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Centers for Medicare & Medicaid Services**

FINAL REPORT TO CONGRESS

Evaluation of the Independence at Home Demonstration

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Executive Summary

Congress authorized the Independence at Home (IAH) Demonstration in 2010.¹ IAH tested a performance-based payment incentive to primary care practices specializing in the delivery of home-based primary care to high-need, high-cost Medicare beneficiaries in the Original Medicare program. This report responds to the statute's requirements for an independent evaluation of the demonstration and report to Congress that includes an analysis of the following topics:

What were best practices under the demonstration? IAH practices had already adopted several best clinical practices that they continued, including: 1) proactive outreach and home visits to beneficiaries, 2) cultivation of trusting relationships with beneficiaries and caregivers, 3) reduction of health risks at home, 4) connection to community-based services, and 5) collaboration with home health agencies.

What was the effect of the demonstration on expenditures? Averaged across all 10 performance years, total Medicare spending for IAH beneficiaries did not significantly increase or decrease in response to the demonstration. For the approximately 25 percent of IAH beneficiaries who newly started receiving home-based primary care, total Medicare spending was lower in their first year relative to similar beneficiaries who did not receive home-based primary care. After the first year, however, total spending was no different between beneficiaries who received and did not receive home-based primary care. IAH practices earned \$96M in incentive payments under the demonstration. The amount of incentive payments may have exceeded the amount that practices reduced in total Medicare spending for IAH beneficiaries.

What was the effect of the demonstration on quality of health care services? The measurable impact of the demonstration on quality of care was limited because IAH practices could earn an incentive payment without reporting and improving certain process measures. Their performance on certain outcome measures did not appear to be any different from the outcomes of similar beneficiaries who did not receive home-based primary care. Over 10 performance years, the rate of hospital admissions preceded by an emergency department (ED) visit did decline in four of the first five performance years and likely did so on average across all years. There was no consistent growth or decline in other emergency department visits, hospital admissions, or readmissions. However, the subset of IAH beneficiaries who newly started receiving home-based primary care significantly reduced hospital admissions in their first two years after starting home-based primary care relative to similar beneficiaries who did not receive home-based primary care. Readmissions significantly declined up to three years after initiation of home-based primary care. As far as improvements in additional health outcomes commensurate with chronic illness levels of the IAH population, IAH beneficiaries tended to spend less time at a hospital, skilled nursing facility, or nursing home after starting home-based primary care. It is unlikely that home-based primary care under the demonstration affected mortality.

What was the effect of the demonstration on access to services? IAH beneficiaries received more primary care than similar beneficiaries who accessed primary care in office-based settings. Starting home-based primary care with IAH practice clinicians led to a large increase in the number of primary care visits, and the number of specialty care visits did not appear to decrease. IAH beneficiaries and their caregivers reported high levels of satisfaction with home-based primary care delivered by IAH practice clinicians.

What was the effect of the demonstration on coordination of care? Care coordination between clinicians and care settings such as hospitals and home health agencies was a core part of home-based primary care delivered by the IAH practices. Beneficiaries who started receiving home-based primary care more frequently received chronic care management services. Regarding improvements to the efficiency of care, none of the IAH practice leaders reported specifically focusing on reducing unnecessary imaging or testing during the demonstration to make care more coordinated and efficient.

What were explanations for the findings? Over the course of the demonstration, IAH beneficiaries did not show consistent evidence of improved outcomes for four overarching reasons: 1) the statutory criteria identified a mix of beneficiaries whose outcomes were more or less expected to be affected by home-based primary care under the demonstration; 2) the relatively small number of beneficiaries in the demonstration made it difficult for the evaluation to measure its impacts on outcomes; 3) the departure of practices during the demonstration prevented measuring its effects among a consistent set of participants and exacerbated the challenges of measuring outcomes for a small number of beneficiaries; and 4) the IAH payment incentive did not sufficiently drive practice-wide changes that improved outcomes.

Introduction

When the IAH Demonstration was created by Congress in 2010, it introduced an opportunity to systematically test a multi-site, multidisciplinary home-based primary care delivery model in the Original Medicare program.² To deliver home-based primary care, health care providers furnish primary care services at a patient's home in place of the patient visiting an office-based primary care clinic.³ Home-based primary care generally targets patients who are homebound or severely frail or infirm, improving their access to primary care with the aim of avoiding costly acute health events such as ED visits or hospitalizations and lowering their overall spending.

IAH's authorizing legislation, in [Appendix A](#), required the Secretary of Health and Human Services to conduct an independent evaluation of the demonstration and submit a report to Congress. In addition to the first IAH report to Congress released in 2018 evaluating the original three years of the demonstration, this second and final IAH report to Congress evaluates the demonstration over its original length plus three extension periods, covering a total of 10 performance years.⁴ As stipulated in statute, this final report to Congress includes best practices under the demonstration, as well as: 1) an analysis of expenditures under the demonstration, 2) quality of health care services delivered to applicable beneficiaries, 3) access to services for applicable beneficiaries, and 4) coordination of care. Under these topics, it studies whether home-based primary care under the demonstration: 1) reduced preventable hospitalizations, ED visits, and the cost of health services, 2) prevented hospital readmissions, 3) improved health outcomes commensurate with beneficiaries' stage of chronic illness, 4) improved the efficiency of care, and 5) achieved beneficiary and caregiver satisfaction.

What follows is an overview of the IAH Demonstration and its evaluation, a summary of findings by each topic, and conclusions. Additional supporting materials, including the first IAH report to Congress and annual and final evaluation reports produced by an independent contractor, can be found on the Centers for Medicare & Medicaid Services (CMS) IAH webpage.⁵

IAH Demonstration Overview

Under statute, IAH was designed to generate evidence on whether home-based primary care coupled with an incentive payment could reduce spending and improve health outcomes for Original Medicare beneficiaries. Preceding IAH's authorizing legislation, home-based primary care interventions of varying structure and rigor were limited to a single health system or site with small numbers of homebound or frail patients.⁶ These interventions produced weak and conflicting evidence of the effectiveness of home-based primary care at reducing hospital-related utilization and health care spending ([Appendix B](#)).

IAH addressed some limitations of preceding studies of home-based primary care by aiming to test a standardized intervention among health care providers across the United States. The demonstration was a multi-site test for Medicare beneficiaries meeting a defined set of criteria who were cared for by practices meeting minimum requirements to deliver home-based primary care. The following elements describe the design and implementation of the demonstration:

Length of the demonstration. IAH was originally specified in statute as a three-year demonstration, and Congress extended the demonstration three times ([Appendix A](#)). After IAH's launch in 2012, the first extension in 2015 lengthened the demonstration two additional years. Congress extended IAH two more years with the second extension in 2018, which was preceded by a 15-month gap between the first and second extension performance years. The third extension in 2020 lengthened IAH three final years for a total of 10 performance years.

Participating practices. Participating practices were subject to certain requirements specified in IAH's authorizing legislation: 1) organized to provide physicians' services; 2) experience with delivering team-based primary care in the homes of patients with chronic, high-cost health needs; 3) availability to patients any hour of the day and all days of the week; 4) use of electronic monitoring, diagnostic, and health information systems; and 5) provision of home visits to a minimum of 200 applicable beneficiaries annually.

Participating practices were prepared to participate in the demonstration because they specialized in delivering team-based, home-based primary care. Their experience with home-based primary care meant that IAH had a standardized group of participants, but it also limited the generalizability of the results of the demonstration, as many primary care clinicians do not specialize in making home visits. At the time IAH began, approximately 475 primary care clinicians were considered full-time providers of home-based primary care by making 1,000 or more home visits each year, and it is estimated that only about half of Americans resided within 30 miles of them.⁷

CMS accepted 18 practices (including four practice consortia) meeting the demonstration's requirements to participate in IAH beginning in 2012. As voluntary participants, IAH practices could withdraw from the demonstration at any time. Fourteen of the original 18 practices participated during the first extension, and only seven practices were still participating at the start of the eighth performance year in the final extension. During the first two extensions, some practices discontinued participating after having trouble meeting the demonstration's requirements or deciding to no longer deliver home-based primary care. During the final extension, most IAH practice clinicians transitioned to alternative payment models created by the Center for Medicare and Medicaid Innovation at CMS such as the Primary Care First Model, Global and Professional Direct Contracting Model, and ACO REACH Model. Only one IAH practice participated in the demonstration's final performance year.

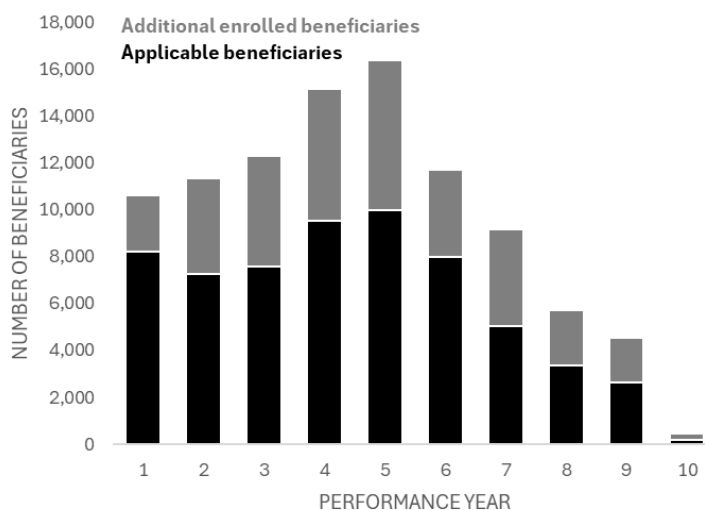
Applicable beneficiaries. As defined in IAH's statute, applicable beneficiaries were Original Medicare beneficiaries with at least two chronic illnesses and in need of assistance from another person with at least two activities of daily living. They must have had a non-elective hospital stay and post-acute rehabilitation services in the past 12 months. In addition, the Secretary established the additional criterion that applicable beneficiaries were not receiving hospice when they enrolled in the demonstration.

To ensure its analyses were standardized, the evaluation used administrative data to establish which beneficiaries met the applicable beneficiary criteria in each performance year of the demonstration. Applicable beneficiaries must have had at least one home visit from an IAH practice clinician. Each beneficiary's hospitalization and post-acute care in the prior 12 months and chronic conditions status were confirmed using claims data, and activities of daily living limitations were determined based on patient assessment surveys from the post-acute care provider. The applicable beneficiary identification process occurred at least six months after the

close of a performance year to ensure that claims and assessments had been submitted for a given year.

Rather than exclusively using administrative data, IAH practices followed different processes for enrolling beneficiaries so that quality measures and incentive payments could be calculated on a timely basis (explained below). Health care providers with IAH practices conducted their own assessments to determine which beneficiaries were enrolled in the demonstration each performance year. A portion of these beneficiaries were later confirmed as applicable beneficiaries by the evaluation with administrative data.⁸ The evaluation also identified beneficiaries who met the applicable beneficiary criteria but were not enrolled by IAH practices, and IAH practices enrolled an additional set of beneficiaries who did not meet the applicable beneficiary criteria according to administrative data. These additional enrolled beneficiaries are shown in the gray bars of **EXHIBIT 1**. IAH practices enrolled 29 percent more beneficiaries than the number of confirmed applicable beneficiaries in year one and as many as 81 percent more beneficiaries in year seven.

EXHIBIT 1: IAH Practices Enrolled Additional Beneficiaries in the Demonstration



NOTE: Bar chart shows the number of applicable beneficiaries according to administrative data in the black bars and additional beneficiaries who were enrolled in the demonstration by IAH practices in the gray bars for the 14 practices evaluated for five or more years.

Total number of beneficiaries. The original IAH statute limited the demonstration to 10,000 applicable beneficiaries across all participating practices, which Congress increased to 15,000 starting in the sixth performance year and then 20,000 applicable beneficiaries starting in the eighth performance year ([Appendix A](#)). In performance years where the number of enrolled beneficiaries exceeded the statutory limit, CMS made an adjustment to incentive payment calculations. After Congress increased the cap to 15,000 beneficiaries, the number of enrolled beneficiaries did not exceed the cap mainly because a growing number of practices discontinued participating after the fifth year of the demonstration. CMS did not recruit additional practices to participate in the demonstration in part from the uncertainty about the demonstration's continuation during its 15-month gap between the first and second extensions and from the short length of each of the three extensions.

