

Intensity and Frequency of Physician Interventions to Nursing Home Residents Before and During the COVID-19 Pandemic

P. Doyle, D.J. Ryan, S. Kennelly, D. O'Neill
Trinity College Dublin, Dublin, Ireland.

Abstract

Introduction

The COVID-19 pandemic has disproportionately affected nursing home residents internationally, with 62% of COVID-19 related deaths in Ireland occurring in residential care facilities. The increased care needs of nursing home residents with COVID-19 has stimulated discussions related to transfer to hospitals for higher intensities of care. However little focus has been given to calculating physician care needs of residents who remain in the nursing home, an ethical imperative for advance care planning which ensures adequate medical care for those not transferring. This study profiled the frequency and intensity of medical intervention.

Methods

Retrospective review of 51 residents' healthcare records from January-May 2020. We assessed the frequency and intensity of medical intervention, compared pre-pandemic and pandemic periods.

Results

Of 51 residents (31 women, mean age 84.1±8.2), 19 (37%) acquired COVID-19. Most residents were maximum dependency (n=32, (55%)) with over half diagnosed with dementia (n=31, 51%) and 29 (47%) with stroke. The average number of medical interventions per month for all residents almost doubled, from 89 during the pre-pandemic period to 176 during the 3-month pandemic period: Chi-squared test: p=0.02. Average monthly night-time and week-end interventions increased by 189% (28 vs 81).

Conclusion

The total frequency of physician interventions for nursing home residents increased significantly during the COVID-19 pandemic. This highlights the importance of ensuring increased access to physicians, including night-time and weekends, in pandemic planning for nursing home residents.

Keywords (MeSH): Nursing Home; Standard of Care; Physicians; COVID-19

Background

There are significant concerns world-wide over the appropriate provision of care for nursing home residents during the COVID-19 pandemic ¹. Delineation of medical standards of care in nursing homes has been poorly defined until recently in Europe, with first standards outlined in 2015 and updated in 2020 in light of the pandemic ². The increased care needs of residents with COVID-19 during the pandemic has sparked discourse on the issue of transferring to hospitals largely on the basis of ventilatory needs, but without a significant focus on provision of physician care for needs of those who stay, important in terms of planning both for these care needs, but also for calculating the parameters for adjudicating potential transfer on the basis of intensity of medical and care needs other than those related to non-invasive and invasive ventilation.

Our nursing home provides a unique opportunity to observe this in view of both constant on-site trainee doctor cover and regular consultant overview. We sought to investigate the intensity of medical review and intervention in a fifty-bedded unit over a period of five months during the pandemic to outline the degree of resilience required in terms of medical manpower.

Methods

A retrospective cohort study was carried out on our fifty bedded nursing home unit from January 2020 to May 2020. Data was collected from residents' healthcare records – a combination of paper records and electronic nursing and multidisciplinary epicCare[®] web-based records. Basic demographic data included age and gender. Data was collected on level of dependence as determined by Barthel Index (independent (20/20, low (16-19), medium (11-15), high (6-10), maximum (0-5))³. Residents' healthcare records were assessed for diagnosis of stroke and dementia.

The frequency of medical intervention was collected from healthcare records. The interventions were divided into normal hours and out-of-hours (outside of 09.00-17.00 hours Monday-Friday) and subdivided into type of interaction – clinical review, medication review/prescription, ordering/review of investigation and discussion with nursing staff i.e. clarification of plan/update regarding status. The period of the study was divided into pre-pandemic (January-February) and pandemic period (March-May). Frequency of medical interventions was averaged over the pre-pandemic (two months) and pandemic (three months) period.

Statistical analysis was carried out using JASP, an open-source statistics program. Normally distributed data was described as means and standard deviations. Categorical variables were compared used chi squared tests.

