



Mortality associated with COVID-19 outbreaks in care homes: early international evidence

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Key findings:

- Official data on the numbers of people affected by COVID-19 is not available in many countries
- Due to differences in testing availabilities and policies, and to different approaches to recording deaths, international comparisons are difficult
- Data from 3 epidemiological studies in the United States shows that as many as half of people with COVID-19 infections in care homes were asymptomatic (or pre-symptomatic) at the time of testing
- Data from 5 European countries suggests that care home residents accounted for between 42% and 57% of all deaths related to COVID-19.

1. Measuring the impact of COVID-19 on care home residents and staff: imperfect and limited data

There is growing international evidence that people living in care homes are particularly vulnerable to severe COVID-19 infections and that they are experiencing high rates of mortality as a result. There are also numerous examples from those countries of care homes becoming unviable as not enough staff is available due to sickness and self-isolation measures. This document uses “care homes” to refer to all non-acute residential and nursing facilities that house people with some form of long-term care needs.

The impact of COVID-19 on residents and staff has become apparent in two ways: distressing news reports of care homes becoming overwhelmed due to large number of deaths in a short amount of time and too many staff members being either sick or self-isolating, and, increasingly, estimates of deaths of care home residents. Very few countries appear to be testing people in care homes (staff and residents) systematically. This makes it very difficult to estimate the numbers of people with COVID-19 infections and also to count how many care home residents and staff have died as a result of infection. Given this lack of consistent testing, it appears that the best way to estimate the mortality impact of COVID-19 in care homes will be by comparing mortality data from the period of the pandemic to mortality in previous years at the same time of the year.

In the meantime, it is important to ensure that the levels of infections and deaths of care residents and staff are not ignored, and there is a danger that, by not attempting to measure them even if

imperfectly, opportunities to inform the decisions that policymakers in terms of resource allocations to the care sector may be missed.

This document, which will be updated as new information and data become available, summarises information from three types of sources: epidemiological studies, official estimates and news reports.

2. Epidemiological studies

As of the 11th April, there are 3 epidemiological studies of COVID-19 in care homes (based on a rapid search, a systematic review protocol is under development). All 3 studies are from the United States and have been carried by Public Health-Seattle and King County (PHSKC) and the Centers for Disease Control and Prevention (CDC).

The first study was carried out following the identification of a resident with COVID-19 in a skilled nursing facility on the 28th February (1). The study involved the investigation of a cluster of COVID-19-like illness. Data was collected on symptoms, severity, coexisting conditions, travel history and close contacts with known COVID-19 and diagnostic testing (which was conducted according to CDC guidelines). The study contacted at least 100 facilities in the same county and gathered information on clusters of influenza-like illness among residents and staff. Data was also collected on emergency medical transfers to acute care to identify influenza-like illness. All facilities were high risk of COVID-19 were visited and those with influenza-like illnesses were tested. The facilities were given infection control assessments, training and support.

Testing identified a total of 4 cases of COVID-19 on the 28th February, including the initial resident and a member of staff. On the 18th March there were 167 persons with COVID-19 that were epidemiologically linked to the first facility. Of these, 101 were residents, 50 were staff and 16 were visitors and, by that date, 34 residents and 1 visitor had died. Another 30 facilities were found to have at least one confirmed COVID-19 case. At least 3 facilities had clear epidemiological links with the first facility where the outbreak was identified. Two of the facilities had staff that also worked in the first facility, and a third facility had received two patient transfers from the first.

The authors acknowledged two key limitations of the study: first, some infections would have been missed as not all residents and staff were interviewed and tested for SARS-CoV-2, particularly those who were pre-symptomatic or asymptomatic. Second, there were no complete records of visitors to the first facility, so some infections among visitors are likely to have been missed.

This study identified the following factors as contributors to the spread of COVID-19 in care facilities:

- Staff who worked while symptomatic
- Staff who worked in more than one facility
- Inadequate familiarity with and adherence to Personal Protection Equipment (PPE) guidance
- Challenges to implementing proper infection control practices, including inadequate supplies of PPE and alcohol-based hand sanitizer
- Delayed recognition of access due to low index of suspicion
- Limited availability of testing
- Difficulty identifying persons with COVID-19 on the basis of signs and symptoms alone

The second study, also conducted by the CDC involved testing 76 (93%) residents in a skilled nursing facility where there was an outbreak of COVID-19. They found that 23 (30%) residents tested

positive. Of these, 10 (43%) had symptoms on the date of the test. The remaining 13 (57%) were asymptomatic. 7 days after testing, 10 out of 13 of the asymptomatic residents had developed symptoms. This study suggests that symptom-based screening in long-term care facilities could fail to identify approximately half of residents with COVID-19 (2).

The third study took place in an assisted living community in Seattle, following the hospitalization of 2 residents with confirmed COVID-19 infection on the 5th of March (3). On the 6th of March social distancing and other preventative measures were implemented. PHSKC and the CDC tested all residents and staff members on the 10th of March and also asked them to complete a questionnaire about their symptoms. The tests were repeated 7 days later. 3 out of 80 residents (3.8%) and 2 out of 62 staff members (3.2%) tested positive. The three residents had no symptoms at the time of testing, although one had had cough earlier. A fourth resident who had tested negative in the first test, tested positive in the second (7 days later). This resident was asymptomatic on both days.

