

The Effect of Medicare Advantage Enrollment on Mammographic Screening

Anna Hung, PharmD; Bruce Stuart, PhD; and Ilene Harris, PharmD, PhD

Breast cancer is the most common type of cancer among women and is the second-leading cause of cancer-related death among women.¹ The decline in breast cancer mortality has been attributed, in part, to the early detection of breast cancer with mammographic screening.^{2,4}

Although the value of mammographic screening has been demonstrated, the frequency of screening and age of the target populations remains a topic of debate. In 2009, the US Preventive Services Task Force (USPSTF) recommended that women aged 50 to 74 years should receive screening mammography every 2 years.⁵ The American Cancer Society (ACS) disagreed and continued to support the longstanding recommendation that women 40 years or older should receive screening mammography every year.⁶

One important determinant of the use of mammographic screening is health insurance status.⁷ The 2 types of insurance compared in this study are Medicare Advantage (MA) and fee-for-service (FFS). MA plans are private health plans that receive a capitated amount per beneficiary from Medicare to provide all Part A and B benefits. MA prescription drug plans receive a separate payment from Medicare to provide Part D benefits.⁸

MA plans started as Medicare managed care in the 1970s, and then were called “Medicare + Choice” after the 1997 Balanced Budget Act. It was not until the Medicare Modernization Act of 2003 that MA plans were called “Medicare Advantage.”⁸ When Medicare managed care plans first began in the 1970s, they were distinguished from traditional Medicare (or FFS) not only because they were private health plans operating under capitated payments, but also because they were mostly health maintenance organizations (HMOs).

MA enrollment has increased from 13% of all Medicare beneficiaries in 2004 to 31%, or 16.8 million beneficiaries, today.⁸ Sixty-four percent of MA beneficiaries are enrolled in HMOs and 31% are enrolled in preferred provider organizations.⁸

ABSTRACT

Objectives: To compare the rates of mammographic screening and reasons for not receiving mammography between Medicare Advantage (MA) and Medicare fee-for-service (FFS) beneficiaries.

Study Design: Cross-sectional study.

Methods: Unadjusted rates of mammographic screening and reasons for not receiving mammography were compared between MA and FFS beneficiaries in total and within subgroups. Probabilities of mammographic screening were also compared between the MA and FFS beneficiaries after adjusting for age, education, race/ethnicity, health status, marriage status, and region of residence using modified Poisson regression models.

Results: We found significantly higher unadjusted rates of mammographic screening in the MA beneficiary population compared with the FFS population (50.3% vs 44%, respectively; $P < .0001$). MA beneficiaries were more likely to receive a mammogram than FFS beneficiaries (unadjusted relative risk [RR], 1.13; 95% CI, 1.07-1.19; and adjusted RR, 1.06; 95% CI, 1.01-1.12). Furthermore, the top 6 reasons why MA and FFS beneficiaries did not receive mammograms were: “not needed,” “doctor did not recommend,” “forgot,” “not recommended annually,” “did not like mammograms,” and “appointment due soon.” Among non-Hispanic blacks and Hispanics specifically, FFS beneficiaries were more likely to report doctors not recommending mammograms than MA beneficiaries.

Conclusions: MA beneficiaries were 1.06 times more likely to receive mammography screening compared with the FFS population. Additionally, providers were less likely to recommend mammographic screening to non-Hispanic black and Hispanic FFS beneficiaries compared with non-Hispanic black and Hispanic MA beneficiaries.

Am J Manag Care. 2016;22(2):e53-e59

Take-Away Points

- Medicare Advantage (MA) beneficiaries were more likely to receive mammography screening compared with fee-for-service (FFS) beneficiaries.
- Three of the top 6 reasons for not receiving mammography involved whether mammography was needed. Although discrepancies in clinical guidelines remain, minimal mammographic screening recommendations should be disseminated to both providers and patients.
- While clinical guidelines were being debated, providers were less likely to recommend mammographic screening to non-Hispanic black and Hispanic FFS beneficiaries compared with non-Hispanic black and Hispanic MA beneficiaries.

