



Since January 2020 Elsevier has created a COVID-19 resource centre with free information in English and Mandarin on the novel coronavirus COVID-19. The COVID-19 resource centre is hosted on Elsevier Connect, the company's public news and information website.

Elsevier hereby grants permission to make all its COVID-19-related research that is available on the COVID-19 resource centre - including this research content - immediately available in PubMed Central and other publicly funded repositories, such as the WHO COVID database with rights for unrestricted research re-use and analyses in any form or by any means with acknowledgement of the original source. These permissions are granted for free by Elsevier for as long as the COVID-19 resource centre remains active.



JAMDA

journal homepage: [www.jamda.com](http://www.jamda.com)

## Research Letters

## Mortality Reduction Associated with Coexistent Antithrombotic Use in Nursing Home Residents with COVID-19



### To the Editor

Long-term care facilities, particularly skilled nursing facilities (SNFs), have felt the impact of the COVID-19 pandemic, with high mortality rates observed in residents. SNF residents comprise less than 1% of the US population,<sup>1</sup> however, this population accounted for over 31% of COVID-19 deaths in the United States through June 2021.<sup>2</sup> Following the noted increased risk of venous thromboembolism observed in patients with COVID-19,<sup>3,4</sup> investigations have demonstrated increased survival in noncritically ill hospitalized individuals treated with heparin.<sup>5</sup> Professional societies and the National Institutes of Health have developed guidelines that encourage the use of anticoagulation in hospitalized individuals with COVID-19.<sup>6,7</sup> Although studies support the use of heparin in hospitalized patients, no similar data have been published regarding the population that resides in SNFs.<sup>8</sup> Our study aimed to evaluate the impact of underlying use of antithrombotics (ATs) on the 30-day mortality of individuals diagnosed with COVID-19 in SNFs. A secondary objective was to assess the relationship between age and sex with 30-day all-cause mortality in patients with COVID-19.

### Methods

The study population included 6884 Institutional Special Needs Program enrollees initially diagnosed with COVID-19 between March 1, 2020, and May 31, 2020. The ISNP provides increased clinical resources at the SNF bedside to safely treat residents in their homes and avoid unnecessary transfers and hospital admissions. This subset of facility residents may have more on-site care and treatment than the broader SNF population. COVID-19 was determined from clinical documentation, the use of a *International Classification of Diseases, Tenth Revision* code for COVID-19 implemented by the Centers for Disease Control and Prevention on April 1, 2020, or an internally maintained COVID-19 registry. The registry also included location and date of death if applicable. Diagnoses were sourced from medical claims including hospital inpatient, skilled nursing inpatient, and outpatient claims. Age and sex were retrieved from medical claims and based on member age as of March 1, 2020. The project

was determined to be exempt from institutional review board review under exemption category 4(ii).

### Results

Some SNF residents are treated with ATs (defined as aspirin and other antiplatelets as well as anticoagulants such as warfarin or direct oral anticoagulants) because of pre-existing conditions such as venous thromboembolism, recent intravascular stent placement, and recent acute coronary syndromes. Most study members (81.8%) were not treated with ATs at the time of diagnosis. Use of ATs resulted in significantly lower odds of 30-day mortality compared with those without these medications (aOR 0.83, 95% CI 0.71–0.97) (Table 1). Thirty-day all-cause mortality for the study population was 23.2%. Mortality rates increased with age and were higher among male (26.1%) than female (21.6%) individuals. Older age groups had significantly higher odds of 30-day mortality compared with those less than 65 years old. Male individuals had significantly higher odds of 30-day mortality than female individuals (aOR 1.69, 95% CI 1.49–1.92). Limitations of this study include its focus on the first few months of the pandemic. Testing capacity was limited which likely contributed to underdiagnosis of asymptomatic SARS-CoV-2 infection during this period. In addition, prior to the development of the *International Classification of Diseases, Tenth Revision* code for COVID-19, positive diagnoses were identified for our database based on clinical documentation.