Quality measures. The statute authorizing IAH required that the demonstration's participants report on quality measures, as specified by the Secretary. CMS developed a set of six quality measures reflecting sound provision of home-based primary care for IAH practices' enrolled beneficiaries. Three of the quality measures were process measures that IAH practices reported:

1. Follow-up contact within 48 hours for at least half of hospital admissions, discharges, and emergency department visits among enrolled beneficiaries annually
2. Medication reconciliation in the home within 48 hours for at least half of hospital discharges and emergency department visits among enrolled beneficiaries annually
3. Patient preferences documented for at least 80 percent of enrolled beneficiaries annually

The other three measures were outcome measures assessed using administrative data, where the rates for an IAH practice's enrolled beneficiaries had to be the same as or lower than the average rates for clinically comparable beneficiaries:

1. Hospital admission rate for diabetes, heart failure, or chronic obstructive pulmonary disease ambulatory care sensitive conditions
2. ED visit rate for diabetes, heart failure, or chronic obstructive pulmonary disease ambulatory care sensitive conditions
3. All-cause, 30-day hospital readmission rate

An IAH practice's performance on quality measures determined the amount of incentive payment it could receive in a performance year if its IAH beneficiaries' spending fell sufficiently below its spending target.

Payment incentive. Congress authorized IAH to offer a payment incentive to participating practices as motivation to deliver care at a spending level below an annual per capita spending target while meeting quality measure standards. An IAH practice could earn an incentive payment if: 1) the annual spending of its beneficiaries was at least five percent below its spending target, and 2) it met performance standards on at least three of six quality measures, as defined in the demonstration's design. As explained above, each practice's annual spending target was based on the beneficiaries who were enrolled by a practice in a performance year.

Within the parameters of the statute, four different methods of setting the spending target were used over the course of the demonstration. Details about the first three methodologies are in the first IAH report to Congress, and the fourth methodology is described in detail in the contractor-written IAH final evaluation report.⁹ The four methodologies are briefly described below:

1. **Original actuarial methodology.** The spending target was a projection from the average Original Medicare spending in each IAH beneficiary's county, adjusted for each IAH beneficiary's clinical risk according to the CMS Hierarchical Condition Category (CMS-HCC) score and frailty derived from practice-reported limitations in the beneficiary's activities of daily living. Practices chose the original actuarial methodology in about 17 percent of total practice-years across all practices when it was offered in year one through year five.
2. **Original regression methodology.** Spending for each IAH beneficiary was assessed against predicted spending from a regression on a matched comparison group. It required confirming IAH eligibility using administrative data, rather than relying on practice assessments of eligibility, so the sample of beneficiaries differed from the original actuarial sample. Practices chose the original regression methodology in about 59 percent of total practice-years across all practices when it was offered in year one and year two.

3. **Revised regression methodology.** Starting in year two, the revised regression methodology was developed to better account for spending-related trajectories from the time of hospitalization for both IAH beneficiaries and their comparison group and continued IAH beneficiary eligibility over more than one year. Practices chose the revised regression methodology in about 74 percent of total practice-years across all practices when it was offered in year two through year five.
4. **Revised actuarial methodology.** Like the original actuarial methodology, the revised version was a projection from the average Original Medicare spending in each IAH beneficiary's county. It was further adjusted for the average CMS-HCC score and average frailty score for all IAH beneficiaries in a practice and a utilization factor reflecting the additional utilization expected for those who had a hospital stay and post-acute care in the past 12 months. All practices used this methodology starting in year six.

Using four different spending target methodologies throughout the demonstration illustrates that there are multiple approaches to estimate incentive payments. The changes over time in spending target methodologies were born out of concerns raised by IAH practice leaders and the American Academy of Home Care Medicine about setting spending targets accurately, as detailed in the first IAH report to Congress.¹⁰ At the root of trying to calculate an accurate spending target was the challenge of predicting spending levels for the small numbers of high-cost, high-mortality beneficiaries in IAH, whose spending patterns are volatile. This challenge begins with identifying spending trajectories from the required hospital stay and post-acute care as part of the applicable beneficiary criteria.

Despite the advantage of establishing a clear index event, requiring a recent hospital stay created challenges with setting spending targets. Hospitalization patterns for beneficiaries enrolled by the practices were not uniform after their first year of the demonstration. Some beneficiaries who continued to be enrolled by the practices experienced another hospitalization or multiple hospitalizations and others continued to be enrolled with no hospital stay, perhaps because of sound management by IAH practices. The spending trajectories of beneficiaries with and without hospital stays diverged, making it more challenging to produce spending targets reflecting the mix of beneficiaries with and without recent hospital stays.

The divergence in hospitalization rates of enrolled beneficiaries after the first performance year led to the development of the revised regression methodology to calculate incentive payments. That methodology relied on administrative data to verify IAH beneficiary eligibility and accounted for differences in spending trajectories for beneficiaries by the timing of their most recent hospitalization. As noted in the first IAH report to Congress, CMS decided that this approach was more accurate than the original actuarial methodology.¹¹

Both the original and revised actuarial methodologies projected a spending target based on a set of assumptions around how to estimate an expected spending level for the IAH beneficiary population. The revised actuarial methodology's utilization factor increased the spending target for new and continuing beneficiaries with a hospital stay and post-acute care in the 12 months preceding a performance year. The utilization factor was designed to compensate for the additional expected spending of a hospital stay and post-acute care, but the increase in the amount of incentive payments as calculated under this methodology suggests that this approach may have overestimated spending targets when the spike in spending associated with those events may have

occurred prior to the performance year. The appreciably larger amount of per-practice-year incentive payments as calculated under the revised actuarial methodology suggests that this approach may have overestimated spending targets.

Summary of the demonstration's design. IAH was designed for a high-cost patient population served by clinicians delivering care at patients' homes. While it was launched as a three-year test of a unique care delivery model, the demonstration ultimately extended to 10 performance years, leading to changes over time in the number of participants and payment incentive methodologies that affected the evaluation of the demonstration.

IAH Evaluation

In its annual reports and the first IAH report to Congress,¹² the contractor conducting the IAH evaluation performed analyses of outcomes for each performance year of the demonstration. For this final report to Congress, the evaluation undertook two sets of analyses of the effects of the demonstration on spending, utilization, and quality of care. One was a summative analysis of all performance years of the demonstration; the other was a new analysis designed to evaluate longitudinal effects of home-based primary care on key outcomes under the demonstration. A more detailed description of these methods and their accompanying findings can be found in the IAH evaluation's final report.¹³

Performance-year analysis. The purpose of the performance-year analysis was to measure IAH practices' effects on applicable beneficiaries' outcomes in response to the demonstration in each performance year. Most IAH beneficiaries had been receiving home-based primary care before each performance year, and some of them were new recipients of home-based primary care. In its final report, the evaluation averaged annual effects of outcomes across the demonstration's 10 performance years to produce overall effects covering all years of the demonstration.¹⁴

The IAH evaluation generated evidence on the demonstration's effects on spending and other outcomes using a rigorous difference-in-differences methodology.¹⁵ A key part of the difference-in-differences methodology is identifying a comparison group. The evaluation applied the same applicable beneficiary criteria to carefully construct a comparison group that did not receive home-based primary care for each performance year. The comparison group provides the best point of reference for how IAH beneficiaries' outcomes would have changed had they not received home-based primary care under the demonstration. After applying the applicable beneficiary criteria, a group of comparison beneficiaries were matched to IAH beneficiaries based on the number of months since their most recent hospitalization and then on a set of characteristics related to the timing of eligibility during the year, demographic characteristics, number of activities of daily living requiring assistance, number and type of chronic conditions, and other health risk factors. Despite the evaluation's thorough approach to constructing a comparison group, there are invariably differences between the two groups that cannot be measured in available data without randomizing beneficiaries to an intervention group and a comparison group (**EXHIBIT 2**).

Another key part of the difference-in-differences methodology is capturing any changes in outcomes before and after IAH began for both the IAH group and comparison group. Similar to the approach during the performance year, capturing these changes involves identifying a group of beneficiaries meeting the applicable beneficiary criteria who visited IAH practice clinicians prior to

the start of the demonstration and a comparison group during the same period of time. Changes in outcomes for the IAH group before and after IAH began minus changes in outcomes before and after IAH began for the comparison group produce the difference-in-differences effect on outcomes.

The performance-year analysis was structured around evaluating the performance of IAH practices each performance year to how to the statutory definition of applicable beneficiaries and to mirror the same annual time period used to calculate incentive payments. The performance-year analysis had two primary limitations:

- **The performance-year analysis measured outcomes over a one-year period.** The evaluation's performance-year analysis assessed spending and other outcomes annually because IAH beneficiaries had to meet the applicable beneficiary criteria each year by having a recent hospitalization and post-acute care. The evaluation could not measure outcomes for the same beneficiaries for more than a year if they did not have another hospital stay, so even if IAH practice clinicians were providing care and support that deterred an IAH beneficiary from being hospitalized, that beneficiary would not have been eligible for analysis by the evaluation in the next year. Therefore, the performance-year analysis could not measure any sustained effects of the demonstration on the same IAH beneficiaries for more than a year unless they continued to meet all applicable beneficiary criteria.
- **The performance-year analysis contained a mix of beneficiaries beginning and continuing home-based primary care.** Even after identifying applicable beneficiaries, IAH beneficiaries in the performance-year analysis were a mix of beneficiaries who varied in their experience with home-based primary care. About three-quarters of applicable beneficiaries had received home-based primary care prior to a performance year and the remaining quarter of applicable beneficiaries were wholly new to receiving home-based primary care. Beneficiaries receiving home-based primary care for the first time may have a stronger response to the IAH care teams delivering care under the demonstration, which could have resulted in lower hospitalization rates and spending. Conversely, the effects of the demonstration may be more muted for beneficiaries who had previously received home-based primary care. Because the demonstration's applicable beneficiary criteria did not distinguish between these two subpopulations, they were analyzed together in the performance-year analysis.

EXHIBIT 2: The Challenge of Creating a Comparison Group

IAH beneficiaries were identified by or referred to IAH practices as good candidates for home-based primary care, and as long as they met the enrollment criteria of the demonstration, they could receive care under the demonstration.

The evaluation had to create a comparison group in the absence of randomizing beneficiaries to receiving home-based primary care at the point of IAH enrollment. As a result, the evaluation's comparison group was unable to account for hard-to-measure factors that might differ between the intervention and comparison groups. For example, it could be the case that some IAH beneficiaries were selected for home-based primary care because their health status was rapidly deteriorating in ways that cannot be fully captured in administrative data to construct a comparison group with the same health trajectory. Had beneficiaries been randomized to receive home-based primary care at each IAH practice, all identifiable and not identifiable characteristics in administrative data would have been distributed in equal proportion across the intervention group and comparison group.

Three-year analysis. The purpose of the three-year analysis was to measure IAH practices' effects on outcomes for approximately a quarter of applicable beneficiaries who started receiving home-based primary care during the demonstration. The three-year analysis pooled IAH beneficiaries initiating home-based primary care across nearly all 10 years of the demonstration to measure their outcomes at one, two, and three years after starting home-based primary care. It was a summative analysis of a subset of applicable beneficiaries performed only for the IAH evaluation's final report.¹⁶

The three-year analysis had a comparison group similar to IAH beneficiaries in health status and demographic characteristics and used a difference-in-differences methodology. But instead of identifying a different set of beneficiaries meeting the applicable beneficiary criteria in both the IAH group and comparison group for the year prior to the start of the demonstration, as done in the performance-year analysis, the three-year analysis followed the same beneficiaries in both the IAH group and comparison group back two years before the IAH group started receiving home-based primary care. By following the same beneficiaries in the two groups two years backward and up to three years forward, the effects of starting home-based primary care could be measured after the IAH group initiated home-based primary care.

Although it excluded most applicable beneficiaries, the three-year analysis overcame limitations of the performance-year analysis in the following ways:

- **The three-year analysis followed the same beneficiaries before and after they began home-based primary care.** Home-based primary care is expected to have different impacts on beneficiaries who had previously received home-based primary care and those who were new to home-based primary care. By following the same beneficiaries before and after they began home-based primary care, the evaluation isolated the effects of home-based primary care under the demonstration.
- **The three-year analysis pooled beneficiaries across different starting performance years to include a sufficient number of beneficiaries.** Analyzing a larger number of beneficiaries better enabled the evaluation to detect differences in outcomes between IAH and comparison groups. Beneficiaries were pooled across performance years, resulting in an analysis of 9,783 IAH beneficiaries new to home-based primary care. By comparison, some years of the performance-year analysis had fewer than half that number of applicable beneficiaries who were either new or previous recipients of home-based primary care.
- **The three-year analysis examined impacts over a longer time period.** Beneficiaries were followed up to three years after their first home-based primary care visit until death or loss of Original Medicare coverage. This approach allowed analysis of longitudinal effects of home-based primary care on a single group of beneficiaries at one, two, and three years, rather than comparing different beneficiaries over each performance year of the demonstration in the performance-year analysis.
- **The three-year analysis used an intent-to-treat design.** Beneficiaries were followed regardless of whether they continued to receive home-based primary care or their practice continued to participate in the demonstration, allowing any lagged effects of home-based primary care to be measured. This design was not possible in the performance-year

analysis, which had to evaluate outcomes while beneficiaries were active recipients of home-based primary care and practices were active participants in the demonstration.

