

**An Access Monitoring System (AMS)
for Medicare Beneficiaries**

FINAL REPORT

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Centers for Medicare and Medicaid Services (CMS)
Contract #: HHSM-500-2006-00008I
Project Officer: David Nyweide, Ph.D.**

**Prepared by:
Kennell and Associates, Inc.
and its subcontractor:
Mathematica Policy Research (MPR)**

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Part I: Monitoring Access

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I. Purpose

The purpose of this project is to develop an Access Monitoring System (AMS) to alert the Centers for Medicare and Medicaid Services (CMS) to potential reductions in access to care experienced by Medicare beneficiaries. The AMS under this project will measure beneficiaries' realized access to professional provider services from Medicare claims data and self-reported perceptions of access from 1-800-MEDICARE call data to produce timely, geographically sensitive measurements of beneficiaries' access to care. In turn, these measurements will be used to detect any significant changes in access across geographical areas and over time.

This final report describes how the AMS is constructed and how the AMS detects meaningful signals of change in access. The first section briefly explains the design features of the AMS and provides details of the analytic methods applied to develop monitoring information. The second section of the report lists all indicators used in the AMS and describes the source of data for each access indicator and how it is calculated. These specifications also note the frequency of updates, the thresholds for change, and finally, any metric notes that may be helpful to users.

II. Background

The Omnibus Budget Reconciliation Act of 1989 enacted a new Medicare fee schedule for physician services, effective in 1992. Yearly adjustments to the physician fee schedule were made according to the Medicare Volume Performance Standard, which was replaced by the Sustainable Growth Rate (SGR) in 1997. The SGR intended to recalibrate physician payment rates annually if aggregate Medicare spending was above or below a sustainable target spending level. Since 1997, Congress has held constant or slightly increased physician payment rates almost every year, even as the SGR has indicated that they should be decreased. Consequently, the scheduled cuts in the physician fee schedule have accumulated such that a 29.5 percent reduction is slated to take effect in January 2012 unless Congress takes action. Although Congress has intervened routinely to avert drastic cuts by temporarily overriding the SGR, the imperative to make the fee schedule more sustainable in the future could have implications for beneficiaries' access to care. Moreover, value-based purchasing initiatives, as described in the Affordable Care Act, also have the potential to significantly impact how physicians are paid for the care they provide. There are concerns that physicians may opt out of seeing Medicare patients as these initiatives are implemented.

Access to care is a complex issue that can be affected by multiple factors such as payment policies; physician supply and Medicare participation; delivery system and market characteristics; and beneficiary characteristics. Previous research indicates that Medicare beneficiaries' realized access to physician services has remained relatively constant in the face of changes to physician payment rates.^{1,2,3,4} Physician surveys indicate that the acceptance of

¹ Physician Payment Review Commission. "Monitoring Access of Medicare Beneficiaries: Report to Congress." No. 93-2. Washington, D.C. 1993.

² Physician Payment Review Commission. "Annual Report to Congress." Washington, D.C. 1994.

³ Medicare Payment Advisory Commission. Report to the Congress: Medicare Payment Policy. Washington, D.C. March 2000.

Medicare and privately insured patients has not varied significantly despite Medicare payment changes. Surveys also indicate that the percentage of physicians accepting new Medicare patients is higher than the percentage accepting new private patients.^{5,6} Inadequate reimbursement is the most commonly cited reason for not accepting new Medicare patients. Moreover, surveys of Medicare beneficiaries indicate that specific subgroups of beneficiaries are more likely to report problems with access—transitioning beneficiaries, beneficiaries located in selected geographical areas, beneficiaries under age 65 (disabled), those in poor or fair health, those with functional limitations, those with low incomes, and those without supplemental insurance.^{7,8}

The issue of access to care for Medicare beneficiaries is extremely important in light of today's health reform environment, especially with the cumulative effects of physician payment adjustments, value-based purchasing initiatives, and the formation of Accountable Care Organizations. Changes in reimbursement that result in lower payments could lead physicians to limit the number of services they deliver to Medicare patients or restrict the number of new or existing Medicare patients they see. While studies have shown that changes in reimbursement have, thus far, had minimal effect on access to care for Medicare beneficiaries, future changes to the physician fee schedule could be much more significant. Moreover, with the highly charged atmosphere in Congress related to health reform implementation and deficit reduction, it is critical that CMS be positioned to address questions about access to care from Congress, the White House, and other parties in a timely and consistent manner.

For these reasons, CMS needs a data-driven system in place to monitor beneficiaries' access to care. Such a monitoring system will focus on tracking Medicare beneficiaries' access to professional provider services in the FFS program, an aspect of access that is directly affected by physicians' participation in the Medicare program. The principal aim of the AMS is to detect significant changes in access—and specifically, when and where access becomes a potential problem.

III. AMS Design Features

This section briefly outlines the design features of the AMS. Because access to care is often a complex and local phenomenon, an overall picture of access must be composed of signals from multiple measures of access and geographical levels. Using this framework, the AMS is a timely, geographically sensitive monitoring system of access to care for all FFS Medicare beneficiaries.

⁴ Medicare Payment Advisory Commission. Report to the Congress: Medicare Payment Policy. Washington, D.C. March 2003.

⁵ Center for Studying Health System Change. *Tracking Report: Physician Acceptance of New Medicare Patients Stabilizes in 2004-2005*. Tracking Report No. 12. Washington, D.C. January 2006.

⁶ Center for Studying Health System Change. *A Snapshot of U.S. Physicians: Key Findings from the 2008 Health Tracking Physician Survey*. Data Bulletin No. 35. Washington, D.C. September 2009.

⁷ Mathematica Policy Research, Inc. *Results from the 2003 Targeted Beneficiary Survey on Access to Physician Services Among Medicare Beneficiaries*. Cambridge, MA. June 2004.

⁸ Medicare Payment Advisory Commission. Report to the Congress: Medicare Payment Policy. Washington, D.C. March 2006.

The AMS includes a set of access indicators derived from Medicare claims and 1-800-MEDICARE call data (referred to as “scripts”). The access indicators in this system measure realized access to professional provider services and self-reported perceptions of access. The access indicators from both data sources generate monitoring information used to alert CMS of any potential reductions in access on a quarterly basis at different geographical levels of analysis, as well as potential changes in access over time. Within each geographical level, the AMS allows stratification of indicators by specific patient and provider characteristics. Using Microsoft Excel workbooks, indicator rates are shown, and visual signals of how the indicators for specific geographical areas compare to national averages and any variation over time are displayed.

A fully operational AMS was developed and implemented using 100 percent of the 2008 Medicare Part B FFS claims (4 quarters), as well as FFS claims from the first quarter of 2007. With data from additional years, the fully operational AMS will enable CMS to identify and monitor areas with potentially reduced access to care nationwide.

A. Data Sources

1. Chronic Condition Data Warehouse (CCW)

The CCW contains existing CMS beneficiary data from multiple data sources linked by a unique, anonymized identifier, allowing researchers to analyze information across the continuum of care. The CCW currently contains data from January 1, 1999 forward for 100 percent of the Medicare FFS population.⁹ From the CCW, the AMS utilizes Part B Medicare claims data, eligibility data from the Beneficiary Summary File, and chronic condition flags from the Chronic Condition Summary File. The AMS currently includes assessments of access using CCW data from 2007 (quarter 1) and 2008 (all quarters).

2. 1-800-MEDICARE Script Data

1-800-MEDICARE is a general source of information about the Medicare program for beneficiaries and will be used to measure perceptions of access problems for beneficiaries. When beneficiaries call 1-800-MEDICARE, they are directed through a series of menus before speaking with a customer service representative (CSR). The CSR then uses scripts to help answer beneficiaries’ questions. 1-800-MEDICARE call data are housed in the National Data Warehouse (NDW).

The script “How Providers Work with Medicare” (script number 220.20.20) is particularly useful for monitoring access to care because it covers issues related to providers not accepting Medicare payment. In June 2010, script 220.20.20 was modified to enable CSRs to log the different types of access issues raised when that particular script is consulted. Counts of the calls involving script 220.20.20 and, after June 2010, different types of access issues involving that script can be converted into access indicators. The access indicators can then be linked via beneficiary residential ZIP Code to a geographical area to identify potential concerns or reported problems with access to care. However, access indicators derived from this script are

⁹ *Chronic Condition Warehouse: Users Manual version 1.6 January 2010*. Centers for Medicare and Medicaid Services. Available: http://ccwdata.org/downloads/CCW_UserManual.pdf

not as good an indicator of access as claims-based indicators, because beneficiaries who call 1-800-MEDICARE are not a nationally or geographically representative sample of the Medicare population. These indicators may also provide a skewed picture of the state of access for a population if one beneficiary makes multiple calls with the same concern. Because call data are available for only those beneficiaries who elect to use this CMS resource, indicators derived from call data are best used to supplement claims-based indicators. In other words, areas that appear to have reduced access to care according to claims data can be checked against area reports from 1-800-MEDICARE and reports from 1-800-MEDICARE can be checked against claims data to better determine if there are indeed problems with access to care in those areas.

The AMS does not currently contain results from the 1-800-MEDICARE script data, because the scripts specified in the measurement specifications are not yet available in the NDW. CMS will implement the call center data once the call scripts used in the call center measures are available.

3. Potential Changes to AMS Data Sources

As designed and implemented, the current AMS collects eligibility data from the CCW Beneficiary Summary File. However, the CCW Beneficiary Summary File for a given year is completed roughly six months after the close of that year. The completed file contains updated information about a beneficiary's enrollment status and ZIP Code of residence. Consequently, the denominator for many access indicators will always be at least a year out of date when making ongoing measurements of access. This discrepancy may inaccurately denote a beneficiary's age, location of residence, or Medicare and Medicaid eligibility.

CMS is exploring options for overcoming this issue and producing more timely data for analysis in the AMS. One option is to continue making preliminary measurements of access after the close of a quarter but extending the time until final measurements are made until the Beneficiary Summary File for a given year is completed. Another option is to rely on the Medicare Enrollment Database (EDB), which contains demographic and enrollment information about Medicare beneficiaries that is updated each month. However, using the EDB in conjunction with claims data in the CCW has its own limitations. Because the EDB identifies individual beneficiaries with the Medicare claims identifier, this option would require a crosswalk with the beneficiary identifier in the CCW, which would add complications to producing timely measurements of access. A third option is to transition from the CCW to the Integrated Data Repository (IDR) as the data source for the AMS. The IDR would include data from claims and the EDB refreshed on a weekly basis, which would permit more real-time measurements of access from both claims and enrollment data.

B. Architecture

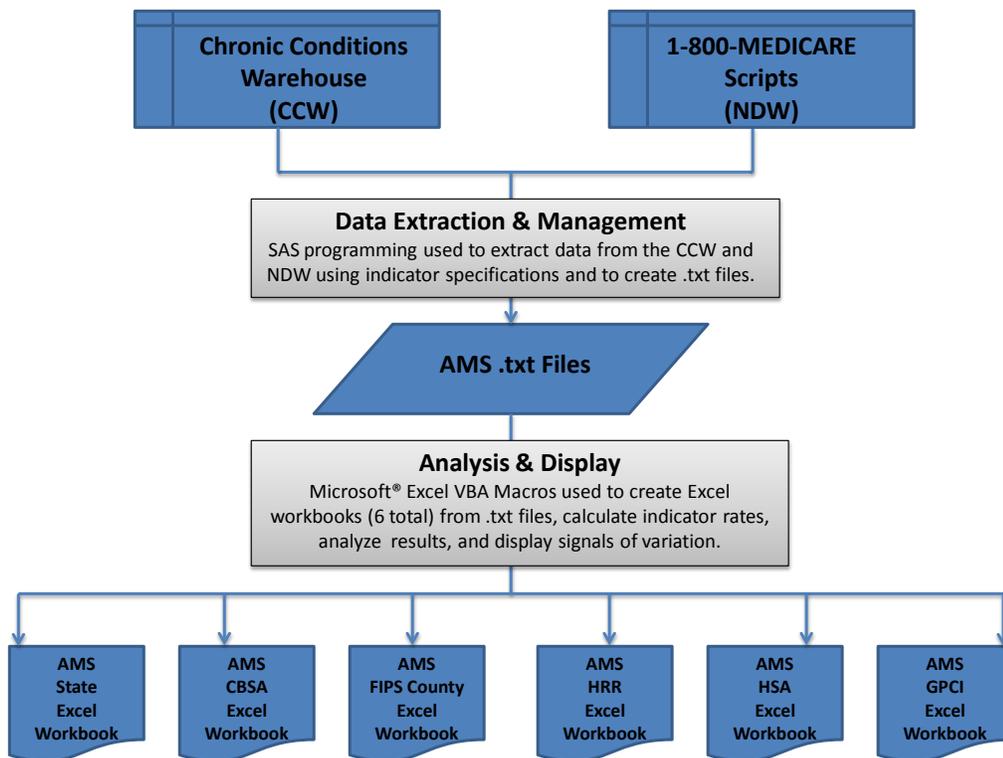
Figure 1 describes the general architecture of how the final AMS tool is produced from its two primary data sources. SAS programming is used to extract necessary data elements from the CCW and the NDW. SAS programs were developed to count indicator numerator and denominator events based on the specifications outlined in Part II of this report. These programs

are also used to generate flat text files (.txt files) that are the input files for the final Microsoft® Excel workbooks.

