SECTION 5

Quality of care in the Medicare program

Chart 5-1. SNFs improved on some measures but not others from 2011 to 2015

Measure	2011	2012	2013	2014	2015
Discharged to the community	33.2%	35.6%	37.5%	37.6%	38.8%
Potentially avoidable readmissions					
During SNF stay	12.4	11.4	11.1	10.8	10.4
During 30 days after discharge from SNF	5.9	5.6	5.5	5.6	5.0
Rate of improvement in one or more mobility ADLs	43.6	43.6	43.6	43.4	43.5
Rate of no decline in mobility	87.2	87.3	87.2	87.1	87.1

Note: SNF (skilled nursing facility), ADL (activity of daily living). High rates of discharge to the community indicate better quality. High readmission rates indicate worse quality. The rate of improvement in mobility ADLs is the average of the rates of improvement in bed mobility, transfer, and ambulation, weighted by the number of stays included in each measure. Stays with improvement in one, two, or three mobility ADLs are counted in the improvement measures. "Rate of no decline in mobility" is the share of stays with no decline in any of the three ADLs. Rates are the average of facility rates and calculated for all facilities with 25 or more stays, except the rate of potentially avoidable readmission during the 30 days after discharge, which is reported for all facilities with 20 or more stays. Measures exclude hospital-based swing-bed units.

Source: MedPAC analysis of Medicare claims and Minimum Data Set data for 2011–2015.

- Rates of risk-adjusted community discharge and potentially avoidable readmission during the SNF stay improved between 2011 and 2015. A greater share of beneficiaries was discharged to the community (38.8 percent compared with 33.2 percent). A lesser share of beneficiaries was readmitted to an acute care hospital during the SNF stay (10.4 percent compared with 12.4 percent) or in the 30 days after discharge (5.0 percent compared with 5.9 percent).

- Both readmission rates include only patients readmitted to a hospital with the principal diagnosis of a potentially avoidable condition. The 13 potentially avoidable conditions are congestive heart failure, electrolyte imbalance/dehydration, respiratory infection, sepsis, urinary tract or kidney infection, hypoglycemia or diabetic complications, anticoagulant complications, fractures and musculoskeletal injuries, acute delirium, adverse drug reactions, cellulitis/wound infections, pressure ulcers, and abnormal blood pressure.

- The two risk-adjusted measures of change in functional status were essentially unchanged between 2011 and 2015. The mobility measures are composites of the patients' abilities in bed mobility, transfer, and ambulation, and they reflect the likelihood that a patient will change, given his or her functional ability at admission. A facility admitting patients with worse prognoses will have a lower expected rate of achieving these outcomes, and this difference will be reflected in the risk-adjusted rates. The rate of improvement in mobility shows the share of stays with improvement in one, two, or three ADLs: bed mobility, transfer, and ambulation. The rate of no decline in mobility is the share of stays with no decline in any of the three ADLs.

Chart 5-2. Home health agencies' performance on quality measures from 2004 to 2015

Measure	2004	2008	2013	2014	2015
Hospitalization rate	27.7%	28.8%	26.5%	27.8%	25.4%
Share of a home health agency's beneficiaries with improvements in:					
Walking	35.9	41.9	54.4	56.0	66.9
Transferring	49.2	48.1	50.5	51.3	63.3

Note: The measure for walking changed in 2011; therefore, the 2004 and 2008 results shown are not comparable with data from later years.

Source: MedPAC analysis of Outcome and Assessment Information Set data compiled by the University of Colorado.

- The average risk-adjusted rate of hospitalization for home health stays has decreased in recent years, but remains over 25 percent.

- Medicare publishes risk-adjusted home health quality measures that track changes in the functional abilities of patients who receive home health care. These measures do not include home health episodes that end with a hospitalization. The share of an agency's beneficiaries with improvement in walking had meaningful improvement (more than 10 percentage points) from 2014 to 2015. The share of an agency's beneficiaries with improvement in transferring also increased more than 10 percentage points from 2014 to 2015.