The performance-year analysis and three-year analysis, in combination with analysis of interview and survey data collected during the evaluation of the demonstration, were used to address the statutory topics in IAH's authorizing legislation.

What were best practices under the demonstration?

IAH practices had specialized in delivering multidisciplinary, home-based primary care for years before the beginning of the demonstration.¹⁷ Their practitioners were thus unique in that most primary care clinicians who deliver primary care at patients' homes make fewer than 200 home visits in a year.¹⁸ In addition to meeting the statutory requirements of participation, IAH practices had already adopted several best clinical practices that they continued during the demonstration:¹⁹

- Proactive outreach and frequent visits to beneficiaries' homes to manage their health
- Cultivate trusting relationships with beneficiaries and their caregivers to promote effective communication about health needs and goals
- Remediate potential harms at home such as fall risks and adverse medication interactions
- Potentially connect beneficiaries to community-based support services that may help them remain at home and avoid nursing home entry
- Actively collaborate and coordinate care with home health agencies

In addition to these best practices, IAH practices varied in how they implemented different care delivery activities, even practices within the same organization type, as shown in **EXHIBIT 3**.²⁰

One notable way in which IAH practices' home-based primary care capabilities demonstrated best practices for serving high-need, high-cost beneficiaries was in 2020, the first year of the COVID-19 pandemic. As explained in the seventh IAH evaluation report, IAH practice clinicians visited IAH beneficiaries at home during a disruptive period for health care delivery, when beneficiaries faced greater health risks of COVID-19 infection from seeking care outside their homes.²¹ IAH practice clinicians had developed relationships with beneficiaries that allowed practices to swiftly pivot to delivering telehealth to beneficiaries at a time when beneficiaries likely felt more isolated and anxious. More frequent telehealth contact also positioned IAH practices to better manage their beneficiaries' health conditions and to possibly stave off ED visits more than for other frail, high-needs beneficiaries who did not have access to home-based primary care. As a result, the demonstration had its largest effect on total spending in the first year of the COVID-19 pandemic, when spending for IAH beneficiaries held steady while spending increased among the comparison beneficiaries.

EXHIBIT 3: IAH Practice Care Delivery Activities by Organization Type

	Medical group practices	Academic medical center practices	Independent practices
Total number of IAH practices in the evaluation	5	5	4
Number of practices that made weekend home visits	3 occasionally; 2 yes	3 no; 2 yes	3 yes; 1 no
Number of practices that made home visits outside usual office hours	5 no	3 urgent or routine reasons; 2 no	2 urgent or routine reasons 2 no
Number of practices that made visits in institutional settings	5 no	3 yes; 2 no	4 no
Number of practices with different risk-stratification methods	5 intense care management program if too much adverse utilization	3 clinical judgment; 1 assessed intensity of contact; 1 used software-derived acuity score	2 assessed intensity of contact; 2 clinical judgment
Number of practices with different notification methods after hospital admission or emergency department visit	3 state health information exchange; 2 from hospital staff	4 partially through electronic health record; 1 state health information exchange	1 from patient or caregiver; 1 from assisted living facility; 1 partially through automated notice; 1 health information exchange
Average daily number of home visits per clinician	8.7 visits	5.4 visits	8.9 visits
Average percentage of visits in an assisted living facility	34.1%	3.6%	46.0%

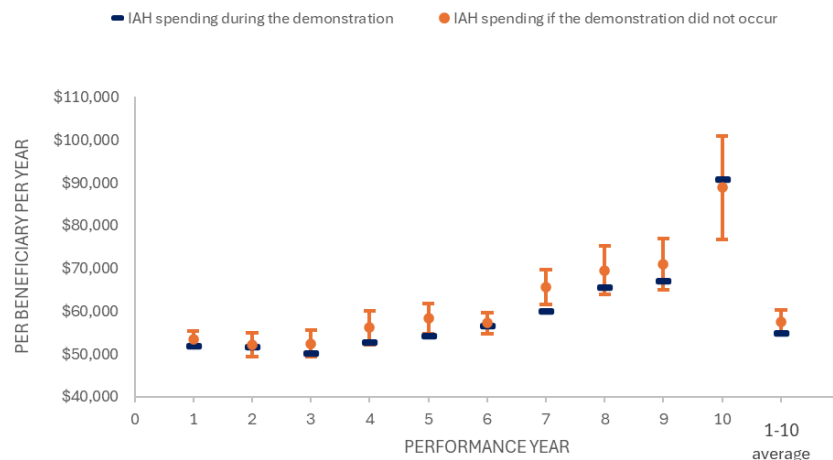
What was the effect of the demonstration on expenditures?**Performance-year analysis of total spending**

KEY FINDING: Averaged across all 10 performance years, total Medicare spending did not significantly decrease.

To illustrate the scale of spending, it is helpful to show how spending changed each performance year from the average total spending level of IAH beneficiaries who visited IAH practices in the year prior to the start of the demonstration and relative to similar beneficiaries who did not receive home-based primary care (**EXHIBIT 4**). The pre-demonstration average total spending level was almost \$52K per year (not shown in exhibit). As shown by the difference in spending level between the orange dot and the blue line for the 1-10 average, the demonstration lowered spending by an average of about \$2.5K each year over 10 years but was not statistically significant, meaning that the spending change for IAH beneficiaries who received home-based primary care was not convincingly different from the change for similar beneficiaries who did not receive home-based primary care. The demonstration showed significant reductions in spending in year five (\$3,960 per

beneficiary per year [PBPY], $p < .1$) and year seven (\$5,508 PBPY, $p < .05$), shown by vertical confidence intervals (in orange) that do not cross the average total spending level (in blue). Those years were unique in that the year five spending was driven by a single practice that ceased participating in IAH the following year, and year seven was the first year of the COVID-19 pandemic, when home-based primary care would have been especially helpful to the IAH beneficiary population.

EXHIBIT 4: Total Spending for IAH Beneficiaries Did Not Decrease Significantly in Most Demonstration Years



NOTE: The orange dots and intervals represent the estimate of what IAH spending would have been without the demonstration. Blue lines represent the unadjusted actual spending levels of IAH beneficiaries in IAH practices participating in each performance year. Where a blue line falls within an orange confidence interval, the effect of the demonstration on spending is not statistically significant at the 90 percent confidence level. Gradual rise in spending levels reflects inflation and different compositions of participating practices after Year 5.

Total spending and incentive payments

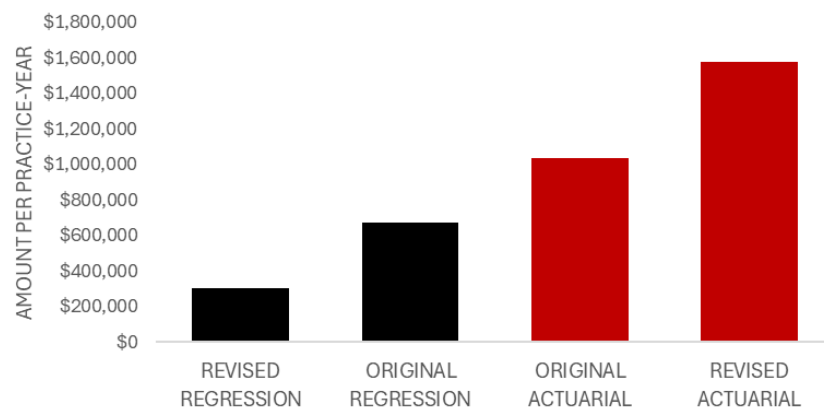
KEY FINDING: In aggregate, the demonstration did not reduce total Medicare spending net of incentive payments.

Incentive payments to IAH practices were a means of providing practices with an incentive to participate in the demonstration and reward them for spending below a set spending target while delivering quality of care according to the demonstration's rules. IAH practices received incentive payments totaling \$96M over the course of the demonstration. Eleven IAH practices received an incentive payment in at least one year of the demonstration, and incentive payments were disbursed in 64 percent of practice-years. These incentive payments amounted to \$864,417 per practice-year or \$1,294 per enrolled beneficiary each year. They were calculated based on the four different spending target methodologies, with the actuarial methodologies resulting in the highest incentive payments to participants, as shown in the red bars (**EXHIBIT 5**). The revised regression methodology was most commonly used across practice-years, though had the smallest average incentive payment payout at \$301,009 per practice-year, in part because practices electing the methodology did not earn an incentive payment in more than half the practice-years. The original actuarial methodology was more than three times greater than the revised regression methodology (average of \$1,034,405 per practice-year), and the revised actuarial methodology was more than five times greater (average of \$1,577,481 per practice-year), with practices in only eight percent of practice-years with the revised actuarial methodology failing to earn an incentive payment. Almost 60 percent of total incentive payments were calculated from the revised actuarial methodology.

It is intuitive to interpret incentive payments as savings to the Medicare program because IAH practices earned incentive payments when their spending was sufficiently below their spending

targets.²² Yet, incentive payments are not evidence that IAH saved money to the Medicare program, as they instead represent the cost to the Medicare program of rewarding IAH practices for their performance under whichever spending target methodology rules apply. Thus, a spending target, and its derived incentive payment, simply represents the assumptions that predicted the target, not cost savings to the Medicare program.²³

EXHIBIT 5: Incentive Payment Amounts per Practice-year were Highest Using the Revised Actuarial Method



NOTE: Average amount of annual incentive payments received by practices electing each payment incentive methodology. Black bars represent the regression-based methods; red bars represent the actuarial-based methods. Incentive payments include practice-years with zero payments among participating practices.

Results from the evaluation's performance-year analysis represent the best estimate of the impact of the demonstration on spending for each performance year because they show the change in spending over time of IAH beneficiaries relative to a comparison group. The estimates for all beneficiaries meeting the applicable beneficiary criteria each year were summed to produce an aggregate total spending estimate for all performance years. The evaluation subtracted the total incentive payments from the aggregate total spending estimate to determine whether IAH produced net savings or losses to the Medicare program:

$$\text{Aggregate total spending estimate} - \text{Total incentive payments} = \text{Net savings (or losses)}$$

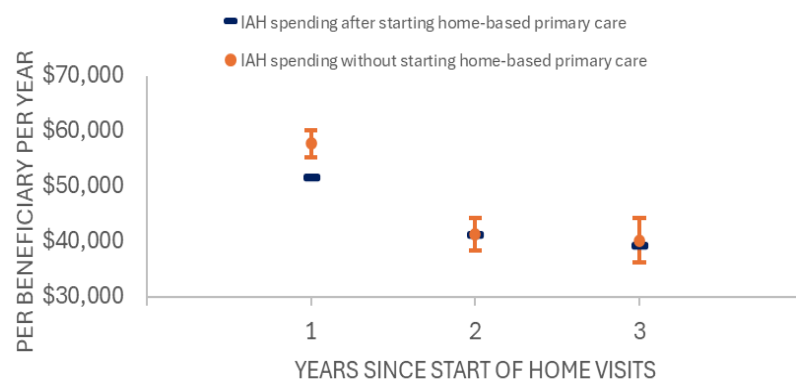
Aggregate total spending from the performance-year analysis was estimated as a range from a decrease in spending of \$258M to an increase in spending of \$9M. The range around the total spending estimate reflects inconsistent declines in total spending from a combination of IAH practice performance and lack of statistical significance from the small size of the demonstration. After including the total incentive payments of \$96M, net savings ranged from savings of \$162M to the Medicare program to a loss of \$104M to the Medicare program. The estimated range in net savings means that IAH practices may not have collectively produced enough reductions in total spending to counterbalance the amount of incentive payments.

Three-year analysis of total spending

KEY FINDING: IAH beneficiaries who newly started receiving home-based primary care had lower total Medicare spending in their first year relative to similar beneficiaries who did not receive home-based primary care. This finding did not persist. In the second and third year after initiation of home-based primary care, total spending was no different between the same beneficiaries who received and did not receive home-based primary care.