Excel Visual Basics Applications (VBA) Macros are then used to generate the Excel workbook structure, populate all worksheets with the appropriate data, generate indicator rates, analyze indicator variation, and display signals of variation and change. Generally, the VBA macro code reads in the flat text files containing the raw data and aggregates the various components of the indicators into a large number of indexed arrays. The tests for statistical significance are done within the VBA code, and then, all reports are written out to the Excel file. None of the calculations are performed within the Excel cells. Instead, all are done within the VBA code for maximum efficiency. While the model is coded in VBA and requires some degree of special expertise to modify, care has been taken to make the code accessible to a programmer with a basic understanding of another programming language so that the AMS Excel workbooks can be easily modified to accommodate changes.

Six Excel workbooks are generated (one workbook per geographical level), and each workbook contains results for all indicators and stratifications. Due to the very large amount of data contained within the Excel models, features have been added to enhance the usefulness of the reports. A control panel facilitates navigation among the various reports and also provides links to additional documentation on the methods behind the calculations. Additionally, in each individual report, a “Find Locality” button has been created to allow a user to jump directly to the section of the report containing the geographical area of interest.

Figure 1: AMS Architecture



C. Access Indicators

1. Domains of Access

In an effort to account for the multi-dimensional aspect of access to professional services, domains of access are used as a framework for the selection and categorization of indicators. Indicators are categorized as realized access (claims-based indicators) and perceptions and concerns about access (call-based indicators). Realized access indicators focus on a range of different types of health care services utilized by beneficiaries and billed by eligible professionals paid under the Medicare physician fee schedule. Indicators derived from 1-800-MEDICARE call data capture beneficiaries' perceived problems with access. Indicators are categorized into access domains under the following four groups:

Realized Access:

- Population-based indicators – measures based on denominators of eligible beneficiaries provide some sense of realized access among the entire population for both users and non-users.
- Provider-based indicators – measures based on services provided by any eligible professional reveal changes in provider supply and availability.
- Access to preventive care and services – measures based on rates of beneficiaries who received recommended cancer screenings and other preventive exams and services reveal any change in services to patients who should receive them.

Perceptions and Concerns about Access:

- Self-reported perceptions of access – measures of beneficiary perceptions and concerns about access can be used to supplement utilization data to determine if a reported need for additional access to providers is reflected as a decrease in realized access and vice versa.

2. List of Indicators

Within the domains of access is the following list of 27 indicators that the AMS will monitor. Detailed specifications for each indicator can be found in Part II of this report.

Realized Access

Population-Based Indicators:

- Number of services per 1,000 eligible beneficiaries
- Number of services per 1,000 beneficiaries served
- Number of new office visits per 1,000 eligible beneficiaries
- Number of new office visits per 1,000 beneficiaries served
- Number of established office visits and consultations per 1,000 eligible beneficiaries
- Number of established office visits and consultations per 1,000 beneficiaries served
- Number of home visits per 1,000 eligible beneficiaries

- Number of home visits per 1,000 beneficiaries served
- Number of emergency department visits per 1,000 eligible beneficiaries
- Number of emergency department visits per 1,000 beneficiaries served

Provider-Based Indicators:

- Total number of providers billing Medicare per 1,000 eligible beneficiaries
- Percentage of services billed on assignment
- Total amount of allowed charges per provider
- Total number of evaluation and management office visits per provider
- Total number of new office visits per provider
- Total number of established office visits and consultations per provider
- Total number of unique Medicare patients per provider

Access to Preventive Care and Services:

- Percentage of eligible female beneficiaries who had a mammogram to screen for breast cancer
- Percentage of eligible beneficiaries who had screening for colorectal cancer
- Percentage of eligible beneficiaries with diabetes who received diabetes care (eye exam, hemoglobin A1C test, or urinalysis)
- Percentage of new Medicare beneficiaries who received a Welcome to Medicare Exam
- Percentage of eligible Medicare beneficiaries who had a preventive care visit
- Mean number of days between qualifying for Medicare and having an ambulatory or preventive care visit

Perceptions and Concerns about Access

- Total calls reporting need for regular doctor who accepts new Medicare patients per 1,000 eligible beneficiaries
- Total calls reporting need for specialist who accepts new Medicare patients per 1,000 eligible beneficiaries
- Total calls reporting existing doctor no longer accepts Medicare patients per 1,000 eligible beneficiaries
- Total calls reporting need for doctor who accepts Medicare payments in full per 1,000 eligible beneficiaries

D. Indicator Stratifications

Within each geographical level, the AMS allows stratification of indicators by specific patient characteristics using information from the Beneficiary Summary File and the CCW Chronic Condition Summary File, as well as provider characteristics using provider specialty codes from claims. Such stratification may aid in illuminating potentially reduced access in an area with a particularly high disease burden or demographic characteristics more sensitive to access problems.

Detailed specifications for each stratification field can be found in Appendix A. Appendix B contains detailed information about the categorization of specific provider specialty codes into provider types. The indicator stratifications include:

Age group:

- <65 years old
- 65+ years old
- 65-74 years old
- 75-84 years old
- 85+ years old

Gender:

- Female
- Male

Race:

- White
- Non-white

Dually eligible status:

- State buy-in coverage for at least 1 month
- No state buy-in coverage

Disabled status:

- Disabled/ESRD
- Not Disabled

Co-existing conditions:

- 0 co-existing conditions
- 1-3 co-existing conditions
- 4-5 co-existing conditions
- 6+ co-existing conditions

Provider type:

- Physician
 - Primary care physician
 - Physician specialist
- Practitioner/Therapist

Beneficiary transition status:

- Medicare Advantage to FFS
- Moving to new location
- Aging into Medicare
- No Transition

E. Geographical Levels

Because access can vary across the country, any monitoring system must have geographically disaggregated measures. Using an existing crosswalk file, geographical levels are crosswalked to Medicare claims and 1-800-MEDICARE call data from the beneficiary's ZIP Code of residence in the Beneficiary Summary File or from the provider's place of service ZIP Code in claims, depending on the indicator. The AMS allows measures to drill down to the following geographical areas:

Political Boundaries:

- State, District of Columbia, and Territory (n = 58)
- Core-Based Statistical Area (CBSA; n = 1,004)
- County (FIPS; n = 3,206)

Medicare Utilization Boundaries:

- Hospital Referral Region (HRR; n = 306)
- Hospital Service Area (HSA; n = 3,436)

Payment Boundaries:

- Geographical Practice Cost Index Locality (GPCI; n = 89)

F. Frequency of Monitoring

Population-based indicators, provider-based indicators, and indicators of perceptions and concerns about access will be calculated each quarter (every three months starting in January). Depending on the number of final action claims available, preliminary and final measurements of access will be taken for each quarter at an interval determined by CMS. A quarterly monitoring schedule allows for sufficient time for utilization and report data to accumulate to produce stable measurements of access during a relatively short period of time. Quarterly assessments of access provide CMS with timely information on the state of access. Indicators measuring access to preventive care and services will be monitored on a yearly schedule to account for screening recommendations and specifications unique to these measures.

IV. Analytic Approach to Monitoring Access

Access indicators from both Medicare claims and 1-800-MEDICARE call data are analyzed as part of the AMS to produce monitoring information that will be used to routinely alert CMS of potential access problems within specific geographical areas and over time. The AMS is designed to detect meaningful signals of change using the approaches described below.

A. Observed vs. Adjusted Rates

Observed rates (i.e., crude rates) are reported for all access indicators in the AMS by dividing the number of applicable events (numerator) by the population eligible to experience these events (denominator) and multiplying by a constant (e.g., 1,000). However, the use of

services by beneficiaries living in geographical areas profiled in the AMS may be affected by beneficiary characteristics (e.g., age and gender) related to the need for health care services. As a result, differences in these characteristics across geographical areas or over time may confound the interpretation of differences in rates of utilization or average charges for services, when used as access indicators in the AMS. That is, variation in observed rates may stem from differences in beneficiary characteristics, rather than differences in access to care. To account for this potential confounding, the direct standardization method is used to adjust for age and gender differences in the population-based measures in the AMS, using the Beneficiary Summary File FFS population as the standard population.¹⁰

However, the direct standardization adjustment method is not feasible to apply to the provider-based measures in the AMS.¹¹ Thus, we tested the feasibility and appropriateness of multivariate regression methods as an alternative to direct standardization, estimating several models of the relationship between county-level beneficiary characteristics (such as the percentage of beneficiaries who are female) and county-level provider-based access indicators (such as the rate of evaluation and management services per provider). The regression analysis was conducted using 111 Florida and California counties as the units of analysis. The parameter estimates from the tested regression models were then used to produce adjusted provider-based access indicators, and were compared to unadjusted indicators. Three models were estimated for each of the provider-based access indicators, using following explanatory variables:

- Model 1: effect of mean age and percent female only
- Model 2: effect of mean age, percent female, percent dually eligible for Medicare and Medicaid, and percent making a transition (recently left a Medicare Advantage plan, became eligible for Medicare, or moved to the area) in a county
- Model 3: effect of mean age, percent female, percent dually eligible for Medicare and Medicaid, and percent making a transition, percent non-white, and percent eligible for Medicare because of disability/ESRD

Regardless of model, the estimated regressions predicted very large effects of these county-level explanatory variables—especially in the case of age—on most of the county-level provider-based indicators in the AMS. For example, at the mean, one model predicted that a one-year increase in the mean age of beneficiaries in a county (e.g., an increase in mean age from 68 to 69 years) would increase the average allowed charges per provider by \$4,909. As a result, when applying this model to produce adjusted results for Florida and California counties, we observed what were considered unreasonably large differences between adjusted and observed results for many counties, raising concerns over the validity of a linear model, at least as applied to the available Florida and California county data. For example, adjusted rates were often half or double the size of actual rates, which did not appear credible.

¹⁰ Direct standardization is an adjustment method where a standard population distribution is applied to the stratum-specific rates to calculate a weighted average for each of the comparison groups.

¹¹ In particular, under direct standardization, both the denominator and numerator of rates need to be stratified according to beneficiary characteristics, which is not feasible with provider-based indicators.

Based on these results, we concluded that further steps, including testing of non-linear models, examination of the potential effects of extreme outliers, and re-estimation of regression models on a larger group of counties in other states, would be necessary before warranting the use of regression-based adjustments to provider-based indicators in the AMS. Thus, the current design of the AMS includes only unadjusted, observed provider-based indicators.

No age-gender adjustment is performed for indicators of access to preventive care and services, because these indicators are restricted to a limited range of beneficiary ages and/or beneficiary gender. With a very small number of events for many geographical areas, only observed rates are also reported for indicators derived from the 1-800-MEDICARE call data.