Chart 5-3. IRFs improved on risk-adjusted rates of discharge to the community and potentially avoidable rehospitalizations from 2011 to 2015

Measure	2011	2012	2013	2014	2015
Potentially avoidable rehospitalizations during IRF stay	2.9%	2.6%	2.5%	2.5%	2.4%
Potentially avoidable rehospitalizations during 30 days after discharge from IRF	5.0	4.6	4.6	4.5	4.2
Discharged to the community	74.0	75.2	75.8	76.2	76.0
Discharged to a SNF	6.9	6.7	6.7	6.9	6.8

Note: IRF (inpatient rehabilitation facility), SNF (skilled nursing facility). High rates of rehospitalization and discharge to a SNF indicate worse quality. High rates of discharge to the community indicate better quality. Rates are the average of the facility rates and are calculated for all facilities with 25 or more stays.

Source: Analysis of Inpatient Rehabilitation Facility–Patient Assessment Instruments from CMS.

- Between 2011 and 2015, the national average rate of risk-adjusted potentially avoidable rehospitalizations during the IRF stay declined from 2.9 percent to 2.4 percent. (Lower rates are better.) A similar pattern was observed in the rate of risk-adjusted potentially avoidable rehospitalizations within 30 days after discharge from an IRF: The national average declined between 2011 and 2015 from 5.0 percent to 4.2 percent.

- The rehospitalization rates count only stays readmitted to a hospital with the principal diagnosis of a potentially avoidable condition. The potentially avoidable rehospitalizations we measure are respiratory-related illness (pneumonia, influenza, bronchitis, chronic obstructive pulmonary disease, and asthma); sepsis; congestive heart failure; fractures or fall with a major injury; urinary tract or kidney infection; blood pressure management; electrolyte imbalance; anticoagulant therapy complications; diabetes-related complications; cellulitis or wound infection; pressure ulcer; medication error or adverse drug reaction; and delirium.

- Between 2011 and 2015, the national average for the risk-adjusted community discharge rate increased from 74.0 percent to 76.0 percent (higher rates are better). Our measure of community discharge does not give IRFs credit for discharging a Medicare beneficiary to the community if the beneficiary is subsequently readmitted to an acute care hospital within 30 days of the IRF discharge. The national risk-adjusted rate of discharge to a SNF was essentially unchanged.

Chart 5-4. Dialysis quality of care: Some measures show progress, others need improvement, 2010–2014

Outcome measure	2010	2012	2014
Percent of in-center hemodialysis patients:			
Receiving adequate dialysis	96%	97%	97%
Managing anemia			
Mean hemoglobin 10 to <12 g/dL	60	71	70
Mean hemoglobin ≥12 g/dL*	30	7	5
Mean hemoglobin <10 g/dL	10	22	26
Dialyzed with an AV fistula	56	60	62
Percent of peritoneal dialysis patients:			
Receiving adequate dialysis	88	90	91
Managing anemia			
Mean hemoglobin 10 to <12 g/dL	60	64	61
Mean hemoglobin ≥12 g/dL*	27	7	6
Mean hemoglobin <10 g/dL	14	29	33
Percent of all dialysis patients wait-listed for a kidney	18	18	17
Renal transplant rate per 100 dialysis-patient years	4.1	3.7	3.6
Annual mortality rate per 100 patient years*	18.4	17.2	16.6
Total hospital admissions per patient year*	2.0	1.9	1.7
Hospital days per patient year	12.8	12.0	11.0

Note: g/dL (grams per deciliter [of blood]), AV (arteriovenous). The rate per patient year is calculated by dividing the total number of events by the fraction of the year that patients were followed. Data on dialysis adequacy, anemia management, and fistula utilization represent the share of patients meeting CMS's clinical performance measures. The United States Renal Data System adjusts data by age, gender, race, and primary diagnosis of end-stage renal disease.
*Lower values suggest higher quality.

Source: Compiled by MedPAC with data from Fistula First, the United States Renal Data System, and 2012 and 2014 institutional outpatient files from CMS.

