

Impact of Eye Exams in Identifying Chronic Conditions

Acknowledgements

Clinical direction for this study and paper was provided by:

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Executive summary

The study was performed by Optum, the nation's leading health services company, on behalf of UnitedHealthcare to illustrate the prevalence of chronic disease identified through comprehensive eye exams by eye care practitioners (ECPs).

The inclusion of a comprehensive eye exam in a health insurance portfolio is a valuable covered benefit. Eye exams can facilitate identification and intervention of various high cost chronic diseases. Eye exams can also facilitate the management of diagnosed medical conditions. A comprehensive dilated eye exam can assess the advancement of the disease, how well the disease is being controlled and any ocular effects of medication to treat the disease. Early intervention of high cost chronic diseases has significant benefits such as lower average annual long term health costs and improved health outcomes.[1-7]

This study investigates eight chronic conditions and evaluates the frequency with which an eye care practitioner (ECP) was responsible or directly contributed to the identification of the disease. This study is a valuable addition to the literature on this topic. People often visit their eye care practitioners (ECPs) more frequently than their primary care providers,[9] so ECPs can serve as gatekeepers to health and can help engage or re-engage members in the care of their chronic condition.

This study reviews members with both medical and vision eligibility in calendar years 2011 and 2012. First evidence of a specified chronic condition was verified by the absence of claims for the condition in a review of the prior 18 months of claims from when the chronic condition was identified by the ECP. Of the members with complete claims data, members with chronic conditions coded in calendar years 2009 and 2010 were excluded from this analysis. ECPs were credited with identification if members with chronic conditions were reported during a comprehensive eye exam or identified within 60 days following a comprehensive eye exam.

Overall, more than 4,000 chronic conditions were identified by an ECP, representing 5.6% of conditions identified. Over 2,600 members had at least one chronic condition identified by an ECP, representing 5.0% of members identified with a chronic condition. Including conditions reported by ECPs, members were diagnosed (through a medical or vision claim) approximately 15 days following a comprehensive eye exam, on average.

The most common conditions identified by an ECP were diabetes (1,453), high cholesterol (1,343) and hypertension (1,001). Multiple sclerosis (15.1%), diabetes (15.0%), juvenile rheumatoid arthritis (12.0%) and Crohn's disease (5.0%) were most likely to be identified by an ECP.

The distribution of days between a comprehensive eye exam and disease identification differed by condition. Juvenile rheumatoid arthritis and diabetes had the majority of diagnoses reported by an ECP or on the same day by another provider. Approximately half of multiple sclerosis, rheumatoid arthritis and one third of Graves disease (ocular thyroid disease) diagnoses were reported during a comprehensive eye exam or on the same day.

This study strengthens the association between comprehensive eye exams and identification of chronic medical conditions. With comprehensive eye exams leading to identification of chronic conditions and re-engagement of members in their medical care, more members can take advantage of the opportunity for reduced costs and improved health outcomes. This underscores the potential added benefits of vision coverage within a healthcare portfolio.

Observations

- Multiple sclerosis, diabetes, juvenile rheumatoid arthritis and Crohn's disease had the highest percentage of identification by ECPs.
- More than 4,000 cases of chronic conditions were identified by an ECP.
- Over 2,600 members had at least one chronic condition identified by an ECP.
- On average, members were diagnosed 15 days following a comprehensive eye exam.
- Diabetes, high cholesterol and hypertension were the most prevalent conditions identified by ECPs.

Objective

Previous studies have indicated vision coverage may lead to reduced medical costs and improved health outcomes through the availability of comprehensive eye exams. More specifically, medical costs stemming from chronic diseases such as diabetes, high cholesterol and many other chronic conditions can be reduced by early identification through comprehensive eye exams. The benefits associated with chronic disease intervention underscore the importance of early detection.[8]

Medical interventions for diabetes treatment have been shown to save employers, as the primary insurer, an average of $1,200-$1,872 per person per year compared to a baseline population. Additionally, a reduction of 4-7 sick days per year and significant increases in work productivity has been observed in previous studies.[1] These savings are crucial as overall spending on diabetes increased by 41% between 2007 and 2012 and is projected to increase by more than 100% between 2012 and 2025.[2]

Hypertension is one of the leading causes of heart attacks, strokes and chronic heart failure. The over 67 million adults[3] with hypertension cost the US "$47.5 billion annually in direct medical expenses and $3.5 billion each year in lost productivity."[4]: About half (47%) of people with high blood pressure have their condition under control."[3] Additionally, "certain interventions may help reduce cases of high blood pressure by 11 million and save 18 billion health care dollars annually."[5]

High cholesterol is also a leading cause of healthcare costs in the US and a significant risk factor for cardiovascular disease. "Cardiovascular disease (CVD) is the leading cause of death in the United States and is responsible for 17% of national health expenditures."[4] Interventions aimed at reducing cholesterol have shown reductions of 15% in the risk of coronary heart disease related mortality and 11% in risk for all-cause mortality per decrease of 10% in total cholesterol levels.[6]

The objective of this study is to illustrate the prevalence of chronic disease identified through comprehensive eye exams by eye care practitioners (ECPs). Eye exams used as the identifier for a chronic condition provide opportunities for reduced costs and improved health outcomes. This study intends to demonstrate the advantage of including vision coverage in healthcare benefits.

Methodology

This study links vision benefits and identification of eight chronic diseases by determining the percentage of specified chronic diseases where the disease was identified or reported through a comprehensive eye exam. The study utilizes UnitedHealthcare (UHC) commercial membership with both medical and vision coverage for calendar years 2011 and 2012.

The following chronic conditions were included in our analysis. These eight conditions were selected because they are high cost, have a high prevalence and can be identified through an eye exam.[7]

These conditions were identified through ICD-9 diagnosis codes. Up to four diagnosis codes per claim were included in the study. Disease specific ICD-9 codes are listed in Appendix: Table 7.

- Crohn's disease
- Diabetes
- Graves' disease
- High cholesterol
- Hypertension
- Juvenile rheumatoid arthritis
- Multiple sclerosis
- Rheumatoid arthritis

Differences from Prior Studies

This study differs in methodology from previous research around attributing the identification of chronic conditions to an ECP. The approach taken in this study attempts to remove external factors and better isolate the impact of comprehensive eye exams on chronic condition identification. As a result, this study is more conservative than previous studies.

The following key distinctions were made between this study and previous research.