B. Statistical Tests

For each of the statistical tests in the AMS, two sample means—one for a test subpopulation and another for a reference group—are compared. For the purposes of the test calculations, the indicators fall into two groups: 1) rates per beneficiary or provider (i.e., non-binomial indicators) and 2) percentages (i.e., binomial indicators).¹² The approach for the two types of indicators is specified below and varies only in how the standard error is calculated.

It is important to note that these statistical tests can only inform the user about the probability that differences are due to random chance. It is up to individual users of the AMS to assess the extent to which these differences are meaningful and/or require actions of different types based on such factors as the interpretation of measures themselves, relationship to patterns observed for other measures, and other information about the health care delivery system or beneficiary needs within an area.

1. Approach for Non-Binomial Indicators

- The general formula for the standard error is $SE = s / \sqrt{n}$, where s is the standard deviation of the underlying distribution.
- The SE of the random variable Y , which is determined by the following transformation of X_i where X_i is the result of an individual trial of a Poisson process and n is the number of beneficiaries/providers:

$$Y = \left(\frac{1}{n}\right) * \sum_{i=1}^n X_i$$

- X_i is Poisson with mean λ .
- The distribution of $\sum_{i=1}^n X_i$ is also Poisson but with mean $(n \lambda)$ and the distribution of Y , which divides again by n is also Poisson, with mean λ .

¹² Although the indicators are rates per thousand, we have adjusted them all to rates per beneficiary/provider to potentially simplify the statistical calculations.

- Since the variance of the Poisson is equal to the mean, the standard deviation of Y is equal to $\sqrt{\lambda}$.
- The general formula for the SE is applied, which is equal to $\sqrt{\lambda/n}$.
- The T-statistic is calculated by using the following formula:

$$t = (Y_{\text{TEST}} - Y_{\text{REF}}) / \sqrt{SE_{\text{TEST}}^2 + SE_{\text{REF}}^2}$$

- For t values in the $\{-2.58, 2.58\}$ range, the test population is considered to be statistically the same as the reference.

2. Modification for Binomial Indicators

For a binomial distribution, the only difference in the calculation of the t-statistic is the calculation of the standard error for the reference and the test population:

- Since the variance of a binomial is npq (where n is the sample size, p is the probability of an occurrence and q is its complement), the standard error of the number of successes is $\sqrt{npq} / \sqrt{n} = \sqrt{pq}$.
- Looking for the SE of the probability of success, SE is divided again by the square root of n : $SE = \sqrt{pq} / \sqrt{n}$.
- The t-test is then calculated in the same manner as for the Poisson-based indicators described above.

C. Monitoring Geographical Differences in Access

Indicator rates within each geographical level are compared to national average rates. The threshold for comparisons of geographical level rates (e.g., state, county, HSA, etc.) to national rates is evaluated using t-tests. These test statistics are evaluated using two-tailed null hypothesis testing with a p -value ≤ 0.001 (approximately 3 standard deviations). A three-level scale (e.g., “lower than,” “average,” or “higher than”) is used to highlight a potential difference in access.

Within each geographical area, t-tests are also used to compare subpopulations (stratifications) to a reference group (e.g., non-whites are compared to whites; females are compared to males; non-dual eligibles are compared to dual eligibles) to determine statistical differences between groups within a geographical area. Again, a three-level scale (e.g., “lower than,” “average,” or “higher than”) is used to draw attention to a potential difference in access to care for a specific subpopulation, as compared to the reference group (see Appendix A). These test statistics are evaluated using two-tailed null hypothesis testing with a p -value ≤ 0.001 (approximately 3 standard deviations).

D. Monitoring Differences in Access over Time

Variation over time within a geographical area is also evaluated using t-tests. The current quarterly rate of a geographical area is compared to both the same quarter in the baseline year and to the same quarter in the previous year. This approach should mitigate issues of seasonality. The directionality of the change over time is reported for comparisons of the current period to the previous periods using a three-point scale of “increasing,” “the same as,” and “decreasing,” based on two-tailed tests of the hypothesis of no change with a p -value ≤ 0.001 (approximately 3 standard deviations).

In addition, t-tests are used to evaluate statistically significant variation in subpopulations (stratifications) over time (current quarter to same quarter in baseline year and current quarter to same quarter in previous year).. For example, in a given geographical area, the rate of new office visits per provider among dual eligible beneficiaries in the current quarter is classified as “increasing,” “the same as,” or “decreasing” when compared to the rate among this subpopulation in the same quarter of the previous year.

E. Handling Small Cell Sizes

Since some of the geographical levels required in the AMS represent small areas, it is also important that an approach be identified for handling small numbers of observations. Data reports that include results based on only a small number of records can be problematic for two reasons. First, reporting the information could be subject to privacy laws and regulations. Second, the information could be misleading, especially when information is reported in the form of a rate, where the sample size used to calculate the rate may not be known. Therefore, within the Microsoft[®] Excel workbooks, indicators for areas with fewer than 30 observations in the denominator are suppressed when displayed, rather than collapsed, to fully comply with HIPAA and other privacy regulations. The number of observations in suppressed areas is still aggregated to larger geographical areas.

F. Composite Measures

Separately evaluating 27 individual indicators can be a challenge when attempting to quickly evaluate the overall state of access in a particular geographical area. For this reason, a smaller set of core indicators have been designated for each sub-domain under realized access. These 10 measures were designated core indicators in an effort to select the most valuable and non-conflicting potential indicators of reduced access. No indicators in the domain of perceptions and concerns about access were selected as core indicators because these measures are derived from 1-800-MEDICARE call data and are not based on a nationally or geographically representative sample of the Medicare population.

The 10 core indicators of realized access include:

Population-Based Indicators (3):

- Number of new office visits per 1,000 eligible beneficiaries
- Number of established office visits and consultations per 1,000 eligible beneficiaries
- Number of emergency department visits per 1,000 eligible beneficiaries

Provider-Based Indicators (3):

- Total number of providers billing Medicare per 1,000 eligible beneficiaries
- Percentage of services billed on assignment
- Total number of evaluation and management office visits per provider

Access to Preventive Care and Services (4):

- Percentage of eligible female beneficiaries who had a mammogram to screen for breast cancer
- Percentage of eligible beneficiaries who had screening for colorectal cancer
- Percentage of eligible beneficiaries with diabetes who received diabetes care (eye exam, hemoglobin A1C test, or urinalysis)
- Mean number of days between qualifying for Medicare and having an ambulatory or preventive care visit

Based on the performance of each of these individual core indicators, a composite score is computed for each geographical level by assigning a value of “1” if the indicator for a geographical area is statistically “better than” the national average; a value of “0.5” if the indicator for a geographical area is statistically “the same as” the national average; and a value of “0” if the measure for the geographical area is statistically “worse than” the national average, so that:

A = number of better-than-average indicators.

B = number of average indicators.

C = number of worse-than-average indicators.

The total number of points assigned is divided by the total number of indicators available within the respective geographical area (A + B + C). In a geographical area where some subset of the indicators is suppressed (e.g., the cell size is <30), the composite score is calculated based on only those non-suppressed indicators. Thus, the composite score equation is:

$$\text{Composite score} = \frac{((A*1) + (B*0.5) + (C*0)) * 100}{A + B + C}$$

Using this equation, four sets of composite scores are calculated:

- Overall – derived from all 10 core measures
- Population-based – derived from 3 population-based core measures
- Provider-based – derived from 3 provider-based core measures
- Preventive care and services – derived from 4 preventive care and services core measures

The result of these calculations will always be: $0 < \text{composite score} < 100$, equal to 0 if all access measures are worse than average and equal to 100 if all access indicators are better than average. Scores between 0 and 100 represent the mix of indicators that are worse than

average, average, and better than average. Higher scores represent better performance because the score increases with the number of measures that are average and increases more rapidly with the number of measures that are better than average. The range of composite scores is categorized as:

- Worse than average: $0 \leq \text{score} < 40$
- Average: $40 \leq \text{score} < 60$
- Better than average: $60 \leq \text{score} < 100$

To evaluate changes in composite scores of access over time, composite scores for each geographical area in the current measurement time period are ranked relative to other scores during that time period and grouped into deciles based on the data distribution. Scores from the comparable previous time period are also grouped into deciles. Using relative deciles for each time period, any change greater than or equal to ± 2 deciles determines whether access is staying constant, improving, or worsening over time. In addition to the overall composite score, each of the subcomponents of the composite score are also grouped into deciles and compared across time individually. Thus, it is possible for the trend indicator to show no significant change for each of the three subcomponents, but a significant trend for the overall composite score.

G. Displaying Results

Results for both individual indicators and composite measures are displayed in Microsoft[®] Excel workbooks. A variation of Harvey Balls—round ideograms used for the visual presentation of quantitative information—are used to show how the indicators for specific geographical areas compare to national averages. Open symbols (○) indicate “lower than,” half-full symbols (◐) indicate “average,” and full symbols (●) indicate “higher than.” For certain indicators (e.g., number of ER visits), it is necessary to reverse the scale so that an open symbol is always indicative of a “worse than average” access. Directional arrows (↑, ↓, ↔) are used to categorize variation over time.

V. *Interpretations and Limitations of Results from the AMS*

The AMS is designed to identify geographical areas and subpopulations with potential access problems. Many indicators used in the AMS describe an observed level of activity but not the drivers behind that level of activity or what the ideal level of activity should be. The indicator values are compared to the national average, but not with the implication that the national average is an appropriate level of access. Results also do not reveal which factors account for differences in measured levels of access. Answers to these questions require additional investigation and may serve as the starting point for program management initiatives or quality improvement efforts. This section provides additional information on issues to consider when interpreting results from the AMS.

A. Contextual Factors

Contextual factors provide information on the environments in which health care systems in a specific geographical area operate. These factors may have a direct or indirect influence on the indicator results for individual areas. Examples of contextual factors include the characteristics of state and county populations, the availability of health care resources, and ways health care systems are organized and operated. More specifically, contextual factors can include the availability of specific services, provider workforce levels, aging or disease prevalence of the population, and policies that may impact how health care is delivered.

Access to services can be affected by many contextual factors that are not apparent in the current AMS design. For example, if a high percentage of an area's population is less than 65 years old and not covered by Medicare and the provider workforce levels are sufficient to meet the younger population's health care needs and the basic needs of a Medicare population, the indicator "Number of Providers Billing Medicare per 1,000 Eligible Beneficiaries" may appear higher than average. However, access to specific specialty services unique to an aging population in that area may actually be poor. Another example of a contextual factor that might influence indicator results is the prevalence of a particular condition or risk factor, such as the portion of the population at risk of heart disease. An increased use of services may reflect a higher need for care, rather than better access. Conversely, improvements in health and lower needs for services may result in lower utilization, which should not necessarily be interpreted as reduced access to care.

It is also important to note that a limitation in using utilization rates as a proxy for access is that signals of change in access may actually reflect improvements or degradation in care efficiency. For example, higher levels of services in one area might simply be a function of inefficient care, rather than better access. Areas with lower than average indicator signals might actually reflect more efficient care, rather than worse access. This issue may affect some AMS indicators more than others (e.g., "Number of Services per 1,000 Beneficiaries" may be highly correlated with care efficiency, while "Number of New Office Visits per 1,000 Beneficiaries" has less correlation with efficiency). As policies and efforts to improve the efficiency of care provided to Medicare beneficiaries expand over the next several years, indicators primarily reflecting overall utilization should be reviewed in the context of these efforts. Specifically, current high-use areas may have the largest reductions in utilization due to improved efficiency, not access degradation.

B. Composite Scores versus Individual Indicator Results

Many of the indicators reported in the AMS reflect a variety of perspectives on the same or similar access concerns. Examination of the entire indicator set helps identify indicators that can be assessed alone or evaluated as a group of indicators linked to a particular access issue. In brief, while each indicator provides important information, a holistic view of results from the broader set of indicators can often provide the most useful interpretation for assessing trends in access to care for Medicare beneficiaries.

