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SUPPORTING INFORMATION

Additional supporting information may be found in the online version of the article at the publisher's website.

Table S1. Differences in administration protocol of the Single Item and UCLA 3-Item loneliness assessments between NSHAP Round 3 (2015–2016) and COVID-19 data.

Table S2. Relationship of Single Loneliness Question to 3-item UCLA Loneliness Scale in data collected during the COVID-19 pandemic and pre-pandemic (2015–2016). Highlighted boxes indicate the rates of false negatives when using the single question. All percentages are row percentages.

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Psychotropic and pain medication use in nursing homes and assisted living facilities during COVID-19

INTRODUCTION

The direct impact of COVID-19 on nursing home and assisted living facility residents in the United States has been devastating. Since the start of the pandemic, roughly 1-in-12 residents in these facilities have died from COVID-19, a toll that represents around 35% of all COVID-19 deaths nationally.¹ Beyond these staggering figures, the indirect effects of COVID-19 on these individuals and the care they received are not yet fully understood.

One important indicator of how nursing homes and assisted living facilities have adapted to COVID clinically is in how medication use has changed. Prescribing can be an early signal of potentially inappropriate care and/or of a changing patient population. Our study focuses on prescribing of select psychotropic and pain medications. Nursing home prescribing for these medications has attracted scrutiny, and the potential is high for negative health consequences among older residents, many of whom have dementia and severe pain.²⁻⁵

METHODS

We used pharmacy claims from IQVIA's Community LRx and LTC-LRx products, respectively capturing around

95% of retail and 75% of nursing home/assisted living claims (our data do not include facility identifiers or distinguish between facility types), regardless of payer. We focus on individuals 65 years and older with LTC LRx claims (roughly 400,000 each month), generally comparing medication use before and after March 2020 (Table S1). We focused on the following medication categories: antipsychotics; benzodiazepines; antidepressants; opioids; muscle relaxants; and mood stabilizers (Table S2).

Analyses examined, by month, the proportion of: i) individuals with any use; ii) individuals who initiated use; and iii) newly admitted individuals who initiated use. For outcome ii, we identified the proportion of stays with a prescription fill among stays that began 31 days or more previously and did not have use of that medication in the previous 30 days. For outcome iii, we analyzed the proportion of newly admitted individuals with a new fill and no use in the 30 days prior to the admission date.

RESULTS

Across our medications of interest, the prevalence and initiation of use among individuals in nursing homes

TABLE 1 Medication use and initiation among all and newly admitted nursing home and assisted living residents

	January 2019	April 2019	July 2019	October 2019	January 2020	April 2020	July 2020	August 2020
N =	415,012	416,444	412,227	420,910	414,101	379,334	363,086	354,137
Medication use among all NH and ALF residents								
Anti-psychotics	9.4%	9.3%	9.5%	9.5%	9.7%	9.6%	10.0%	9.9%
Anti-depressants	23.2%	23.5%	23.6%	23.6%	24.0%	24.0%	24.5%	24.4%
Benzo-diazepines	9.1%	9.0%	9.0%	8.8%	8.8%	8.8%	9.1%	9.0%
Opioid analgesics (LA)	1.9%	1.9%	1.8%	1.8%	1.7%	1.7%	1.7%	1.7%
Opioid analgesics (SA)	11.3%	11.0%	11.0%	10.9%	11.0%	10.4%	10.9%	10.6%
Muscle relaxants	2.0%	2.1%	2.1%	2.1%	2.2%	2.1%	2.2%	2.2%
Mood stabilizers	10.3%	10.5%	10.7%	10.6%	10.8%	10.6%	10.8%	10.6%
Medication initiation among all NH and ALF residents								
Anti-psychotics	4.6%	4.7%	4.7%	4.8%	4.7%	4.5%	4.8%	4.7%
Anti-depressants	19.0%	19.0%	19.6%	19.4%	19.3%	18.4%	19.4%	19.0%
Benzo-diazepines	7.6%	7.5%	7.6%	7.5%	7.1%	6.9%	7.1%	7.0%
Opioid analgesics (LA)	1.5%	1.4%	1.4%	1.3%	1.2%	1.1%	1.2%	1.2%
Opioid Analgesics (SA)	8.1%	7.7%	7.9%	7.8%	7.5%	7.1%	7.4%	7.1%
Muscle relaxants	1.2%	1.2%	1.3%	1.3%	1.3%	1.2%	1.3%	1.3%
Mood stabilizers	5.9%	6.0%	6.2%	6.0%	5.9%	5.6%	5.9%	5.7%
Medication initiation among new NH and ALF admissions								
Anti-psychotics	8.7%	8.9%	9.6%	8.4%	8.8%	11.0%	12.7%	13.7%
Anti-depressants	15.3%	16.3%	17.0%	15.7%	18.5%	16.1%	18.5%	21.2%
Benzo-diazepines	16.7%	16.6%	17.2%	15.3%	16.8%	20.0%	22.3%	23.7%
Opioid analgesics (LA)	3.9%	3.6%	3.8%	3.2%	3.1%	3.9%	4.4%	4.9%
Opioid analgesics (SA)	23.9%	24.0%	24.7%	22.7%	25.0%	25.1%	29.2%	30.9%
Muscle relaxants	2.5%	2.5%	2.8%	2.5%	2.9%	2.0%	2.9%	2.9%
Mood stabilizers	8.4%	8.3%	9.0%	8.1%	9.1%	7.1%	9.2%	9.9%

Abbreviations: ALF, assisted-living facility; NH, nursing home.

and assisted living facilities during the previous month were largely unchanged over the study period (Table 1; Figures S3 and S4). For instance, roughly 10% of our sample used antipsychotics each month, and roughly 5% initiated their use in each month of the study period.