In the three-year analysis, IAH beneficiaries averaged approximately \$64K in total spending the year before starting home-based primary care (not shown in exhibit), about \$10K more than the mix of beneficiaries who were new and continuing recipients of home-based primary care in the performance-year analysis (**EXHIBIT 6**). Home-based primary care during the demonstration led to a decline in the average spending of IAH beneficiaries in the first year after starting home-based primary care of \$6,012 ($p < .01$), as shown by the difference between the

EXHIBIT 6: Total Spending Decreased One Year after Starting Home-based Primary Care



NOTE: The orange dots and intervals represent the estimate of what IAH spending would have been without the demonstration. Blue lines represent the unadjusted actual spending levels of IAH beneficiaries in IAH practices participating in each performance year. Where a blue line falls within an orange confidence interval, the effect of the demonstration on spending is not statistically significant at the 90 percent confidence level.

orange dot and blue line. Inpatient and skilled nursing facility spending drove the decline, offsetting increases in home health and hospice spending. At two and three years following their initial home visit, IAH beneficiaries' total spending was no longer significantly different from their baseline spending and relative to similar beneficiaries who did not receive home-based primary care, as shown by the orange vertical confidence intervals that cross the blue lines. Total spending was also no longer significant at two and three years following the initiation of home-based primary care for the subset of beneficiaries who continued receiving home visits.

Beneficiaries who were dually-eligible for Medicare and Medicaid and needed the most assistance with activities of daily living had the largest declines in total Medicare spending (\$16,452 per beneficiary in the first year; \$5,952 per beneficiary in the second year; and \$8,484 per beneficiary in the third year). Total Medicare spending did not decline significantly in all three years for beneficiaries dually eligible for Medicare and Medicaid needing the least assistance with activities of daily living.

UNDERSTANDING THE DIFFERENT TOTAL SPENDING RESULTS BETWEEN THE PERFORMANCE-YEAR AND THREE-YEAR ANALYSES: IAH beneficiaries new to home-based primary care tended to have higher spending levels just prior to their first home visit than the full population of IAH beneficiaries, who were a mix of new and continuing recipients of home-based primary care. Their higher spending levels gave IAH beneficiaries initiating home-based primary care more opportunity for their spending to decline during their first year of home-based primary care.²⁴ Moreover, the early effects of home-based primary care on spending weakened two and three years later, suggesting that much of the effect of home-based primary care on total spending during the demonstration was driven by beneficiaries receiving home visits for the first time.

What was the effect of the demonstration on quality of health care services?

KEY FINDING: The measurable impact of the demonstration on quality of care was limited because IAH practices could earn an incentive payment without reporting and improving certain process measures. Their performance on certain outcome measures did not appear to be any different from the outcomes of similar beneficiaries who did not receive home-based primary care.

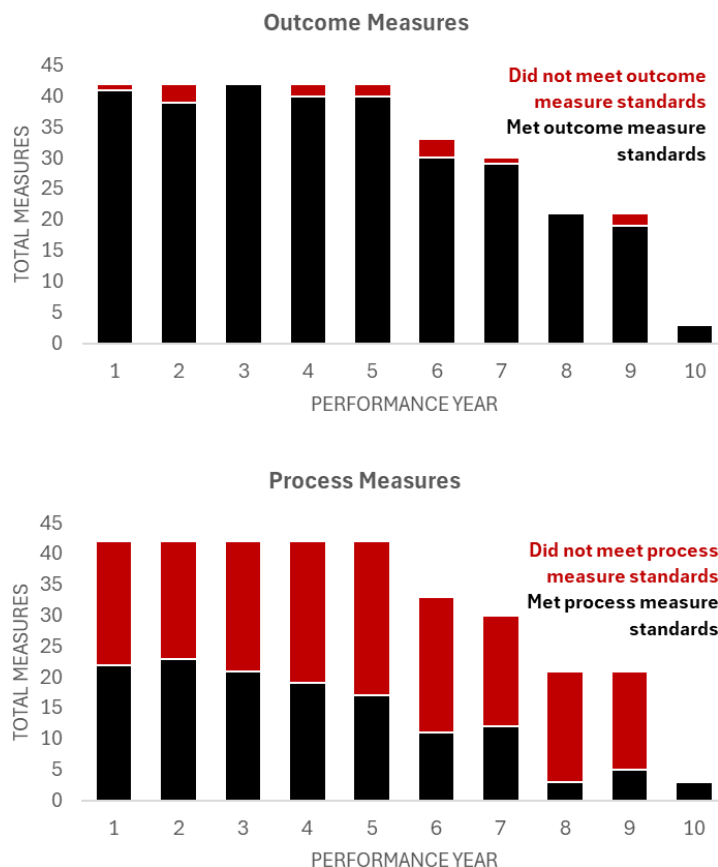
An IAH practice could earn an incentive payment by meeting minimum performance standards on any three of the six quality measures. The incentive payment amount was incrementally higher if a practice met the performance standards for a greater number of the six quality measures.

As shown in **EXHIBIT 7**, almost all IAH practices met performance standards for the three outcome measures every year, but they only met performance standards for about half the process measures in the first three years of the demonstration and less than half in the remaining years, except the final year, when one practice was participating.

Practices could meet the basic requirements of the demonstration by focusing on meeting performance standards for the three outcome measures. They could achieve potentially greater incentive payment through the process measures, or they could forgo that strategy and not focus on meeting the performance standards for process measures.

The practices may have been performing the activities associated with the process measures but not recording and submitting them or simply not performing them. Many practices had to develop notification processes when their beneficiaries visited the ED or were admitted to the hospital and at discharge to tabulate these measures, and some practices may not have been able to sustain these notification processes.

EXHIBIT 7: Practices Met Performance Standards Less Often for Process Measures



NOTE: In every performance year other than Year 10, practices met the performance standards for more outcome measures than process measures. Total measures reflect the total number of measures across all practices participating in a given year.

When the evaluation examined the change in IAH practices' performance on quality measures very similar to the three outcome measures—potentially preventable hospitalization, ED visit, or 30-day hospital readmission—against the change for its comparison group of similar beneficiaries who did not receive home-based primary care each year, there were no significant differences in their rates averaged over all performance years.

Performance-year analysis of hospitalizations and hospital readmissions

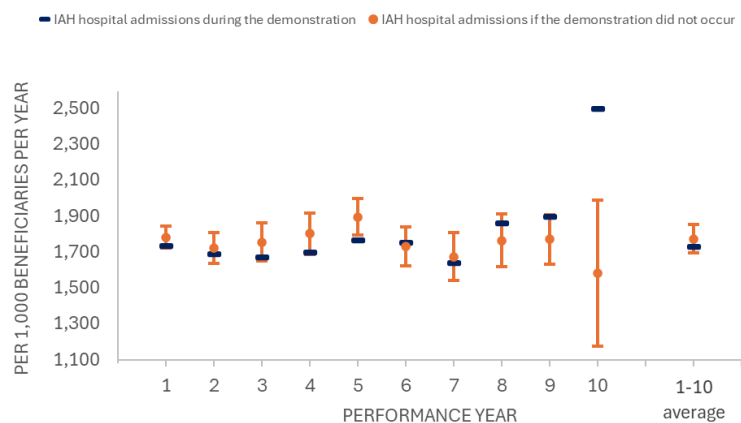
KEY FINDING: Over 10 years, there was no consistent growth or decline in all hospital admissions, potentially preventable hospitalizations, or readmissions for IAH beneficiaries.

Averaged over all performance years, the change in hospitalizations for IAH beneficiaries was not significantly different from the change for similar beneficiaries who did not receive home-based primary care (**EXHIBIT 8**). The significant reduction in the hospitalization rate in Year five (129 hospitalizations per 1,000 beneficiaries, $p < .05$) in part explained the decline in total spending in year five. The large increase in the hospitalization rate in Year 10 was likely related to unstable measurement from only one practice participating that year (917 hospitalizations per 1,000 beneficiaries, $p < .01$). The subset of hospitalizations that were potentially

preventable showed statistically significant decreases ranging from 36 to 58 per 1,000 beneficiaries ($p < .1$) in years three, four, and five but was not statistically significant over the combined 10 years.

EXHIBIT 9 shows how IAH practices adopting certain care delivery strategies or activities were more likely to have lower rates of potentially preventable hospitalization. The probability of an unplanned 30-day readmission significantly declined in year three (1.70 percentage points, $p < .05$), as reported in the first IAH report to Congress,²⁵ but increased in year nine (1.42 percentage points, $p < .1$) and was not statistically significant averaged across all performance years.

EXHIBIT 8: Hospitalizations Did Not Decrease throughout the Demonstration



NOTE: The orange dots and intervals represent the estimate of what the IAH hospitalization rate would have been without the demonstration. Blue lines represent the unadjusted actual hospitalization rates of IAH beneficiaries in IAH practices participating in each performance year. Where a blue line falls within an orange confidence interval, the effect of the demonstration on hospitalization is not statistically significant at the 90 percent confidence level.

EXHIBIT 9: Certain Care Delivery Strategies or Activities Were Related to Fewer Potentially Preventable Hospitalizations

The IAH evaluation identified six care delivery strategies or activities associated with lower rates of potentially preventable hospitalization among IAH beneficiaries new to home-based primary care:

- Lower daily clinician caseloads;
- Smaller clinician panel sizes;
- Majority of the practice's primary care visits were provided by non-physicians such as nurse practitioners or physician assistants;
- Different members of the care team visited beneficiaries at home such as registered nurses or social workers;
- IAH practice clinicians visited IAH beneficiaries when they were hospitalized or in a skilled nursing facility; and
- Use of remote monitoring technology

Three-year analysis of hospitalizations and hospital readmissions

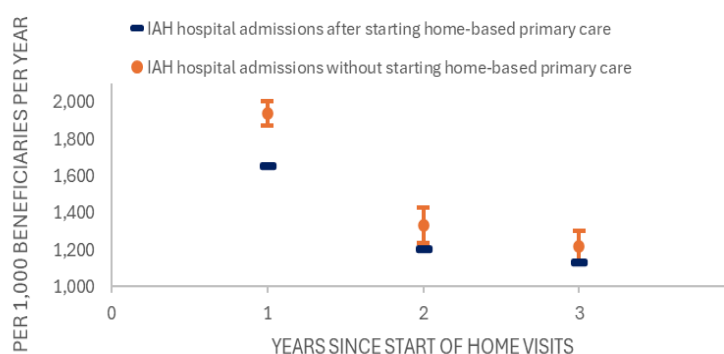
Key Finding: IAH beneficiaries who newly started receiving home-based primary care significantly reduced hospital admissions in their first two years after starting home-based primary care relative to similar beneficiaries who did not receive home-based primary care. Readmissions significantly declined up to three years after initiation of home-based primary care.

IAH beneficiaries in the three-year analysis had a hospitalization rate of 2,475 per 1,000 beneficiaries prior to their first home visit (not shown in exhibit). In contrast, the baseline hospitalization rate for beneficiaries in the performance-year analysis did not exceed 1,800 per 1,000 beneficiaries.

As shown in **EXHIBIT 10**, the hospitalization rate for IAH beneficiaries new to home-based primary care significantly declined in their first year of receiving home-based primary care by 283 hospitalizations per 1,000 beneficiaries ($p < .01$), but the decline was smaller at years two (123 hospitalizations per 1,000 beneficiaries, $p < .05$) and three (80 hospitalizations per 1,000 beneficiaries, not significant).

Potentially preventable hospitalizations followed the same trend, though these hospitalizations accounted for a

EXHIBIT 10: Hospitalizations Decreased Two Years after Starting Home-based Primary Care



NOTE: The orange dots and intervals represent the estimate of what the rate of IAH hospitalization would have been without the demonstration. Blue lines represent the unadjusted actual rates of hospitalization of IAH beneficiaries in IAH practices participating in each performance year. Where a blue line falls within an orange confidence interval, the effect of the demonstration on hospitalization is not statistically significant at the 90 percent confidence level.

minority of hospital stays (reduction of 50 hospitalizations per 1,000 beneficiaries in the first year, $p < .05$). The probability of an unplanned 30-day readmission was 5.1 percentage points lower in the first year ($p < .01$) and about 2.0 percentage points lower in the second and third years ($p < .05$).