Another key difference between MA and FFS is that MA plans are incentivized by star ratings whereas traditional FFS is not. More specifically, MA plans are given a 1 to 5 star rating annually, which is shared with the public⁹; consumers can then use this information when selecting plans. Additionally, MA plans with higher star ratings receive bonus payments. Providing preventive services, such as breast cancer screenings, is one of many measures used to calculate star ratings, and thus, MA plans have more of an incentive to ensure that their beneficiaries are receiving mammography.

Previous studies have found that women with Medicare HMO insurance had an earlier-stage breast cancer diagnosis than women with Medicare FFS insurance, which may lead to increased survival.^{10,11} Among breast cancer survivors, another study found that mammography was more often reported by those with Medicare plus private than those with only public insurance.¹² Regarding the Medicare population as a whole, a study using 1996 data showed that Medicare HMO beneficiaries were more likely to receive mammograms than FFS beneficiaries.⁷ Updating these figures and better understanding why patients decline mammograms is needed. This study has 2 aims: 1) compare mammographic screening rates between Medicare FFS and MA beneficiaries in 2009, and 2) compare reasons for not receiving mammographic screening between Medicare FFS and MA beneficiaries in 2009.

METHODS

This study used 2009 Medicare Current Beneficiary Survey (MCBS) data, collected via computer-assisted personal interviews.¹³ The MCBS is a longitudinal panel survey of a representative sample of the Medicare population¹⁴ that captures many beneficiary characteristics, including age, highest degree of education, race/ethnicity, self-reported health status, marriage status, region of residence, and MA enrollment. Additionally, the MCBS asks beneficiaries about mammography utilization and their reasons for not receiving mammography.

This study was approved by the University of Maryland Baltimore Institutional Review Board.

Sample Selection

The **Figure** shows how the sample was selected. Only females without a history of breast cancer were included. Since mammogram type (diagnostic or screening) was not specified, females with a history of breast cancer were excluded so calculated mammogram receipt rates would be focused on screening mammograms.

Of 14,695 Medicare beneficiaries, 7460 (51%) were females with no history of breast cancer. Of those, 5568 (75%) were FFS beneficiaries and 1892 (25%) were MA beneficiaries. Of the FFS and MA beneficiaries, 5417 (97%) and 1875 (99%) responded to whether they received a mammogram, respectively.

Next, 3033 (54%) and 932 (49%) FFS and MA beneficiaries did not receive mammograms, respectively. Of the FFS and MA beneficiaries who did not receive mammograms, 2175 (72%) and 755 (81%) reported why they did not receive a mammogram, respectively (not shown in the **Figure**).

Measures

All measures except age were self-reported from the survey. Age came from administrative records maintained by CMS. Receipt of screening mammogram was based on females with no history of breast cancer reporting whether they had received a mammogram in the last year. MA enrollment was based on whether patients reported current coverage by a Medicare HMO. However, this Medicare HMO was more similar to an MA plan because it included not only traditional risk HMOs, but also cost HMOs and other healthcare prepayment plans.

Statistical Analyses

For preliminary analyses, the FFS and MA beneficiary populations were compared using χ^2 tests of homogeneity to determine if differences in characteristics between the 2 populations were statistically significant.

For the first aim, unadjusted mammographic screening rates were calculated and compared between the FFS and MA beneficiary populations. Next, mammographic screening rates were compared between the 2 populations within strata of potential confounders, including age, education, race/ethnicity, health status, marriage status, and region of residence.

Lastly, a series of modified Poisson regression models were constructed to assess the effect of MA enrollment

on the receipt of screening mammography. Poisson regression with robust error variance has been previously used to estimate relative risk for binary outcomes.¹⁵ Relative risks were reported instead of odds ratios to avoid overestimation of risk if events are common, due to misinterpretation of odds ratios as a measure of risk.¹⁵ The final adjusted model contained all 6 potential confounders mentioned above: age, education, race/ethnicity, health status, marriage status, and region of residence. The previous study using data from 1996 also controlled for age, education, race/ethnicity, and health status.⁷ Marriage status and region of residence were also controlled for in the study because these characteristics were statistically significantly different between the FFS and MA populations in preliminary analyses and were considered potential confounders of the relationship between health plan type and mammogram use.