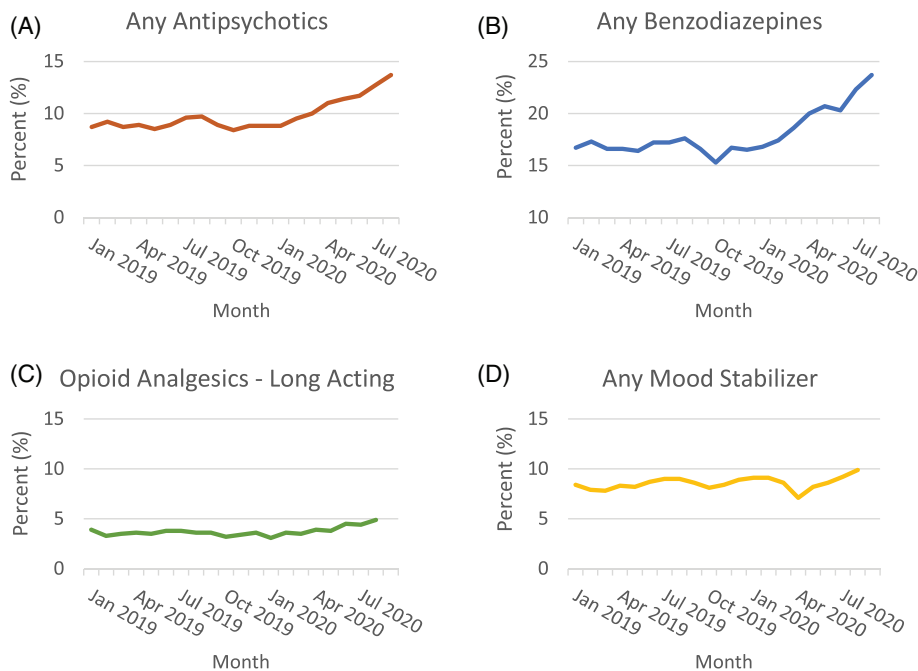
In contrast, initiation of use among new admissions exhibited different trends, especially for certain types of medications (Figures 1 and S5). After being relatively steady (at 9%–10%) before COVID-19, the initiation of antipsychotic use among new admissions increased to 13% by August 2020. Similar trends were exhibited for benzodiazepines (around 17% pre-COVID before increasing to 22%) and short-acting opioids (23%–25% before increasing to 29%). Trends for other medication classes were less clear. Initiation of long-acting opioids and muscle relaxants was relatively stable. Initiation of mood

stabilizers and antidepressants among new admissions was variable in pre-COVID months, exhibited a slight drop during the first part of 2020, and increased between April and August 2020.

DISCUSSION

Among nursing home and assisted living residents, overall use of select psychotropic and pain medications was relatively unchanged between our pre- and post-COVID periods, at least based on national averages. A similar finding emerged regarding the initiation of these medications among individuals without such use during the prior month of their stay. Given the clinical and organizational challenges posed by the pandemic, these findings are reassuring.

FIGURE 1 Percentage of newly admitted residents with initiation of select medications. Analyses use IQVIA LTC LRx and LRx data, January 2019 to August 2020. The figures display the percentage of new stays with a new fill in a given month and no use in the 30 days prior to the admission date. Please note that the percentage using benzodiazepines starts at 10%



We found distinct trends among individuals newly admitted to facilities, with initiation of use increasing after the start of the pandemic among some medication classes. The use of antipsychotics and benzodiazepines among newly admitted individuals without prior use of these medications, for instance, rose nearly 30% from April to August 2020. The initiation of short-acting opioids followed a similar pattern. In contrast, it is harder to discern pandemic-related trends for other classes we examined.

Importantly, it is difficult to determine causes for medication use trends from our data, and we are unable to discern facility-level trends. Increased antipsychotic and benzodiazepine use could reflect facilities' struggle to manage the care of newly admitted residents. When staffing and clinical challenges interacted with the anxiety created by COVID-19—including severe limitations on family visits which could ease a new resident's transition—it is possible that facilities turned to these medications more than they had previously.^{6,7} Moreover, changes to focus state survey practices more narrowly on infection control with a reduced on-site presence could have contributed to changes in facility practices.⁸ Alternatively, the case-mix of admitted residents likely shifted considerably after the pandemic started. As discretionary inpatient procedures paused and as nursing homes especially became a setting of last resort, new admissions were most likely individuals for whom staying at home was no longer safe.^{9,10} Future research should incorporate clinical and functional assessment data and investigate the role of the facility and geographic factors to examine these trends in more detail.

CONFLICT OF INTEREST

The authors do not have any conflicts of interest to report.

AUTHOR CONTRIBUTIONS


Drs. Stevenson and Huskamp obtained data for the study, developed the initial study concept, and worked directly with the study data. All authors contributed to refining the research approach, interpreting the results, and in preparing the manuscript. Dr. Stevenson's time was supported in part by the Veterans Affairs Tennessee Valley Healthcare System. However, the contents of this article do not represent the views of the Department of Veterans Affairs or the US government. In addition, our programmer's time was supported in part by the Hospice of the Valley Foundation, which similarly did not have a role in the letter itself.

SPONSOR'S ROLE

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SUPPORTING INFORMATION

Additional supporting information may be found in the online version of the article at the publisher's website.

Table S1. Demographic characteristics of the study population.

Table S2. Listing of all medications reviewed across the nine drug categories of interest and the drug/product level.

Figure S3. Figures display the percentage of all stays with a fill for a medication in seven drug categories of interest in a given month.

Figure S4. Figures display the percentage of all stays with a new fill in a given month and no use in the 30 days prior to the admission date.

Figure S5. Figures display the percentage of new stays with a new fill for a medication in a given month and no use in the 30 days prior to the admission date.