UNDERSTANDING THE DIFFERENT HOSPITALIZATION RESULTS BETWEEN THE

PERFORMANCE-YEAR AND THREE-YEAR ANALYSES: The effect of home-based primary care on reducing hospitalizations was largest in the first year after beneficiaries started receiving home visits. IAH beneficiaries who began receiving home-based primary care had a higher expected rate of hospitalization compared with the full population of IAH beneficiaries, suggesting that beneficiaries new to home-based primary care tend to be sicker. A higher expected rate of hospitalization gave them greater opportunity to reduce hospitalizations in the first year.

Performance-year analysis of emergency department visits

KEY FINDING: Over 10 years, IAH did not reduce total outpatient emergency department visits nor potentially preventable outpatient emergency department visits, but IAH did reduce the rate of hospital admissions preceded by an emergency department visit.

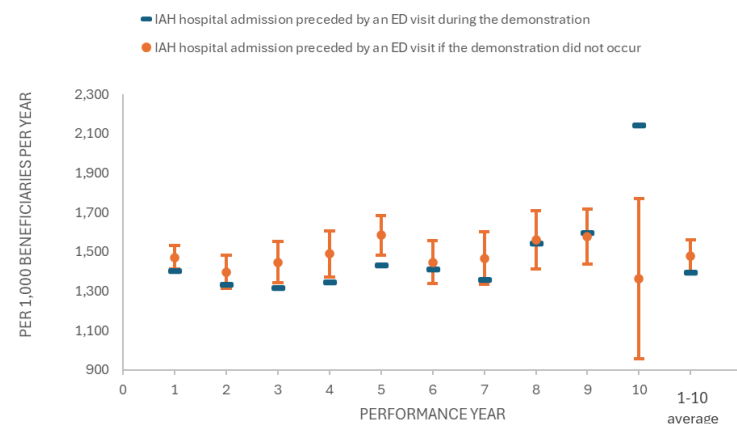
In all demonstration years, rates of outpatient emergency department visits (those not resulting in a hospital stay) and potentially preventable outpatient ED visits did not show statistically significant changes. However, there were reductions in hospitalizations through the emergency department.

Hospitalizations through the emergency department was the outcome with the most consistent reductions during the demonstration. In four of the first five years of IAH, the rate of hospitalizations through the emergency department significantly declined between 69 and 149 per 1,000 beneficiaries ($p < .05$), as shown in **EXHIBIT 11**, and likely did so on average across all demonstration years.

Three-year analysis of ED visits

KEY FINDING: IAH beneficiaries who were new to receiving home-based primary care decreased total outpatient ED visits in their first, second, and third year after starting home-based primary care relative to similar beneficiaries who did not receive home-based primary care. Potentially preventable outpatient ED visits and hospital

EXHIBIT 11: Hospital Admissions through the Emergency Department Showed Early Reductions

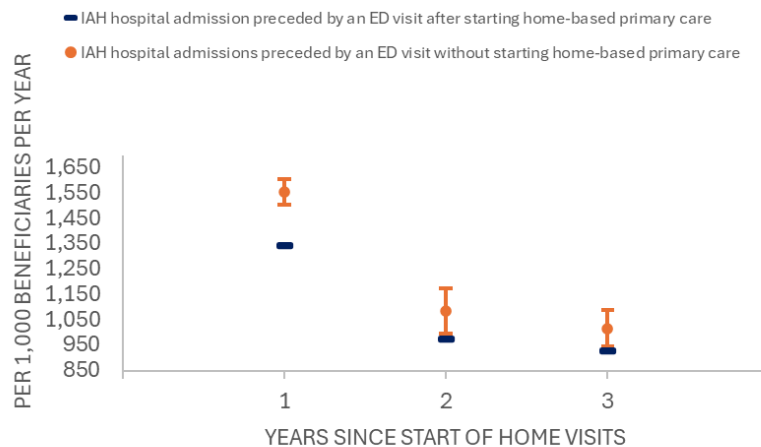


NOTE: The orange dots and intervals represent the estimate of what the rate of IAH hospitalization through the emergency department (ED) would have been without the demonstration. Blue lines represent the unadjusted actual rates of hospitalization through the emergency department of IAH beneficiaries in IAH practices participating in each performance year. Where a blue line falls within an orange confidence interval, the effect of the demonstration on hospitalization through the emergency department is not statistically significant at the 90 percent confidence level.

admissions preceded by an ED visit were also reduced in all three years after IAH beneficiaries initiated home-based primary care.

Outpatient ED visits did not significantly change in the first year after starting home-based primary care, but the size of reductions increased in the second (163 per 1,000 beneficiaries) and third years (211 per 1,000 beneficiaries, $p < .01$). As a small subset of all outpatient emergency department visits, potentially preventable emergency department visit rates were significantly lower all three years ($p < .05$). As with the performance-year analysis, hospitalization through the emergency department had large effects (**EXHIBIT 12**), accounting for the bulk of the reduction in all hospitalizations in the first year (211 per 1,000 beneficiaries, $p < .01$) and second year (109 per 1,000 beneficiaries, $p < .05$) and less so in the third year (87 per 1,000 beneficiaries, $p < .05$).

EXHIBIT 12: Hospital Admissions through the Emergency Department Declined after Starting Home-based Primary Care



NOTE: The orange dots and intervals represent the estimate of what the rate of IAH hospitalization through the emergency department (ED) would have been without the demonstration. Blue lines represent the unadjusted actual rates of hospitalization through the emergency department of IAH beneficiaries in IAH practices participating in each performance year. Where a blue line falls within an orange confidence interval, the effect of the demonstration on hospitalization through the emergency department is not statistically significant at the 90 percent confidence level.

UNDERSTANDING THE DIFFERENT EMERGENCY DEPARTMENT RESULTS BETWEEN THE PERFORMANCE-YEAR AND THREE-YEAR ANALYSES: Home-based primary care may initially deter more hospital admissions through the ED while deterring a greater number of less serious ED visits over time as beneficiaries become more accustomed to receiving ambulatory care at home.

Health outcomes commensurate with beneficiaries' stage of chronic illness

KEY FINDING: After starting home-based primary care, IAH beneficiaries tended to spend more days at home and less time at a hospital, skilled nursing facility, or nursing home. It is unlikely that IAH affected mortality.

The evaluation measured impacts of the demonstration on: 1) the number of days a beneficiary was at home rather than an institutional health care setting, 2) whether beneficiaries were more likely to enter a nursing home, and 3) mortality. For IAH beneficiaries in the performance-year analysis, who were a mix of new and existing users of home-based primary care, there were no notable changes in these outcomes over the course of the demonstration.

However, for IAH beneficiaries new to home-based primary care, the number of days at home significantly increased by five percent and their rate of nursing home entry significantly decreased

8.6 percentage points in the first year. Mortality for beneficiaries new to home-based primary care may have increased by 3.5 percentage points in their first year and up to 6.3 percentage points in their third year. However, results from this analysis do not suggest that starting home-based primary care during the demonstration inappropriately caused beneficiaries to die more quickly. An increase in mortality hints that there may have been underlying, immeasurable differences between the IAH beneficiaries starting home-based primary care and their comparison group of beneficiaries since they were not randomized to receive home-based primary care. For example, beneficiaries who began home-based primary care may have been nearer to death. The increase in mortality may also reflect appropriate care at the end of life since hospice spending increased.

What was the effect of the demonstration on access to services?

KEY FINDING: IAH beneficiaries received more primary care than similar beneficiaries who accessed primary care in office-based settings. Starting home-based primary care with IAH practice clinicians led to a large increase in the number of primary care visits, and the number of specialty care visits did not appear to decrease.

IAH practice clinicians provided frequent primary care visits through their home-visit model of care delivery. By delivering primary care at beneficiaries' homes, they eased access barriers for homebound beneficiaries or those without reliable transportation to a primary care clinic for routine or non-urgent reasons. Some IAH practices also made urgent home visits or visited beneficiaries when they were hospitalized (**EXHIBIT 3**). During the demonstration's 10 performance years, IAH beneficiaries averaged five more primary care visits per year—whether at home, in a clinic, or via telehealth—and about one fewer specialty care visit than beneficiaries in their comparison group. IAH practice clinicians delivered home visits at a similar rate before and after the demonstration began, suggesting that the demonstration did not produce an increase in primary or specialty care visits.

During the COVID-19 pandemic, CMS loosened restrictions on the use of telehealth (real-time audio or video visits), and the home-based primary care delivery model enabled IAH practices to preserve access to care by quickly increasing telehealth visits.²⁶ In 2020, IAH beneficiaries averaged 1.7 more video visits and 1.0 more audio-only visits than the comparison group. Those differences persisted, though were attenuated, the following year and leveled off by the third year of the COVID-19 pandemic.

For beneficiaries new to home-based primary care, IAH practice clinicians greatly increased their access to primary care. In the year before starting home-based primary care, IAH beneficiaries had a primary care visit on average every 11 weeks; in the year after starting home-based primary care, they had a primary care visit on average about every five weeks, about 154 percent higher growth than similar beneficiaries who did not receive home-based primary care. The number of specialist visits appeared to remain relatively unchanged, though may have increased slightly by the third year after starting home-based primary care.

Beneficiary and caregiver satisfaction

KEY FINDING: IAH beneficiaries and their caregivers reported high levels of satisfaction with home-based primary care delivered by IAH practice clinicians.

As another metric of access to care, overall satisfaction with home-based primary care under IAH was high, as reported by 3,870 IAH beneficiaries and 2,519 of their caregivers in a survey administered during the first three years of the demonstration. More than 90 percent of IAH beneficiaries and caregivers were satisfied or very satisfied overall with home-based primary care, and about the same proportion reported that they had no problems receiving visits at home. In addition, 72 percent of IAH beneficiaries and caregivers reported a strong preference for home-based primary care. The survey also provided an opportunity for respondents to provide a free text response related to their experience under the demonstration (**Exhibit 13**).

EXHIBIT 13: IAH Beneficiary and Caregiver Satisfaction Quotes

I like the privacy and I'm not sitting in a room filled with people and their germs ... [and the IAH clinician is] not always in a rush like doctor's offices.

— IAH beneficiary

I am truly satisfied and impressed with the amount of care and consideration that this program provides for my mother and for my family's peace of mind. All staff are caring and very compassionate. I only wished we knew of this service much earlier.

— IAH beneficiary caregiver

What was the effect of the demonstration on coordination of care?

KEY FINDING: Care coordination between clinicians and care settings was a core part of home-based primary care delivered by the IAH practices. Beneficiaries who started receiving home-based primary care more frequently received chronic care management services.

Consistent with the best practices IAH practices followed during the demonstration, coordination of care was part of many aspects of their delivery of home-based primary care. IAH practices strengthened their communication channels with hospitals by developing notification systems when their beneficiaries were hospitalized and improving their post-discharge transition processes. IAH practice leaders reported that their clinicians routinely coordinated services with home health agencies for IAH beneficiaries' acute and chronic conditions. The IAH practices' multidisciplinary care teams coordinated care between IAH practice clinicians and other clinicians outside IAH practices as well as beneficiaries' connections to community-based support services when they were needed.

IAH practice clinicians also embraced new means of enhancing care coordination. Medicare started paying for chronic care management services, which provide support for coordinating care between clinicians and managing transitions between care settings, after the demonstration was underway. The percentage of beneficiaries new to receiving home-based primary care who started receiving these chronic care management services increased about 20 percentage points more than beneficiaries in the comparison group.

Efficiency of care

KEY FINDING: During interviews, none of the IAH practice leaders reported focusing on reducing unnecessary imaging or testing during the demonstration, yet there was some evidence that IAH practices decreased spending on ultrasounds and x-rays overall. When beneficiaries began receiving home-based primary care, use of simple imaging and lab tests tended to rise.

One result of good coordination of care is higher efficiency of care, specifically by reducing duplicative diagnostic and laboratory tests. IAH practice leaders did not report specifically focusing on eliminating excessive imaging or testing during the demonstration. As part of their approach to delivering home-based primary care, several IAH practices arranged for IAH beneficiaries to receive lab tests, ultrasounds, and x-rays at home. In the first year after starting home-based primary care, IAH beneficiaries' spending on testing increased about 62 percent and increased for imaging such as ultrasounds and x-rays about 27 percent but advanced imaging probably did not increase or decrease. Among the mix of IAH beneficiaries who were new and existing recipients of home-based primary care, there were no significant changes in spending on testing or advanced imaging over the course of the demonstration, but spending on imaging such as ultrasounds and x-rays significantly decreased 10 percent, perhaps because IAH practice clinicians reduced duplication from better monitoring of imaging across care settings in later years of the demonstration.