For the second aim, unadjusted reported rates for reasons for not receiving a mammogram were calculated and compared between the FFS and MA beneficiary populations. Next, these rates were compared within strata of the same 6 potential confounders. Chi-squared and Fisher's exact tests were used throughout to determine if differences were statistically significant at $P < .05$ unless otherwise noted.

RESULTS

Beneficiary Characteristics

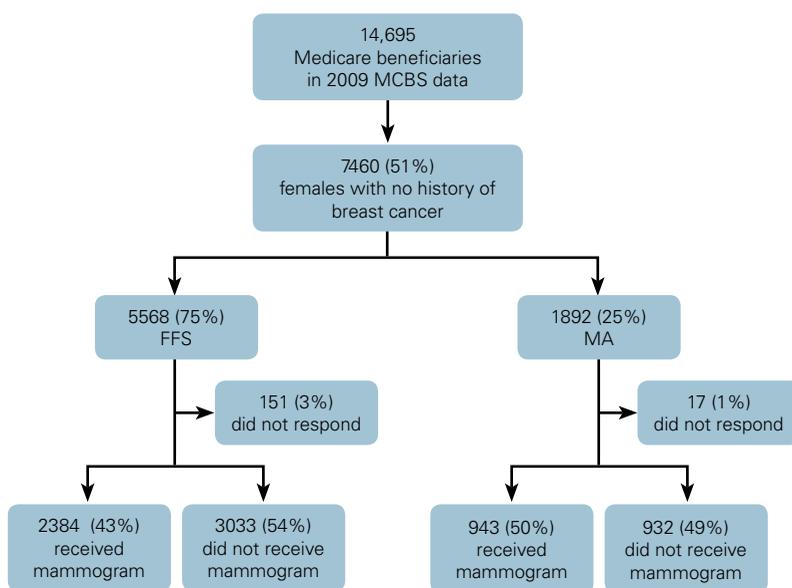
Table 1 shows the characteristics of FFS versus MA beneficiaries. In general, these results indicate that there are greater proportions of MA beneficiaries, compared with FFS beneficiaries, who are older, racial minorities, married, healthier, and living in western regions, mountainous regions, or Puerto Rico.

Mammographic Screening Rates

Table 2 compares unadjusted mammographic screening rates in Medicare FFS versus MA beneficiaries in the entire sample and then within strata of the 6 potential confounders: age, race/ethnicity, education, self-reported health status, marriage status, and region of residence.

A statistically significantly higher proportion of MA beneficiaries than FFS beneficiaries received a mammogram in 2009 (Table 2) (50.3% vs 44%, respectively;

■ **Figure. Sample Selection Flow Chart**



FFS indicates fee-for-service; MA, Medicare Advantage; MCBS, Medicare Current Beneficiary Survey.

$P < .0001$). Also, statistically significantly higher proportions of MA beneficiaries received a mammogram in 2009 compared with FFS beneficiaries within specific strata: aged under 65 years, non-Hispanic white race/ethnicity, non-Hispanic black race/ethnicity, other races/ethnicities, high school graduate or lower education, good or fair health status, single marriage status, northern regions, eastern regions, and Puerto Rico.

MA enrollees were more likely to receive a mammogram compared with Medicare FFS enrollees before and after adjusting for confounders (Table 2) (unadjusted relative risk [RR], 1.13; 95% CI, 1.07-1.19; and adjusted RR, 1.06; 95% CI, 1.01-1.12).

Reasons for Not Receiving Mammography

Table 3 shows the top 6 reasons why beneficiaries did not receive mammograms in 2009. These reasons, from most to least reported, were that the beneficiary did not think it was needed, the doctor did not recommend it, the beneficiary had forgotten, the beneficiary did not think the mammogram was recommended annually, the beneficiary did not like mammograms, and the beneficiary had an appointment due soon. The proportions of beneficiaries reporting these reasons in the FFS and MA beneficiary populations were not statistically significantly different.