Because of potentially idiosyncratic factors affecting each indicator, a specific geographical area may rank highly on one indicator and have a low score on another similar indicator. In many cases it is useful to consider related indicators as a group, rather than

individually. Examining “composite” indicators—a single score that results from combining multiple indicator results—may be more informative if there is interest in a broader view of a particular domain of access that is represented by a set of related indicators.

However, the use of composite scores may obscure problem areas within specific topics of concern. For example, if there is concern about providers accepting new Medicare patients, it may be more useful to evaluate the stand-alone measure of “Number of New Office Visits per 1,000 Eligible Beneficiaries” (Indicator 3) along with the indicator “Number of Providers Billing Medicare per 1,000 Eligible Beneficiaries” (Indicator 11). Lower than average performance on both Indicators 3 and 11 may signify an issue of low provider supply and patient saturation in an area, rather than provider willingness to accept new Medicare patients due to payment policies. Similarly, concerns about provider supply in an area might be evaluated using the stand alone measure of “Number of Established Office visits and Consultations per 1,000 Eligible Beneficiaries” (Indicator 5) along with “Number of Emergency Department Visits per 1,000 Eligible Beneficiaries” (Indicator 9). Lower than average performance on both Indicators 5 and 9 may indicate that access to appointments for primary care preventable or treatable conditions is poor because provider supply is low or provider willingness to see Medicare patients is poor in a geographical area.

C. Observed versus Adjusted Data

Sometimes data need to be assessed to determine whether factors such as age or gender affect the results. For example, the prevalence of disease rises as the population ages, and this higher prevalence is likely to increase both the utilization of services and the provider supply in an area. Adjustment (or standardization) of rates can control for these important health determinants so that differences among groups in multiple locations and time periods can more accurately be compared.

The AMS design provides rates adjusted for age and gender for the population-based indicators. While these adjusted rates do reduce the confounding effects of age and gender when comparing rates amongst various populations, evaluating only adjusted results may obscure important differences amongst age and gender groups in a specific location. For example, when evaluating access indicators for a specific location and analyzing what population characteristics might contribute to these differences, subpopulation adjusted rates are minimized or inflated depending on the standard population used for the adjustment and how different the age and gender distributions of the local population are from the standard population. An analysis of how subpopulations contribute to the overall rate should be evaluated using stratifications of the unadjusted rate.

D. Data by Stratifications

The AMS design also includes indicator results by stratification, which is a simple form of case-mix adjustment, a statistical process of accounting for differences among a population’s clinical and demographic characteristics when assessing the structure and processes of health

care. An analysis of potential access problems should include a comparison of indicator results by categories—or strata—defined by one or more characteristic, such as age group, the presence of a co-existing condition, dually eligible status, and any beneficiary transition status that might impact the utilization of services.

Evaluating AMS results by stratifications has two main uses. First, stratifications allows for comparison among more homogeneous populations and the opportunity to identify any potential disparities among particular subpopulations of Medicare beneficiaries. Second, an analysis of the data by stratifications allows the user to assess whether overall trends in an area may be influenced by one or another group's experiences (e.g., utilization declined overall, but this decline is driven mainly by one subpopulation).

E. AMS Data Sources versus Survey Data

The two most common data sources for measuring access to care are Medicare claims and surveys. Each data source has its own set of advantages and disadvantages. Claims data, the primary source of data in the AMS, are continually collected and capture actual utilization, an indication of realized access to care. However, claims data require a period of time from the date of service to be submitted and processed and do not capture any barriers beneficiaries may have experienced in seeking care.

Survey data provide insights into beneficiaries' perceptions of access but are expensive to collect and not timely, as they are often conducted on an annual basis. Existing surveys such as the Medicare Current Beneficiary Survey (MCBS) and the Consumer Assessment of Healthcare Providers and Systems (CAHPS) do not fully capture access problems that result from difficulties in finding a physician who accepts Medicare patients due to payment policy changes. In addition, these surveys are national in scope and are limited in their ability to describe access in local markets. These critical differences make validating results in the AMS with survey results from the MCBS and CAHPS difficult.

F. Using Population Averages for Performance Improvement

The AMS is designed to monitor area differences from a population average and changes in these averages over time. Average results for large populations can provide a useful reference point from which to compare results for large, diverse populations and can be developed for specific subpopulations. However, a shortcoming of average results relates to the goals of any quality-improvement or quality management initiative. Improving a problem area to an average performance level might be an important preliminary goal, but averages provide little guidance on where excellence lies on the performance continuum. The AMS does not currently contain standards of indicator performance, nor does it contain statistical benchmarks. In other words, the signals of variation in the AMS do not denote standard expectations of access or benchmarks of excellent results. Instead, the indicator signals reflect a relative comparison of geographical areas or subpopulations where potential access concerns exist.

Part II: Indicator Specifications

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Indicator 1: Number of Services per 1,000 Eligible Beneficiaries

Purpose:	Indicates which types of services are utilized—or not—among all eligible beneficiaries.
Domain of Access:	Realized Access (Population-Based)
Core Measure:	No
Refresh Cycle:	Quarterly
Data Sources:	Part B Medicare Claims (numerator), Beneficiary Summary File (denominator)
Numerator:	Sum of the number of services (see Appendix C for a full list of BETOS codes used to count services)
Denominator:	Sum of unique beneficiaries who were FFS at least 1 month during the quarter evaluated
Stratifications:	Age group, gender, race, dual eligible status, disabled status, provider type, co-existing conditions, beneficiary transition status (see Appendix A)
Drill Down:	State/territory, CBSA, County FIPS, HRR, HSA, GPSI (beneficiary ZIP Code)
Indicator Note:	Number of services is based on a count of line items. Claims from provider specialties representing facilities have been excluded to avoid duplicative counts of services and visits (see Appendix B).
Signal of Change:	The threshold for comparison of test subpopulations (e.g., individual state, county, CBSA) to a reference group (e.g., the U.S. total) is evaluated using test statistics ($p \leq 0.001$). A three-level scale (“lower than”, “average” or “higher than”) is used to alert a potential reduction in access. The threshold for comparison of one time period to another is also evaluated using test statistics ($p \leq 0.001$). A three-level scale (“increasing”, “the same as” or “decreasing”) is used to alert a potential reduction in access over time.

Indicator 2: Number of Services per 1,000 Beneficiaries Served

Purpose:	Indicates which types of services are utilized—or not—among those beneficiaries who have realized access.
Domain of Access:	Realized Access (Population-Based)

Core Measure:	No
Refresh Cycle:	Quarterly
Data Sources:	Part B Medicare Claims (numerator), Beneficiary Summary File (denominator)
Numerator:	Sum of the number of services (see Appendix C for a full list of BETOS codes used to count services)
Denominator:	Sum of unique beneficiaries with at least 1 Part B claim during the quarter evaluated
Stratifications:	Age group, gender, race, dual eligible status, disabled status, provider type, co-existing conditions, beneficiary transition status (see Appendix A)
Drill Down:	State/territory, CBSA, County FIPS, HRR, HSA, GPSI (beneficiary ZIP Code)
Indicator Note:	Number of services is based on a count of line items. Claims from provider specialties representing facilities have been excluded to avoid duplicative counts of services and visits (see Appendix B).
Signal of Change:	The threshold for comparison of test subpopulations (e.g., individual state, county, CBSA) to a reference group (e.g., the U.S. total) is evaluated using test statistics ($p \leq 0.001$). A three-level scale ("lower than", "average" or "higher than") is used to alert a potential reduction in access. The threshold for comparison of one time period to another is also evaluated using test statistics ($p \leq 0.001$). A three-level scale ("increasing", "the same as" or "decreasing") is used to alert a potential reduction in access over time.

Indicator 3: Number of New Office Visits per 1,000 Eligible Beneficiaries

Purpose:	Indicates whether providers are restricting the numbers of new patients they see.
Domain of Access:	Realized Access (Population-Based)
Core Measure:	Yes
Refresh Cycle:	Quarterly
Data Sources:	Part B Medicare Claims (numerator), Beneficiary Summary File (denominator)
Numerator:	Sum of evaluation and management visits where the BETOS code

indicates “new office visit” (see Appendix C for a full list of BETOS codes used to count visits)

- Denominator:** Sum of unique beneficiaries who were FFS at least 1 month during the quarter evaluated
- Stratifications:** Age group, gender, race, dual eligible status, disabled status, provider type, co-existing conditions, beneficiary transition status (see Appendix A)
- Drill Down:** State/territory, CBSA, County FIPS, HRR, HSA, GPSI (beneficiary ZIP Code)
- Indicator Note:** Number of visits is based on a count of line items for the same beneficiary, provider id, and single service day. Claims from provider specialties representing facilities have been excluded to avoid duplicative counts of services and visits (see Appendix B).
- Signal of Change:** The threshold for comparison of test subpopulations (e.g., individual state, county, CBSA) to a reference group (e.g., the U.S. total) is evaluated using test statistics ($p \leq 0.001$). A three-level scale (“lower than”, “average” or “higher than”) is used to alert a potential reduction in access. The threshold for comparison of one time period to another is also evaluated using test statistics ($p \leq 0.001$). A three-level scale (“increasing”, “the same as” or “decreasing”) is used to alert a potential reduction in access over time.

Indicator 4: Number of New Office Visits per 1,000 Beneficiaries Served

- Purpose:** Indicates whether providers are restricting the numbers of new patients they see among beneficiaries who have some realized access.
- Domain of Access:** Realized Access (Population-Based)
- Core Measure:** No
- Refresh Cycle:** Quarterly
- Data Sources:** Part B Medicare Claims (numerator), Beneficiary Summary File (denominator)
- Numerator:** Sum of evaluation and management visits where the BETOS code indicates “new office visit” (see Appendix C for a full list of BETOS codes used to count visits)
- Denominator:** Sum of unique beneficiaries with at least 1 Part B claim during the quarter evaluated
- Stratifications:** Age group, gender, race, dual eligible status, disabled status, provider type, co-existing conditions, beneficiary transition status (see

Appendix A)

Drill Down: State/territory, CBSA, County FIPS, HRR, HSA, GPSI (beneficiary ZIP Code)

Indicator Note: Number of visits is based on a count of line items for the same beneficiary, provider id, and single service day. Claims from provider specialties representing facilities have been excluded to avoid duplicative counts of services and visits (see Appendix B).

Signal of Change: The threshold for comparison of test subpopulations (e.g., individual state, county, CBSA) to a reference group (e.g., the U.S. total) is evaluated using test statistics ($p \leq 0.001$). A three-level scale ("lower than", "average" or "higher than") is used to alert a potential reduction in access. The threshold for comparison of one time period to another is also evaluated using test statistics ($p \leq 0.001$). A three-level scale ("increasing", "the same as" or "decreasing") is used to alert a potential reduction in access over time.

Indicator 5: Number of Established Office Visits and Consultations per 1,000 Eligible Beneficiaries

Purpose: Indicates whether providers are restricting the numbers of established patients they see.

Domain of Access: Realized Access (Population-Based)

Core Measure: Yes

Refresh Cycle: Quarterly

Data Sources: Part B Medicare Claims (numerator), Beneficiary Summary File (denominator)

Numerator: Sum of evaluation and management visits where the BETOS code indicates "established office visit" or "consultation" (see Appendix C for a full list of BETOS codes used to count visits)

Denominator: Sum of unique beneficiaries who were FFS at least 1 month during the quarter evaluated

Stratifications: Age group, gender, race, dual eligible status, disabled status, provider type, co-existing conditions, beneficiary transition status (see Appendix A)

Drill Down: State/territory, CBSA, County FIPS, HRR, HSA, GPSI (beneficiary ZIP Code)

Indicator Note: Number of visits is based on a count of line items for the same beneficiary, provider id, and single service day. Claims from provider specialties representing facilities have been excluded to avoid

duplicative counts of services and visits (see Appendix B).

Signal of Change: The threshold for comparison of test subpopulations (e.g., individual state, county, CBSA) to a reference group (e.g., the U.S. total) is evaluated using test statistics ($p \leq 0.001$). A three-level scale (“lower than”, “average” or “higher than”) is used to alert a potential reduction in access. The threshold for comparison of one time period to another is also evaluated using test statistics ($p \leq 0.001$). A three-level scale (“increasing”, “the same as” or “decreasing”) is used to alert a potential reduction in access over time.