- Quality of dialysis care is mixed. Performance has improved on some measures, but performance on others remains unchanged.

- All hemodialysis patients require vascular access—the site on the patient's body where blood is removed and returned during dialysis. Between 2010 and 2014, use of arteriovenous fistulas, considered the best type of vascular access, increased from 56 percent to 62 percent of hemodialysis patients. Between 2010 and 2014, overall adjusted mortality rates decreased by 9.3 percent (from 18.4 percent to 16.6 percent).

- Between 2010 and 2014, the proportion of hemodialysis patients receiving adequate dialysis remained high. Between 2010 and 2014, overall rates of hospitalization declined.

- Other measures suggest that improvements in dialysis quality are still needed. We looked at access to kidney transplantation because it is widely believed to be the best treatment option for individuals with end-stage renal disease. Between 2010 and 2014, the proportion of dialysis patients accepted on the kidney transplant waiting list remained low, and the renal transplant rate per 100 dialysis-patient years declined.

Chart 5-5. Medicare Advantage quality measures were generally stable between 2014 and 2016

Measures	HMO averages (cost plans included) 2014	2015	2016	Local PPO averages 2014	2015	2016
HEDIS® administrative measures						
Osteoporosis management [a]	29.2[bc]	37.9[a]	40.8[c]	22.7[bc]	39.3[a]	31.9[c]
Rheumatoid arthritis management	76.1[c]	76.7[c]	77.5[c]	80.6[c]	81.1[c]	79.7[c]
HEDIS® hybrid measures						
BMI documented	90.1[bc]	93.3[bc]	93.7[c]	86.5[bc]	90.0[bc]	89.9[c]
Colorectal cancer screening	65.1[bc]	66.9[bc]	68.0	61.8[bc]	63.4[c]	66.9[b]
Controlling blood pressure[d]	65.8[b]	71.1	69.7	63.9[b]	69.0	67.1
Eye exam to check for damage from diabetes[a]	68.8	69.2[a]	70.2[a]	67.3	69.3[a]	69.4[a]
Kidney function testing for members with diabetes[a]	91.4[bc]	92.2[a]	95.8[abc]	89.6[bc]	90.3[a]	94.7[abc]
Diabetics not controlling blood sugar (lower rate better)[a]	24.3[c]	24.2[a]	25.1[a]	25.1[bc]	24.6[ab]	25.4[a]
Measures from HOS[e]						
Advising physical activity	50.3[c]	51.4[bc]	53.3[bc]	48.4[c]	49.4[c]	55.1[bc]
Reducing the risk of falling	62.3[c]	62.2[c]	58.3[bc]	56.5[c]	57.1[c]	53.6[bc]
Other measures based on HOS						
Improving or maintaining physical health	68.8[b]	68.3	67.7	68.3[b]	68.3	68.0
Improving or maintaining mental health	79.1[bc]	78.7[c]	84.6[bc]	80.3[bc]	80.1[c]	85.6[bc]
Measures from CAHPS®						
Annual flu vaccine	72.3[b]	71.7[c]	71.9[c]	73.8	74.1[c]	73.8[c]
Ease of getting needed care and seeing specialists	83.6[bc]	83.0[c]	82.6[c]	85.3[bc]	84.9[c]	84.4[c]
Getting appointments and care quickly	76.0[c]	75.7[c]	75.5[c]	77.2[bc]	76.8[c]	76.8[c]
Overall rating of health care quality	86.0	85.4[bc]	85.8	86.4	86.4[c]	86.0
Overall rating of plan	85.8	85.0[b]	84.8[c]	85.1	84.3[b]	83.5[c]
Care coordination	85.1	84.9[c]	85.0[c]	85.8	85.7[c]	86.0[c]

Note: HMO (health maintenance organization), PPO (preferred provider organization), HEDIS® (Healthcare Effectiveness Data and Information Set, a registered trademark of the National Committee for Quality Assurance (NCQA)), BMI (body mass index), HOS (Health Outcomes Survey), CAHPS® (Consumer Assessment of Healthcare Providers and Systems, a registered trademark of the Agency for Healthcare Research and Quality). Data exclude regional PPOs, private fee-for-service plans, and employer-direct plans. Cost-reimbursed HMO plans are included. HEDIS administrative measures are calculated using administrative data such as claims; hybrid measures can involve sampling medical records to determine a rate. Averages are for all reporting plans in each year; results may therefore differ from those shown in other Commission reporting. The 2015 local PPO rate for osteoporosis management is a correction of the previously reported rate.