Eleven other reasons for not undergoing mammography were asked in the survey. These were: "cost," "test use-

Table 1. Characteristics of Medicare FFS vs MA Beneficiaries

Beneficiary Characteristics	FFS N = 5568	MA N = 1892
Age, years ^a : %		
<65	16.8	8.3
65-74	30.2	37.5
75-84	31.8	37.5
≥85	21.2	16.7
Race/ethnicity, ^a %		
Non-Hispanic white	84.0	81.9
Non-Hispanic black	11.3	12.1
Hispanic	2.1	3.5
Other	2.6	2.5
Education, %		
Less than high school graduate	27.8	27.4
High school graduate	33.3	34.6
Some post high school graduate	39.0	38.0
Self-reported health status, ^{a,b} %		
Excellent or very good	39.1	43.1
Good	30.3	33.2
Fair	20.6	18.7
Poor	10.0	5.0
Marriage status, ^a %		
Married	33.7	40.8
Single ^c	66.3	59.2
Region, ^a %		
North	24.7	20.7
South	19.9	12.8
East	39.9	35.9
West	8.4	14.8
Mountain	6.4	11.1
Puerto Rico	0.6	4.7

FFS indicates fee-for-service; MA, Medicare Advantage.
^aMA beneficiaries significantly differ from beneficiaries in FFS at $P < .0001$, using χ^2 test.
^bNot self-reported for facility-dwelling beneficiaries and proxies.
^cIncludes widowed, divorced, separated, and never married.

less,” “beneficiary not at risk for breast cancer,” “doctor recommending against it,” “inconvenience,” “beneficiary afraid of results,” “radiation causing cancer,” “beneficiary had a mastectomy,” “beneficiary never heard of a mammogram,” “beneficiary too ill,” and “other.” These reasons were not included in Table 3 because they were reported by less than 5% of both the FFS and MA beneficiaries. Additionally, only 8 differences were found to be statistically significant when comparing proportions of FFS and MA beneficiaries’ reporting reasons for not receiving mam-

mography within strata of age, education, race/ethnicity, health status, marriage status, and region (see Table 4).

Age. Among beneficiaries aged under 65 years, a higher proportion of FFS versus MA beneficiaries reported not receiving mammograms because the doctor did not recommend it (Table 4) (30.11% vs 12.70%, respectively; $P < .05$). Among beneficiaries 85 years or older, a higher proportion of MA versus FFS beneficiaries reported not receiving mammograms because it was not recommended annually (Table 4) (21.54% vs 14.98%, respectively) or they had forgotten (Table 4) (14.36% vs 6.42%, respectively; $P < .05$).

Education. Among beneficiaries who graduated high school at the most, a higher proportion of MA versus FFS beneficiaries reported not receiving mammograms because the appointment was due soon (Table 4) (12.94% vs 8.28%, respectively; $P < .05$).

Race/ethnicity. Among non-Hispanic blacks, a higher proportion of FFS versus MA beneficiaries reported not receiving mammograms because the doctor did not recommend it (Table 4) (30.29% vs 16.87%, respectively; $P < .05$). In the same group, a higher proportion of MA vs FFS beneficiaries reported not receiving mammograms because they did not like mammograms (Table 4) (15.66% vs 6.22%, respectively; $P < .05$). Among Hispanics, a higher proportion of FFS versus MA beneficiaries also reported not receiving mammograms because the doctor did not recommend it (Table 4) (34.15% vs 9.09%, respectively; $P < .05$).

Self-reported health status. Among beneficiaries reporting excellent or very good health status, a higher proportion of MA versus FFS beneficiaries reported not receiving mammograms because they were not recommended annually (Table 4) (18.45% vs 12.98%, respectively; $P < .05$).

DISCUSSION

MA beneficiaries are slightly more likely to receive mammographic screening compared with FFS beneficiaries. Reasons for not receiving mammography differ between MA and FFS beneficiaries within specific subgroups of age, race/ethnicity, education level, and health status.