### Discussion

Because of our limited sample size and the duration of the study, we were unable to determine if there was variability in the protective effect of one medication or class of medications over another. A separate review that includes more individuals followed over a longer period could help answer that question. Although we found coexistent AT use important in reducing 30-day mortality in COVID-19 positive nursing home residents, it is unclear whether ATs should be started in SNF residents newly infected with COVID-19 if they are not already using these medications. In addition, we must determine which patients are appropriate candidates for AT therapy in this context given the risk of bleeding posed by these medications in this population. Anticoagulant therapy has become a hallmark of medical care for COVID-19 in the hospital setting. It remains unclear whether other ATs would be effective, and questions remain about the indications and effectiveness of these therapies in the skilled nursing and outpatient settings. Additional areas of research include determining whether a specific class of AT medication is more effective at reducing 30-day mortality. The duration of the hypercoagulable period in this frail older population remains unclear, thus, recommendations regarding the duration of AT therapy warrant further study. Longer follow-up could provide additional insights into the risks and benefits of various therapies.

**Table 1**  
Multivariate Logistic Regression of Predictors of 30-Day All-Cause Mortality

Features	Percent of Population	aOR	P Value	Confidence Low	Confidence High
Antithrombotic use	18.2%	0.83	<.05	0.71	0.97
Age category:					
65–69 y	10.7%	1.41	<.001	1.06	1.88
70–74 y	13.1%	1.70	<.001	1.30	2.23
75–79 y	14.9%	1.79	<.001	1.38	2.34
80–84 y	14.7%	2.42	<.001	1.87	3.15
85–89 y	15.5%	3.03	<.001	2.35	3.93
90 y and older	19.1%	3.71	<.001	2.89	4.79
<65 y	12.0%	Ref			
Sex:					
Male	35.6%	1.69	<.001	1.49	1.92
Female	64.4%	Ref			
Medical conditions:					
Cancer	12.3%	0.72	<.001	0.60	0.87
CKD	30.3%	1.70	<.001	1.50	1.93
COPD	48.7%	1.07	.280	0.95	1.20
CAD CHF	42.8%	1.13	<.05	1.00	1.28
Thrombosis	4.0%	0.76	.086	0.54	1.04

CAD, coronary artery disease; CHF, congestive heart failure; CKD, chronic kidney disease; COPD, chronic obstructive pulmonary disease.

## Acknowledgments

The authors wish to thank J. Michelle Graham PharmD, BCPS.

## References

- Harris-Kojetin L, Sengupta M, Lendon JP, Rome V, Valverde R, Caffrey C. Long-term care providers and services users in the United States, 2015–2016. *National Center for Health Statistics. Vital Health Stat* 2019;3:1–78.
- The New York Times. Nearly One-Third of U.S. Coronavirus Deaths Are Linked to Nursing Homes, 2021. Accessed September 15, 2021. <https://www.nytimes.com/interactive/2020/us/coronavirus-nursing-homes.html>
- Nopp S, Moik F, Jilma B, Pabinger I, Ay C. Risk of venous thromboembolism in patients with COVID-19: a systematic review and meta-analysis. *Res Pract Thromb Haemost* 2020;4:1178119.
- Wichmann D, Sperhake JP, Lutgehetmann M, Steurer S, et al. Autopsy findings and venous thromboembolism in patients with COVID-19: a prospective cohort study. *Ann Int Med* 2020;173:268–277.
- The ATTACC, ACTIV-4a, and REMAP-CAP Investigators. Therapeutic anticoagulation with heparin in noncritically ill patients with Covid-19. *N Engl J Med* 2021;385:790–802.
- Baumann Kreuziger L, Lee AYY, Garcia D, DeSancho M, Connors JM; American Society of Hematology. COVID-19 and VTE/Anticoagulation: Frequently Asked Questions (Version 11.0; last updated July 15, 2021), Accessed September 15, 2021. <https://www.hematology.org/covid-19/covid-19-and-vte-anticoagulation>
- National Institutes of Health. Antithrombotic Therapy in Patients with COVID-19, 2021. Accessed September 15, 2021. <https://www.covid19treatmentguidelines.nih.gov/therapies/antithrombotic-therapy/>
- AMDA - The Society for Post-Acute and Long-Term Care Medicine. Q & A Document for COVID-19 Updated January 29, 2021, 2021. Accessed September 15, 2021. <https://paltc.org/sites/default/files/COVID%20QA%20012921.pdf>