- As it is outside the scope of most ECPs to diagnose chronic conditions, this study focuses on identification of chronic disease, defined as:
  - an ECP detecting signs of an undiagnosed chronic disease during a comprehensive eye exam and referring the member to a PCP or specialist for diagnosis, or
  - an ECP reporting a diagnosis on a claim based on the member's previously documented history or self-report.
- This study attributes identification to an ECP if the comprehensive eye exam preceded a non-hospital or emergency room medical claim with a chronic condition by less than 60 days. Previous studies attribute early identification to an ECP up to 180 days following the comprehensive eye exam.
- This study excludes members with disease evidence up to 18 months prior to the reported condition. Members without 18 months of claims history were excluded entirely. Previous studies only exclude members with disease evidence six months prior to the reported condition.
- Prior studies attribute the comprehensive eye exam as the first identifier even if the initial coding of the condition was in a hospital or emergency room. These facility settings typically reflect an elevated level of the condition, where early intervention is no longer an option. In this study, attribution was not assigned to the ECP for initial hospital or emergency room coding, regardless of the duration between the comprehensive eye exam and the initial coding.

Data sources

We identified UnitedHealthcare (UHC) members with a minimum of 670 days of continuous medical and vision coverage during calendar years 2011 and 2012. Overall, approximately 820,000 members were identified with continuous medical and vision coverage. Of these members, 78,815 did not have any claims and 739,633 members had at least one medical or vision claim.

Eligibility and claims were collected from UHC membership and claims databases contained within UHC's data warehouses.

Study population

Members with reported chronic conditions at any point between January 2009 and December 2010 are excluded from this analysis. For members without complete eligibility in 2009 and 2010 we required a minimum of 18 months of eligibility prior to the identified condition. Of these members, the study identifies a total of 72,534 comorbid chronic conditions in scope.

Table 1: Conditions identified in study population

Condition name	Conditions	Percent of total
Crohn's Disease	545	0.8%
Diabetes	9,700	13.4%
Graves Disease	1,691	2.3%
High Cholesterol	34,025	46.9%
Hypertension	24,562	33.9%
Juvenile Rheumatoid Arthritis	75	0.1%
Multiple Sclerosis	338	0.5%
Rheumatoid Arthritis	1,598	2.2%
GRAND TOTAL:	**72,534**	**100.0%**

Methodology

This study removes external factors to better isolate the impact of comprehensive eye exams by:

1. Only counting chronic conditions identified within 60 days after the eye exam.
2. Excluding members with chronic condition claims coded within 18 months prior to the eye exam.
3. Excluding chronic conditions identified in the hospital or emergency room.

Determination of Identification Source

The earliest date of chronic condition and source (ex. Hospital or emergency room, PCP, Other specialist, ECP) were used to determine if a comprehensive eye exam was the chronic disease identification source.

Chronic conditions are considered to be identified through a comprehensive eye exam if one of the following conditions exists:

- Condition was reported through a comprehensive eye exam with no medical treatment evidence for 18 months prior to eye exam. In this case, the ECP is coding the claim based on a previously confirmed diagnosis in the member's history or as reported to the ECP by the member.
- Condition was first reported within 60 days following a comprehensive eye exam. However, conditions first coded in facility settings (hospitals and emergency rooms) were not credited to the ECP.

Members identified with chronic conditions through comprehensive eye exams are split into one of two groups based on each of these conditions.

Key Assumptions

- Comprehensive eye exams were identified through the following procedure codes: 92004, 92014, 92002, 92012. E/M codes (99xxx) were not included in the study.
- Comprehensive eye exams performed in a non-facility setting (e.g. Doctor's office) by a Specialist were assumed to be performed by an optometrist or ophthalmologist (ECP).
- Identification by an ECP was assumed if a comprehensive eye exam preceded a non-hospital or emergency room medical claim with a chronic condition by less than 60 days. The identification was credited to the ECP even if the chronic condition was not coded with the comprehensive eye exam.
- Chronic conditions reported by ECPs with no disease evidence for 18 months prior were included in the study and credited to the ECP. 18 months was chosen as a reasonable benchmark to assume no prior disease identification.
- Subscriber ID and Birth Date were used to match medical and vision eligibility data
  - This potentially duplicates spouses with common birthdates and twin dependents. The potential impact of duplications is assumed to be insignificant.
- We defined continuous vision and medical coverage as a minimum of 670 days out of the 730 days in calendar years 2011 and 2012
- Used ICD-9 diagnoses and CPT procedure code mapping to identify chronic conditions.
- Members with disease evidence in calendar years 2009 or 2010 were excluded from this study.

Observations: Members with Chronic Conditions

We observed members within the study population who were diagnosed with one or more chronic medical conditions in Table 2. Overall, 52,408 members were identified with single or multiple chronic conditions. On average, there were about 1.4 chronic conditions per member. Of these 52,408 members, 5.0% had their condition identified by an ECP.

Table 2: Count of Members with Condition by Source

Provider Type	Individuals with Conditions	Percent of Total
Primary Care Physician	23,188	44.2%
Non-Vision Specialist	5,466	10.4%
Vision Provider	2,612	5.0%
RX	0	0.0%
Facility	21,142	40.3%
GRAND TOTAL:	**52,408**	

Tables 3 and 4 further break out chronic conditions reported during a comprehensive eye exam and chronic conditions identified through a medical source within 60 days following a comprehensive eye exam. Table 3 details total members identified with a specified condition through an ECP. Table 4 details total specified conditions identified by an ECP.

Table 3: Total Members with Specified Chronic Condition Identified through an Eye Exam

Identification Indicator	Members	Percent of Total
Identified and Coded Through Eye Exam	1,341	2.6%
Coded Within 60 Days of Eye Exam	1,271	2.4%
All Vision Exams Total	**2,612**	**5.0%**
All Chronic Conditions	**52,408**	

Table 4: Total Chronic Conditions Identified through an Eye Exam

Identification Indicator	Conditions	Percent of Total
Identified and Coded Through Eye Exam	1,647	2.3%
Coded Within 60 Days of Eye Exam	2,387	3.3%
All Vision Exams Total	**4,034**	**5.6%**
All Chronic Conditions	**72,534**	

Often, following a chronic condition being identified through a comprehensive eye exam, multiple additional conditions will be observed by the PCP and not necessarily credited to the eye exam. Therefore, through identifying early the first chronic condition, other chronic conditions will be observed earlier as well. Table 5, on the following page, shows secondary conditions observed within 60 days of the initial chronic condition observed through the eye exam. Additional conditions identified and attributed to an ECP at later dates were listed as subsequent conditions.