Carrasquillo et al (2001) used 1996 data and found that Medicare HMO beneficiaries tended to be slightly younger minorities with similar education and perceived health as FFS beneficiaries.⁷ This study similarly finds that MA beneficiaries tend to be racial minorities and have similar education compared with FFS beneficiaries. However, this study also finds that compared with FFS beneficiaries, more MA beneficiaries are older, healthier, married, and living in western regions, mountainous regions, or Puerto Rico. The increased MA enrollment over the past decade

Table 2. Mammographic Screening Rates in Medicare FFS vs MA Beneficiaries

Beneficiary Characteristics	Received Mammogram	
	FFS N = 5417	MA N = 1875
Total (unadjusted), %	44.0	50.3 ^a
Age, years: %		
<65	39.4	50.0 ^b
65-74	57.8	60.9
75-84	46.6	50.7
≥85	23.8	25.6
Race/ethnicity, %		
Non-Hispanic white	44.5	50.4 ^a
Non-Hispanic black	42.7	51.3 ^b
Hispanic	43.4	40.0
Other	33.3	55.3 ^b
Education, %		
Less than high school graduate	34.4	43.2 ^b
High school graduate	31.7	49.7 ^b
Some post high school graduate	52.8	55.9
Self-reported health status, ^e %		
Excellent or very good	52.7	53.0
Good	43.0	50.7 ^b
Fair	36.6	48.0 ^b
Poor	27.6	33.3
Marriage status, %		
Married	55.9	56.6
Single ^d	38.0	45.9 ^a
Region, %		
North	41.5	49.2 ^b
South	44.7	47.9
East	45.6	52.2 ^b
West	43.9	46.6
Mountain	44.3	52.9
Puerto Rico	20.0	52.3 ^b
Unadjusted RR (95% CI)	Ref	1.13 (1.07-1.19)
Adjusted RR (95% CI)	Ref	1.06 (1.01-1.12)

FFS indicates fee-for-service; MA, Medicare Advantage; Ref, reference; RR, relative risk.
^aMA beneficiaries significantly different from beneficiaries in FFS at $P < .0001$.
^bMA beneficiaries significantly different from beneficiaries in FFS at $P < .05$, using χ^2 test.
^cNot self-reported for facility-dwelling beneficiaries and proxies.
^dIncludes widowed, divorced, separated, and never married.

may have contributed to these changes in demographic characteristics between the MA and FFS populations.

Table 3. Top 6 Reasons Why a Mammogram Was Not Received by Medicare FFS vs MA Beneficiaries

Reason	FFS N = 2175	MA N = 755
Was not needed, %	24.1	22.7
Not recommended annually, %	12.4	14.7
Doctor did not recommend it, %	21.9	19.7
Do not like mammograms, %	10.6	10.1
Forgot, %	15.4	16.6
Appointment due soon, %	8.4	10.3

FFS indicates fee-for-service; MA, Medicare Advantage.

Similar to the study by Carasquillo et al, as well as a study in breast cancer survivors, this study also finds that MA beneficiaries have higher mammographic screening utilization rates than FFS beneficiaries.^{7,12} However, after adjustment, MA beneficiaries are only slightly more likely to receive mammographic screening than FFS beneficiaries. Thus, the higher mammography rates in MA versus FFS beneficiaries is likely due to both demographic differences, and extra incentives, such as star ratings, for MA plans to provide mammographic screening. This study also shows that in 2009, 3 of the top 4 reasons for not receiving mammograms in both the MA and FFS beneficiary populations pertain to either the beneficiary not thinking they needed the mammogram at all, or at least not annually, or the doctor not recommending the mammogram. This is a reflection of the confusion around mammographic screening due to the disagreement in USPSTF and ACS clinical guidelines. Removing these barriers to mammography requires decreasing patient and provider uncertainty toward mammography. Despite remaining discrepancies between guidelines, patients and providers should understand that the minimum recommendation for mammographic screening is at least every other year for those aged 50 to 74 years.