[a] NCQA advises caution in the evaluation of the rates for measures for diabetic care in 2016 because of coding changes for identifying beneficiaries with a diagnosis of diabetes. For 2015, NCQA advised caution in the evaluation of the rates for diabetic care and for the osteoporosis management rate because of some data anomalies.

[b] Statistically significant difference in performance from previous year ($p < 0.05$).

[c] Statistically significant difference in performance between HMO and PPO results ($p < 0.05$).

[d] The specifications for this measure changed for the 2015 reporting period such that the result cannot be compared with prior-year results.

[e] Results shown for HEDIS measures taken from the HOS (the two measures listed) include scores for plans not reporting other HEDIS data. Results may therefore differ from those shown in other MedPAC reporting of these scores.

Source: MedPAC analysis of CMS HEDIS public use files for HEDIS measures and star ratings data for measures based on HOS and for CAHPS measures.

(Chart continued next page)

Chart 5-5. Medicare Advantage quality measures were generally stable between 2014 and 2016 (continued)

- The chart displays the simple averages across all plans in each category (HMOs and local PPOs) for each year. The measures listed are included in the measures that CMS uses to develop plan star ratings, which are the basis of quality bonus payments for plans (see Chart 9-12). For star rating purposes, measures have different weights. For example, process measures, such as each of the HEDIS administrative measures in the table, have a weight of 1.0; patient experience measures, including the last five items in the table, have a weight of 1.5.

- The table includes two HEDIS intermediate-outcome measures used in the star ratings: controlling blood pressure (for all patients with hypertension) and diabetics not controlling blood sugar. Neither had statistically significant improvement in the most recent data compared with the prior year (though the NCQA has advised caution in the interpretation of the current measures for diabetes care because of changes in coding affecting diabetes diagnoses). For the HOS-based outcome measures, both HMOs and PPOs performed better in 2016 than 2015 in the measure for improving or maintaining mental health. There continue to be differences between HMO and PPO results in the mental health measure, with PPOs better by a small margin.

- Among HMOs, 4 of the 18 listed measures show statistically significant changes between 2015 and 2016. Two of the four measures improved by 4 percent (kidney function testing for members with diabetes and advising physical activity); one improved by 7 percent (the HOS improvement of mental health measure); and one measure declined by 6 percent (reducing the risk of falling). (Note that percent change is reported rather than percentage point change.) Among local PPOs, 5 of the 18 listed measures showed statistically significant changes in 2016 over 2015: the same 4 as for HMOs plus the colorectal cancer screening measure. For local PPOs, the kidney function testing measure improved by 5 percent, and the HOS mental health improvement measure improved by 7 percent (for this latter measure, the same percentage improvement as for HMOs). Two measures showed greater improvement among local PPOs: the kidney function testing measure, at 5 percent versus 4 percent for HMOs; and the advising physical activity measure, at 12 percent for local PPOs and 4 percent for HMOs. For local PPOs, the colorectal cancer screening measure improved by 6 percent and is now very close to the rate for HMOs. The one measure that declined among local PPOs—reducing the risk of falling—declined by 6 percent, the same percentage as among HMOs.

- In 2016, 12 of the 18 listed measures showed statistically significant differences in performance between HMOs and PPOs. Six of the 12 measures had a difference of 3 percent or more (which can be thought of as a meaningful difference) between the two plan types. Half of the six measures were better among HMOs, and half were better among local PPOs. HMOs had better performance in osteoporosis management (22 percent better among HMOs), BMI documented (4 percent better), and reducing the risk of falling (8 percent better). The measures for which local PPOs showed better performance of at least 3 percent were rheumatoid arthritis management, advising physical activity, and annual flu vaccination.

