Supplementary Online Content

McGarry BE, Sommers BD, Wilcock AD, Grabowski DC, Barnett ML. Monoclonal antibody and oral antiviral treatment of SARS-CoV-2 infection in US nursing homes. *JAMA*. Published July 14, 2023.. doi:10.1001/jama.2023.12945

eAppendix 1. Supplementary Details on Data and Methods

This supplementary material has been provided by the authors to give readers additional information about their work

eAppendix 1. Supplementary Detail on Data, Methods, and Results

Data

The primary data source for this study was the Centers for Medicare and Medicaid Services (CMS) COVID-19 Nursing Home Data database, derived from CDC's National Healthcare Safety Network Long-term Care Facility COVID-19 Module. These publicly available data have been widely used to study the impact of the COVID pandemic on U.S. nursing homes.[1-5]

In May of 2021, CMS began requiring nursing homes to report the number of residents treated with certain COVID-19 treatments. Specifically, the modules ask facilities to report the number of residents treated in the current week with the following treatments (from a medicine stock at the respondent facility or a stock at a different facility): bamlanivimab, casirivimab plus imdevimab, bamlanivimab plus etesevimab, sotrovimab, bebtelovimab, molnupiravir, and Paxlovid (nirmatrelvir/ritonavir).

Additional Data Sources and Measures

We obtained information about nursing homes, including overall quality ratings, profit status, and bed size from the January 2022 Nursing Home Compare Provider Information dataset.[4] Additional information about nursing homes, including the racial/ethnic composition of residents, the share of residents with Medicaid, chain affiliation, the average age of residents, and the acuity of residents (as measured by the 25 point Acuity Index, which quantifies the level of care in activities of daily living and specialized medical treatments needed by residents) were obtained from the 2020 Certification and Survey Provider Enhancement Reports (CASPER) system and 2020 Minimum Data Set (MDS) assessments, both through the National Institute on Aging-funded LTCFocus.org website.[5] In instances of missing values within this dataset, prior years were used when available. Staffing level information was obtained from staffing records submitted by nursing homes during the first quarter of 2022 as part of CMS's mandatory payroll-based journal (PBJ) electronic staffing reporting system.[6] Information on the physicians affiliated with each nursing home was obtained from the CMS Physician Compare Facility Affiliation File and the National Downloadable File.[6,7] These data were used to construct the number of affiliated physicians per 100 beds at each facility, and an indicator for whether any of the affiliated physicians listed geriatric medicine as a primary or non-primary specialty on their CMS Provider Info entry.

Data Cleaning

To address potential outliers, we first excluded 106 facilities that report more than twice as many treatment counts as compared to COVID-19 case counts over the full study window (i.e., a total treatment rate>200%). We chose to exclude these facilities because their outlier status appeared to be driven by data quality issues in either treatment or case counts. For the remaining 15,092 facilities, we further addressed potential outliers with respect to treatment rates by Winsorizing weekly treatment counts for 274 facilities (1.8%) whose total treatment rates over the full study window exceeded 100%. Specifically, in weeks where treatment counts exceed the number of new resident cases, we set weekly treatment counts equal to total COVID-19 case counts for these facilities.

Methods

To examine the relationship between facility characteristics and the likelihood of any oral antiviral or monoclonal antibodies treatment use, we estimated a linear probability model where the outcome was an indicator for using any treatment during the study window and the independent variables are the facility characteristics listed in the Table in the letter. Models also included county fixed effects to account for geographic differences in practice patterns and treatment availability, as well as indicators to account for any missing data in the independent variables of interest. To facilitate interpretation of covariate estimates, we scaled continuous variables to be in standard deviation units. Categorical measures are estimated as differences relative to a reference category. The regression analysis is limited to 13,878 facilities who had at least one resident COVID-19 cases during the study period and were located in a county with >1 nursing home (to allow for within county comparisons).

Supplementary References

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