Additionally, similar to a previous 2013 study examining racial and ethnic differences in mammogram use, this study finds that in FFS, there are lower percentages of non-Hispanic blacks, Hispanics, and other races receiving mammograms compared with non-Hispanic whites, and the opposite trend in MA (except for the higher proportion of Hispanic beneficiaries receiving mammography vs non-Hispanic whites).¹⁶

Furthermore, among non-Hispanic blacks and Hispanics, more FFS beneficiaries reported their doctor not recommending mammograms than MA beneficiaries. In general, non-Hispanic blacks and Hispanics have a lower risk of breast cancer than white women. Thus, in

the midst of uncertainty, providers may reconsider recommending mammograms to FFS beneficiaries, whereas providers may be pressured by MA plans to continue to recommend mammograms due to star rating incentives.

Limitations and Strengths

One limitation of this study is that many of the variables, including race/ethnicity, education, health status, marriage status, region of residence, MA enrollment, use of a mammogram in last year, and reasons for not receiving mammography were self-reported measures. MA enrollment can be easily misclassified since there are many different types of plans. However, in approximately 90% of the cases, MA enrollment data came from or had been validated by CMS administrative data. A second limitation of this study is that the reasons for not receiving mammography came only from community-dwelling Medicare beneficiaries; thus, the findings pertaining to the reasons may not be applicable to facility-dwelling Medicare beneficiaries.

One contribution of this study is reporting on the specific reasons for not receiving mammograms. Compared with other surveys, such as the Medical Expenditure Panel Survey, the MCBS is unique because it asks 17 detailed questions regarding why preventive services were not used. Another strength of this study is comparing results from previous studies and identifying changes in the demographic characteristics of the MA population compared with the FFS population. Knowledge of beneficiaries' reasons for not receiving mammograms, as well as changes in the demographics of the population, allows healthcare providers and health plan managers to target how to improve appropriate mammographic screening.

CONCLUSIONS

Medicare Advantage beneficiaries are slightly more likely to receive mammographic screening compared with Medicare fee-for-service beneficiaries. Three of the top 6 reasons for not receiving mammography involved whether mammography was needed. Although discrepancies in clinical guidelines remain, minimal mammographic screening recommendations should be disseminated to both providers and patients.

Table 4. Reasons Why a Mammogram Was Not Received by Medicare FFS vs MA Beneficiaries Within Subgroups

Subgroup	Reason	FFS	MA
Age <65		N = 465	N = 63
	Doctor did not recommend it, %	30.1	N/A*
Age ≥85		N = 514	N = 195
	Not recommended annually, %	15.0	21.5
	Forgot, %	6.4	14.4
High school graduate		N = 749	N = 255
	Appointment due soon, %	8.3	12.9
Non-Hispanic black		N = 241	N = 83
	Doctor did not recommend it, %	30.3	16.9
	Do not like mammograms, %	6.2	15.7
Hispanic		N = 41	N = 33
	Doctor did not recommend it, %	34.2	N/A*
Excellent or very good self-reported health status		N = 786	N = 309
	Not recommended annually, %	13.0	18.5

FFS indicates fee-for-service; MA, Medicare Advantage; N/A, not available.
 *Percentage hidden per data use agreement; percentages cannot be reported when cell size is less than 11 enrollees.
 All differences statistically significant at $P < .05$, using χ^2 test.

Author Affiliations: University of Maryland, School of Pharmacy (AH, BS), Baltimore, MD; IMPAQ International, LLC (IH), Columbia, MD.

Source of Funding: None.

Author Disclosures: The authors report no relationship or financial interest with any entity that would pose a conflict of interest with the subject matter of this article.

Authorship Information: Concept and design (AH, BS, IH); acquisition of data (AH); analysis and interpretation of data (AH, IH); drafting of the manuscript (AH); critical revision of the manuscript for important intellectual content (AH, BS, IH); statistical analysis (AH); and supervision (AH, BS).

Address correspondence to: Anna Hung, PharmD, University of Maryland, School of Pharmacy, 220 South Arch St, Baltimore, MD 21201. E-mail: anna.hung@umaryland.edu.