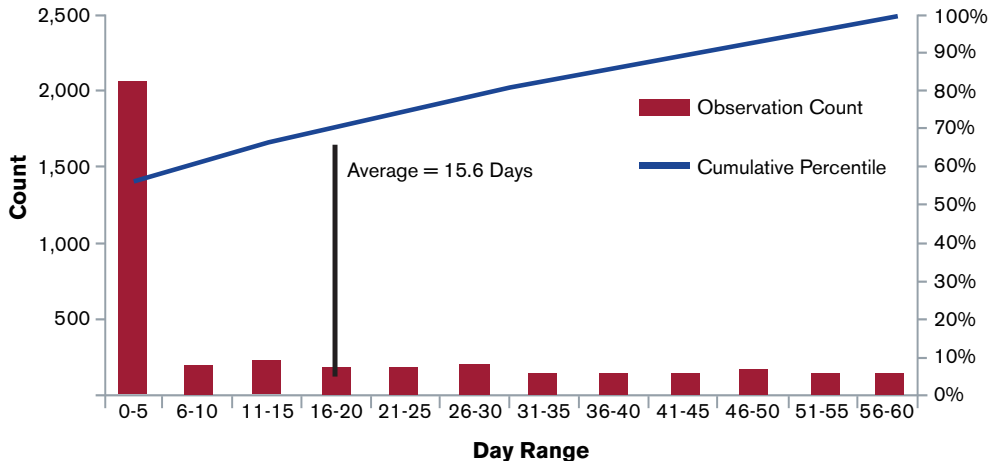
Table 5: Comorbidity in comprehensive eye exam diagnosed population of multiple chronic conditions

	Subsequent Condition Identified							
First Condition Identified	Crohn's Disease	Diabetes	Graves Disease	High Cholesteral	Hypertension	Juvenile Rheumatoid Arthritis	Multiple Sclerosis	Rheumatiod Arthritis
Crohn's Disease		0.0%	0.0%	10.3%	3.4%	0.0%	3.4%	0.0%
Diabetes	0.0%		0.1%	3.6%	3.1%	0.0%	0.0%	0.1%
Graves Disease	0.0%	2.4%		4.8%	3.6%	0.0%	0.0%	0.0%
High Cholesterol	0.2%	3.9%	0.3%		14.3%	0.0%	0.1%	0.1%
Hypertension	0.1%	4.5%	0.3%	19.0%		0.0%	0.1%	0.1%
Juvenile Rheumatoid Arthritis	0.0%	0.0%	0.0%	0.0%	0.0%		0.0%	0.0%
Multiple Sclerosis	2.0%	0.0%	0.0%	3.9%	2.0%	0.0%		0.0%
Rheumatoid Arthritis	0.0%	2.9%	0.0%	1.4%	4.3%	0.0%	0.0%	

- 14.3% of members diagnosed with high cholesterol were later diagnosed with hypertension.
- 19.0% of members diagnosed with hypertension were later diagnosed with high cholesterol.

Observations: Duration between Comprehensive eye exam and Chronic Condition Diagnosis

Chart 1: Distribution of days between comprehensive eye exam and diagnosis: All Conditions



Of all members identified with a chronic condition through a comprehensive eye exam, 51.3% of members had their condition coded by an ECP. This accounts for approximately 2.6% of all members with a specified chronic condition. Including diseases coded directly by ECPs, members were diagnosed approximately 15 days following a comprehensive eye exam, on average. Overall, approximately two-thirds of diagnoses were made within 19 days of a comprehensive eye exam

Of all conditions identified through a comprehensive eye exam, 40.8% of conditions were coded by an ECP. This accounts for approximately 2.3% of all conditions identified. A total of 44.1% of conditions identified through a comprehensive eye exam were either coded by the ECP or another provider on the same day as the comprehensive eye exam.

The distribution of days between a comprehensive eye exam and disease identification differed by condition. Juvenile rheumatoid arthritis and diabetes were typically identified by an ECP or the same day by another provider. Approximately half of the members with multiple sclerosis, rheumatoid arthritis and Graves' disease were identified during a comprehensive eye exam or on the same day.

Observations

- After identifying the first chronic condition, other chronic conditions were observed earlier as well.
- 14.3% of members diagnosed with high cholesterol were later diagnosed with hypertension
- 19% of members diagnosed with hypertension were later diagnosed with high cholesterol.

Results

Of 72,534 chronic conditions identified, 4,034 or 5.6% of the total were attributable to comprehensive eye exams. Of 52,408 members identified with a chronic condition, 2,612 or 5.0% of members had at least one condition identified through a comprehensive eye exam.

Diabetes, high cholesterol and hypertension had the highest volume identified through a comprehensive eye exam. Multiple sclerosis (15.1%), diabetes (14.9%) and juvenile rheumatoid arthritis (12.0%) accounted for the disease most likely to be identified by an ECP.

Table 6: Chronic Conditions Identified by an Eye Care Practitioner

Condition Name	Early Identified Conditions	ECP Identified	Percent of Conditions Identified First by ECP
Crohn's Disease	27	545	5.0%
Diabetes	1,453	9,700	15.0%
Graves Disease	81	1,691	4.8%
High Cholesterol	1,343	34,025	3.9%
Hypertension	1,001	24,562	4.1%
Juvenile Rheumatoid Arthritis	9	75	12.0%
Multiple Sclerosis	51	338	15.1%
Rheumatoid Arthritis	69	1,598	4.3%
GRAND TOTAL:	**4,034**	**72,534**	**5.6%**

Conclusion and next steps

A link is evident between comprehensive eye exams and identification of various chronic conditions. In our study population an eye care practitioner identified 5.6% of the total chronic conditions reviewed. Diabetes, juvenile rheumatoid arthritis and multiple sclerosis were the most likely chronic conditions identified through a comprehensive eye exam. The proportion of these conditions identified by an ECP ranged 12%-15%. Due to a high incidence rate, diabetes, high cholesterol and hypertension are the most commonly identified chronic conditions through a comprehensive eye exam. Approximately 90% of diabetes and juvenile rheumatoid arthritis conditions were identified on the day of the comprehensive eye exam, indicating that in many of these cases, the diagnoses may have been self-reported by the member and there was a lack of care for over 18 months. Since ECPs often see members more frequently than PCPs, this provides an excellent opportunity for ECPs to re-engage members into care for their chronic conditions that may have been otherwise lost to follow-up. This previously overlooked role for eye care may create improved health outcomes and cost avoidance. Future studies should include a financial impact analysis of the benefits of early identification for each chronic condition included in this study.