Indicator 6: Number of Established Office Visits and Consultations per 1,000 Beneficiaries Served

Purpose: Indicates whether providers are restricting the numbers of established patients they see among beneficiaries who have some realized access.

Domain of Access: Realized Access (Population-Based)

Core Measure: No

Refresh Cycle: Quarterly

Data Sources: Part B Medicare Claims (numerator), Beneficiary Summary File (denominator)

Numerator: Sum of evaluation and management visits where the BETOS code indicates “established office visit” or “consultation” (see Appendix C for a full list of BETOS codes used to count visits)

Denominator: Sum of unique beneficiaries with at least 1 Part B claim during the quarter evaluated

Stratifications: Age group, gender, race, dual eligible status, disabled status, provider type, co-existing conditions, beneficiary transition status (see Appendix A)

Drill Down: State/territory, CBSA, County FIPS, HRR, HSA, GPSI (beneficiary ZIP Code)

Indicator Note: Number of visits is based on a count of line items for the same beneficiary, provider id, and single service day. Claims from provider specialties representing facilities have been excluded to avoid duplicative counts of services and visits (see Appendix B).

Signal of Change: The threshold for comparison of test subpopulations (e.g., individual state, county, CBSA) to a reference group (e.g., the U.S. total) is evaluated using test statistics ($p \leq 0.001$). A three-level scale (“lower than”, “average” or “higher than”) is used to alert a potential reduction in access. The threshold for comparison of one time period to another is also evaluated using test statistics ($p \leq 0.001$). A three-level scale

("increasing", "the same as" or "decreasing") is used to alert a potential reduction in access over time.

Indicator 7: Number of Home Visits per 1,000 Eligible Beneficiaries

Purpose:	Indicates whether providers are restricting the numbers of patients they see at home.
Domain of Access:	Realized Access (Population-Based)
Core Measure:	No
Refresh Cycle:	Quarterly
Data Sources:	Part B Medicare Claims (numerator), Beneficiary Summary File (denominator)
Numerator:	Sum of evaluation and management visits where the BETOS code indicates "home visit" (see Appendix C for a full list of BETOS codes used to count visits)
Denominator:	Sum of unique beneficiaries who were FFS at least 1 month during the quarter evaluated
Stratifications:	Age group, gender, race, dual eligible status, disabled status, provider type, co-existing conditions, beneficiary transition status (see Appendix A)
Drill Down:	State/territory, CBSA, County FIPS, HRR, HSA, GPSI (beneficiary ZIP Code)
Indicator Note:	Number of visits is based on a count of line items for the same beneficiary, provider id, and single service day. Claims from provider specialties representing facilities have been excluded to avoid duplicative counts of services and visits (see Appendix B).
Signal of Change:	The threshold for comparison of test subpopulations (e.g., individual state, county, CBSA) to a reference group (e.g., the U.S. total) is evaluated using test statistics ($p \leq 0.001$). A three-level scale ("lower than", "average" or "higher than") is used to alert a potential reduction in access. The threshold for comparison of one time period to another is also evaluated using test statistics ($p \leq 0.001$). A three-level scale ("increasing", "the same as" or "decreasing") is used to alert a potential reduction in access over time.

Indicator 8: Number of Home Visits per 1,000 Beneficiaries Served

Purpose: Indicates whether providers are restricting the numbers of patients

they see at home among beneficiaries who have some realized access.

Domain of Access:	Realized Access (Population-Based)
Core Measure:	No
Refresh Cycle:	Quarterly
Data Sources:	Part B Medicare Claims (numerator), Beneficiary Summary File (denominator)
Numerator:	Sum of evaluation and management visits where the BETOS code indicates "home visit" (see Appendix C for a full list of BETOS codes used to count visits)
Denominator:	Sum of unique beneficiaries with at least 1 Part B claim during the quarter evaluated
Stratifications:	Age group, gender, race, dual eligible status, disabled status, provider type, co-existing conditions, beneficiary transition status (see Appendix A)
Drill Down:	State/territory, CBSA, County FIPS, HRR, HSA, GPSI (beneficiary ZIP Code)
Indicator Note:	Number of visits is based on a count of line items for the same beneficiary, provider id, and single service day. Claims from provider specialties representing facilities have been excluded to avoid duplicative counts of services and visits (see Appendix B).
Signal of Change:	The threshold for comparison of test subpopulations (e.g., individual state, county, CBSA) to a reference group (e.g., the U.S. total) is evaluated using test statistics ($p \leq 0.001$). A three-level scale ("lower than", "average" or "higher than") is used to alert a potential reduction in access. The threshold for comparison of one time period to another is also evaluated using test statistics ($p \leq 0.001$). A three-level scale ("increasing", "the same as" or "decreasing") is used to alert a potential reduction in access over time.

Indicator 9: Number of Emergency Department Visits per 1,000 Eligible Beneficiaries

Purpose:	Indicates whether beneficiaries are having trouble accessing ambulatory care.
Domain of Access:	Realized Access (Population-Based)
Core Measure:	Yes
Refresh Cycle:	Quarterly

Data Sources:	Part B Medicare Claims (numerator), Beneficiary Summary File (denominator)
Numerator:	Sum of evaluation and management visits where the BETOS code indicates “emergency department visit” (see Appendix C for a full list of BETOS codes used to count visits)
Denominator:	Sum of unique beneficiaries who were FFS at least 1 month during the quarter evaluated
Stratifications:	Age group, gender, race, dual eligible status, disabled status, provider type, co-existing conditions, beneficiary transition status (see Appendix A)
Drill Down:	State/territory, CBSA, County FIPS, HRR, HSA, GPSI (beneficiary ZIP Code)
Indicator Note:	Number of visits is based on a count of line items for the same beneficiary, provider id, and single service day. Claims from provider specialties representing facilities have been excluded to avoid duplicative counts of services and visits (see Appendix B).
Signal of Change:	The threshold for comparison of test subpopulations (e.g., individual state, county, CBSA) to a reference group (e.g., the U.S. total) is evaluated using test statistics ($p \leq 0.001$). A three-level scale (“lower than”, “average” or “higher than”) is used to alert a potential reduction in access. The threshold for comparison of one time period to another is also evaluated using test statistics ($p \leq 0.001$). A three-level scale (“increasing”, “the same as” or “decreasing”) is used to alert a potential reduction in access over time.

Indicator 10: Number of Emergency Department Visits per 1,000 Beneficiaries Served

Purpose:	Indicates whether beneficiaries are having trouble accessing ambulatory care among beneficiaries who have some realized access.
Domain of Access:	Realized Access (Population-Based)
Core Measure:	No
Refresh Cycle:	Quarterly
Data Sources:	Part B Medicare Claims (numerator), Beneficiary Summary File (denominator)
Numerator:	Sum of visits evaluation and management where the BETOS code indicates “emergency department visit” (ER) (see Appendix C for a full list of BETOS codes used to count visits)
Denominator:	Sum of unique beneficiaries with at least 1 Part B claim during the quarter evaluated

Stratifications:	Age group, gender, race, dual eligible status, disabled status, provider type, co-existing conditions, beneficiary transition status (see Appendix A)
Drill Down:	State/territory, CBSA, County FIPS, HRR, HSA, GPSI (beneficiary ZIP Code)
Indicator Note:	Number of visits is based on a count of line items for the same beneficiary, provider id, and single service day. Claims from provider specialties representing facilities have been excluded to avoid duplicative counts of services and visits (see Appendix B).
Signal of Change:	The threshold for comparison of test subpopulations (e.g., individual state, county, CBSA) to a reference group (e.g., the U.S. total) is evaluated using test statistics ($p \leq 0.001$). A three-level scale ("lower than", "average" or "higher than") is used to alert a potential reduction in access. The threshold for comparison of one time period to another is also evaluated using test statistics ($p \leq 0.001$). A three-level scale ("increasing", "the same as" or "decreasing") is used to alert a potential reduction in access over time.

Indicator 11: Number of Providers Billing Medicare per 1,000 Eligible Beneficiaries

Purpose:	Indicates whether the total number of providers billing Medicare is increasing or decreasing.
Domain of Access:	Realized Access (Provider-Based)
Core Measure:	Yes
Refresh Cycle:	Quarterly
Data Sources:	Part B Medicare Claims (numerator), Beneficiary Summary File (denominator)
Numerator:	Sum of unique providers billing at least 1 line item during the quarter evaluated
Denominator:	Sum of unique beneficiaries who were FFS at least 1 month during the quarter evaluated
Stratifications:	Provider type (see Appendix A)
Drill Down:	State/territory, CBSA, County FIPS, HRR, HSA, GPSI (beneficiary ZIP Code)
Indicator Note:	Provider-based measures include any eligible professionals paid under the Medicare physician fee schedule. Claims from provider specialties representing facilities have been excluded to avoid duplicative counts

of services and visits (see Appendix B).

Signal of Change: The threshold for comparison of test subpopulations (e.g., individual state, county, CBSA) to a reference group (e.g., the U.S. total) is evaluated using test statistics ($p \leq 0.001$). A three-level scale (“lower than”, “average” or “higher than”) is used to alert a potential reduction in access. The threshold for comparison of one time period to another is also evaluated using test statistics ($p \leq 0.001$). A three-level scale (“increasing”, “the same as” or “decreasing”) is used to alert a potential reduction in access over time.

Indicator 12: Percentage of Services Billed on Assignment

Purpose:	Indicates which types of services providers are accepting payment in full among those beneficiaries who have realized access.
Domain of Access:	Realized Access (Provider-Based)
Core Measure:	Yes
Refresh Cycle:	Quarterly
Data Sources:	Part B Medicare Claims (numerator), Beneficiary Summary File (denominator)
Numerator:	Sum of the number of services that are flagged as billed on assignment (see Appendix C for a full list of BETOS codes used to count services)
Denominator:	Sum of the number of services (see Appendix C for a full list of BETOS codes used to count services) during the quarter evaluated
Stratifications:	Provider type (see Appendix A)
Drill Down:	State/territory, CBSA, County FIPS, HRR, HSA, GPSI (provider place of service ZIP Code)
Indicator Note:	Number of services is based on a count of line items. Claims from provider specialties representing facilities have been excluded to avoid duplicative counts of services and visits (see Appendix B).
Signal of Change:	The threshold for comparison of test subpopulations (e.g., individual state, county, CBSA) to a reference group (e.g., the U.S. total) is evaluated using test statistics ($p \leq 0.001$). A three-level scale (“lower than”, “average” or “higher than”) is used to alert a potential reduction in access. The threshold for comparison of one time period to another is also evaluated using test statistics ($p \leq 0.001$). A three-level scale (“increasing”, “the same as” or “decreasing”) is used to alert a potential reduction in access over time.

Indicator 13: Total Amount of Allowed Charges per Provider

Purpose:	Indicates whether the dollar amount that providers bill Medicare is increasing or decreasing.
Domain of Access:	Realized Access (Provider-Based)
Core Measure:	No
Refresh Cycle:	Quarterly
Data Sources:	Part B Medicare Claims (numerator and denominator)
Numerator:	Sum of allowed charge amount
Denominator:	Sum of unique providers billing at least 1 line item during the quarter evaluated
Stratifications:	Provider type (see Appendix A)
Drill Down:	State/territory, CBSA, County FIPS, HRR, HSA, GPSI (provider place of service ZIP Code)
Indicator Note:	Provider-based measures include any eligible professionals paid under the Medicare physician fee schedule. Claims from provider specialties representing facilities have been excluded to avoid duplicative counts of services and visits (see Appendix B). Changes in allowed charges over time may be due to RVU updates, not necessarily changes in practice patterns.
Signal of Change:	The threshold for comparison of test subpopulations (e.g., individual state, county, CBSA) to a reference group (e.g., the U.S. total) is evaluated using test statistics ($p \leq 0.001$). A three-level scale ("lower than", "average" or "higher than") is used to alert a potential reduction in access. The threshold for comparison of one time period to another is also evaluated using test statistics ($p \leq 0.001$). A three-level scale ("increasing", "the same as" or "decreasing") is used to alert a potential reduction in access over time.

