

No Signs That COVID-19 Disrupted Hypertension Medication Adherence for Medicare Beneficiaries, but Racial and Ethnic Disparities Persisted

Mona Kilany, Merton Lee, Tanvi Rao, Karin Johnson, Mike Liu, Tracy Haider, Rouguia Barry, and Ilene Harris

Despite major care disruptions in the initial stage of the COVID-19 pandemic, medication adherence, or taking medication as prescribed, for Medicare beneficiaries aged 65 years and older with hypertension, also known as high blood pressure, remained high—at 86 percent—according to a new American Institutes for Research[®] (AIR[®]) study using fee-for-service (FFS) Medicare claims data from 2018 to 2020. However, disparities in medication adherence persisted for Black, Hispanic, and American Indian/Alaska Native beneficiaries with hypertension. About three in five (59.8 percent)¹ Medicare FFS beneficiaries aged 65 and older have hypertension, increasing their risk for heart disease, stroke, and other diseases, as well as COVID-19-related complications, especially if their blood pressure is poorly controlled. Medication adherence is a critical factor in controlling high blood pressure. This study examined how disruptions in care associated with the pandemic—such as reduced access to ambulatory care visits—affected medication adherence for hypertension. The findings suggest that steps by the Centers for Medicare & Medicaid Services (CMS) to relax prescribing requirements during the pandemic—for example, by allowing beneficiaries to refill prescriptions early and get a 90-day supply of medication—likely helped maintain medication adherence for high blood pressure and prevent racial and ethnic disparities in adherence from worsening.²

Key Findings

- Medication adherence remained high and stable (86 percent) through the first year of the COVID-19 pandemic for Medicare fee-for-service beneficiaries aged 65 and older diagnosed with hypertension.
- Racial and ethnic disparities in hypertension medication adherence persisted for American Indian/Alaska Native, Black, and Hispanic beneficiaries.
- Relaxed Medicare prescribing requirements, such as allowing early refills and larger quantities of medication, likely helped keep medication adherence rates high and prevent worsening disparities among racial and ethnic groups.
- Policymakers should explore ways to improve measurement of medication adherence, particularly focused on reducing health disparities and increasing equity among racial and ethnic groups.

High Blood Pressure Prevalence Among Medicare Beneficiaries

High blood pressure is the most important modifiable risk factor for heart disease, stroke, congestive heart failure, and end-stage renal disease.³ According to the Centers for Disease Control and Prevention (CDC), hypertension that is not under control results in nearly 1,300 deaths every day in the United States.⁴ Almost half (47percent) of Americans are found to have high blood pressure in the 2017 clinical guideline from the American College of Cardiology,⁵ the American Heart Association, and other organizations, which defines high blood pressure as systolic blood pressure at or above 130 mmHg and/or diastolic blood pressure at or above 80 mmHg. An estimated 59.8 percent of Medicare FFS beneficiaries aged 65 and older have high blood pressure, and the prevalence of hypertension varies across racial and ethnic groups within FFS Medicare. Based on 2018 data, the most recent data available, Black beneficiaries aged 65 and older have the highest prevalence of hypertension (70.1 percent), followed by American Indian/Alaska Native (59.5 percent), White (59.4 percent), Asian/Pacific Islander (58.9 percent), and Hispanic (58 percent) beneficiaries.³

Hypertension is an ambulatory care sensitive condition (ACSC)—or a condition where hospitalizations and other serious complications can generally be avoided if patients have access to effective primary care. Effective management of ACSCs can improve quality of care and potentially reduce costs. Some people can get their blood pressure under control with lifestyle changes such as eating a healthier diet or exercising more, but most people need prescription medications, such as renin-angiotensin system (RAS) antagonists, to lower their blood pressure. RAS antagonists are a low-cost way to help people manage their hypertension, reduce their risk of cardiovascular disease, and slow the progression of chronic kidney disease.^{6,7} Medicare recognized the importance of medication adherence for hypertension by including a measure for the use of RAS antagonists in Star Ratings for the stand-alone Part D prescription drug plans available to Medicare FFS beneficiaries.