Clinical Perspective

- Because people visit their eye care practitioners (ECPs) more frequently than their primary care providers, ECPs can serve as gatekeepers to health.
- A link is evident between eye care and identification of diabetes, juvenile rheumatoid arthritis and multiple sclerosis.
- ECPs can also re-engage members into care for chronic conditions, which may create improved health outcomes and cost avoidance.

Appendix

Table 7: ICD-9 Codes used in Study

B2H Order	Category Description	ICD-9 Ranges	ICD-10 Ranges
20	Crohn's Disease	555.0	K50 - K50.919
1	Diabetes	249 - 250.93, 648 - 648.04, 648.8 - 648.84	E08.0 - E08.29, E08.36 - E08.9, E09.0 - E09.29, E09.36 - E09.9, E10.1 - E10.9, E10.36 - E10.29, E11.0 - E11.29, E11.36 - E11.9, E13.0 - E13.29, E13.36 - E13.9, 024.0 - 024.93
14	Graves Disease	242 - 242.91	E03.0 - E03.9 E05.0 - E05.91
3	High Cholesterol (Hyperlipidemia) (Arcus)	272 - 272.9, 371.41	E78.0 - E78.5, H02.6 - H02.66, H18.0 - H18.009, H18.03 - H18.039
2	Hypertension	401 - 405.99	110 - 111.9, 010.0 - 011.9, 016.1 - 016.9,
12	Juvenile Rheumatoid Arthrities	714.30 - 714.33	M08.0 - M08.99
13	Multiple Sclerosis	340	G35
10	Rheumatoid	714.0 - 714.2, 714.4 - 714.9	M05.0 - M06.9

Crohn's Disease

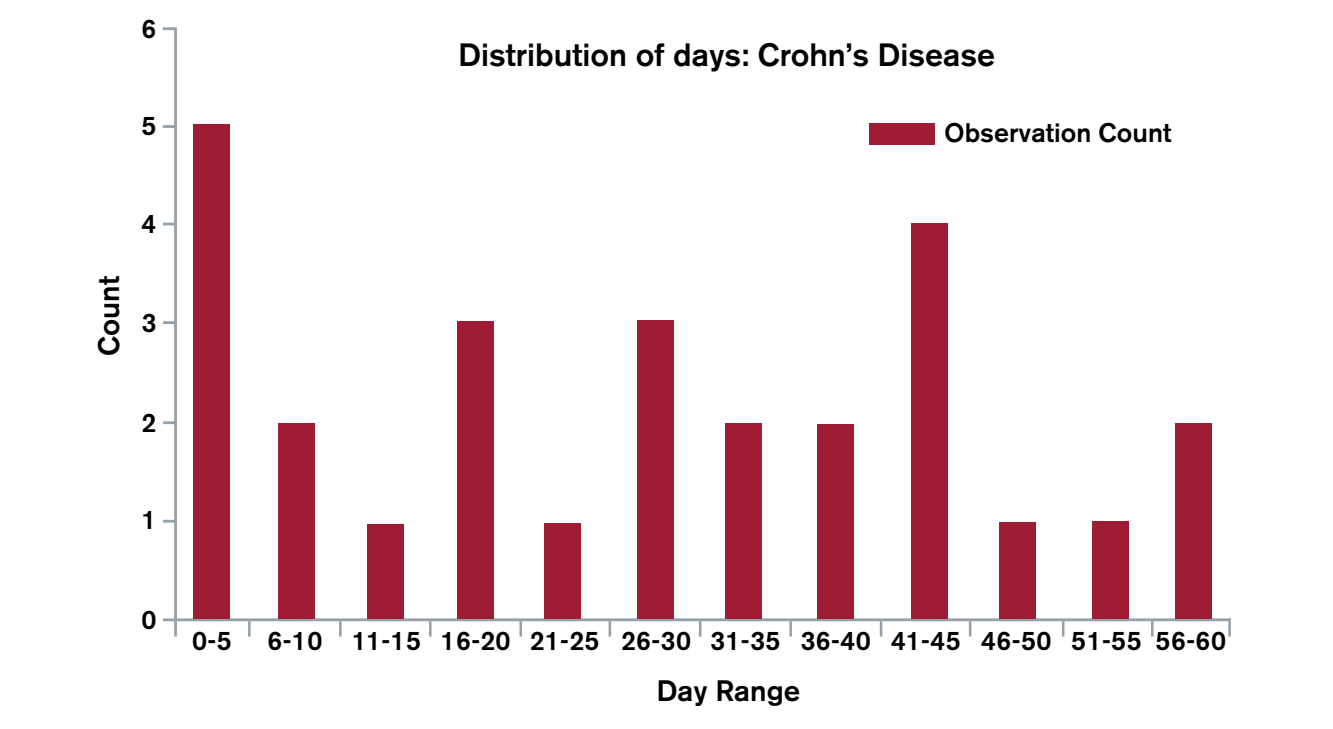
There were 545 Crohn's disease diagnoses in this study. 27 diagnoses were attributable to comprehensive eye exams.

5.0% of members with Crohn's Disease were identified during a comprehensive eye exam.

Identification Indicator	Crohn's Disease	Percent of Total
Identified and Coded Through Eye Exam	2	0.4%
Coded Within 60 Days of Eye Exam	25	4.6%
All Vision Exams Total	**27**	**5.0%**
All Crohn's Disease	**545**	

7.4% of members with Crohn's disease diagnoses attributed to comprehensive eye exams were coded the same day as the comprehensive eye exam and 18.5% were coded within five days of a comprehensive eye exam. On average, a Crohn's disease diagnosis was coded 27 days after a comprehensive eye exam.