Laurent Adler, MD, Cathy Lipton, MD, Clay C. Watson, MD  
Complex Care Management, Optum Inc, United Health Group  
Eden Prairie, MN, USA

Shanieek Lawrence, PhD, Alexa Richie, DHSc  
Optum Center for Research and Innovation, Optum Inc, UnitedHealth  
Group, Eden Prairie, MN, USA

Clare Spain, BA, Kevin Heltemes, MPH  
Health Care Economics, Optum Inc, United Health Group  
Eden Prairie, MN, USA

<https://doi.org/10.1016/j.jamda.2021.11.012>

# Excess Mortality in Long-Term Care Residents With and Without Personal Contact With Family or Friends During the COVID-19 Pandemic



Despite evidence of disparities in excess mortality during the COVID-19 pandemic,<sup>1</sup> less is known about the unequal impacts within long-term care (LTC).<sup>2</sup> Even pre-pandemic, many residents experienced loneliness and social isolation.<sup>3</sup> The most isolated—those without living family or friends, or who are geographically distant or estranged from them<sup>4</sup>—often receive increased care and support from LTC staff.<sup>5</sup> With the demands of COVID-19, these efforts may not have been possible to sustain. This may have led already socially vulnerable residents to be disproportionately affected by COVID-19, especially without family and friends to advocate for needed care or provide emotional support. Our objective was to compare excess mortality early in the COVID-19 pandemic in LTC residents with and without personal contact with family or friends.

## Methods

We conducted an interrupted time series analysis to evaluate changes in all-cause mortality rates of LTC residents with and without contact with family or friends in Ontario, Canada, from January 1, 2017, to September 30, 2020. Residents were identified using the Continuing Care Reporting System database. Although pandemic-related restrictions in LTC (eg, visitor bans, suspension of congregate dining) led to widespread social isolation of residents, most remained in contact with family and friends virtually or by phone. We defined residents as having no personal contact (including phone calls) with family and friends in the past 7 days if the assessor indicated “yes” to item F2E (absence of personal contact with family or friends), based on their most recent annual assessment from the Resident Assessment Instrument Minimum Dataset (version 2.0).<sup>6</sup> Item F2E is a reliable measure of family or friend contact. We found 93.5% agreement across annual assessments over a 5-year lookback window and 95.8% agreement between the last 2 assessments (Supplementary Table 1), with a prevalence- and bias-adjusted Kappa coefficient of 0.92 (95% CI 0.91, 0.92) (Supplementary Table 2). Deaths were ascertained using Ontario’s Registered Persons Database and other health administrative databases. These datasets were linked using unique encoded identifiers and analyzed at ICES.

We used March 14, 2020, when restrictions were implemented as an infection prevention and control intervention in Ontario as COVID-19 began to spread in the community, to define the pre-pandemic and pandemic periods. Segmented regression models with autocorrelated errors were fitted for each resident group to

This study was supported by ICES, Canada, which is funded by an annual grant from the Ontario Ministry of Health (MOH), Canada and the Ministry of Long-Term Care (MLTC). Parts of this material are based on data and/or information compiled and provided by the Canadian Institute for Health Information (CIHI). However, the analyses, conclusions, opinions, and statements expressed in the material are those of the author(s), and not necessarily those of CIHI. The analyses, conclusions, opinions, and statements expressed herein are solely those of the authors and do not reflect those of the funding or data sources; no endorsement is intended or should be inferred.

The authors declare no conflicts of interest.