Chart 5-6. Between 34 and 72 low-value services provided per 100 FFS beneficiaries in 2014; Medicare spent between $2.4 billion and $6.5 billion on these services

	Broader version of measures			Narrower version of measures		
Measure	Count per 100 beneficiaries	Share of beneficiaries affected	Spending (millions)	Count per 100 beneficiaries	Share of beneficiaries affected	Spending (millions)
Imaging for nonspecific low back pain	12.0	8.9%	$232	3.4	3.1%	$66
PSA screening at age ≥75 years	9.0	6.2	79	5.1	4.2	44
Colon cancer screening for older adults	8.0	7.5	405	0.3	0.3	3
Spinal injection for low back pain	6.6	3.3	1,261	3.4	2.0	643
Carotid artery disease screening in asymptomatic adults	5.1	4.6	268	4.2	3.8	221
Preoperative chest radiography	4.6	4.1	67	1.1	1.1	17
PTH testing in early CKD	4.5	2.6	83	3.9	2.3	71
Stress testing for stable coronary disease	4.3	4.1	1,198	0.5	0.5	137
T3-level testing for patients with hypothyroidism	3.8	2.2	23	3.8	2.2	23
Head imaging for headache	3.6	3.3	242	2.4	2.2	160
Cervical cancer screening at age >65 years	2.2	2.2	44	1.9	1.9	39
Homocysteine testing in cardiovascular disease	1.5	1.2	12	0.4	0.3	3
Head imaging for syncope	1.2	1.1	78	0.8	0.7	51
Preoperative echocardiography	0.8	0.8	62	0.2	0.2	19
Preoperative stress testing	0.6	0.6	177	0.2	0.2	60
Screening for carotid artery disease for syncope	0.6	0.6	33	0.4	0.4	23
CT for rhinosinusitis	0.6	0.5	39	0.2	0.2	17
Vitamin D testing in absence of hypercalcemia or decreased kidney function	0.5	0.4	8	0.5	0.4	8
Imaging for plantar fasciitis	0.5	0.4	9	0.4	0.3	6
BMD testing at frequent intervals	0.4	0.4	9	0.3	0.3	6
Cancer screening for patients with CKD on dialysis	0.4	0.3	9	0.1	0.1	1
PCI/stenting for stable coronary disease	0.3	0.3	1,284	0.1	0.1	216
Arthroscopic surgery for knee osteoarthritis	0.2	0.2	204	0.1	0.1	108
Vertebroplasty	0.2	0.2	338	0.2	0.2	327
Preoperative PFT	0.2	0.2	2	0.1	0.1	1
Hypercoagulability testing after DVT	0.2	0.1	5	0.1	0.1	2
IVC filter placement	0.1	0.1	33	0.1	0.1	33
Carotid endarterectomy for asymptomatic patients	0.1	0.1	165	0.03	0.03	66
EEG for headache	0.1	0.1	4	0.04	0.04	2
Renal artery stenting	0.1	0.1	152	0.02	0.02	51
Pulmonary artery catheterization in ICU	0.01	0.01	0.2	0.01	0.01	0.2
Total	**72.2**	**37.4**	**6,526**	**34.2**	**22.5**	**2,425**

(Chart continued next page)

