

Real World Analyses of Patient Characteristics in Patients who Received a Retinal Eye Exam within the First Year of Type 2 Diabetes Mellitus Diagnosis Compared with Patients who did not Receive a Retinal Eye Exam

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Purpose

- To analyze real world health plan claims data to assess differences in characteristics between those who received a retinal eye exam in the first year of type 2 diabetes mellitus diagnosis compared to those who did not and to assess screening rates over time

Background

- Diabetes is the leading cause of new cases of blindness, but patients with diabetic retinopathy are often asymptomatic until significant damage occurs
- Prevention and early detection are crucial, but only about 62% of adults with type 2 diabetes had dilated retinal eye exams in 2010, according to the latest CDC assessment¹
- At risk patients may benefit from retinal eye exams, which may increase early detection and patient engagement, potentially improving healthcare resource utilization
- Medicare evaluation of health plans includes an annual rating of 1-5 stars based on the percentage of plan members with diabetes who had a retinal eye exam to check for damage from diabetes during the year²

Methods

- This is a retrospective study of real-world medical and pharmacy claims from regional health plans in Magellan's medical and pharmacy claims database
- Qualifying patients:
 - Were 18-75 years old at start of study period (January 1, 2011 to December 31, 2015)
 - Had a type 2 diabetes diagnosis in the baseline period (either two outpatient claims or one inpatient claim with appropriate diagnosis code)
 - Were eligible for the entire calendar year of interest of for annual screening calculations
- Patients were segmented into two cohorts based on evidence of a retinal eye exam within the first year of type 2 diabetes diagnosis

References

- Age-Adjusted Percentage of Adults Aged 18 Years or Older with Diagnosed Diabetes Receiving a Dilated Eye Exam in the Last Year, United States, 1994-2010. Diabetes public Health Resource. https://www.cdc.gov/diabetes/statistics/preventive/fx_eye.htm
- Star Ratings. Medicare.gov, The Official U.S. Government Site for Medicare. <https://www.medicare.gov/find-a-plan/staticpages/rating/planrating-help.aspx>

Disclosures

- This research was conducted by Magellan Rx Management, Newport, RI, with external funding by Regeneron Healthcare Solutions, Inc.

Results

- A total of 142,086 patients were included in the study
- 99,776 (70%) did not receive a retinal eye exam during the first year of type 2 diabetes diagnosis
- Patients receiving a retinal eye exam in the first year were older than those who did not
 - Odds ratio = 1.029, 95% CI = 1.028 - 1.030 (See Table 1)
- Comorbidity assessment showed patients receiving a retinal eye screen in year one had greater comorbidities than those who did not: 45.3% of screened patients had a comorbidity index ≥ 1 , vs. 23.4% of those not screened (See Table 2)
 - Patients who received a diabetic retinal eye exam in the first year of diagnosis were sicker on average than those who did not (Table 2)
 - Patients who received a diabetic retinal eye exam in the first year of diagnosis had a much higher rate of comorbidities of interest on average than those who did not (See Table 3)
- In general, retinal eye exams over time increased from 37% in 2011 to 61% in 2015 ($p=0.003$) (See Figure 1)

Table 1. Demographics

	Overall	No Screen	Screen	p-value
Overall Patient count	142,086	99,776	42,310	
Age – continuous and n (%)				
Mean Age (SD) [Median]	53.77 (10.92) [55.00]	52.90 (11.05) [53.00]	55.83 (10.33) [57.00]	<0.0001
18-29	3,530 (2.5%)	2,832 (2.8%)	698 (1.7%)	<0.0001
30-39	11,231 (7.9%)	9,061 (9.1%)	2,170 (5.1%)	
40-49	30,049 (21.2%)	22,722 (22.8%)	7,327 (17.3%)	
50-59	54,017 (38.1%)	37,629 (37.7%)	16,388 (38.8%)	
60-69	32,735 (23.1%)	20,881 (20.9%)	11,854 (28.0%)	
70+	10,401 (7.3%)	6,566 (6.6%)	3,835 (9.1%)	
Gender - n (%)				
Female	67,990 (47.9%)	46,353 (46.5%)	21,637 (51.2%)	<0.0001
Male	74,096 (52.2%)	53,423 (53.6%)	20,673 (48.9%)	