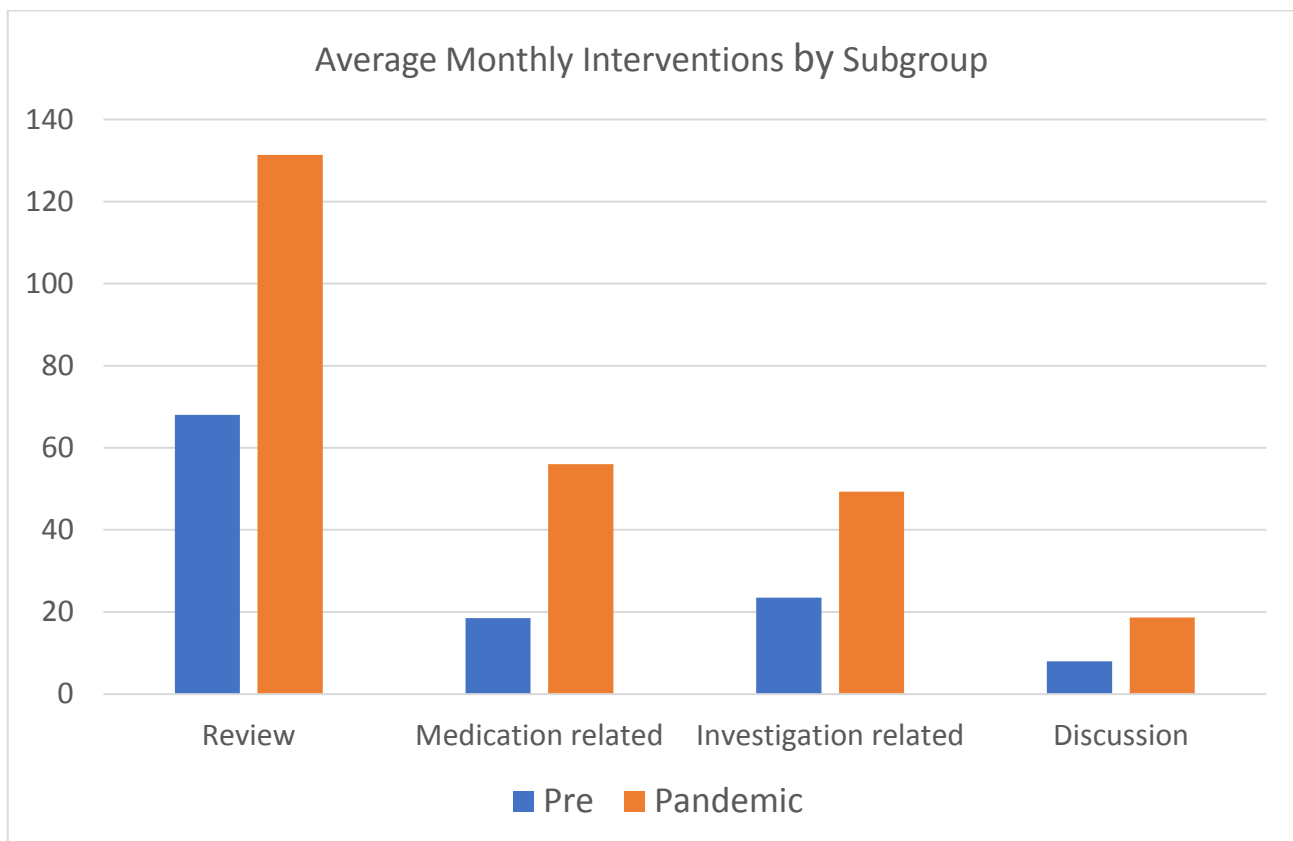
Ethical approval for this retrospective cohort study was obtained from the Tallaght Hospital/St. James's Hospital Joint Research Ethics Committee and the Human Research Health Research Consent Declaration Committee.

Results

Fifty-one residents were included in the study period of whom eleven died. The average occupancy per month during the study period was 45 residents. The mean age was 84.1 years (SD 8.2, range 68-101), and 24/51 (48%) were women. More than half (54%) of the residents were rated as maximum dependency. Twenty-four residents (48%) had a history of stroke and 26/51 (51%) had diagnosis of dementia: clinical and/or laboratory diagnosis of COVID-19 was made for 19/51 residents (37%) during the study period.

During the total five-month study period there were 706 medical interventions with 298 out-of-hours calls. The pre-pandemic interventions totalled 171 with 56 out-of-hours calls over two months: the pandemic period had a total of 529 calls with 242 out-of-hours interventions over three months. The mean monthly total interventions were significantly higher during the pandemic period, 89 vs 176 (Chi-squared test: $p = 0.02$). The breakdown of types of interventions is demonstrated in Fig 1, with general review the most frequent intervention. The residents with a diagnosis of COVID-19 had a higher frequency of medical intervention in the pandemic period compared to residents without COVID-19, averaging 117 interventions versus 59 (Chi-squared test: $p = 0.00000002$). The residents with COVID-19 had a 189% increase in frequency of medical interventions per month during the pandemic period compared to the residents without COVID-19 who had an unchanged frequency of interventions (Chi-squared test: $p = 0.0001$).