Conclusions

IAH beneficiaries had high potential for health care cost savings because their service utilization was at the expensive end of the cost distribution among the Original Medicare population at large.²⁷ Despite the strengths of IAH's design as a standardized intervention targeting a particular patient population well-suited for home-based primary care, its results from the performance-year analysis were broadly consistent with the mixed findings of other studies of home-based primary care during the demonstration.

IAH and other studies of home-based primary care

The evaluation found strong evidence that outcomes improved for IAH beneficiaries who started home-based primary care during the demonstration and for beneficiaries dually eligible for Medicare and Medicaid who needed the most assistance with activities of daily living. Put another way, beneficiaries with the greatest needs among IAH beneficiaries were the ones with the greatest potential to reduce spending, but outcomes for other subpopulations were not affected by the demonstration.

Between the launch and conclusion of IAH, at least 15 studies were published that contributed to the evidence of the effects of home-based primary care on hospitalization, emergency department visits, or spending for patients with varying levels of illness and frailty ([Appendix B](#)). Seven were simple study designs with limited generalizability since they involved only a single site or health system with no more than 500 patients.²⁸ The only randomized controlled trial was halted early because of an inordinate increase in mortality in the group randomized to receive home-based primary care, perhaps because about a third of patients assigned to the intervention did not receive

it or may reflect less-aggressive care at the end of life among home-based primary care recipients.²⁹ A rigorous study of almost 5,000 elderly Veterans Affairs diabetic patients found that rates of potentially preventable hospitalization were lower for those with the most medical complexity and higher for those with the least medical complexity.³⁰ In a national sample of Medicare beneficiaries meeting IAH eligibility criteria but receiving home visits from any health care provider, home-based primary care was associated with a small, significant reduction in the potentially preventable hospitalization rate after two years.³¹ A direct-matched, case-control study of enrollment in a home visit program among frail elderly adults found lower ED visit and hospitalization rates and lower spending after two years, which was not surprising since the patients receiving home visits had appreciably higher rates of hospitalization and home health care utilization at baseline.³²

These mixed results for hospitalizations, ED visits, and spending mirror the findings from IAH evaluation reports and three systematic reviews of the effects of home-based primary care on outcomes.³³ These findings are also consistent with a 2016 review of home-based primary care by the Agency for Healthcare Research and Quality (AHRQ), which found moderate evidence supporting home-based primary care's capacity to reduce hospitalizations for very sick or frail patients.³⁴ The AHRQ report additionally found weaker evidence supporting reductions in ED visits and inconsistent findings related to costs of care. It noted that the varying criteria for targeting patients and the variety of home-based primary care interventions and their duration make it difficult for evidence to inform which patients under which circumstances would most benefit from home-based primary care.

Explanations for IAH findings

Like its findings from the first IAH report to Congress,³⁵ IAH practice performance in all performance years did not show consistent and convincing evidence of improved outcomes. Why did the demonstration fail to show conclusive evidence of reducing total spending, hospitalization, readmissions, or ED visits for most IAH beneficiaries?

- **The statutory definition of applicable beneficiaries limited the analysis of beneficiary outcomes to annual performance periods for new and existing users of home-based primary care.** As previously discussed, each IAH practice conducted its own assessments to determine which beneficiaries were enrolled in the demonstration each performance year. The statute allowed each IAH practice to apply the applicable beneficiary criteria to determine which beneficiaries were enrolled in the demonstration for purposes of incentive payment calculations. To ensure its analyses were standardized and could be replicated in a comparison group, the evaluation used administrative data to establish which beneficiaries met the applicable beneficiary criteria in each performance year of the demonstration. When the evaluation uniformly applied the applicable beneficiary criteria to beneficiaries in all IAH practices, the set of beneficiaries contributing to incentive payments were not the same as the set of beneficiaries who the evaluation confirmed were applicable beneficiaries in its analyses of the demonstration's outcomes.

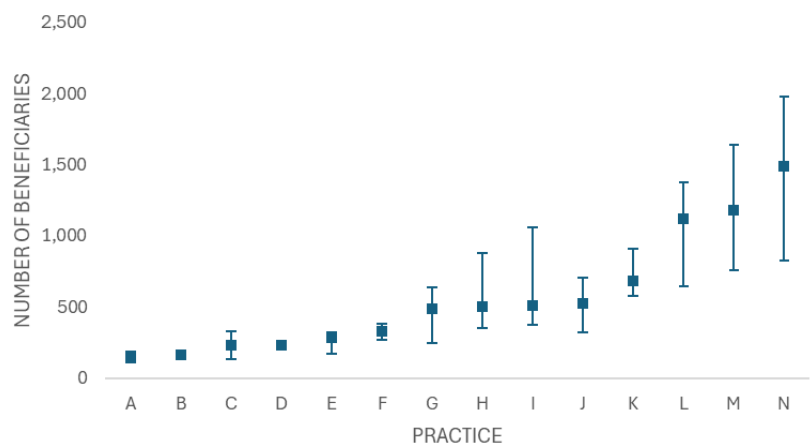
The difference between the beneficiaries enrolled by the practices and the beneficiaries confirmed based on administrative data meant that IAH practices may have continued to enroll beneficiaries who may have met the applicable beneficiary criteria in a previous year but not the current performance year, while outcomes to evaluate the demonstration could

only be measured in annual increments for beneficiaries meeting the applicable beneficiary criteria each year. For example, the statutory requirement for an IAH beneficiary to have a hospitalization and post-acute care within the past 12 months did not allow the evaluation's performance-year analysis to capture any impact over time that IAH practices may have had on deterring inpatient and post-acute utilization for the same beneficiaries. The applicable beneficiary criteria also did not distinguish between beneficiaries with previous exposure to home-based primary care and new recipients of home-based primary care. The outcomes in the evaluation's three-year analysis of beneficiaries newly exposed to home-based primary care, who represented roughly a quarter of applicable beneficiaries in any given performance year, were more responsive to home-based primary care under the demonstration.

- **The small size of the demonstration made it difficult for the evaluation to measure its impacts.**

The statutory beneficiary cap meant that relatively small numbers of applicable beneficiaries were spread across IAH practices. As shown in **EXHIBIT 14**, nine practices had a median of around 500 or fewer applicable beneficiaries during their years of participation. The small number of beneficiaries per practice made it more challenging to both set accurate spending targets to calculate incentive payments and to be confident in the evaluation's measurements of effects of the demonstration on spending and utilization.

EXHIBIT 14: Median IAH Practice Sizes Ranged from 153 to 1,486 Applicable Beneficiaries



NOTE: Each letter on the horizontal axis denotes a different IAH practice, with practices arrayed from smallest to largest median practice size for the 14 practices evaluated for five or more years. A square represents the median number of applicable beneficiaries during a practice's participating years in the demonstration, with the low interval representing the year with the smallest number of applicable beneficiaries and the high interval showing the year with the largest number of applicable beneficiaries.

To be better able to robustly measure effects on spending and utilization, the evaluation pooled applicable beneficiaries across practices. Even with pooling, the total number of beneficiaries in the demonstration was still small enough that the evaluation was often not able to state that the IAH Demonstration had an impact on spending and utilization with a reasonable degree of statistical certainty. The wide variability in effects on spending and utilization for a small, high-cost patient population are difficult to detect unless those effects are very large.

- **IAH practices withdrew from the demonstration.** The withdrawal of practices prevented measuring the effects of the demonstration among a consistent set of participants while

exacerbating the challenges of measuring meaningful changes in outcomes with smaller numbers of beneficiaries in the demonstration. Four of the original 18 practices discontinued participation within the first three years of the demonstration because they could not meet operational requirements of the demonstration, leaving 14 practices included in the evaluation. After year five, the number of practices in the demonstration declined for a variety of reasons, resulting in a different mix of participating practices every year in four of the five remaining years of the demonstration.

- **The payment incentive did not sufficiently drive practice-wide changes that improved outcomes.** The demonstration payment incentive may not have led IAH practices to improve how they delivered home-based primary care beyond their approaches prior to the demonstration. Based on interviews conducted for the evaluation, IAH practice leaders reported that their general approach to home-based primary care was mostly unchanged from before the demonstration began.³⁶ Thus, IAH practices as a whole did not make consistent efforts to affect hospitalization or ED visits differently during IAH relative to their approach to home-based primary care that predated IAH. For the most part, the practices also did not deliver care for IAH beneficiaries any differently from all their patients who received home-based primary care, as noted in the first IAH report to Congress.³⁷

IAH tested whether the prospect of an incentive payment derived from a spending target could promote better performance on hospital-related utilization and spending for participating practices delivering home-based primary care to a costly population of Original Medicare beneficiaries. As the IAH evaluation found, IAH beneficiaries and their caregivers were very satisfied with receiving home-based primary care, but its effects on spending and utilization under the demonstration were not as conclusive. Within IAH's applicable beneficiary criteria, only a subset of beneficiaries with the greatest needs or those who began receiving home visits had convincingly lower rates of ED visits and hospitalizations and reductions in total Medicare spending. The incentive structure of IAH may have aided some practices with funding the multidisciplinary care teams that provided home-based primary care, but it does not appear to have sufficiently spurred improvements in practice performance nor reductions in spending that exceeded the amount of the demonstration's incentive payments to practices for the care of IAH beneficiaries.

Appendix A: IAH Statute

The Patient Protection and Affordable Care Act PUBLIC LAW 111-148 ORIGINAL STATUTE [AMENDMENTS]

INDEPENDENCE AT HOME MEDICAL PRACTICE DEMONSTRATION PROGRAM^[617]

Sec. 1866E. [42 U.S.C. 1395cc-5] (a) Establishment.—

(1) In general.—The Secretary shall conduct a demonstration program (in this section referred to as the “demonstration program”) to test a payment incentive and service delivery model that utilizes physician and nurse practitioner directed home-based primary care teams designed to reduce expenditures and improve health outcomes in the provision of items and services under this title to applicable beneficiaries (as defined in subsection (d)).

(2) Requirement.—The demonstration program shall test whether a model described in paragraph (1), which is accountable for providing comprehensive, coordinated, continuous, and accessible care to high-need populations at home and coordinating health care across all treatment settings, results in—

- (A) reducing preventable hospitalizations;
- (B) preventing hospital readmissions;
- (C) reducing emergency room visits;
- (D) improving health outcomes commensurate with the beneficiaries’ stage of chronic illness;
- (E) improving the efficiency of care, such as by reducing duplicative diagnostic and laboratory tests;
- (F) reducing the cost of health care services covered under this title; and
- (G) achieving beneficiary and family caregiver satisfaction.

(b) Independence at Home Medical Practice.—

(1) Independence at home medical practice defined.—In this section:

(A) In general.—The term “independence at home medical practice” means a legal entity that—

(i) is comprised of an individual physician or nurse practitioner or group of physicians and nurse practitioners that provides care as part of a team that includes physicians, nurses, physician assistants, pharmacists, and other health and social services staff as appropriate who have experience providing home-based primary care to applicable beneficiaries, make in-home visits, and are available 24 hours per day, 7 days per week to carry out plans of care that are tailored to the individual beneficiary’s chronic conditions and designed to achieve the results in subsection (a);

- (ii) is organized at least in part for the purpose of providing physicians' services;
- (iii) has documented experience in providing home-based primary care services to high-cost chronically ill beneficiaries, as determined appropriate by the Secretary;
- (iv) furnishes services to at least 200 applicable beneficiaries (as defined in subsection (d)) during each year of the demonstration program;
- (v) has entered into an agreement with the Secretary;
- (vi) uses electronic health information systems, remote monitoring, and mobile diagnostic technology; and
- (vii) meets such other criteria as the Secretary determines to be appropriate to participate in the demonstration program.

The entity shall report on quality measures (in such form, manner, and frequency as specified by the Secretary, which may be for the group, for providers of services and suppliers, or both) and report to the Secretary (in a form, manner, and frequency as specified by the Secretary) such data as the Secretary determines appropriate to monitor and evaluate the demonstration program.

(B) Physician.—The term “physician” includes, except as the Secretary may otherwise provide, any individual who furnishes services for which payment may be made as physicians' services and has the medical training or experience to fulfill the physician's role described in subparagraph (A)(i).