Chart 2: Distribution of days between Comprehensive eye exam and Diagnosis: Crohn's Disease



Diabetes

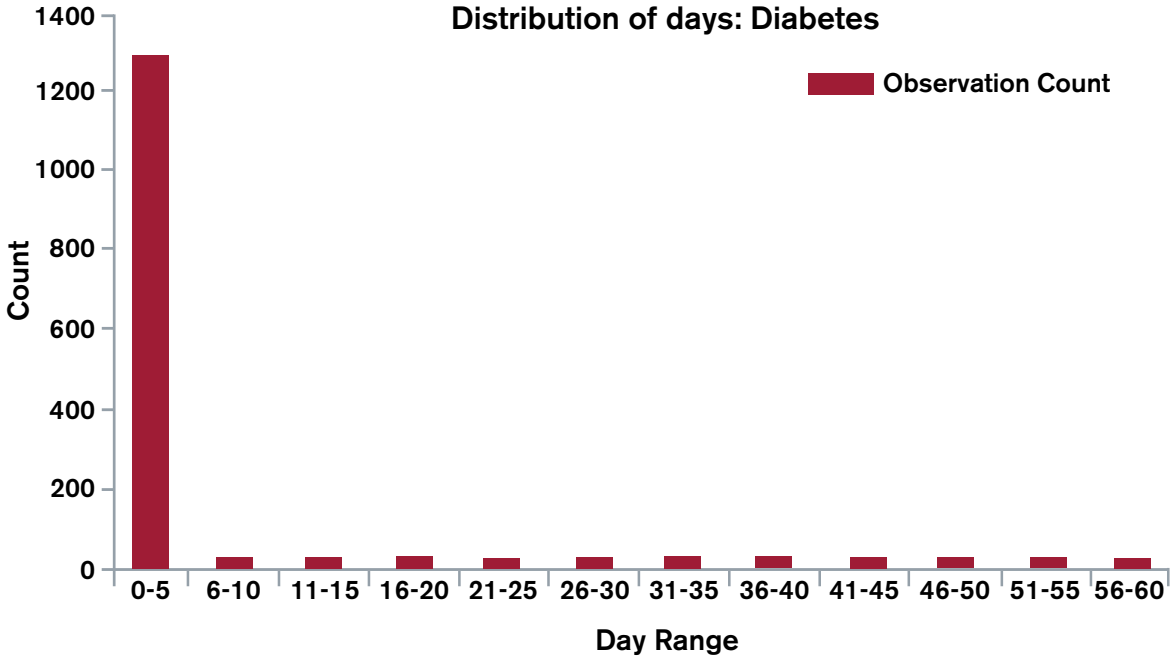
There were 9,700 diabetes diagnoses in this study. 1,453 diagnoses were attributable to comprehensive eye exams.

15.0% of members with diabetes were identified during a comprehensive eye exam.

Identification Indicator	Diabetes	Percent of Total
Identified and Coded Through Eye Exam	1,253	12.9%
Coded Within 60 Days of Eye Exam	200	2.1%
All Vision Exams Total	**1,453**	**15.0%**
All Diabetes	**9,700**	

87.7% of members with diabetes diagnoses attributed to comprehensive eye exams were coded the same day and 89.3% were coded within five days of a comprehensive eye exam. On average, a diabetes diagnosis was coded three days after the comprehensive eye exam.

Chart 3: Distribution of days between comprehensive eye exam and diagnosis: Diabetes



Graves' disease

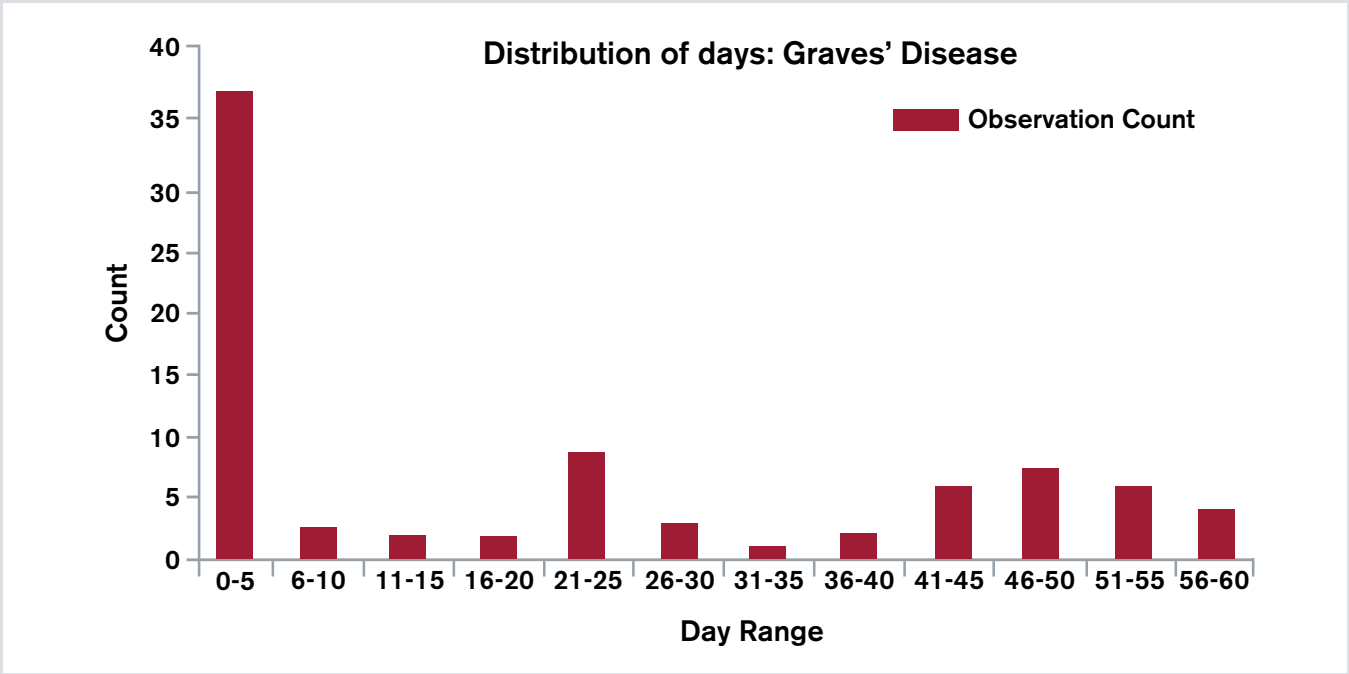
There were 1,691 Graves' disease diagnoses in this study. 81 diagnoses were attributable to comprehensive eye exams.

4.8% of members with Graves' disease were identified during a comprehensive eye exam.