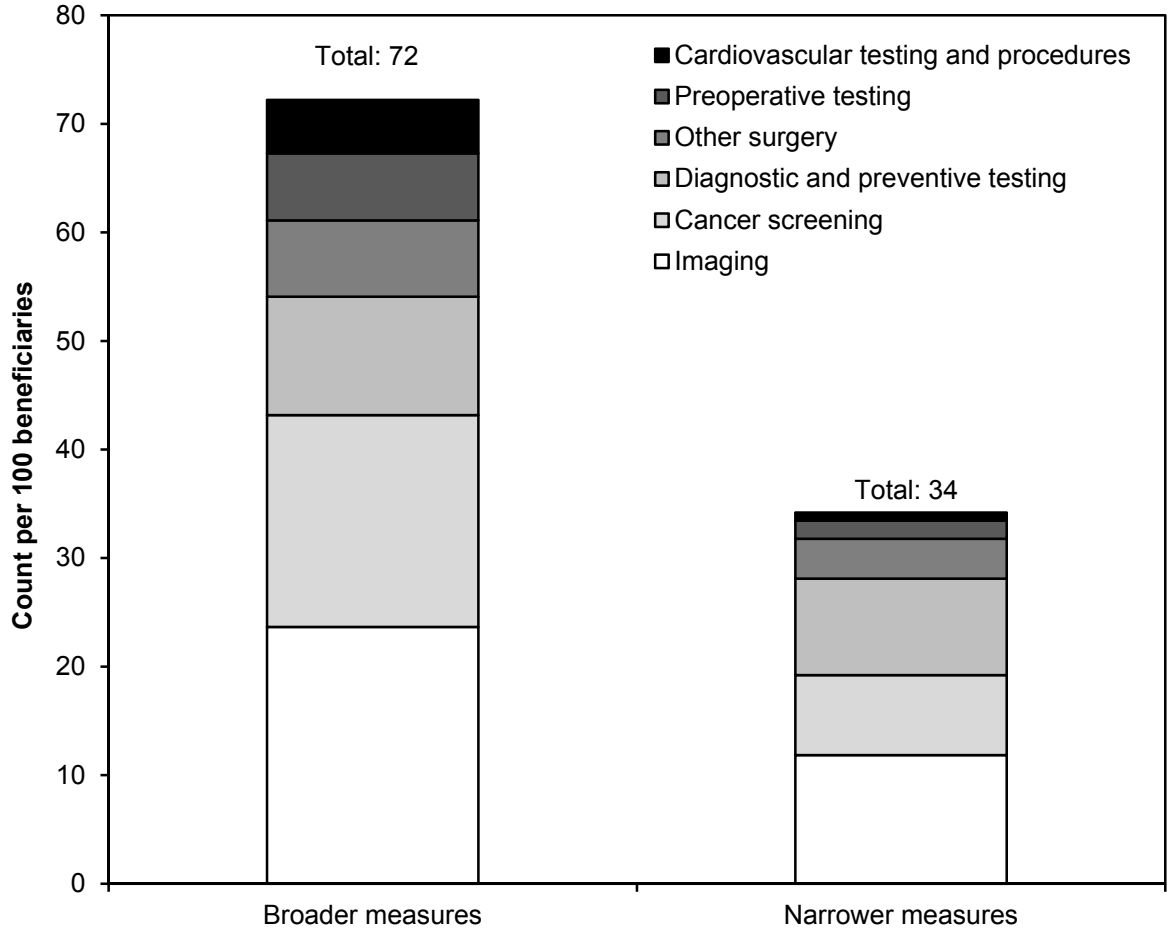
Chart 5-6. Between 34 and 72 low-value services provided per 100 FFS beneficiaries in 2014; Medicare spent between $2.4 billion and $6.5 billion on these services (continued)

Note: FFS (fee-for-service), PSA (prostate-specific antigen), PTH (parathyroid hormone), CKD (chronic kidney disease), CT (computed tomography), BMD (bone mineral density), PCI (percutaneous coronary intervention), PFT (pulmonary function test), DVT (deep vein thrombosis), IVC (inferior vena cava), EEG (electroencephalography), ICU (intensive care unit). "Count" refers to the number of unique services. Numbers may not sum to totals due to rounding. The totals for share of beneficiaries affected do not equal the column sums because some beneficiaries received services covered by multiple measures. Spending includes Medicare Part A and Part B program spending and beneficiary cost sharing for services detected by measures of low-value care. Spending is based on a standardized price for each service from 2009 that was updated to 2014.

