HEALTH CARE RESOURCE USE OF MEDICARE BENEFICIARIES WITH PRIMARY OSTEOARTHRITIS (OA) OF THE KNEE – A CLAIMS DATA ANALYSIS

Su W[1],* Chen F[1], Iacobucci W[1], Bedenbaugh A[2], Bair N[2], Oruc A[2]
[1]IHS Markit, Washington, DC, USA, [2]Samumed, San Diego, CA, USA

OBJECTIVES

This study analyzed the health care resource use of Medicare patients with primary osteoarthritis of the knee compared to similar patients without this condition and examined shifts in patient claims and spending patterns.

METHODS

The methodology of this study is explained in detail in another poster.[1] We analyzed deidentified patient-level Medicare claims data from 2009 and 2014, and estimated resource use of knee osteoarthritis (KOA) patients for inpatient stays, outpatient visits, physician office visits (i.e. non-institutional service), skilled nursing facilities (SNF), and home health care (HHC). The CMS 5% sample dataset of physician office visit claims was used to identify KOA patients which were then linked to the other 4 complete claims datasets. A benchmark population without KOA was also generated using demographics-based propensity score matching. Resource use patterns between the 2 populations were compared cross-sectionally and between 2009 and 2014.

The burden of disease is defined as the increased amount of resource use and financial burden for KOA patients when compared to a similar non-KOA patient. All cost data was inflation-adjusted to 2014 dollars.

RESULTS

Study population

The KOA patient cohorts identified from the 5% sample physician office visits dataset resulted in 94,054 individuals for 2009 and 105,764 individuals for 2014, representing a 12% increase. Of these, close to 90% were 65 years or older, approximately two-thirds were female, and approximately 85% were non-Hispanic white (Exhibit 1). By construction, the control sample (without KOA) was identical to the analysis sample in demographics and Medicare status.

Extrapolating the 5% sample to 100% Medicare beneficiaries with claims, it was estimated that there were 1,881,000 and 2,115,000 KOA patients who had some form of health care resource use in 2009 and 2014, respectively.

[1]Su, W, Chen, F, Iacobucci, W, Bedenbaugh, A, Bair, N, Oruc, A, A statistical analysis plan to understand osteoarthritis patient journey by linking Medicare claims across care delivery settings, Annual Conference of ISPOR, Boston, MA, 22-24 May 2017

Exhibit 1: Baseline KOA patient population characteristics

Characteristics	2009	2014
Total number of patients contained in the physician office visits data set (5% sample)	1,676,297	1,783,340
Number of identified KOA patients (5% sample)	94,054 (5.6%)	105,764 (5.9%)
Estimated total number of KOA patients (above * 20)	1,881,000	2,115,000
Age		
>65	88.5%	86.7%
Gender		
Male	32.8%	34.5%
Female	67.2%	65.5%
Race/Ethnicity		
White	84.6%	83.0%
Black	9.5%	10.3%
Hispanic	2.0%	1.9%
Other	3.9%	4.8%
Medicare status		
Aged without end stage renal disease (ESRD)	88.1%	86.3%
Aged with ESRD	0.4%	0.4%
Disabled without ESRD	11.3%	13.0%
Disabled with ESRD	0.2%	0.2%
ESRD only	0.1%	0.1%

Resource utilization

Based on extrapolation from the 5% sample data set, the number and proportion of KOA patients increased between 2009 and 2014 (1,881,000 (5.6%) and 2,115,000 (5.9%), respectively), representing an overall increase of approximately 234,000 patients over 5 years. Similarly, the total number of disease-related claims for the KOA population increased from 86.7 million (2009) to 95.4 million (2014), representing a 10% greater claims-processing impact to CMS. When assessing the burden of KOA versus non-KOA, expressed in number of claims per person, it was found that KOA patients had approximately 16.3 more claims per analysis year than those without disease in both 2009 and 2014 (Exhibit 2).

In 2013, CMS announced a plan to cut HHC reimbursement by 14%, the largest reduction allowed by the Affordable Care Act.[2] The impact of this reduction was demonstrated by the reduction of home health services to near-zero in 2014 versus 2009. However, post-procedure care is essential to positive outcomes[3] and thus, SNF's saw a two- to three-fold increase in the same period, likely due to representing a resulting shift in care from HHC to SNFs.