Identification Indicator	Graves Disease	Percent of Total
Identified and Coded Through Eye Exam	23	1.4%
Coded Within 60 Days of Eye Exam	58	3.4%
All Vision Exams Total	81	4.8%
All Graves Disease	1,691	

33.0% of members with Graves' disease diagnoses attributed to comprehensive eye exams were coded the same day and 45.6% were coded within five days of a comprehensive eye exam. On average, a Graves' disease diagnosis was coded 20 days after the comprehensive eye exam.

Chart 4: Distribution of days between Comprehensive eye exam and Diagnosis: Graves' Disease



High Cholesterol

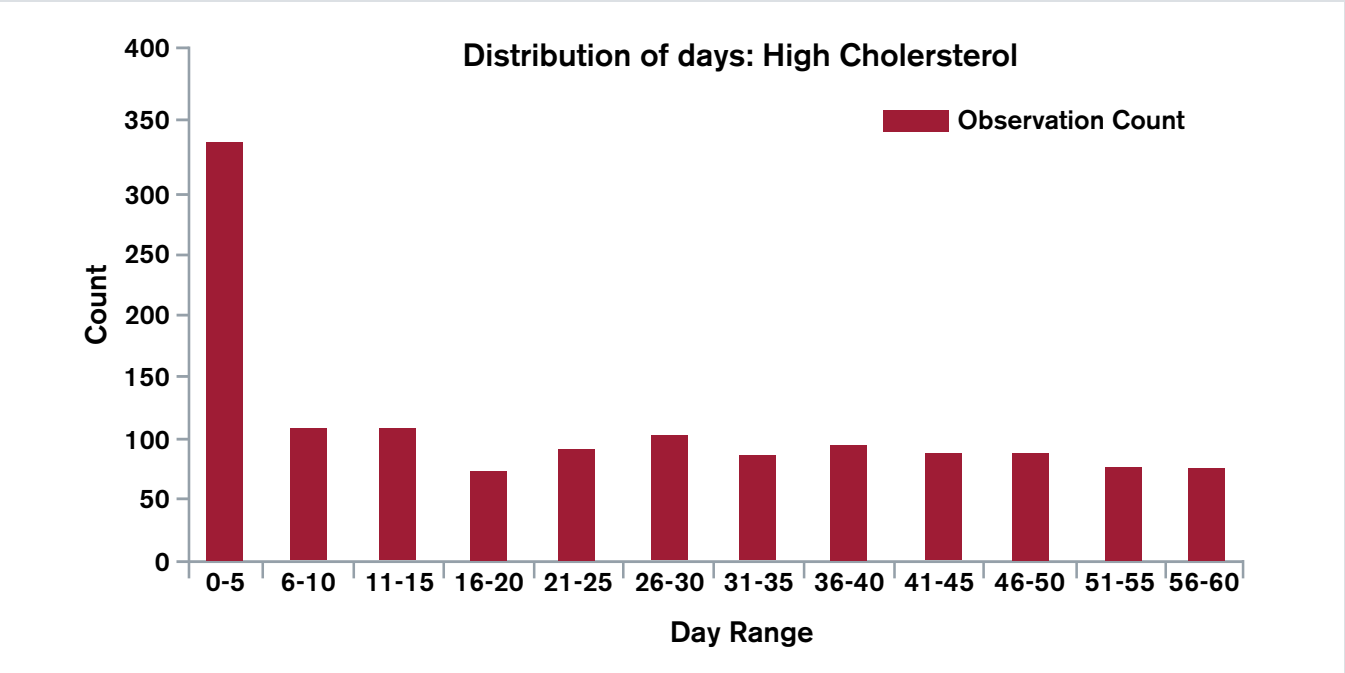
There were 34,025 high cholesterol diagnoses in this study. 1,343 diagnoses were attributable to comprehensive eye exams.

3.9% of members with high cholesterol were identified during a comprehensive eye exam.

Identification Indicator	High Cholesterol	Percent of Total
Identified and Coded Through Eye Exam	166	0.5%
Coded Within 60 Days of Eye Exam	1,177	3.5%
All Vision Exams Total	1,343	3.9%
All High Cholesterol	**34,025**	

16.8% of members with high cholesterol diagnoses attributed to comprehensive eye exams were coded the same day as the comprehensive eye exam and 25.3% were coded within five days of a comprehensive eye exam. On average, a high cholesterol diagnosis was coded 23 days after a comprehensive eye exam.

Chart 5: Distribution of days between Comprehensive eye exam and Diagnosis: High Cholesterol



Hypertension

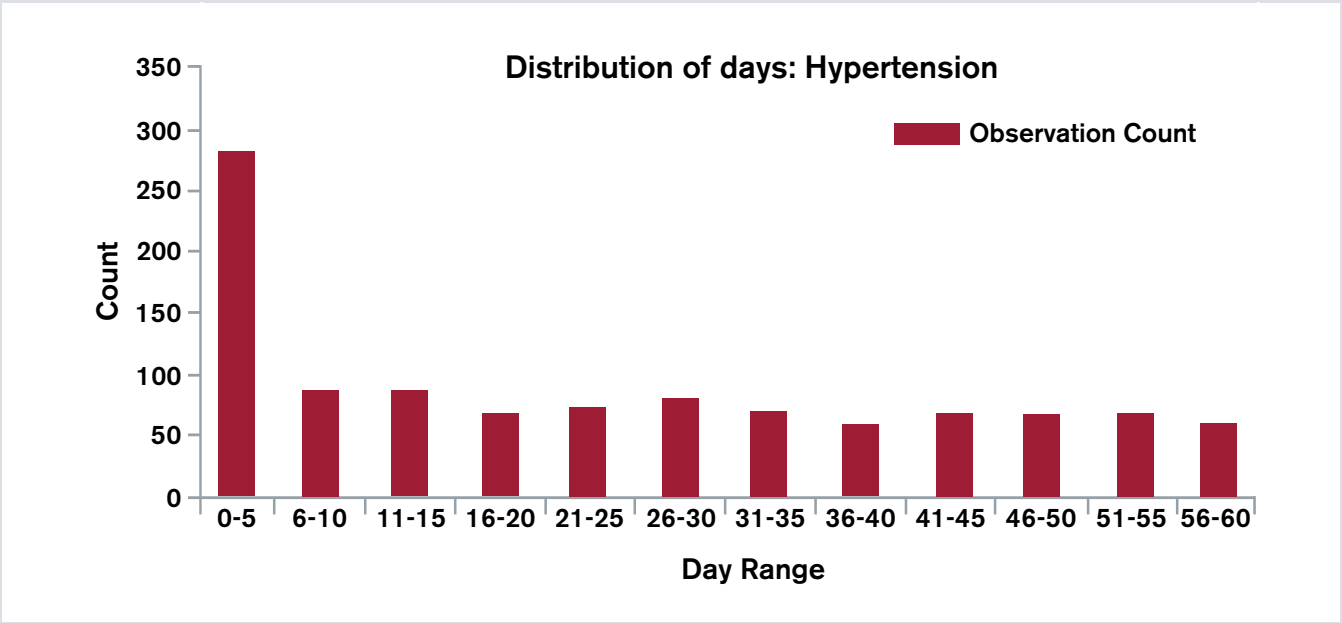
There were 24,562 hypertension diagnoses in this study. 1,001 diagnoses were attributable to comprehensive eye exams.

