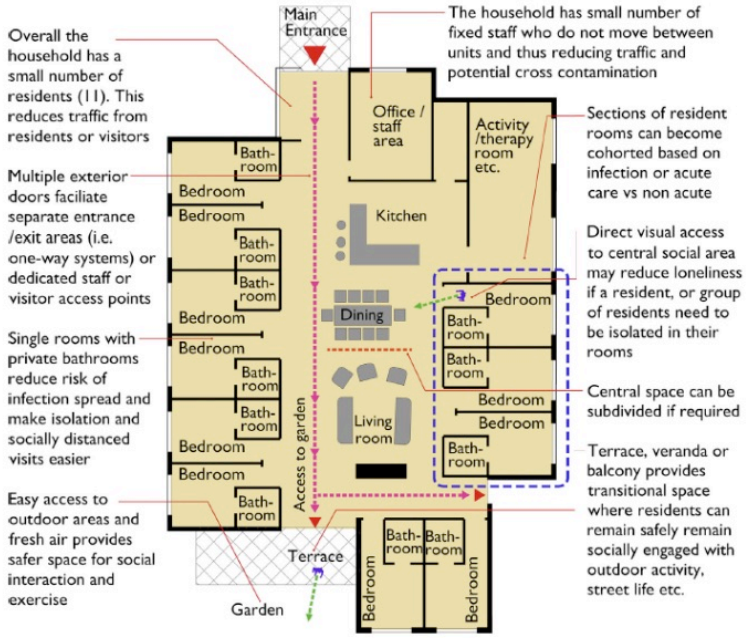

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What do we need in the long term? IPAC

Current challenges in Ontario

1. IPAC understanding and practice in Ontario remains plainly inadequate
2. LTC homes are getting different advice from different experts (and none of it is working really well)
3. Red Cross outbreak management plans differ in fundamental concept from IPAC as usually recommended

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What do we need in the long term?
IPAC

1. Better IPAC
2. Best brains in LTC IPAC re-conceptualizing how we might do it best
3. PANDEMIC PLANNING

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COVID in Nursing Homes
Prof. Allison McGeer, University of Toronto
A Webber Training Teleclass

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January 28, 2021	*(FREE Teleclass)* COVID UPDATE: FOCUS ON VACCINES Speaker: **Prof. Robert T. Ball**, Medical University of South Carolina
February 4, 2021	SUPPORTING THE PSYCHOLOGICAL SAFETY AND WELLBEING OF HEALTHCARE WORKERS THROUGH UNCERTAIN TIMES Speaker: **Amy Pack** and **Dr. Diane Aubin**, Canadian Patient Safety Institute
February 9, 2021	*(European Teleclass)* ANTIMICROBIAL STEWARDSHIP IN ASIA PACIFIC - GLOBAL BELLWEATHER? Speaker: **Prof. Anucha Apisarnthanarak**, Thammasat University Hospital, Thailand
February 17, 2021	*(South Pacific Teleclass)* THE NEW ZEALAND COVID-19 RESPONSE - LESSONS LEARNED Speaker: **Prof. Ian Town**, Ministry of Health, New Zealand
February 25, 2021	CONTINUOUS ACTIVE ANTI-VIRAL COATINGS

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