Medicare Prescribing Requirements Eased During COVID-19

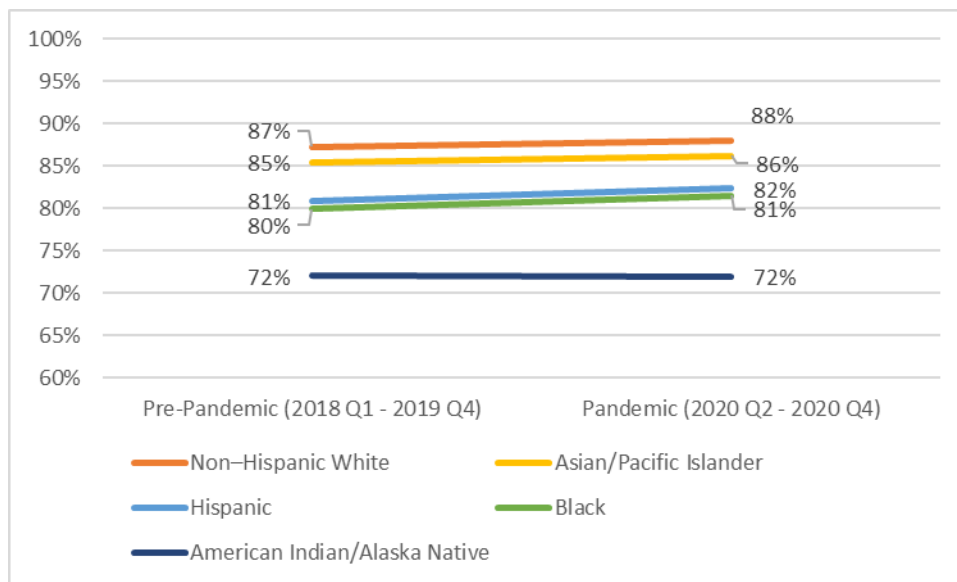
In the wake of the COVID-19 public health emergency, U.S. health care utilization changed abruptly and dramatically,^{8,9,10,11} with many physician practices and other ambulatory care sites limiting in-person care. For people with ACSCs, including hypertension, care disruptions—like those seen early in the pandemic—can be particularly harmful if patients delay or go without needed care. Given the importance of clinical follow-up for medication adherence, changes in health care access and utilization stemming from the pandemic could affect adherence and the management of ACSCs such as hypertension. To minimize care disruptions, CMS eased prescribing requirements—for example, allowing Medicare beneficiaries to refill prescriptions early or get a 90-day supply of medication. Medicare also expanded coverage of telehealth visits during the public health emergency, enabling beneficiaries to communicate more easily with clinicians remotely.^{12,13}

Disparities in Medication Adherence Persisted During the Pandemic

CMS defines medication adherence for hypertension (e.g., RAS antagonists) as the percentage of beneficiaries with a prescription for a blood pressure medication who fill their prescription often enough to cover 80 percent or more of the time they are supposed to be taking the medication—a threshold known as the proportion of days covered.¹⁴ Between the pre-pandemic period (2018 quarter 1–2020 quarter 1) and initial pandemic periods (2020 quarter 2–2020 quarter 4), hypertension medication adherence remained stable, with approximately 86 percent of Medicare FFS beneficiaries aged 65 and older taking RAS antagonists remaining adherent, according to AIR’s analysis of Medicare 2018–2020 claims data (see Methods box on page 5).

However, disparities in medication adherence for Black, Hispanic, and American Indian/Alaska Native beneficiaries persisted during the pandemic (Exhibit 1), with the largest gap reaching 16 percentage points between American Indian/Alaska Native (72 percent) and White (88 percent) beneficiaries. Although Black beneficiaries have the highest prevalence of hypertension, their medication adherence was approximately 7 percentage points lower than that of White beneficiaries (81 percent vs. 88 percent) during late 2020. Similarly, Hispanic beneficiaries had lower medication adherence, at 82 percent, remaining stable before and during the pandemic in 2020.

Exhibit 1. Hypertension Medication Adherence for Fee-for-Service Medicare Beneficiaries Aged 65 Years and Older Before and During the COVID-19 Pandemic, by Race and Ethnicity



Note. Hypertension medication adherence is measured as the percentage of beneficiaries taking RAS antagonists who fill their prescription often enough to cover 80 percent or more of the time they are supposed to be taking the medication (see Note 15, <https://www.cms.gov/files/document/mmppperformanceceadatechnotes.pdf>).

Source: Medicare fee-for-service claims for a 10 percent simple random sample of beneficiaries enrolled in Part A, Part B, and Part D between 2018 Q1 and 2020 Q4.

Many factors are associated with medication adherence, including health-related social needs such as food security and social determinants of health (SDOH), defined by [Healthy People 2030](#) as “the conditions in the environments where people are born, live, learn, work, play, worship, and age that affect a wide range of health, functioning, and quality-of-life outcomes and risks.”¹⁵ For example, poverty/food insecurity, weak social supports, and healthy built environments are associated with hypertensive medication adherence.¹⁶ Moreover, in terms of disparities in medication adherence among racial and ethnic groups, individual factors such as patient-provider interactions and communications about the importance of adherence, patient knowledge and understanding, forgetting to take medications, and running out of pills early are associated with lower medication adherence.^{17,18,19} Such factors may in part explain the ongoing disparities in medication adherence for American Indian/Alaska Native, Black, and Hispanic beneficiaries identified in the AIR study.