The authors had expected to find larger numbers of cases, in part because of the results found in the previous two studies in skilled nursing facilities. They speculate that this may have been due to better opportunities for social isolation measures to be effective in assisted living facilities (where residents live in their own apartments), and also due to less frequent contact with health care providers. The authors also conclude that symptom screening is unlikely to be sufficient to identify people with COVID-19 infections.

3. International data on mortality associated with COVID-19 among care home residents

This section aims to collect the latest information available from a number of countries, this section will be updated regularly as new information becomes available.

It is very important to note that the data reported here is not comparable. Data from official sources has been used where possible, and, where that was not available, information from news reports has been collected. There are a number of caveats that should be noted:

- We do not have information for many countries (please email a.comas@lse.ac.uk if you can contribute)
- The systems for recording deaths linked to COVID-19 in care homes (and the definition of what is a care home) vary between different countries and even regions.

Belgium:

The most recent report by the Belgian Ministry of Health (4), on the 11th April there had been 3,346 COVID-19 deaths, of which 1,405 (42%) were in care homes for older people. 90% of Belgian care homes had at least one case of COVID-19. Assuming that there are 175,000 beds, the mortality rate suggested would be 0.8% of beds.

France:

The most recent numbers published by the Ministry of Health on the 11th of April declared a total of 13,832 deaths as a result of COVID-19, of which 6,177 (44.6%) were residents in care homes. Of these, 4,889 died in care homes and 1,288 in hospital (5). There had been 93,790 cases of confirmed COVID-19 infections, of these, 35,864 were care home residents. France has an estimated 650,000 residential care home beds.

Another source of data, which would not be affected by the variability in testing, are excess deaths compared to the same time in previous years. The French national institute of statistics has published data (on the 10th of April) that shows that, during the month of March 2020 there were 11.9% more deaths in care homes than in March 2019. Across the whole population, there were 10.4% more deaths (6). The total number of deaths in care homes in France in March 2020 was 7,332, compared to 6,572 in 2019, the difference, of 760 people is much lower than the 6,177 deaths reported by the Ministry of Health.

Additionally, some regional health agencies have also published data, for example in Nouvelle Aquitaine (7), cases of COVID-19 infections were identified in 25% of care homes for older people. There were 82 deaths of care home residents (51 in the homes and 31 in hospital), this represented 45% of all deaths associated with COVID-19 in the region, and 0.25% of the number of care home beds in Nouvelle Aquitaine (69,683).

Ireland

Ireland has a centralised system to collect epidemiological information in relation to COVID-19 (see Pierce, 2020). On the 11th April, Ireland had registered 6,444 cases of COVID-19 and 288 deaths, of which 156 (54%) were care home residents. The total number of care home places is 31,000, so the rate of mortality would be 0.5%. As of the 7th of April, Ireland had identified a total of 317 clusters of COVID-19, of which 109 (54%) were in care homes (9).

Italy

The most recent official source is a report of the National Institute of Health (10) published on the 6th of April based on a survey sent to 2,166 of the 4,629 care homes for older people in Italy. 577 homes, with 44,457 residents, responded (26% of those invited to take part in the survey, and just over 10% of all care homes in Italy). Between the 26th of February and the 6th of April, there were 3,859 deaths in the homes that responded, about 8.6% of residents, there regional differences, for example 13.1% in Lombardy and 7.0% in Veneto. It is estimated that 37.3% of these deaths were associated with COVID-19 (3.2% of the total number of residents).

Extrapolating this mortality rate to the total number of residents in care homes in Italy (around 297,158, (11) would suggest that about 9,509 care home residents deaths linked to COVID-19. This would represent 45% of the total of 18,000 deaths in Italy as of the 9th of April.

Spain

There are no official estimates for COVID-19 related mortality in care homes in Spain, but the media (12) has shared information sent by the regional governments to the Ministry of Health on the number of deaths between the 8th of March and the 8th of April. According to these figures, there would have been 8,345 deaths, which would correspond to 57% of the 14,555 deaths due to COVID-19 to date. There are about 325,000 beds in care homes in Spain, so the death rate per bed would be about 2.2%.

Comparison table:

This table summarises the gathered in this document so far, but needs to be interpreted with the limitations and caveats described above.

	Date	Source	Deaths of care home residents linked to COVID-19	% of total COVID-19 deaths	% of care home beds
Belgium	10/04/2020	Official data	1.405	42	0,8
France	11/04/2020	Official data	6,177	45	0,7
Nouvelle Aquitaine (FR)	11/04/2020	Official data	82	45	0,2
Ireland	11/04/2020	Official data	156	54	0,5
Italy	6/04/2020	Survey by official institute (extrapolation)	9,509	45	3,2
Spain	8/04/2020	Media	9.756	57	2,5

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