(2) Participation of nurse practitioners and physician assistants.—Nothing in this section shall be construed to prevent a nurse practitioner or physician assistant from participating in, or leading, a home-based primary care team as part of an independence at home medical practice if—

- (A) all the requirements of this section are met;
 - (B) the nurse practitioner or physician assistant, as the case may be, is acting consistent with State law; and
 - (C) the nurse practitioner or physician assistant has the medical training or experience to fulfill the nurse practitioner or physician assistant role described in paragraph (1)(A)(i).
- (3) Inclusion of providers and practitioners.—Nothing in this subsection shall be construed as preventing an independence at home medical practice from including a provider of services or a participating practitioner described in section 1842(b)(18)(C) that is affiliated with the practice under an arrangement structured so that such provider of services or practitioner participates in the demonstration program and shares in any savings under the demonstration program.
- (4) Quality and performance standards.—The Secretary shall develop quality performance standards for independence at home medical practices participating in the demonstration program.

(c) Payment Methodology.—

(1) Establishment of target spending level.—The Secretary shall establish an estimated annual spending target, for the amount the Secretary estimates would have been spent in the absence of the demonstration, for items and services covered under parts A and B furnished to applicable beneficiaries for each qualifying independence at home medical practice under this section. Such spending targets shall be determined on a per capita basis. Such spending targets shall include a risk corridor that takes into account normal variation in expenditures for items and services covered under parts A and B furnished to such beneficiaries with the size of the corridor being related to the number of applicable beneficiaries furnished services by each independence at home medical practice. The spending targets may also be adjusted for other factors as the Secretary determines appropriate.

(2) Incentive payments.—Subject to performance on quality measures, a qualifying independence at home medical practice is eligible to receive an incentive payment under this section if actual expenditures for a year for the applicable beneficiaries it enrolls are less than the estimated spending target established under paragraph (1) for such year. An incentive payment for such year shall be equal to a portion (as determined by the Secretary) of the amount by which actual expenditures (including incentive payments under this paragraph) for applicable beneficiaries under parts A and B for such year are estimated to be less than 5 percent less than the estimated spending target for such year, as determined under paragraph (1).

(d) Applicable Beneficiaries.—

(1) Definition.—In this section, the term “applicable beneficiary” means, with respect to a qualifying independence at home medical practice, an individual who the practice has determined—

(A) is entitled to benefits under part A and enrolled for benefits under part B;

(B) is not enrolled in a Medicare Advantage plan under part C or a PACE program under section 1894;

(C) has 2 or more chronic illnesses, such as congestive heart failure, diabetes, other dementias designated by the Secretary, chronic obstructive pulmonary disease, ischemic heart disease, stroke, Alzheimer’s Disease and neurodegenerative diseases, and other diseases and conditions designated by the Secretary which result in high costs under this title;

(D) within the past 12 months has had a nonelective hospital admission;

(E) within the past 12 months has received acute or subacute rehabilitation services;

(F) has 2 or more functional dependencies requiring the assistance of another person (such as bathing, dressing, toileting, walking, or feeding); and

(G) meets such other criteria as the Secretary determines appropriate.

(2) Patient election to participate.—The Secretary shall determine an appropriate method of ensuring that applicable beneficiaries have agreed to enroll in an independence at home medical practice under the demonstration program. Enrollment in the demonstration program shall be voluntary.

(3) Beneficiary access to services.—Nothing in this section shall be construed as encouraging physicians or nurse practitioners to limit applicable beneficiary access to services covered under this title and applicable beneficiaries shall not be required to relinquish access to any benefit under this title as a condition of receiving services from an independence at home medical practice.

(e) Implementation.—

(1) Starting date.—The demonstration program shall begin no later than January 1, 2012. Agreements with an independence at home medical practice under the demonstration program may cover not more than a 7-year period.[\[618\]](#)[\[619\]](#)[\[623\]](#)

(2) No physician duplication in demonstration participation.—The Secretary shall not pay an independence at home medical practice under this section that participates in section 1899.

(3) No beneficiary duplication in demonstration participation.—The Secretary shall ensure that no applicable beneficiary enrolled in an independence at home medical practice under this section is participating in the programs under section 1899.

(4) Preference.—In approving an independence at home medical practice, the Secretary shall give preference to practices that are—

(A) located in high-cost areas of the country;

(B) have experience in furnishing health care services to applicable beneficiaries in the home; and

(C) use electronic medical records, health information technology, and individualized plans of care.

(5) Limitation on number of practices.—In selecting qualified independence at home medical practices to participate under the demonstration program, the Secretary shall limit the number of such practices so that the number of applicable beneficiaries that may participate in the demonstration program does not exceed 15,000. An applicable beneficiary that participates in the demonstration program by reason of the increase from 10,000 to 15,000 in the preceding sentence pursuant to the amendment made by section 50301(a)(1)(B)(i) of the Advancing Chronic Care, Extenders, and Social Services Act shall be considered in the spending target estimates under paragraph (1) of subsection (c) and the incentive payment calculations under paragraph (2) of such subsection for the sixth and seventh years of such program.[\[620\]](#)[\[624\]](#)

(6) Waiver.—The Secretary may waive such provisions of this title and title XI as the Secretary determines necessary in order to implement the demonstration program.

(7) Administration.—Chapter 35 of title 44, United States Code, shall not apply to this section.

(f) Evaluation and Monitoring.—

(1) In general.—The Secretary shall evaluate each independence at home medical practice under the demonstration program to assess whether the practice achieved the results described in subsection (a).

(2) Monitoring applicable beneficiaries.—The Secretary may monitor data on expenditures and quality of services under this title after an applicable beneficiary discontinues receiving services under this title through a qualifying independence at home medical practice.

(g) Reports to Congress.—The Secretary shall conduct an independent evaluation of the demonstration program and submit to Congress a final report, including best practices under the demonstration program including, to the extent practicable, with respect to the use of electronic health information systems, as described in subsection (b)(1)(A)(vi). Such report shall include an analysis of the demonstration program on coordination of care, expenditures under this title, applicable beneficiary access to services, and the quality of health care services provided to applicable beneficiaries.[\[621\]](#)

(h) Funding.—For purposes of administering and carrying out the demonstration program, other than for payments for items and services furnished under this title and incentive payments under subsection (c), in addition to funds otherwise appropriated, there shall be transferred to the Secretary for the Center for Medicare & Medicaid Services Program Management Account from the Federal Hospital Insurance Trust Fund under section 1817 and the Federal Supplementary Medical Insurance Trust Fund under section 1841 (in proportions determined appropriate by the Secretary) \$5,000,000 for each of fiscal years 2010 through 2015. Amounts transferred under this subsection for a fiscal year shall be available until expended.[\[625\]](#)

(i) Termination.—

(1) Mandatory termination.—The Secretary shall terminate an agreement with an independence at home medical practice if—

(A)[\[622\]](#) the Secretary estimates or determines that such practice did not achieve savings for the third of 3 consecutive years under the demonstration program; or

(B) such practice fails to meet quality standards during any year of the demonstration program.

(2) Permissive termination.—The Secretary may terminate an agreement with an independence at home medical practice for such other reasons determined appropriate by the Secretary.

AMENDMENTS

[617] P.L. 111-148, §3024, added this second section 1866D, effective March 23, 2010; P.L. 111-148, §10308(b)(2), redesignated this §1866D as 1866E.

[618] P.L. 114-39, struck “3-year”; inserted “5-year”. Effective July 30, 2015.

[619] P.L. 115-123 §50301(a)(1)(A) struck “An agreement” in paragraph (1) and inserted “Agreements”; struck “5-year” and inserted 7-year”. Effective February 9, 2018.

[620] P.L. 115-123 §50301(a)(1)(B) struck “10,000” and inserted “15,000” and inserted “An applicable beneficiary that participates in the demonstration program by reason of the increase from 10,000 to 15,000 in the preceding sentence pursuant to the amendment made by section 50301(a)(1)(B)(i) of the Advancing Chronic Care, Extenders, and Social Services Act shall be considered in the spending target estimates under paragraph (1) of subsection (c) and the incentive payment calculations under paragraph (2) of such subsection for the sixth and seventh years of such program.” at the end of the paragraph. Effective February 9, 2018.

[621] P.L. 115-123 §50301(a)(2) inserted “including, to the extent practicable, with respect to the use of electronic health information systems, as described in subsection (b)(1)(A)(vi). Such report shall include an analysis of the demonstration program on coordination of care, expenditures under this title, applicable beneficiary access to services, and the quality of health care services provided to applicable beneficiaries.” after “under the demonstration program”. Effective February 9, 2018.

[622] P.L. 115-123 §50301(a)(3) struck “will not receive an incentive payment for the second of 2” and inserted “did not achieve savings for the third of 3”. Effective as if included in P.L. 111-148, which was March 23, 2010.

[623] P.L. 116-260 §105(a)(1)(A) struck “7-year”; inserted “10-year”. Effective as if included in the enactment of P.L. 111-148.

[624] P.L. 116-260 §105(a)(1)(B) struck “15,000”; inserted “20,000”. Struck “sixth and seventh” and inserted “sixth through tenth”. Added at the end the new sentence: “An applicable beneficiary that participates in the demonstration program by reason of the increase from 15,000 to 20,000 in the first sentence of this paragraph pursuant to the amendment made by section 105 of division CC of the Consolidated Appropriations Act, 2021 shall be considered in the spending target estimates under paragraph (1) of subsection (c) and the incentive payment calculations under paragraph (2) of such subsection for the eighth through tenth years of such program.” Effective as if included in the enactment of P.L. 111-148.

[625] P.L. 116-260 §105(a)(2) inserted “and \$9,000,000 for fiscal year 2021” after “2015” in subsection (h). Effective as if included in the enactment of P.L. 111-148.

Appendix B: Home-based Primary Care Studies

Year	Author	Title	Participants	Number of Patients in Intervention	Intervention	Study Design	Total Spending, Hospitalization, or ED Visit Results for Intervention Patients	Limitations
Studies preceding the creation of Independence at Home								
1985	Zimmer et al.	A Randomized Controlled Study of a Home Health Care Team	1 health system	85	Interdisciplinary care team delivering home-based primary care to homebound or terminally ill elderly patients	Randomized controlled trial	At six months, unadjusted 0.6 less hospital admissions per patient and 0.21 more ED visits per patient per month than control group; adjusted total spending not statistically significant	Small study with limited generalizability; utilization measures not subject to multivariate regression
2007	Counsell et al.	Geriatric Care Management for Low-Income Seniors: A Randomized Controlled Trial	1 health system	474 total; 362 at low risk of hospitalization and 112 at high risk of hospitalization according to probability of repeated admission score	Physicians randomized to an interdisciplinary care team that would make initial and regular follow-up contact, often through home visits, with older, community-dwelling adults with low incomes and work with the patient and physician on developing a care plan and following care protocols	Randomized controlled trial	ED visits without hospitalization were significantly lower (198 per 1,000 patients) in the second year; hospitalizations or 30-day readmissions were not significantly different in the first or second years; among patients considered high risk, ED visits were significantly lower in the second year (309 per 1,000 patients), as were hospitalizations (466 per 1,000 patients), but not the first year	Generalizability to other sites and patients limited
2008	Bouman et al.	Effects of Intensive Home Visiting Programs for Older People with Poor Health Status: A Systematic Review	6 randomized controlled trials outside the United States	73; 116; 159; 184; 331; 160	Four or more home visits per year to older adults with poor health	Systematic review	No significant differences in hospital stays	Small sample sizes with different patient eligibility criteria and home-visit programs
2009	Beck et al.	House Calls for Seniors: Building and Sustaining a Model of Care for Homebound Seniors	1 site	468	House calls for homebound elderly adults by multidisciplinary care team	Pre/post analysis	After one year, 15% fewer ED visits; 8% more hospitalizations; average total spending increased \$5,721	Descriptive study design; small study with limited generalizability
2009	Chang et al.	Impact of a Home-Based Primary Care Program in an Urban Veterans Affairs Medical Center	1 site	183	Interdisciplinary home-based primary care program for frail, chronically ill adults	Pre/post analysis	The number of hospitalizations significantly decreased by 43.7% between six months before and six months after program enrollment; no significant change in ED visits	Descriptive study design; small study of younger and older VA patients; VA delivery system limits generalizability
2009	Counsell et al.	Cost Analysis of the Geriatric Resources for Assessment and Care of Elders Care Management Intervention	1 health system	474 total; 362 at low risk of hospitalization and 112 at high risk of hospitalization according to probability of repeated admission score	Physicians randomized to an interdisciplinary care team that would make initial and regular follow-up contact, often through home visits, with older, community-dwelling adults with low incomes and work with the patient and physician on developing a care plan and following care protocols	Randomized controlled trial	Among all patients, average total spending was significantly higher than the control group over the two-year intervention and not significant one year post-intervention; patients at low risk of hospitalization had significantly higher average total spending (\$2,236 higher at one year and \$1,504 higher at two years and \$815 higher at one year post-intervention); patients at high risk of hospitalization were not significantly different in average total spending than their control group during the two-year intervention but had significantly lower spending at one year post-intervention (\$1,487 lower)	Generalizability to other sites and patients limited
2010	Wajnberg et al.	Hospitalizations and Skilled Nursing Facility Admissions Before and After the Implementation of a Home-Based Primary Care Program	1 medical center	179	House calls program for homebound older adults	Pre/post analysis	The number of patients with at least one hospital stay decreased 23 percentage points between the period before to the period after initiation of program	Descriptive, small study without a standardized baseline nor intervention period and has limited generalizability
Studies following the creation of Independence at Home								
2012	Rosenberg	Acute Hospital Use, Nursing Home Placement, and Mortality in a Frail Community-Dwelling Cohort Managed with Primary Integrated Interdisciplinary Elder Care at Home	1 site	248	Primary Integrated Interdisciplinary Elder Care at Home for frail older adults	Pre/post analysis	In multivariate regression models, no significant differences in hospital stays or emergency department visits	Descriptive study design; small study with limited generalizability