Shooting for the Stars: Medicare Plan Ratings and Adherence

Once a person is prescribed a blood pressure medication, taking and continuing the medication as prescribed is among the most important ways to manage hypertension.²⁰ For this reason, medication adherence for this condition is one of the quality measures included in the Medicare Part D Star Ratings program, which awards up to five stars to the highest performing stand-alone Medicare prescription drug plans across a range of quality measures.²¹ Indeed, given the stakes attached to plans earning high Star Ratings—consistently low ratings can lead to plan exclusion from Part D, whereas high ratings may help draw new enrollees—some research shows increasing rates of automatic refills, supply fills of more days, and higher adherence than has been reported in the clinical literature for some classes of medications included in Star Ratings, particularly for patients with multiple chronic conditions.^{22,23} Such plan tactics can appear to improve performance on adherence measures without affecting actual patient behavior, given the nature of the Part D medication adherence measure, which is calculated by determining the proportion of days covered based on Part D prescription claims data.²² And yet, regulatory pressure on adherence may result in better adherence, especially for drugs that treat health conditions included in the Star Ratings. Researchers noted a spillover effect on oral antihypertensives in general when the RAS antagonist measure accounted for a higher weight in the overall Star Rating. However, this spillover effect was only observed for medications treating the same conditions as those included in the Star Ratings, not for all oral medications taken by a patient. Thus, patients with multiple chronic conditions and complex medication regimens may require additional support to achieve overall adherence.²² As former surgeon general C. Everett Koop said decades ago,²⁴ “Drugs don’t work in people who don’t take them.” People cannot take their medications if they do not have their prescriptions filled. So, improving medication adherence, as well as its measurement, is an important policy goal.

Conclusions and Policy Implications

Despite widely documented disruptions to care during the COVID-19 pandemic, the AIR study found little change in hypertension medication adherence among Medicare FFS beneficiaries before and during the pandemic in late 2020. On a less positive note, ongoing disparities in medication adherence among American Indian/Alaska Native, Black, and Hispanic beneficiaries persisted. These findings suggest that policy refinements to medication adherence measures could help spur improved Part D prescription drug plan performance and address ongoing documented racial and ethnic disparities in adherence.²⁵

Policymakers could consider the following ways to improve measurement of medication adherence:

- Identify and test new measures that improve adherence by addressing health-related social needs.
- Use additional measures of adherence for Star Ratings, perhaps by targeting additional chronic diseases.
- Improve data collection of actual medication-taking behavior to verify that performance on quality measures results in meaningful outcomes.

In conclusion, the federal government, through the [Million Hearts](#) initiative sponsored by CMS and the CDC, is working to avert one million preventable cardiovascular disease events, including heart attacks and strokes, by 2027. The key element of the Million Hearts campaign of improving blood pressure control and measurement of hypertension medication adherence—especially targeted at closing gaps among racial and ethnic groups—can both help save lives and improve health care equity.

METHODS

This analysis used fee-for-service Medicare claims data from a 10 percent simple random sample of Medicare beneficiaries who were enrolled in Medicare Parts A, B, and D for the entire 2018–2020 study period. The study sample included 983,140 Medicare beneficiaries aged 65 and older with hypertension as of 2019, as determined by the Master Beneficiary Summary File chronic condition flag. The analysis excluded beneficiaries enrolled in Part C and those diagnosed with end-stage renal disease at any point in the study period.

Medication adherence was measured using the Pharmacy Quality Alliance’s [Proportion of Days Covered: Renin Angiotensin System Antagonists \(PDC-RASA\)](#) data from the Medicare Part D Event File. To calculate the PDC-RASA, the numerator included the count of days in the observation/treatment period during which beneficiaries had medication in their possession according to the days’ supply, and the denominator included the number of individuals aged 65 years and older who claimed 2 or more prescriptions for any RAS antagonist or RAS antagonist combination product on different dates of service in the treatment period. The treatment period started with the first prescription claim for any RASA medication, referred to as the index prescription start date, and ended with the last day of the measurement year or death, whichever occurred first. We modified the measure to reflect a treatment period of at least 180 days to be included in the measure denominator.