Figure 1. Retinal Eye Exam Rate and Star Rating by Year*

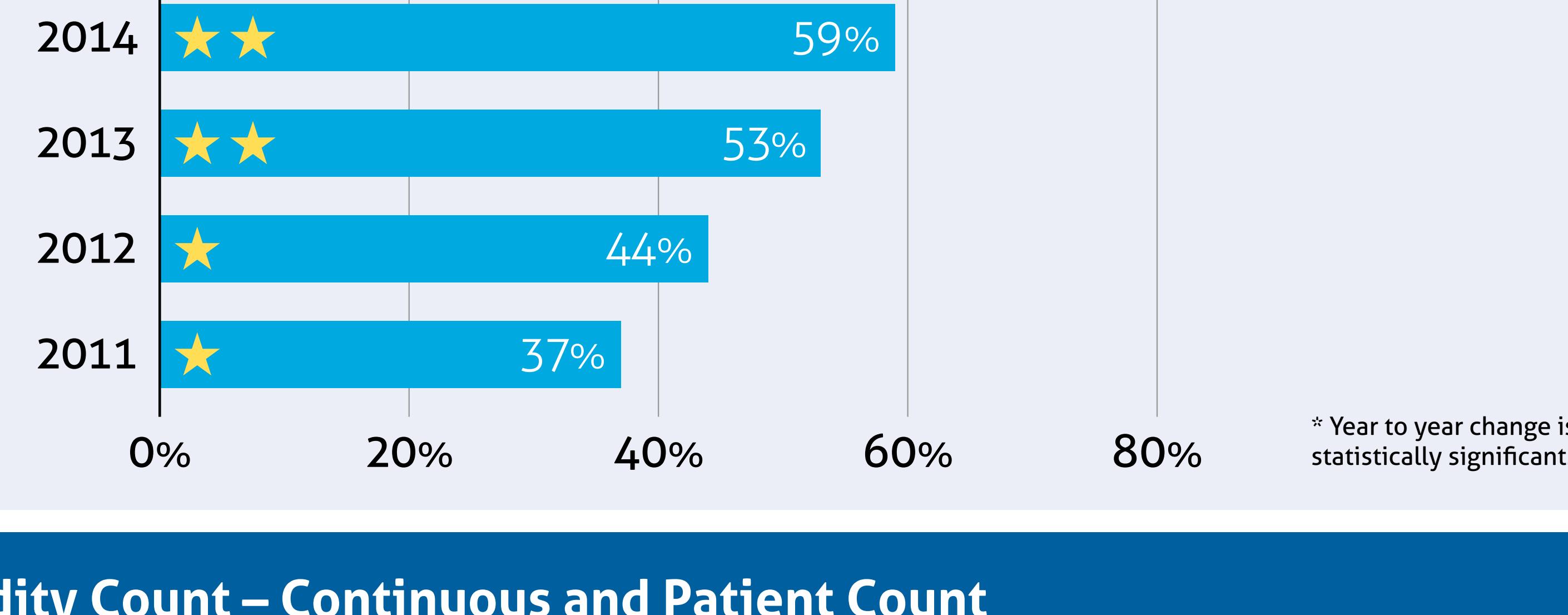


Table 2. Comorbidity Count – Continuous and Patient Count

	Overall	No Screen	Screen	p-value
Deyo-Charlson Comorbidity Index Mean (SD) [Median]	0.45 (1.10) [0.00]	0.25 (0.83) [0.00]	0.92 (1.46) [0.00]	<0.0001
0	108,878 (76.7%)	85,732 (86.0%)	23,146 (54.8%)	<0.0001
1	17,849 (12.6%)	8,013 (8.0%)	9,836 (23.3%)	
2	7,633 (5.4%)	3,589 (3.6%)	4,044 (9.6%)	
3+	7,603 (5.4%)	2,357 (2.4%)	5,246 (12.4%)	

Table 3. Comorbidities

Condition n(%)	Overall	No Screen	Screen	p-value
Blindness/ Low Vision	185 (0.1%)	31 (0.0%)	146 (0.3%)	<0.0001
Cardiovascular Disease	37,468 (26.4%)	16,021 (16.1%)	18,794 (44.5%)	
Diabetic Retinopathy	1,598 (1.1%)	175 (0.2%)	1,381 (3.3%)	
Kidney Disease	3,240 (2.3%)	1,279 (1.3%)	1,526 (3.6%)	
Thyroid Disorders	39,852 (28.15)	16,675 (16.7%)	21,241 (50.2%)	

Conclusion

- This analysis suggests patients receiving a retinal eye exam within one year of type 2 diabetes diagnosis were more likely to be female and older than those who did not
- Patients receiving retinal eye exams had a significantly higher comorbidity burden than those who did not as measured by the Deyo-Charlson comorbidity index
- When comparing screening rates over time, significant improvement in retinal eye exam rates were observed
- The rate of retinal eye exams observed in this study was lower than rate observed by the CDC in 2010
- This discrepancy may be due in part to payers having little incentive to collect this data until member retention was influenced by and financial rewards were attached to the STAR rating program