REFERENCES

- Courtney-Long E, Armour B, Frammartino B, Miller J. Factors associated with self-reported mammography use for women with and women without a disability. *J Womens Health (Larchmt)*. 2011;20(9):1279-1286. doi:10.1089/jwh.2010.2609.
- Shen Y, Yang Y, Inoue LY, Munsell MF, Miller AB, Berry DA. Role of detection method in predicting breast cancer survival: analysis of randomized screening trials. *J Natl Cancer Inst*. 2005;97(16):1195-1203.
- Mandelblatt JS, Cronin KA, Bailey S, et al; Breast Cancer Working Group of the Cancer Intervention and Surveillance Modeling Network. Effects of mammography screening under different screening schedules: model estimates of potential benefits and harms. *Ann Intern Med*. 2009;151(10):738-747. doi:10.7326/0003-4819-151-10-200911170-00010.
- Berry DA, Cronin KA, Plevritis SK, et al; Cancer Intervention and Surveillance Modeling Network (CISNET) Collaborators. Effect of screening and adjuvant therapy on mortality from breast cancer. *N Engl J Med*. 2005;353(17):1784-1792.
- US Preventive Services Task Force. Screening for breast cancer: U.S. preventive services task force recommendation statement. *Ann Intern Med*. 2009;151(10):716-726, W-236. doi:10.7326/0003-4819-151-10-200911170-00008.

6. American Cancer Society guidelines for the early detection of cancer. American Cancer Society website. <http://www.cancer.org/healthy/findcancerearly/cancerscreeningguidelines/american-cancer-society-guidelines-for-the-early-detection-of-cancer>. Updated October 20, 2015. Accessed November 1, 2015.
7. Carrasquillo O, Lantigua RA, Shea S. Preventive services among Medicare beneficiaries with supplemental coverage versus HMO enrollees, Medicaid recipients, and elders with no additional coverage. *Med Care*. 2001;39(6):616-626.
8. Medicare Advantage. Kaiser Family Foundation website. <http://kff.org/medicare/fact-sheet/medicare-advantage/>. Published June 29, 2015. Accessed November 1, 2015.
9. Medicare Advantage plan star ratings and bonus payments in 2012. Kaiser Family Foundation website. <http://www.kff.org/medicare/upload/8257.pdf>. Published November 1, 2011. Accessed November 1, 2015.
10. Riley GF, Potosky AL, Klabunde CN, Warren JL, Ballard-Barbash R. Stage at diagnosis and treatment patterns among older women with breast cancer: an HMO and fee-for-service comparison. *JAMA*. 1999;281(8):720-726.
11. Roetzheim RG, Chirikos TN, Wells KJ, et al. Managed care and cancer outcomes for Medicare beneficiaries with disabilities. *Am J Manag Care*. 2008;14(5):287-296.
12. Sabatino SA, Thompson TD, Richardson LC, Miller J. Health insurance and other factors associated with mammography surveillance among breast cancer survivors: results from a national survey. *Med Care*. 2012;50(3):270-276. doi:10.1097/MLR.0b013e318244d294.
13. Medicare Current Beneficiary Survey (MCBS): 2012 national health-care quality and disparities reports—detailed methods appendix. Agency for Healthcare Research and Quality website. <http://archive.ahrq.gov/research/findings/nhqrdr/nhqrdr12/methods/mcbs.html>. Updated October 2014. Accessed January 2016.
14. Medicare Current Beneficiary Survey (MCBS). CMS website. <http://www.cms.gov/Research-Statistics-Data-and-Systems/Research/MCBS/index.html?redirect=/MCBS>. Accessed November 1, 2015.
15. Zou G. A modified Poisson regression approach to prospective studies with binary data. *Am J Epidemiol*. 2004;159(7):702-706.
16. Ayanian JZ, Landon BE, Zaslavsky AM, Newhouse JP. Racial and ethnic differences in use of mammography between Medicare advantage and traditional Medicare. *J Natl Cancer Inst*. 2013;105(24):1891-1896. doi:10.1093/jnci/djt333. ■

www.ajmc.com Full text and PDF