Endnotes

- ¹ Centers for Medicare & Medicaid Services. (2018). *Chronic conditions* [Excel file]. U.S. Department of Health and Human Services. https://www.cms.gov/Research-Statistics-Data-and-Systems/Statistics-Trends-and-Reports/Chronic-Conditions/Downloads/CC_Prev_State_County_Age.zip
- ² Centers for Medicare & Medicaid Services. (n.d.). *Getting prescriptions in disaster or emergency*. U.S. Department of Health and Human Services. <https://www.medicare.gov/what-medicare-covers/getting-prescriptions-in-disaster-or-emergency>
- ³ Centers for Medicare & Medicaid Services. (2020). *Data Snapshot, June 2020: Hypertension disparities in Medicare fee-for-service beneficiaries*. U.S. Department of Health and Human Services. https://www.cms.gov/About-CMS/Agency-Information/OMH/Downloads/OMH_Dwnld-DataSnapshot-Hypertension.pdf
- ⁴ Centers for Disease Control and Prevention, National Center for Health Statistics. (2018). *Underlying cause of death, 1999–2017* (CDC WONDER online database). U.S. Department of Health and Human Services.
- ⁵ Centers for Disease Control and Prevention. (2022). *Facts about hypertension*. U.S. Department of Health and Human Services. <https://www.cdc.gov/bloodpressure/facts.htm>
- ⁶ Muneer, K., & Nair, A. (2017). Angiotensin-converting enzyme inhibitors and receptor blockers in heart failure and chronic kidney disease—Demystifying controversies. *Indian Heart Journal*, 69(3), 371–374. <https://doi.org/10.1016/j.ihj.2016.08.007>
- ⁷ Düsing, R. (2016). Mega clinical trials which have shaped the RAS intervention clinical practice. *Therapeutic Advances in Cardiovascular Disease*, 10(3), 133–150. <https://doi.org/10.1177/1753944716644131>
- ⁸ Roy, C. M., Bollman, E. B., Carson, L. M., Northrop, A. J., Jackson, E. F., & Moresky, R. T. (2021). Assessing the indirect effects of COVID-19 on healthcare delivery, utilization and health outcomes: A scoping review. *European Journal of Public Health*, 31(3), 634–640. <https://doi.org/10.1093/eurpub/ckab047>
- ⁹ Stamenova, V., Chu, C., Pang, A., Fang, J., Shakeri, A., Cram, P., Bhattacharyya, O., Sacha Bhatia, R., & Tadrous, M. (2022). Virtual care use during the COVID-19 pandemic and its impact on healthcare utilization in patients with chronic disease: A population-based repeated cross-sectional study. *PloS One*, 17(4), e0267218. <https://doi.org/10.1371/journal.pone.0267218>
- ¹⁰ Cantor, J., Sood, N., Bravata, D. M., Pera, M., & Whaley, C. (2022). The impact of the COVID-19 pandemic and policy response on health care utilization: Evidence from county-level medical claims and cellphone data. *Journal of Health Economics*, 82, 102581. <https://doi.org/10.1016/j.jhealeco.2022.102581>
- ¹¹ Leuchter, R. K., Villaflores, C. W. A., Norris, K. C., Sorensen, A., Vangala, S., & Sarkisian, C. A. (2021). Racial disparities in potentially avoidable hospitalizations during the COVID-19 pandemic. *American Journal of Preventive Medicine*, 61(2), 235–239. <https://doi.org/10.1016/j.amepre.2021.01.036>
- ¹² Dolan, R. (2022, April 30). *States are shifting how they cover prescription drugs in response to COVID-19*. Kaiser Family Foundation. <https://www.kff.org/policy-watch/states-are-shifting-how-they-cover-prescription-drugs-in-response-to-covid-19/>
- ¹³ Centers for Medicare & Medicaid Services. (2022). *COVID-19 frequently asked questions (FAQs) on Medicare fee-for-service (FFS) billing*. U.S. Department of Health and Human Services. <https://www.cms.gov/files/document/03092020-covid-19-faqs-508.pdf>
- ¹⁴ Centers for Medicare & Medicaid Services. (2022, March). *2022 Medicare-Medicaid plan performance data technical notes*. U.S. Department of Health and Human Services. <https://www.cms.gov/files/document/mmppperformancedatatechnotes.pdf>
- ¹⁵ U.S. Department of Health and Human Services, Office of Disease Prevention and Health Promotion. *Social determinants of health. Healthy People 2030*. <https://health.gov/healthypeople/priority-areas/social-determinants-health>
- ¹⁶ Donneyong, M. M., Chang, T.-J., Jackson, J. W., Langston, M. A., Juarez, P. D., Sealy-Jefferson, S., Lu, B., Im, W., Burciaga Valdez, R., Way, B. M., Colen, C., Fischer, M. A., Salsberry, P., Bridges, J. F. P., & Hood, D. B. (2020). Structural and social determinants of health factors associated with county-level variation in non-adherence to antihypertensive medication treatment. *International Journal of Environmental Research and Public Health*, 17(18), 6684. <https://doi.org/10.3390/ijerph17186684>
- ¹⁷ Ratner, N. L., Davis, E. B., Lhotka, L. L., Wille, S. M., & Walls, M. L. (2017). Patient-centered care, diabetes empowerment, and type 2 diabetes medication adherence among American Indian patients. *Clinical Diabetes*, 35(5), 281–285. <https://doi.org/10.2337/cd17-0008>