[2]Tozzi J., Obamacare's surprise Medicare cut, https://www.bloomberg.com/news/articles/2014-03-06/obamacares-surprise-medicare-cut, 3 June 2014, accessed 7 April 2017

Exhibit 2: Resource utilization of KOA and non-KOA control population

	2009				2014			
Resource utilization	KOA	Control	Burden of KOA	P value	KOA	Control	Burden of KOA	P value
Average number of claims per patient								
Physician office	39.0	25.0	14.0	<.001	38.0	24.0	14.0	<.001
Inpatient	0.6	0.4	0.2	<.001	0.5	0.3	0.2	<.001
Outpatient	6.1	4.2	1.9	<.001	6.4	4.4	2.0	<.001
SNF	0.07	0.06	0.01	<.001	0.23	0.14	0.09	<.001
Home health	0.4	0.2	0.2	<.001	0.003	0.001	0.002	0.003
Total	**46.1**	**29.8**	**16.3**	**<.001**	**45.1**	**28.8**	**16.3**	**<.001**
Average number of utilization days per patient								
Inpatient	2.7	2.0	0.7	<.001	2.2	1.6	0.6	<.001
SNF	0.9	0.7	0.2	<.001	3.0	1.8	1.2	<.001
Total	**3.6**	**2.7**	**0.9**	**<.001**	**5.2**	**3.4**	**1.8**	**<.001**

Financial burden

The financial burden of disease based amongst Medicare beneficiaries (difference between KOA and non-KOA medical resource use) was significant for both 2009 and 2014 ($6,234 and $5,364, respectively) (Exhibit 3). We also assessed KOA-related costs using 2 different perspectives: CMS payment/reimbursement and total expense paid (sum of CMS reimbursement, patient contribution and 3rd party co-insurance). In Medicare, there was a decrease in reimbursement per KOA patient in 2014 versus 2009 ($14,802 vs. $12,663, respectively), likely as a result of increased cost-containment measures taken in 2013. However, despite this significant reduction in Medicare reimbursement, overall total expense decreased only $1,485 from $17,043 in 2009 to $15,558 in 2014 (Exhibit 4).

Exhibit 3: Total expense per patient between KOA and non-KOA control population, 2009 and 2014

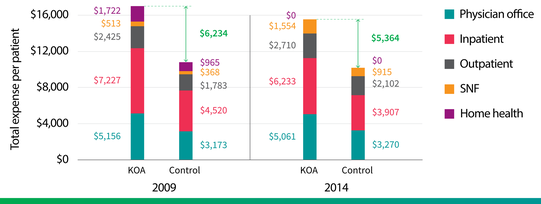
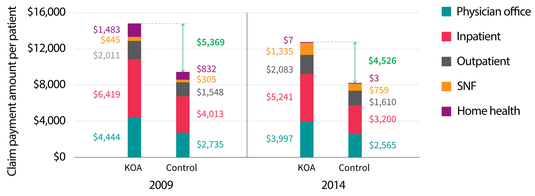


Exhibit 4: Medicare reimbursement per patient between KOA and non-KOA control population, 2009 and 2014



However, the number of patients being treated for KOA continues to rise, thus the total expense for providing medical care to patients with KOA increased from $32B to $33B between 2009 and 2014. This increased total medical expense cost along with decreased Medicare reimbursement amounts ultimately represent a shift in financial burden to patients and 3rd-party insurance (Exhibit 5).

Exhibit 5: Disease burden summary, 2009 and 2014

Description	2009*	2014	% Change
Estimated number of KOA patients**	1.88 million (5.6%)	2.12 million (5.9%)	13%
Total Medicare reimbursement for all KOA patients	$27.8 billion	$26.8 billion	-4%
Total expense for all KOA patients***	$32.0 billion	$33.0 billion	3%
Total burden to sources outside of Medicare	$4.2 billion	$6.2 billion	48%

*Inflation adjusted to 2014 dollars **Extrapolated based on the 5% physician sample
***Total expense includes reimbursement, patient co-payment/deductible, and additional 3rd-party insurance

Limitations

Due to data limitations, research findings only represent those Medicare KOA patients who have been diagnosed and treated, and do not cover prescription claims that would be included under Medicare Part D. Also, due to the nature of the 5% random sample provided, assumptions were made that the extrapolated population numbers are representative.

CONCLUSION

In this comprehensive analysis of medical costs across care settings in Medicare, it was demonstrated that patients with KOA have higher medical expenditures compared to patients without KOA, as well as showing that the total estimated number of KOA beneficiaries increased by 13% between 2009 and 2014. An interesting finding in this study was that the inflation-adjusted total Medicare reimbursement payment for an KOA patient actually decreased by 4% over the 5-year period. However, this decrease was more than offset by the 13% increase in the number of estimated KOA patients, resulting in an overall 3% increase in total expense paid in 2014. Even as reimbursement decreased, the expense of caring for this population increased, likely representing a shift to a greater financial burden of care falling to patients and 3rd-party insurance.