Source: MedPAC analysis of 100 percent of Medicare claims using measures developed by Aaron Schwartz and colleagues (Schwartz, A. L., B. E. Landon, A. G. Elshaug, et al. 2014. Measuring low-value care in Medicare. *JAMA Internal Medicine* 174: 1067–1076; Schwartz, A. L., M. E. Chernew, B.E. Landon, et al. 2015. Changes in low-value services in year 1 of the Medicare Pioneer Accountable Care Organization Program. *JAMA Internal Medicine* 175: 1815–1825).

- Low-value care is the provision of a service that has little or no clinical benefit, or care in which the risk of harm from the service outweighs its potential benefit.
- The 31 measures of low-value care in this chart were developed by a team of researchers. The measures are drawn from evidence-based lists—such as Choosing Wisely—and the medical literature. We applied these measures to 100 percent of Medicare claims data from 2014. These 31 measures do not represent *all* instances of low-value care; the actual number (and corresponding spending) may be much higher.
- The researchers developed two versions of each measure: a broader one with higher sensitivity (and lower specificity) and a narrower one with lower sensitivity (and higher specificity). Increasing the sensitivity of a measure captures more potentially inappropriate use but is also more likely to misclassify some appropriate use as inappropriate. Increasing a measure's specificity leads to less misclassification of appropriate use as inappropriate at the expense of potentially missing some instances of inappropriate use.
- Based on the broader versions of the measures, there were about 72 instances of low-value care per 100 beneficiaries in 2014, and about 37 percent of beneficiaries received at least one low-value service. Medicare spending for these services was $6.5 billion. Based on the narrower versions of the measures, there were about 34 instances of low-value care per 100 beneficiaries, and almost 23 percent of beneficiaries received at least one low-value service. Medicare spending for these services totaled about $2.4 billion.

Chart 5-7. Between 34 and 72 low-value services provided per 100 FFS beneficiaries in 2014