Indicator 14: Number of Evaluation and Management Office Visits per Provider

Purpose:	Indicates whether providers are increasing or decreasing the number of office visits they have with Medicare patients.
Domain of Access:	Realized Access (Provider-Based)
Core Measure:	Yes

Refresh Cycle:	Quarterly
Data Sources:	Part B Medicare Claims (numerator and denominator)
Numerator:	Sum of evaluation and management visits where BETOS indicates “new office visit,” “established office visit,” or “consultation” (see Appendix C for a full list of BETOS codes used to count visits)
Denominator:	Sum of unique providers billing at least 1 evaluation and management visit or consultation during the quarter evaluated
Stratifications:	Provider type (see Appendix A)
Drill Down:	State/territory, CBSA, County FIPS, HRR, HSA, GPSI (provider place of service ZIP Code)
Indicator Note:	Provider-based measures include any eligible professionals paid under the Medicare physician fee schedule. Claims from provider specialties representing facilities have been excluded to avoid duplicative counts of services and visits (see Appendix B). Number of visits is based on a count of line items for the same beneficiary, provider id, and single service day.
Signal of Change:	The threshold for comparison of test subpopulations (e.g., individual state, county, CBSA) to a reference group (e.g., the U.S. total) is evaluated using test statistics ($p \leq 0.001$). A three-level scale (“lower than”, “average” or “higher than”) is used to alert a potential reduction in access. The threshold for comparison of one time period to another is also evaluated using test statistics ($p \leq 0.001$). A three-level scale (“increasing”, “the same as” or “decreasing”) is used to alert a potential reduction in access over time.

Indicator 15: Number of New Office Visits per Provider

Purpose:	Indicates whether providers are increasing or decreasing the number of new patients they see among all Medicare patients.
Domain of Access:	Realized Access (Provider-Based)
Core Measure:	No
Refresh Cycle:	Quarterly
Data Sources:	Part B Medicare Claims (numerator and denominator)
Numerator:	Sum of evaluation and management visits where BETOS indicates “new office visit” (see Appendix C for a full list of BETOS codes used to count visits)
Denominator:	Sum of unique providers billing at least 1 evaluation and management

	visit during the quarter evaluated
Refresh Cycle:	Quarterly
Data Sources:	Part B Medicare Claims
Stratifications:	Provider type (see Appendix A)
Drill Down:	State/territory, CBSA, County FIPS, HRR, HSA, GPSI (provider place of service ZIP Code)
Indicator Note:	Provider-based measures will include any eligible professionals paid under the Medicare physician fee schedule. Claims from provider specialties representing facilities have been excluded to avoid duplicative counts of services and visits (see Appendix B). Number of visits is based on a count of line items for the same beneficiary, provider id, and single service day.
Signal of Change:	The threshold for comparison of test subpopulations (e.g., individual state, county, CBSA) to a reference group (e.g., the U.S. total) is evaluated using test statistics ($p \leq 0.001$). A three-level scale ("lower than", "average" or "higher than") is used to alert a potential reduction in access. The threshold for comparison of one time period to another is also evaluated using test statistics ($p \leq 0.001$). A three-level scale ("increasing", "the same as" or "decreasing") is used to alert a potential reduction in access over time.

Indicator 16: Number of Established Office Visits and Consultations per Provider

Purpose:	Indicates whether providers are increasing or decreasing the number of established patients they see among all Medicare patients.
Domain of Access:	Realized Access (Provider-Based)
Core Measure:	No
Refresh Cycle:	Quarterly
Data Sources:	Part B Medicare Claims (numerator and denominator)
Numerator:	Sum of evaluation and management visits where BETOS indicates "established office visit" or "consultation" (see Appendix C for a full list of BETOS codes used to count visits)
Denominator:	Sum of unique providers billing at least 1 evaluation and management visit during the quarter evaluated
Stratifications:	Provider type (see Appendix A)
Drill Down:	State/territory, CBSA, County FIPS, HRR, HSA, GPSI (provider place of

service ZIP Code)

Indicator Note: Provider-based measures will include any eligible professionals paid under the Medicare physician fee schedule. Claims from provider specialties representing facilities have been excluded to avoid duplicative counts of services and visits (see Appendix B). Number of visits is based on a count of line items for the same beneficiary, provider id, and single service day.

Signal of Change: The threshold for comparison of test subpopulations (e.g., individual state, county, CBSA) to a reference group (e.g., the U.S. total) is evaluated using test statistics ($p \leq 0.001$). A three-level scale ("lower than", "average" or "higher than") is used to alert a potential reduction in access. The threshold for comparison of one time period to another is also evaluated using test statistics ($p \leq 0.001$). A three-level scale ("increasing", "the same as" or "decreasing") is used to alert a potential reduction in access over time.

Indicator 17: Number of Unique Medicare Patients per Provider

Purpose: Indicates whether providers are increasing or decreasing the number of unique Medicare patients they see.

Domain of Access: Realized Access (Provider-Based)

Core Measure: No

Refresh Cycle: Quarterly

Data Sources: Part B Medicare Claims (numerator and denominator)

Numerator: Sum of unique beneficiaries with at least 1 Part B claim during the quarter evaluated

Denominator: Sum of unique providers billing at least 1 evaluation and management visit during the quarter evaluated

Stratifications: Provider type (see Appendix A)

Drill Down: State/territory, CBSA, County FIPS, HRR, HSA, GPSI (provider place of service ZIP Code)

Indicator Note: Provider-based measures will include any eligible professionals paid under the Medicare physician fee schedule. Claims from provider specialties representing facilities have been excluded to avoid duplicative counts of services and visits (see Appendix B).

Signal of Change: The threshold for comparison of test subpopulations (e.g., individual state, county, CBSA) to a reference group (e.g., the U.S. total) is evaluated using test statistics ($p \leq 0.001$). A three-level scale ("lower

than", "average" or "higher than") is used to alert a potential reduction in access. The threshold for comparison of one time period to another is also evaluated using test statistics ($p \leq 0.001$). A three-level scale ("increasing", "the same as" or "decreasing") is used to alert a potential reduction in access over time.

Indicator 18: Percentage of Eligible Female Beneficiaries Who Had a Mammogram to Screen for Breast Cancer

Purpose: Indicates whether primary screening for breast cancer is increasing or decreasing.

Domain of Access: Realized Access (Access to Preventive Care and Services)

Core Measure: Yes

Refresh Cycle: Yearly

Data Sources: Part B Medicare Claims (numerator), Beneficiary Summary File (numerator and denominator)

Numerator: Sum of mammograms (multiple mammograms are counted only once per unique beneficiary) billed during the year evaluated among female beneficiaries 50-69 years old with at least 1 month of FFS coverage

Denominator: Sum of unique female beneficiaries (aged 50-69 as of the end of the measurement year) who were FFS at least 1 month during the year evaluated

Stratifications: Age group, race, dual eligible status, disabled status, co-existing conditions, beneficiary transition status (see Appendix A)

Drill Down: State/territory, CBSA, County FIPS, HRR, HSA, GPSI (beneficiary ZIP Code)

Indicator Note: Derived from HEDIS definitions of breast cancer screening, a woman had a mammogram if a submitted claim contains any 1 of the following codes:

CPT	HCPCS	ICD-9-CM Diagnosis
76090-76092, 77055-77057	G0202, G0204, G0206	V76.11, V76.12

Signal of Change: The threshold for comparison of test subpopulations (e.g., individual state, county, CBSA) to a reference group (e.g., the U.S. total) is evaluated using test statistics ($p \leq 0.001$). A three-level scale ("lower than", "average" or "higher than") is used to alert a potential reduction in access. The threshold for comparison of one time period to another is also evaluated using test statistics ($p \leq 0.001$). A three-level scale

("increasing", "the same as" or "decreasing") is used to alert a potential reduction in access over time.

Indicator 19: Percentage of Eligible Beneficiaries Who Had Screening for Colorectal Cancer

- Purpose:** Indicates whether preventive screening for colorectal cancer is increasing or decreasing.
- Domain of Access:** Realized Access (Access to Preventive Care and Services)
- Core Measure:** Yes
- Refresh Cycle:** Yearly
- Data Sources:** Part B Medicare Claims (numerator), Beneficiary Summary File (numerator and denominator)
- Numerator:** Sum of screenings (multiple colorectal screening procedures are counted only once per unique beneficiary) billed during the year evaluated among beneficiaries 50-80 years old with at least 1 month of FFS coverage
- Denominator:** Sum of unique beneficiaries (aged 50-80 as of the end of the measurement year) who were FFS at least 1 month during the year evaluated
- Stratifications:** Age group, gender, race, dual eligible status, disabled status, co-existing conditions, beneficiary transition status (see Appendix A)
- Drill Down:** State/territory, CBSA, County FIPS, HRR, HSA, GPSI (beneficiary ZIP Code)
- Indicator Note:** Though annual screening with any of these procedures is not the goal, screenings for colorectal cancer are defined by any of the following procedures (as specified in the HEDIS specifications for colorectal cancer screening): fecal occult blood test (FOBT), flexible sigmoidoscopy, double contrast barium enema (DCBE), or colonoscopy.

Description	CPT	HCPCS	ICD-9-CM Diagnosis
FOBT	82270, 82274	G0107, G0328, G0394	V76.51

Description	CPT	HCPCS	ICD-9-CM Diagnosis
Flexible sigmoidoscopy	45330-45335, 45337-45342, 45345	G0104	
DCBE	74280		
Colonoscopy	44388-44394, 44397, 45355, 45378-45387, 45391, 45392	G0105, G0121	

Signal of Change: The threshold for comparison of test subpopulations (e.g., individual state, county, CBSA) to a reference group (e.g., the U.S. total) is evaluated using test statistics ($p \leq 0.001$). A three-level scale (“lower than”, “average” or “higher than”) is used to alert a potential reduction in access. The threshold for comparison of one time period to another is also evaluated using test statistics ($p \leq 0.001$). A three-level scale (“increasing”, “the same as” or “decreasing”) is used to alert a potential reduction in access over time.

Indicator 20: Percentage of Eligible Beneficiaries with Diabetes Who Received Diabetes Care

Purpose: Indicates whether the use of diabetes services for diabetic beneficiaries is increasing or decreasing.

Domain of Access: Realized Access (Access to Preventive Care and Services)

Core Measure: Yes

Refresh Cycle: Yearly

Data Sources: Part B Medicare Claims (numerator), CCW Chronic Conditions Summary File (numerator and denominator), Beneficiary Summary File (numerator and denominator)

Numerator: Sum of at least 1 diabetes care service—multiple diabetes services are counted only once per unique beneficiary with diabetes (aged 75 and younger as of the end of the measurement year) *and* at least 1 month of FFS coverage—billed during the year evaluated

Denominator: Sum of unique beneficiaries with diabetes (aged 75 and younger as of

the end of the measurement year) who were FFS at least 1 month during the year evaluated. A beneficiary with diabetes is identified by the diabetes indicator in the CCW Chronic Conditions Summary File.

Stratifications: Age group, gender, race, dual eligible status, disabled status, co-existing conditions, beneficiary transition status (see Appendix A)

Drill Down: State/territory, CBSA, County FIPS, HRR, HSA, GPSI (beneficiary ZIP Code)

Indicator Note: Diabetes care services are defined by any of the following procedures: eye exam, hemoglobin A1C test, and urinalysis.

Description	CPT	Provider Specialty
Eye exam	67101, 67105, 67107, 67108, 67110, 67112, 67141, 67145, 67208, 67210, 67218, 67227, 67228, 92002, 92004, 92012, 92014, 92018, 92019, 92225, 92226, 92230, 92235, 92240, 92250, 92260	18 or 41
Hemoglobin A1C	83036	
Urinalysis	82043, 82044	

Signal of Change: The threshold for comparison of test subpopulations (e.g., individual state, county, CBSA) to a reference group (e.g., the U.S. total) is evaluated using test statistics ($p \leq 0.001$). A three-level scale (“lower than”, “average” or “higher than”) is used to alert a potential reduction in access. The threshold for comparison of one time period to another is also evaluated using test statistics ($p \leq 0.001$). A three-level scale (“increasing”, “the same as” or “decreasing”) is used to alert a potential reduction in access over time.