Figure 1: Types of physician intervention before and during the pandemic.



Discussion

Our study demonstrated a very significant increase in medical interventions both during the standard working week and out of hours for nursing home residents during a pandemic period. This raises significant issues for the planning of appropriate physician care and cover for a highly dependent population between and during pandemics and raises concerns that existing frameworks for provision of physician care to nursing homes are likely to be inadequate in many countries. Among the very few studies of physician engagement with nursing home care, residents received just over one GP consultation per month in the last six months of life, a considerably lower tempo than required by the residents in our study during the pandemic⁴. Concerns have been raised across the world about the capacity for general practitioners to cope with the needs of nursing home residents as well as discussion how to incentivize and develop medical cover⁵⁻⁷.

Much emphasis has been placed in protocols for advance-care planning in nursing homes on avoidance of transfers to general hospitals where the levels of care and cover are reasonably standardized⁸, but almost no discussion has taken place on the corresponding ethical imperative of clarifying the level of physician care that will be provided in the nursing home to support ongoing often substantial medical needs by those residents deemed “not for transfer”⁹. Clarifying the medical support in the nursing home is not only important in its own right, but also serves to help determine the boundaries for escalating care to the general hospital. When considered in terms of COVID-19 positive and negative subgroups, we determined there was no significant increase in medical interventions of the negative group, although worth noting that the emphasis on COVID-19 residents in other settings may have diverted attention from the ongoing medical needs of the COVID-19 negative residents.

Studies to date have reviewed in isolation the indications or the frequency for medical intervention in nursing homes, yet our review of the literature could not identify research which outlined both frequency and content of medical review¹⁰⁻¹². When considering the optimal frequency of physician visits to nursing home residents one needs to incorporate resident and family expectations, national standards, medical complexity and acuity of residents and availability and level of expertise of providers¹³, but also need to factor in the historical relative neglect of critical focus on the delivery of medical care in residential settings¹⁴. A 2019 European cross-sectional study quantified the frequency of physician visits to nursing homes and the physician recognition of terminal phase of illness¹⁵: however, it has been also noted that quantity of visits does not necessarily equate to the quality of care delivered¹³.

Through studying the content of resident/physician interactions we can better plan the provision of medical care in nursing homes in the future. A strength of our study was the delineation of interactions into subgroup through observation of healthcare records. A 2011 cross-sectional survey of physicians delivering care to nursing home residents with dementia and pneumonia in the US and the Netherlands, highlighted the need for observational studies into how physicians spend their time in nursing homes¹⁶: we have demonstrated how this time was spent in our setting and noted a significant increase in all subgroups of interventions with clinical reviews being the most frequent type of intervention.

As the majority of medical care in nursing homes in Europe is provided for by general practitioners rather than geriatricians or physicians specialising in nursing home medicine¹⁷, the ready availability of medical cover in our nursing home may have influenced the level of physician interventions and may limit generalisability of the study's results.

In terms of resident profile, levels of high dependency were in keeping with a previous Irish study of nursing home residents transferred to emergency departments, and the rate of diagnosed dementia in our centre was consistent with other studies of dementia in nursing homes^{18 19}.

Although concerns about over-medicalisation of the facility that is a resident's home has been described as barrier to medical presence in nursing homes²⁰, it is likely in reality that this has been over-stated, and that under-provision is the real concern. In the midst of a global pandemic that disproportionately affects older adults, the group of vulnerable, multimorbidity and complex nursing home residents require structured and organised medical care²¹.

Our study highlights the significant increase in medical care needs required during a pandemic for older adults and should be used to inform future provision of medical care to nursing home residents during and between pandemics and other natural crises.

Declaration of Conflicts of Interest:

None.

Corresponding Author:

Prof Desmond O'Neill,
Centre for Ageing,
Neuroscience and the Humanities,
Trinity College Dublin,
Trinity Centre for Health Sciences,
Tallaght University Hospital,
Dublin D24 NROA,
Ireland
E-mail: doneill@tcd.ie

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