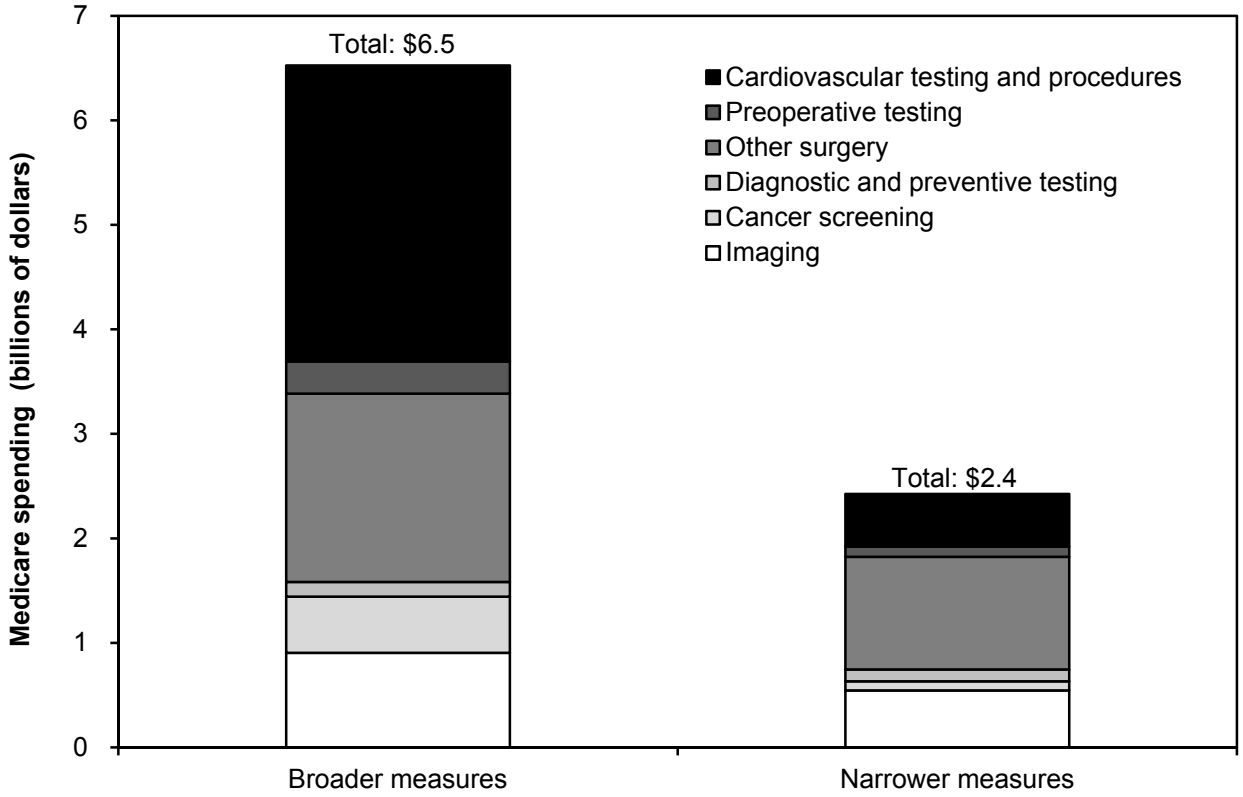


Note: FFS (fee-for-service). "Count" refers to the number of unique services provided to FFS Medicare beneficiaries.

Source: MedPAC analysis of 100 percent of Medicare claims using measures developed by Aaron Schwartz and colleagues. (Schwartz, A. L., B. E. Landon, A. G. Elshaug, et al. 2014. Measuring low-value care in Medicare. *JAMA Internal Medicine* 174: 1067–1076; Schwartz, A. L., M. E. Chernew, B. E. Landon, et al. 2015. Changes in low-value services in year 1 of the Medicare Pioneer Accountable Care Organization Program. *JAMA Internal Medicine* 175: 1815–1825).

- We assigned each of the 31 measures of low-value care from Chart 5-6 to 1 of 6 clinical categories.
- Imaging and cancer screening accounted for 60 percent of the volume of low-value care per 100 beneficiaries among the broader versions of the measures. The "imaging" category includes back imaging for patients with nonspecific low back pain and screening for carotid artery disease in asymptomatic adults. The cancer screening category includes prostate-specific antigen testing for men age 75 or older and colorectal cancer screening for older adults.
- Among the narrower versions of the measures, imaging and diagnostic and preventive testing accounted for 61 percent of the volume of low-value care per 100 beneficiaries.

Chart 5-8. At a minimum, Medicare spent between $2.4 billion and $6.5 billion on low-value care in 2014



Note: Spending includes Medicare Part A and Part B program spending and beneficiary cost sharing for services detected by measures of low-value care. To estimate spending, we used standardized prices to adjust for regional differences in payment rates. The standardized price is the median payment amount per service in 2009, adjusted for the increase in payment rates between 2009 and 2014. This method was developed by Schwartz et al. (2014).

Source: MedPAC analysis of 100 percent of Medicare claims using measures developed by Aaron Schwartz and colleagues. (Schwartz, A. L., B. E. Landon, A. G. Elshaug, et al. 2014. Measuring low-value care in Medicare. *JAMA Internal Medicine* 174: 1067–1076; Schwartz, A. L., M. E. Chernew, B.E. Landon, et al. 2015. Changes in low-value services in year 1 of the Medicare Pioneer Accountable Care Organization Program. *JAMA Internal Medicine* 175: 1815–1825).

- Cardiovascular testing and procedures and other surgery accounted for 71 percent of total spending on low-value care using the broader measures. Other surgery and imaging made up two-thirds of spending on low-value care using the narrower measures.

- The "cardiovascular testing and procedures" category includes stress testing for stable coronary disease and percutaneous coronary intervention with balloon angioplasty or stent placement for stable coronary disease. The "other surgery" category includes spinal injection for low back pain and arthroscopic surgery for knee osteoarthritis. The "imaging" category includes back imaging for patients with nonspecific low back pain and screening for carotid artery disease in asymptomatic adults.

- The spending estimates probably understate actual spending on low-value care because they do not include downstream services (e.g., follow-up tests and procedures) that may result from the initial low-value service. Also, we are not capturing *all* low-value care through these 31 measures.