Indicator 21: Percentage of Newly Eligible Beneficiaries Who Had a “Welcome to Medicare” Exam

Purpose: Indicates whether the use of Medicare’s 1-time preventive physical exam is increasing or decreasing among newly eligible beneficiaries.

Domain of Access: Realized Access (Access to Preventive Care and Services)

Core Measure: Yes

Refresh Cycle: Yearly

Data Sources: Part B Medicare Claims (numerator), Beneficiary Summary File (numerator and denominator)

Numerator: Sum of unique beneficiaries (aged 66 as of the end of the measurement year) aging into Medicare with an occurrence of at least 1 “Welcome to Medicare” physical exam billed during the year evaluated

Denominator: Sum of unique beneficiaries (aged 66 as of the end of the measurement year) aging into Medicare within the evaluation period who were FFS at least 1 month during the year evaluated

Stratifications: Age group, gender, race, dual eligible status, disabled status, co-existing conditions, provider type, beneficiary transition status (see Appendix A)

Drill Down: State/territory, CBSA, County FIPS, HRR, HSA, GPSI (beneficiary ZIP Code)

Indicator Note: A beneficiary had a “Welcome to Medicare” exam if a submitted claim contains any 1 of the following codes:

Description	HCPCS
Initial preventive physical examination and screening	G0402, G0403, G0404, G0405

Signal of Change: The threshold for comparison of test subpopulations (e.g., individual state, county, CBSA) to a reference group (e.g., the U.S. total) is evaluated using test statistics ($p \leq 0.001$). A three-level scale (“lower than”, “average” or “higher than”) is used to alert a potential reduction in access. The threshold for comparison of one time period to another is also evaluated using test statistics ($p \leq 0.001$). A three-level scale (“increasing”, “the same as” or “decreasing”) is used to alert a potential reduction in access over time.

Indicator 22: Percentage of Eligible Beneficiaries Who Had a Preventive Care Visit

Purpose: Indicates whether the use of preventive care is increasing or decreasing.

Domain of Access: Realized Access (Access to Preventive Care and Services)

Core Measure: Yes

Refresh Cycle: Yearly

Data Sources: Part B Medicare Claims (numerator), Beneficiary Summary File (denominator)

Numerator: Sum of unique beneficiaries with an occurrence of at least 1 preventive care visit billed during the year evaluated

Denominator: Sum of unique beneficiaries who were FFS at least 1 month during the year evaluated

Stratifications: Age group, gender, race, dual eligible status, disabled status, co-existing conditions, provider type, beneficiary transition status (see Appendix A)

Drill Down: State/territory, CBSA, County FIPS, HRR, HSA, GPSI (beneficiary ZIP Code)

Indicator Note: A preventive care visit is defined as an occurrence of 1 of the codes listed below:

Description	CPT	HCPCS	ICD-9-CM Diagnosis
Preventive medicine	99385-99387, 99395-99397, 99401-99404, 99411, 99412, 99420, 99429	G0344, G0402, G0403, G0404, G0405	

Signal of Change: The threshold for comparison of test subpopulations (e.g., individual state, county, CBSA) to a reference group (e.g., the U.S. total) is evaluated using test statistics ($p \leq 0.001$). A three-level scale ("lower than", "average" or "higher than") is used to alert a potential reduction in access. The threshold for comparison of one time period to another is also evaluated using test statistics ($p \leq 0.001$). A three-level scale ("increasing", "the same as" or "decreasing") is used to alert a potential reduction in access over time.

Indicator 23: Mean Number of Days Between Qualifying for Medicare and Receiving an Ambulatory or Preventive Care Visit

Purpose: Indicates whether the time period between benefit qualification and use of ambulatory or preventive care is increasing or decreasing.

Domain of Access: Realized Access (Access to Preventive Care and Services)

Core Measure: Yes

Refresh Cycle: Yearly

Data Sources: Part B Medicare Claims (numerator), Beneficiary Summary File (numerator and denominator)

Numerator: Sum of the number of days between date beneficiary turned 65 and the service date of the first ambulatory or preventive care visit billed during the year evaluated among beneficiaries who qualify for Medicare because of age during the period evaluated

Denominator: None

Stratifications: Age group, gender, race, dual eligible status, disabled status, co-existing conditions, provider type, beneficiary transition status (see Appendix A)

Drill Down: State/territory, CBSA, County FIPS, HRR, HSA, GPSI (beneficiary ZIP Code)

Indicator Note: An ambulatory or preventive care visit is defined as an occurrence of 1 of the codes listed below:

Description	CPT	HCPCS	ICD-9-CM Diagnosis
Office or other outpatient services	99201-99205, 99211-99215, 99241-99245		
Home services	99341-99350		
Nursing facility care	99304-99310, 99315, 99316, 99318		
Domiciliary, rest home or custodial care services	99324-99328, 99334-99337		
Preventive medicine	99385-99387, 99395-99397, 99401-99404, 99411, 99412, 99420, 99429	G0344, G0402, G0403, G0404, G0405	
Ophthalmology and optometry	92002, 92004, 92012, 92014		
General medical examination			V70.0, V70.3, V70.5, V70.6, V70.8, V70.9

Signal of Change: The threshold for comparison of test subpopulations (e.g., individual

state, county, CBSA) to a reference group (e.g., the U.S. total) is evaluated using test statistics ($p \leq 0.001$). A three-level scale ("lower than", "average" or "higher than") is used to alert a potential reduction in access. The threshold for comparison of one time period to another is also evaluated using test statistics ($p \leq 0.001$). A three-level scale ("increasing", "the same as" or "decreasing") is used to alert a potential reduction in access over time.

Indicator 24: Number of Total Calls with Need for a Regular Doctor Who Accepts New Medicare Patients per 1,000 Beneficiaries

Purpose:	Indicates whether problems finding providers who accept new patients have been reported by beneficiaries.
Domain of Access:	Perceptions and Concerns about Access
Core Measure:	No
Refresh Cycle:	Quarterly
Data Sources:	1-800-MEDICARE calls (numerator), Beneficiary Summary File (denominator)
Numerator:	Sum of calls where a caller reports of need for regular doctor who accepts new Medicare patients
Denominator:	Sum of unique beneficiaries who were FFS at least 1 month during the quarter evaluated
Stratifications:	None
Drill Down:	State/territory, CBSA, County FIPS, HRR, HSA, GPSI (beneficiary ZIP Code)
Indicator Note:	1-800-MEDICARE script 220.20.20 was modified in June 2010 to enable this indicator to be calculated; data from previous years will simply include the number of times script 220.20.20 was consulted.
Signal of Change:	The threshold for comparison of test subpopulations (e.g., individual state, county, CBSA) to a reference group (e.g., the U.S. total) is evaluated using test statistics ($p \leq 0.001$). A three-level scale ("lower than", "average" or "higher than") is used to alert a potential reduction in access. The threshold for comparison of one time period to another is also evaluated using test statistics ($p \leq 0.001$). A three-level scale ("increasing", "the same as" or "decreasing") is used to alert a potential reduction in access over time.

Indicator 25: Number of Total Calls Reporting Need for a Specialist Who Accepts New Medicare Patients per 1,000 Beneficiaries

Purpose:	Indicates whether problems finding specialists who accept new patients have been reported by beneficiaries.
Domain of Access:	Perceptions and Concerns about Access
Core Measure:	No
Refresh Cycle:	Quarterly
Data Sources:	1-800-MEDICARE calls (numerator), Beneficiary Summary File (denominator)
Numerator:	Sum of calls where a caller reports of need for a specialist who accepts new Medicare patients
Denominator:	Sum of unique beneficiaries who were FFS at least 1 month during the quarter evaluated
Stratifications:	None
Drill Down:	State/territory, CBSA, County FIPS, HRR, HSA, GPSI (beneficiary ZIP Code)
Indicator Note:	1-800-MEDICARE script 220.20.20 was modified in June 2010 to enable this indicator to be calculated; data from previous years will simply include the number of times script 220.20.20 was consulted.
Signal of Change:	The threshold for comparison of test subpopulations (e.g., individual state, county, CBSA) to a reference group (e.g., the U.S. total) is evaluated using test statistics ($p \leq 0.001$). A three-level scale ("lower than", "average" or "higher than") is used to alert a potential reduction in access. The threshold for comparison of one time period to another is also evaluated using test statistics ($p \leq 0.001$). A three-level scale ("increasing", "the same as" or "decreasing") is used to alert a potential reduction in access over time.

Indicator 26: Number of Total Calls Reporting Existing Doctor No Longer Accepts Medicare Patients per 1,000 Beneficiaries

Purpose:	Indicates whether problems of existing doctors dropping Medicare patients from roles have been reported by beneficiaries.
Domain of Access:	Perceptions and Concerns about Access

Core Measure:	No
Refresh Cycle:	Quarterly
Data Sources:	1-800-MEDICARE calls (numerator), Beneficiary Summary File (denominator)
Numerator:	Sum of calls where a caller reports of existing doctor who no longer accepts Medicare patients
Denominator:	Sum of unique beneficiaries who were FFS at least 1 month during the quarter evaluated
Stratifications:	None
Drill Down:	State/territory, CBSA, County FIPS, HRR, HSA, GPSI (beneficiary ZIP Code)
Indicator Note:	1-800-MEDICARE script 220.20.20 was modified in June 2010 to enable this indicator to be calculated; data from previous years will simply include the number of times script 220.20.20 was consulted.
Signal of Change:	The threshold for comparison of test subpopulations (e.g., individual state, county, CBSA) to a reference group (e.g., the U.S. total) is evaluated using test statistics ($p \leq 0.001$). A three-level scale ("lower than", "average" or "higher than") is used to alert a potential reduction in access. The threshold for comparison of one time period to another is also evaluated using test statistics ($p \leq 0.001$). A three-level scale ("increasing", "the same as" or "decreasing") is used to alert a potential reduction in access over time.

Indicator 27: Number of Total Calls Reporting Need for Doctor Who Accepts Medicare Payments in Full per 1,000 Beneficiaries

Purpose:	Indicates whether problems of finding doctors who accept Medicare payments in full have been reported by beneficiaries.
Domain of Access:	Perceptions and Concerns about Access
Core Measure:	No
Refresh Cycle:	Quarterly
Data Sources:	1-800-MEDICARE calls (numerator), Beneficiary Summary File (denominator)
Numerator:	Sum of calls where a caller reports of need for doctor who accepts Medicare payments in full

- Denominator:** Sum of unique beneficiaries who were FFS at least 1 month during the quarter evaluated
- Stratifications:** None
- Drill Down:** State/territory, CBSA, County FIPS, HRR, HSA, GPSI (beneficiary ZIP Code)
- Indicator Note:** 1-800-MEDICARE script 220.20.20 was modified in June 2010 to enable this indicator to be calculated; data from previous years will simply include the number of times script 220.20.20 was consulted.
- Signal of Change:** The threshold for comparison of test subpopulations (e.g., individual state, county, CBSA) to a reference group (e.g., the U.S. total) is evaluated using test statistics ($p \leq 0.001$). A three-level scale ("lower than", "average" or "higher than") is used to alert a potential reduction in access. The threshold for comparison of one time period to another is also evaluated using test statistics ($p \leq 0.001$). A three-level scale ("increasing", "the same as" or "decreasing") is used to alert a potential reduction in access over time.

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Appendix A: Stratifications

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Stratification Variables

Within each geographical level, the AMS will allow stratification of indicators by specific patient characteristics using information from the Beneficiary Summary File, provider types using provider specialty codes from claims, and predetermined thresholds of co-existing chronic conditions using information found in the CCW Chronic Condition Summary File. Such stratification may aid in illuminating potentially reduced access in an area with a particularly high disease burden or demographic characteristics more sensitive to access problems.