-
- ¹⁸ Turner, B. J., Hollenbeak, C., Weiner, M. G., Ten Have, T., & Roberts, C. (2009). Barriers to adherence and hypertension control in a racially diverse representative sample of elderly primary care patients. *Pharmacoepidemiology & Drug Safety*, 18(8), 672–681. <https://doi.org/10.1002/pds.1766>
- ¹⁹ Gerber, B. S., Cho, Y. I., Arozullah, A. M., & Lee, S. Y. (2010). Racial differences in medication adherence: A cross-sectional study of Medicare enrollees. *The American Journal of Geriatric Pharmacotherapy*, 8(2), 136–145. <https://www.sciencedirect.com/science/article/abs/pii/S1543594610000218?via%3Dihub>
- ²⁰ Campbell, P. J., Axon, D. R., Taylor, A. M., Smith, K., Pickering, M., Black, H., Warholak, T., & Chinthammit, C. (2021). Hypertension, cholesterol and diabetes medication adherence, health care utilization and expenditure in a Medicare Supplemental sample. *Medicine*, 100(35), e27143. <https://doi.org/10.1097/MD.00000000000027143>
- ²¹ Cooke, C. E., Olshanskaya, S., Lee, M., & Brandt, N. J. (2022). Evolution of the Comprehensive Medication Review Completion Rate for Medicare Part D Plans: What Do the Stars Tell Us?. *The Senior Care Pharmacist*, 37(8), 357-365. <https://www.ingentaconnect.com/content/ascp/tscp/2022/00000037/00000008/art00009>
- ²² Farley, J. F., Kumar, A., & Urlick, B. Y. (2019). Measuring adherence: A proof of concept study for multiple medications for chronic conditions in alternative payment models. *Pharmacy*, 7(3), 81. <https://doi.org/10.3390/pharmacy7030081>
- ²³ Stefanacci, R. G. (2007). Medicare Part D: It should be all about quality ... stupid! *Journal of the American Geriatrics Society*, 55(7), 1134–1136. <https://agsjournals.onlinelibrary.wiley.com/doi/full/10.1111/j.1532-5415.2007.01288.x>
- ²⁴ Lindenfeld, J., & Jessup, M. (2017). “Drugs don’t work in patients who don’t take them” (C. Everett Koop, MD, US Surgeon General, 1985). *European Journal of Heart Failure*, 19(11), 1412–1413. <https://doi.org/10.1002/ejhf.920>
- ²⁵ Tsang, C. C. S., Wan, J. Y., Chisolm-Burns, M. A., Li, M., Dagogo-Jack, S., Cushman, W. C., Hines, L. E., & Wang, J. (2021). Racial/ethnic disparities in measure calculations for Part D Star Ratings among Medicare beneficiaries with diabetes, hypertension, and/or hyperlipidemia. *Research in Social and Administrative Pharmacy*, 17(8), 1469–1477. <https://www.sciencedirect.com/science/article/abs/pii/S1551741120311682>



1400 Crystal Drive, 10th Floor
Arlington, VA 22202-3289
+1.202.403.5000 | AIR.ORG

Established in 1946, with headquarters in Arlington, Virginia, the American Institutes for Research® (AIR®) is a nonpartisan, not-for-profit organization that conducts behavioral and social science research and delivers technical assistance to solve some of the most urgent challenges in the U.S. and around the world. We advance evidence in the areas of education, health, the workforce, human services, and international development to create a better, more equitable world. The AIR family of organizations now includes IMPAQ, Maher & Maher, and Kimetrica. For more information, visit AIR.ORG.

Copyright © 2022 American Institutes for Research®. All rights reserved. No part of this publication may be reproduced, distributed, or transmitted in any form or by any means, including photocopying, recording, website display, or other electronic or mechanical methods, without the prior written permission of the American Institutes for Research. For permission requests, please use the Contact Us form on AIR.ORG.

Notice of Trademark: “American Institutes for Research” and “AIR” are registered trademarks. All other brand, product, or company names are trademarks or registered trademarks of their respective owners.