2014	De Jonge et al.	Effects of Home-Based Primary Care on Medicare Costs in High-Risk Elders	1 site	722	Receipt of home visits for frail elderly adults	Direct matched case-control study	Unadjusted hospitalizations were 9% lower and emergency department visits were 10% lower; average adjusted total spending \$8,477 lower after two years, driven by frailest patients	Cases and controls not well balanced on baseline hospital and post-acute care utilization or chronic conditions
2014	Edes et al.	Better Access, Quality, and Cost for Clinically Complex Veterans with Home-Based Primary Care	National sample	9,425	Veterans Affairs (VA) and Medicare spending for patients starting home-based primary care	Pre/post analysis and projected annual costs	Hospitalizations 25.5% lower after starting home-based primary care; VA and Medicare costs 11.7% lower than projected	Descriptive study design, with cost projections subject to assumptions that do not measure actual spending against a concurrent comparison group
2014	Stall et al.	Systematic Review of Outcomes from Home-Based Primary Care Programs for Homebound Older Adults	9 studies	46,154	Home-based primary care for homebound, community-dwelling elderly adults	Systematic review	Three of four studies showed no significant decreases in emergency department visits; five of nine studies showed no significant decreases in hospital stays; four studies showed mixed findings with spending	4 of 9 studies were program descriptions; only 1 was a randomized controlled trial
2015	Mattke et al.	Medicare Home Visit Program Associated with Fewer Hospital and Nursing Home Admissions, Increased Office Visits	5 states	18,351 patients with diabetes, heart failure, or chronic obstructive pulmonary disease in a Medicare Advantage Chronic Special Needs Plan; 18,029 Medicare Advantage patients in other plans	HouseCalls annual home visit health assessment, with results relayed to the patient's primary care clinician	Retrospective cohort study	Chronic Special Needs Plan patients who received a home visit were 18% less likely to have a hospitalization and seven % less likely to have any emergency department visit in the next 12 months relative to those who did not; Medicare Advantage patients in other plans who received a home visit had no significant difference in rate of hospitalization or any emergency department visit	Excluded patients who disenrolled in Medicare Advantage or died within a year of a home visit
2017	Edwards et al.	Preventing Hospitalization with Veterans Affairs Home-Based Primary Care: Which Individuals Benefit Most	National sample	4,573	Elderly VA patients with diabetes who began home-based primary care	Retrospective cohort study	Patients with the lowest complexity were more likely to have an ambulatory care sensitive condition hospitalization (OR = 33.18, 95% CI = 4.58–240.12), while those with the most were least likely (OR = 0.43, 95% CI = 0.19–0.93)	VA patients and delivery system limit generalizability
2017	Ruiz et al.	Innovative Home Visit Models Associated with Reductions in Costs, Hospitalizations, And Emergency Department Use	5 care delivery models	1,244; 171; 412; 1,112; 2,922	Home visits to chronically ill patients by practice-extender teams to improve care coordination and patient education and engagement with care	Systematic review	Significantly lower hospitalization rate in 3/5 models; lower emergency department visit rate in 1/5 models; lower spending in 2/5 models ($p < 0.05$)	Care delivery models were not home-based primary care and varied widely in structure, targeted patients, and goals
2017	Schamess et al.	Reduced Emergency Room and Hospital Utilization in Persons with Multiple Chronic Conditions and Disability Receiving Home-Based Primary Care	1 health system	250	Home-based primary care program for disabled adults with 2 or more chronic illnesses	Pre/post analysis	At one year after enrollment, 5.2 per 1,000 patient-days fewer hospital admissions; 1.8 fewer 30-day readmissions, and 5.5 fewer emergency department visits; at three years, 2.2 fewer hospital admissions, 0.5 fewer 30-day readmissions, and 2.7 fewer emergency department visits	Descriptive study design; small study of younger and older patients with limited generalizability
2018	McGregor et al.	A Before-After Study of Hospital Use in Two Frail Populations Receiving Different Homebased Services over the Same Time in Vancouver, Canada	1 health system	246; 492	Integrated home-based primary care for frail, homebound patients; home care support with customary primary care for patients needing assistance with an activity of daily living	Pre/post analysis	Among frail, homebound patients, adjusted incident rate ratios were not statistically significant for rates of hospital stays or emergency department visits; among less frail patients, adjusted incident rate ratios were significantly higher for hospital admissions (1.46, 95% CI 1.22-1.74) and emergency department visits (1.34, 95% CI 1.15-1.56)	Descriptive study design; limited generalizability
2018	Stanhope et al.	The Effects of Home-Based Primary Care on Medicare Costs at Spectrum Health/Priority Health	1 integrated delivery system	210	Adults with at least 5 chronic illnesses and other health risks at home	Direct matched case-control study	No statistically significant differences in spending at 12 months; \$8,620 significantly less in spending at 24 months, with spending reductions driven by decedents	Cases and controls not well balanced on baseline inpatient and outpatient spending or sex or age
2018	Trilla et al.	Nurse Practitioner Home-Based Primary Care Program Improves Patient Outcomes	1 managed care organization	471; 408	Nurse practitioner led a home-based primary care team for patients identified through a claims-based algorithm as in need of intensive primary care	Retrospective cohort study	For the cohort with 471 patients, 57% reduction in hospital stays and 37% reduction in emergency department visits two years from initiation of home-based primary care and \$1,241 less in per-member-per-month total spending after one year; the cohort of 408 patients had reductions in total spending of \$416 per-member-per-month after one year against an eligible group of patients who did not receive the intervention	Descriptive study design; small study of younger and older patients with limited generalizability

2019	Daaleman et al.	The Impact of a Community-Based Serious Illness Care Program on Healthcare Utilization and Patient Care Experience	1 health system	159	Interdisciplinary program integrating home-based primary and palliative care for patients with mobility difficulties and a serious illness	Pre/post analysis	No statistically significant differences in hospitalizations or emergency department visits within a year after initiation of program	Descriptive study design; small study of younger and older patients with limited generalizability
2021	Zimbroff et al.	Home-Based Primary Care: A Systematic Review of the Literature, 2010–2020	79 studies	N/A	Outcomes of home-based primary care were 1 of 5 themes	Systematic review	Suggestive evidence of reductions in total spending and hospital-related utilization	Studies were not rigorous nor generalizable
2022	Federman et al.	Outcomes of Home-Based Primary Care for Homebound Older Adults: A Randomized Clinical Trial	1 site	114	Home-based primary care for homebound elderly adults with a hospital stay in past year	Randomized controlled trial	Among home-based primary care group, lower hospitalization rates (-17.9%, 95% CI = -31.0-1.0) but no significant differences in emergency department visits	Underpowered and 34.2% of patients randomized to home-based primary care did not receive it; trial ended early because 10.4 percentage point greater mortality in randomized group
2023	Kimme et al.	Effects of Home-Based Primary Care on Hospital Use for High-Need Medicare Patients: An Observational Study	National sample	55,303	High-need, high-cost Medicare patients who began receiving home visits	Matched retrospective cohort study	In multivariate regression difference-in-differences models, no statistically significant differences in hospital admissions at one year or two years but a significant reduction in potentially avoidable hospitalizations of 11 per 1,000 patients in the second year (P=0.01); inpatient spending was reduced by \$24 per patient per month in the first year (P=0.1) but not significant in the second year	Home visits were not delivered using a specific model of home-based primary care
2023	Woodall et al.	Addressing Healthcare Utilization and Costs for Older Adults with Limited Mobility through a Multidisciplinary Home-Based Primary Care Program	1 aging services agency	62	Interdisciplinary home-based primary care program for Medicare patients	Pre/post analysis	Two more hospital stays and five fewer emergency department visits, with average monthly spending \$1,485 less in year after initiation of program	Descriptive, small study with limited generalizability; intervention year was first year of COVID-19 pandemic

Notes and References

¹ The Patient Protection and Affordable Care Act. (Pub.L. 111-148) Sec. 3024. Independence at Home Demonstration Program.

² The Patient Protection and Affordable Care Act. (Pub.L. 111-148) Sec. 3024. Independence at Home Demonstration Program.

³ Klein, S, et al. An Overview of Home-Based Primary Care: Learning from the Field. The Commonwealth Fund. 2017.

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⁴ The first IAH Report to Congress is available on the CMS IAH webpage.
<https://www.cms.gov/priorities/innovation/files/reports/iah-rtc.pdf>

⁵ All IAH evaluation reports and the first IAH Report to Congress are available on the CMS IAH webpage.
<https://www.cms.gov/priorities/innovation/innovation-models/independence-at-home>

⁶ Wajnberg, A, et al. Hospitalizations and skilled nursing facility admissions before and after the implementation of a home-based primary care program. Journal of the American Geriatrics Society. 2010.

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Zimmer, JG, et al. A randomized controlled study of a home health care team. American Journal of Public Health. 1985.

⁷ Yao, N, et al. Geographic concentration of home-based medical care providers. Health Affairs. 2016.

⁸ The process of identifying enrolled beneficiaries to calculate incentive payments was as follows: IAH practices reported newly enrolled beneficiaries in the demonstration to CMS. Then, the contractor responsible for calculating incentive payments used administrative data to verify that they had Parts A and B coverage in the Original Medicare program and incurred a hospital stay and post-acute care in the prior 12 months without hospice enrollment. The verification process did not include confirming a beneficiary's activities of daily living limitations nor chronic conditions with administrative data. After a beneficiary's initial year of enrollment in the demonstration, only a beneficiary's Original Medicare status was confirmed in subsequent performance years but not whether the beneficiary had another hospital stay and post-acute care. A beneficiary could stay enrolled in the demonstration even after starting hospice. Practices could disenroll a beneficiary from the demonstration at any point for any reason.

⁹ The first IAH report to Congress and the IAH final evaluation report can be found on the CMS IAH webpage.
<https://www.cms.gov/priorities/innovation/files/reports/iah-rtc.pdf> and
<https://www.cms.gov/priorities/innovation/innovation-models/independence-at-home>

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- ¹⁰ The first IAH Report to Congress is available on the CMS IAH webpage.
<https://www.cms.gov/priorities/innovation/files/reports/iah-rtc.pdf>
- ¹¹ The first IAH report to Congress is available on the CMS IAH webpage.
<https://www.cms.gov/priorities/innovation/files/reports/iah-rtc.pdf>
- ¹² All IAH evaluation reports and the first IAH report to Congress are available on the CMS IAH webpage.
<https://www.cms.gov/priorities/innovation/innovation-models/independence-at-home>
- ¹³ The IAH final evaluation report is available on the CMS IAH webpage.
<https://www.cms.gov/priorities/innovation/innovation-models/independence-at-home>
- ¹⁴ The IAH final evaluation report is available on the CMS IAH webpage.
<https://www.cms.gov/priorities/innovation/innovation-models/independence-at-home>
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- ¹⁹ Rerucha, CM, et al. House calls. *American Academy of Family Physicians*. 2020.
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- ²⁰ The IAH final evaluation report is available on the CMS IAH webpage.
<https://www.cms.gov/priorities/innovation/innovation-models/independence-at-home>
- ²¹ Evaluation of the Independence at Home Demonstration: An Examination of Year 7, the First Year of the COVID-19 Pandemic. January 2023. <https://www.cms.gov/priorities/innovation/data-and-reports/2023/iah-year7-eval-report>
- ²² Affordable Care Act payment model saves more than \$25 million in first performance year. June 18, 2015.
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