4.1% of members with hypertension were identified during a comprehensive eye exam.

Identification Indicator	Hypertension	Percent of Total
Identified and Coded Through Eye Exam	141	0.6%
Coded Within 60 Days of Eye Exam	860	3.5%
All Vision Exams Total	**1,001**	**4.1%**
All Hypertension	**24,562**	

18.8% of members with hypertension diagnoses attributed to comprehensive eye exams were coded the same day as the comprehensive eye exam and 28.5% were coded within five days of a comprehensive eye exam. On average, a hypertension diagnosis was coded 22 days after a comprehensive eye exam.

Chart 6: Distribution of days between Comprehensive eye exam and Diagnosis: Hypertension



Juvenile Rheumatoid Arthritis

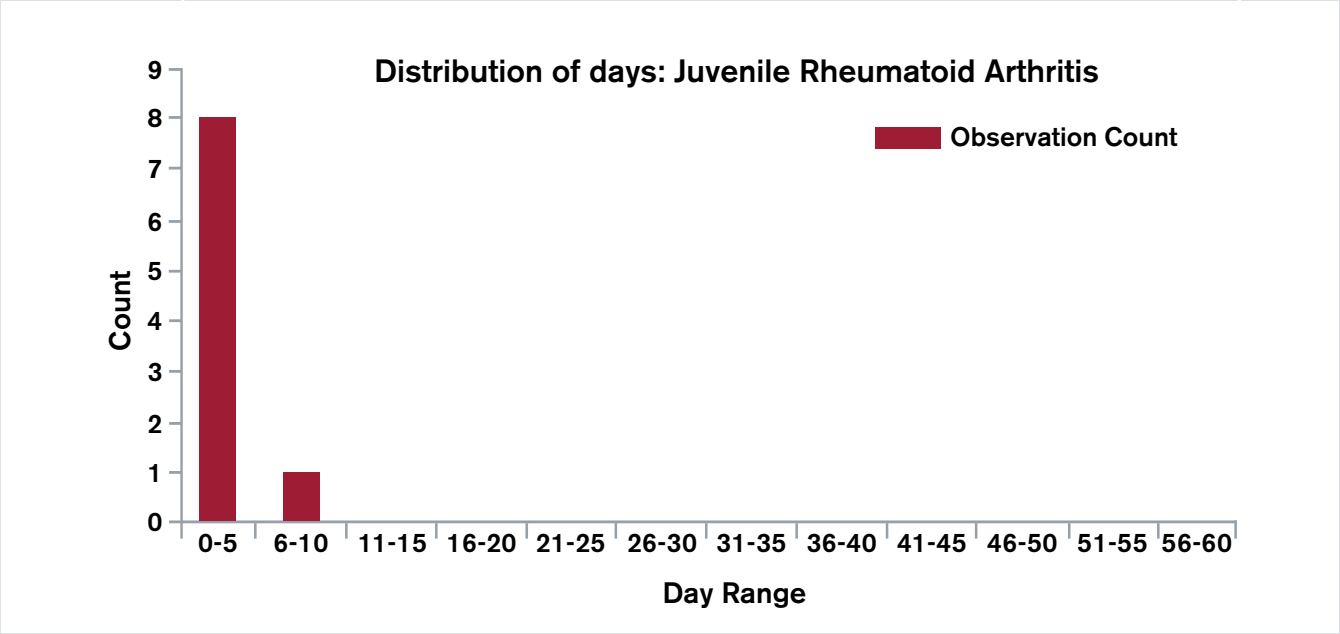
There were 75 juvenile rheumatoid arthritis diagnoses in this study. Nine diagnoses were attributable to comprehensive eye exams.

12.0% of members with juvenile rheumatoid arthritis were identified during a comprehensive eye exam.

Identification Indicator	Juvenile Rheumatoid Arthritis	Percent of Total
Identified and Coded Through Eye Exam	8	10.7%
Coded Within 60 Days of Eye Exam	1	1.3%
All Vision Exams Total	**9**	**12.0%**
All Juvenile Rheumatoid Arthritis	**75**	

88.9% of members with juvenile rheumatoid arthritis diagnoses attributed to comprehensive eye exams were coded the same day as the comprehensive eye exam. On average, a juvenile rheumatoid arthritis diagnosis was coded one day after the comprehensive eye exam.

Chart 7: Distribution of days between comprehensive eye exam and diagnosis: Juvenile Rheumatoid Arthritis