Stratification:	Age Group
Purpose:	Specific age groups may be sensitive to changes in access
Data Sources:	Beneficiary Summary File
Categories:	<65, 65+, 65-74, 75-84, 85+
Reference Group:	65-74
Variable Note:	Derived from the calculated age at the end of the quarter.

Stratification:	Gender
Purpose:	Potential gender differences in access
Data Sources:	Beneficiary Summary File
Categories:	Females, Males
Reference Group:	Males
Variable Note:	None.

Stratification:	Race
Purpose:	Racial minorities may be sensitive to changes in access
Data Sources:	Beneficiary Summary File
Categories:	White, Non-White
Reference Group:	White
Variable Note:	Derived from the RTI Race Code for claims starting in 2006.

Stratification:	Dual Eligible Status
Purpose:	An indicator for lower-income beneficiaries, who may be sensitive to

changes in access

Data Sources: Beneficiary Summary File

Categories: Yes, No

Reference Group: No

Variable Note: Derived from the State Buy-In Coverage Count variable. If the number of months is greater than 0 in a given quarter, then dual eligible status is yes; otherwise, dual eligible status is no.

Stratification: Disabled Status

Purpose: An indicator for disabled beneficiaries, who may be sensitive to changes in access

Data Sources: Beneficiary Summary File

Categories: Disabled/ESRD, Not Disabled

Reference Group: Not Disabled

Variable Note: Derived from the Original Reason for Entitlement Code. If the original reason for entitlement is disability, ESRD, or both disability and ESRD, then disabled status is disabled/ESRD.

Stratification: Co-existing Conditions

Purpose: Beneficiaries with multiple co-existing conditions (i.e., sicker patients) may be more sensitive to changes in access

Data Sources: CCW Chronic Conditions Summary File

Categories: 0, 1-3, 4-5, 6 or more

Reference Group: 0

Variable Note: Flags for certain conditions are combined and counted only once: Alzheimer's disease and Alzheimer's disease and related dementia; rheumatoid arthritis/osteoarthritis and osteoporosis; all 5 cancer fields (female breast cancer, colorectal cancer, prostate cancer, lung cancer, endometrial cancer). Flags for AMI, hip fractures, and cataracts are not counted.

Stratification: Provider Type

Purpose: Specific categories of providers may be more sensitive to changes in access

Data Sources: Part B Claims Data

Categories: Physician; Primary Care Physician; Physician Specialist; Practitioner/Therapist

Reference Group: No reference group for this stratification

Variable Note: Providers who are MDs and DOs are considered “Physicians,” while all other practitioners and therapists eligible for payment under the physician fee schedule are categorized as “Practitioners/Therapists.” “Physicians” are further categorized as “Primary Care Physicians” and “Physician Specialist” using the provider specialty code. A complete list of provider specialty codes comprising each provider type category can be found in Appendix B.

Stratification: Beneficiary Transition Status

Purpose: Transitioning beneficiaries may be more sensitive to changes in access

Data Sources: Beneficiary Summary File

Categories: Transitioning from Medicare Advantage (MA) to FFS; Aging into Medicare; Moving to Area; No Transition

Reference Group: No Transition

Variable Note: MA to FFS is derived from the monthly HMO flag and FFS flag. If a beneficiary was MA during either of the two previous monitoring quarters and is FFS in the current monitoring quarter, then the beneficiary transitioned from MA to FFS. Aging into Medicare is derived from the original reason for entitlement (age) and age (the beneficiary turned 65 during the monitoring quarter). Moving to Area is derived by comparing the HSA value on the current year’s Beneficiary Summary File with the previous year such that if HSAs differ, the beneficiary has moved into an area.

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Appendix B: Provider Types

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Provider Types

Providers who are MDs and DOs are considered “Physicians,” while all other practitioners and therapists eligible for payment under the physician fee schedule are categorized as “Practitioners/Therapists.” “Physicians” are further categorized as “Primary” and “Specialist” using the provider specialty code.

Any claim containing a specialty code that indicates a facility (e.g., freestanding ambulatory surgery center) is excluded so that services and visits are not double-counted

The following table specifies which provider specialty codes are included in each provider type category:

Specialty Code	Specialty Description	Provider Type
1	General Practice	Primary Care Physician
8	Family Practice	Primary Care Physician
11	Internal Medicine	Primary Care Physician
38	Geriatric Medicine	Primary Care Physician
2	General Surgery	Physician Specialist
3	Allergy Immunology	Physician Specialist
4	Otolaryngology	Physician Specialist
5	Anesthesiology	Physician Specialist
6	Cardiology	Physician Specialist
7	Dermatology	Physician Specialist
9	Interventional Pain Management	Physician Specialist
10	Gastroenterology	Physician Specialist
13	Neurology	Physician Specialist
14	Neurosurgery	Physician Specialist
16	Obstetrics Gynecology	Physician Specialist
18	Ophthalmology	Physician Specialist
19	Oral Surgery (dental only)	Physician Specialist
20	Orthopedic Surgery	Physician Specialist
22	Pathology	Physician Specialist
24	Plastic and Reconstructive Surgery	Physician Specialist
25	Physical Medicine and Rehabilitation	Physician Specialist
26	Psychiatry	Physician Specialist
28	Colorectal Surgery (formerly Proctology)	Physician Specialist
29	Pulmonary Disease	Physician Specialist
30	Diagnostic Radiology	Physician Specialist
33	Thoracic Surgery	Physician Specialist

Specialty Code	Specialty Description	Provider Type
34	Urology	Physician Specialist
36	Nuclear Medicine	Physician Specialist
37	Pediatric Medicine	Physician Specialist
39	Nephrology	Physician Specialist
40	Hand Surgery	Physician Specialist
41	Optometry	Physician Specialist
44	Infectious Disease	Physician Specialist
46	Endocrinology	Physician Specialist
48	Podiatry	Physician Specialist
66	Rheumatology	Physician Specialist
76	Peripheral Vascular Disease	Physician Specialist
77	Vascular Surgery	Physician Specialist
78	Cardiac Surgery	Physician Specialist
79	Addiction Medicine	Physician Specialist
81	Critical Care (Intensivists)	Physician Specialist
82	Hematology	Physician Specialist
83	Hematology/Oncology	Physician Specialist
84	Preventive Medicine	Physician Specialist
85	Maxillofacial Surgery	Physician Specialist
86	Neuropsychiatry	Physician Specialist
90	Medical Oncology	Physician Specialist
91	Surgical Oncology	Physician Specialist
92	Radiation Oncology	Physician Specialist
93	Emergency Medicine	Physician Specialist
94	Interventional Radiology	Physician Specialist
98	Gynecological/Oncology	Physician Specialist
99	Unknown Physician Specialty	Physician Specialist
32	Anesthesiologist Assistant	Practitioner/Therapist
35	Chiropractor	Practitioner/Therapist
42	Certified Nurse Midwife	Practitioner/Therapist
43	Certified Registered Nurse Assistant (CRNA)	Practitioner/Therapist
50	Nurse Practitioner	Practitioner/Therapist
62	Psychologist	Practitioner/Therapist
64	Audiologist	Practitioner/Therapist
65	Physical Therapist	Practitioner/Therapist
67	Occupational Therapist	Practitioner/Therapist
68	Clinical Psychologist	Practitioner/Therapist
69	Clinical Laboratory	Practitioner/Therapist

Specialty Code	Specialty Description	Provider Type
71	Registered Dietitian/Nutrition Professional	Practitioner/Therapist
80	Licensed Clinical Social Worker	Practitioner/Therapist
89	Certified Clinical Nurse Specialist	Practitioner/Therapist
97	Physician Assistant	Practitioner/Therapist
A0	Hospital	Exclude
A1	Skilled Nursing Facility	Exclude
A2	Intermediate Care Nursing Facility	Exclude
A3	Other Nursing Facility	Exclude
A4	Home Health Agency	Exclude
A5	Pharmacy	Exclude
A6	Medical Supply Company with Respiratory Therapist	Exclude
A7	Department Store	Exclude
A8	Grocery Store	Exclude
12	Osteopathic Manipulative Therapy (OMM)	Exclude
45	Mammography Screening Center	Exclude
47	Independent Diagnostic Testing Facility	Exclude
49	Ambulatory Surgical Center	Exclude
51	Medical Supply Company with Orthotist	Exclude
52	Medical Supply Company with Prosthetist	Exclude
53	Medical Supply Company with Orthotist-Prosthetist	Exclude
54	Other Medical Supply Company	Exclude
55	Individual Certified Orthotist	Exclude
56	Individual Certified Prosthetist	Exclude
57	Individual Certified Prosthetist-Orthotist	Exclude
58	Medical Supply Company with Pharmacist	Exclude
59	Ambulance Service Provider	Exclude
60	Public Health or Welfare Agency	Exclude
61	Voluntary Health or Charitable Agency	Exclude
63	Portable X-Ray Supplier	Exclude
70	Multi-specialty Clinic or Group Practice/Single Specialty	Exclude

Specialty Code	Specialty Description	Provider Type
72	Pain Management	Exclude
73	Mass Immunization Roster Billers	Exclude
74	Radiation Therapy Center	Exclude
75	Slide Preparation Facilities	Exclude
87	All Other Suppliers	Exclude
88	Unknown Supplier/Provider Specialty	Exclude
96	Optician	Exclude

Appendix C: BETOS Code Categories

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BETOS Code Categories

For access indicators evaluating visits and services, it was necessary to categorize individual BETOS codes into broader groups. The table below summarizes which BETOS codes are included in each BETOS category. Any line item containing the following BETOS codes is excluded from the AMS: D1A, D1C, D1D, D1E, D1F, D1G, M2A, M2B, M2C, M4B, M5B*, M5C*, O1A, O1B, O1C, O1D, O1E, O1F, O1G, P0, Y1, Y2, Z2.

Indicator Use	BETOS Category	Description	BETOS Code
Visit counts	NEWOV	New evaluation and management visit	M1A
			M5B*
			M5C*
	ESTCONOV	Established evaluation and management visit/consultation	M1B
			M5B**
			M5C**
			M6***
	ER	ER evaluation and management visit	M3
	HOME	Home evaluation and management visit	M4A
Service counts	MAJPROC	Major procedures	P1A
			P1B
			P1C
			P1D
			P1E
			P1F
			P1G
	CPROC	Major cardiovascular procedures	P2A
			P2B
			P2C
			P2D
			P2E
			P2F
	OPROC	Major orthopedic procedures	P3A
			P3B
			P3C
			P3D
	EPROC	Eye procedures	P4A
			P4B
			P4C
			P4D
			P4E

Indicator Use	BETOS Category	Description	BETOS Code
	APROC	Ambulatory procedures	P5A
			P5B
			P5C
			P5D
			P5E
	MINPROC	Minor procedures	P6A
			P6B
			P6C
			P6D
	ONC	Oncology procedures	P7A
			P7B
	ENDO	Endoscopy procedures	P8A
			P8B
			P8C
			P8D
			P8E
			P8F
			P8G
			P8H
	DIAL	Dialysis services	P9A
			P9B
	SIMAGE	Standard imaging	I1A
			I1B
			I1C
			I1D
			I1E
			I1F
AIMAGE	Advanced imaging	I2A	
		I2B	
		I2C	
		I2D	
ECHO	Echography/ultrasonography	I3A	
		I3B	
		I3C	
		I3D	
		I3E	
		I3F	
PIMAGE	Imaging/procedure	I4A	
		I4B	

Indicator Use	BETOS Category	Description	BETOS Code
	LTEST	Lab tests	T1A
			T1B
			T1C
			T1D
			T1E
			T1F
			T1G
			T1H
	OTEST	Other tests	T2A
			T2B
			T2C
			T2D

*Included if the CPT is 90801, 92002, or 92004

**Included if the CPT is 90805, 90807, 90809, 90811, 90813, 90815, 92012, or 92014

***Medicare discontinued its use of consultation codes on January 1, 2010.

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