Multiple Sclerosis

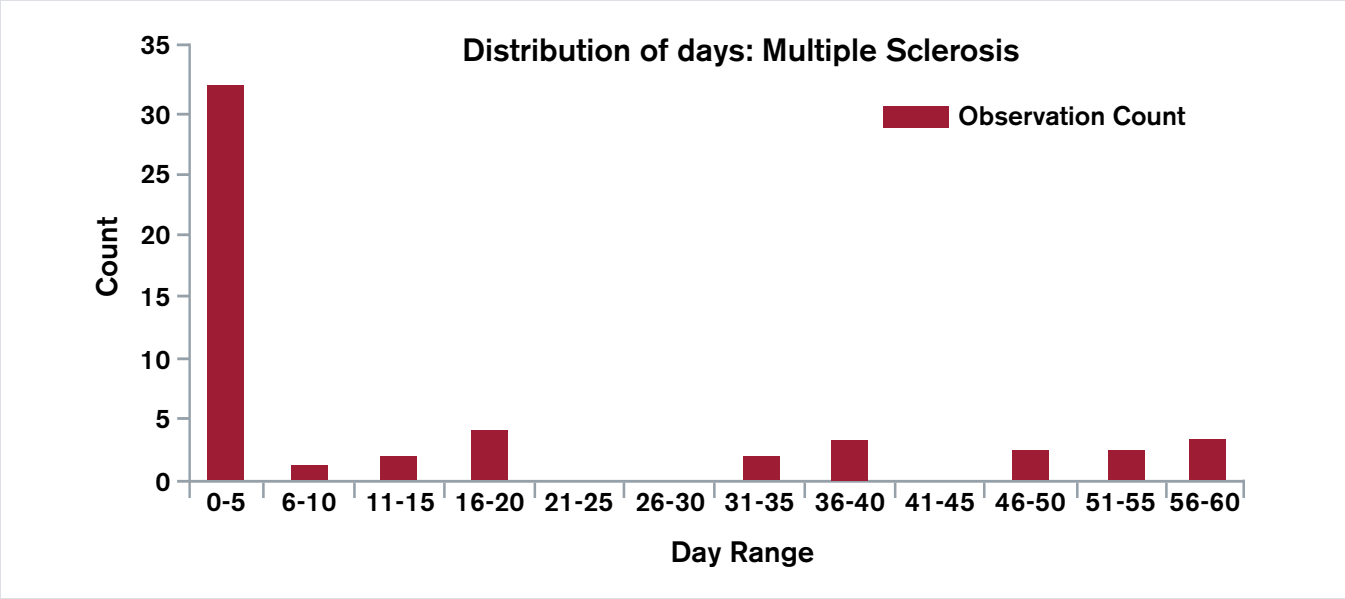
There were 338 multiple sclerosis diagnoses in this study. 51 diagnoses were attributable to comprehensive eye exams.

15.1% of members with multiple sclerosis were identified during a comprehensive eye exam.

Identification Indicator	Multiple Sclerosis	Percent of Total
Identified and Coded Through Eye Exam	26	7.7%
Coded Within 60 Days of Eye Exam	25	7.4%
All Vision Exams Total	**51**	**15.1%**
All Multiple Sclerosis	**338**	

50.0% of members with multiple sclerosis diagnoses attributed to comprehensive eye exams were coded the same day and 62.7% were coded within five days of a comprehensive eye exam. On average, a multiple sclerosis diagnosis was coded 13 days after the comprehensive eye exam.

Chart 8: Distribution of days between Comprehensive eye exam and Diagnosis: Multiple Sclerosis



Rheumatoid Arthritis

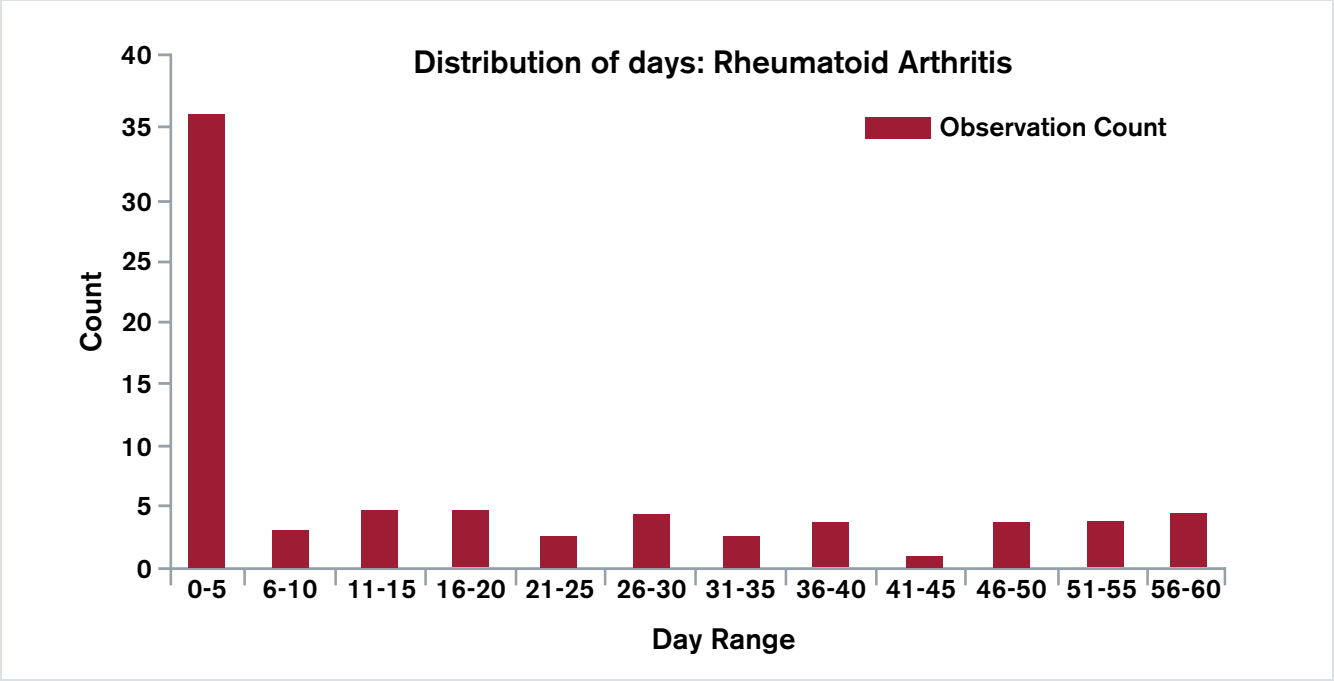
There were 1,598 rheumatoid arthritis diagnoses in this study. 69 diagnoses were attributable to comprehensive eye exams.

4.3% of members with rheumatoid arthritis were identified during a comprehensive eye exam.

Identification Indicator	Rheumatoid Arthritis	Percent of Total
Identified and Coded Through Eye Exam	28	1.8%
Coded Within 60 Days of Eye Exam	41	2.6%
All Vision Exams Total	**69**	**4.3%**
All Rheumatoid Arthritis	**1,598**	

44.9% of members with rheumatoid arthritis diagnoses attributed to comprehensive eye exams were coded the same day and 52.2% were coded within five days of a comprehensive eye exam. On average, a rheumatoid arthritis diagnosis was coded 16 days after the comprehensive eye exam.

Chart 9: Distribution of days between Comprehensive eye exam and Diagnosis: Rheumatoid Arthritis



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