

Loss to Follow up in Patients with Neovascular Age Related Macular Degeneration treated with Anti-VEGF therapy in the United States

Rahul N. Khurana, Danielle Fujino, Scott P. Kelly, and Flora Lum



NORTHERN CALIFORNIA

RETINA VITREOUS ASSOCIATES

ESTABLISHED IN 1983

Financial Disclosures

- ◆ Allergan

- ◆ Advisory Board: Honoraria

- ◆ Chengdu Kanghong

- ◆ Investigator: Grants

- ◆ Clearside Biomedical

- ◆ Investigator: Grants

- ◆ Graybug Vision

- ◆ Investigator: Grants

- ◆ Merck

- ◆ Advisory Board: Honoraria

- ◆ Regeneron

- ◆ Advisory Board: Honoraria

- ◆ Roche

- ◆ Investigator: Grants

- ◆ Santen

- ◆ Investigator: Grants

This was supported by Hoskins Center IRIS Registry Research Award

Summary Statement

- ◆ Adherence to Anti-VEGF treatment is essential to Optimize Outcomes in Neovascular AMD
- ◆ High Rate of Loss to Follow Up in Neovascular AMD with nearly 1 out of 5 patients Loss to Follow Up
- ◆ Risk Factors include Increasing Age, Male Sex, Unreported Ethnicity, Unilateral Involvement, Private Insurance, Govt/ Military Insurance

Retina Specialists Clinics...

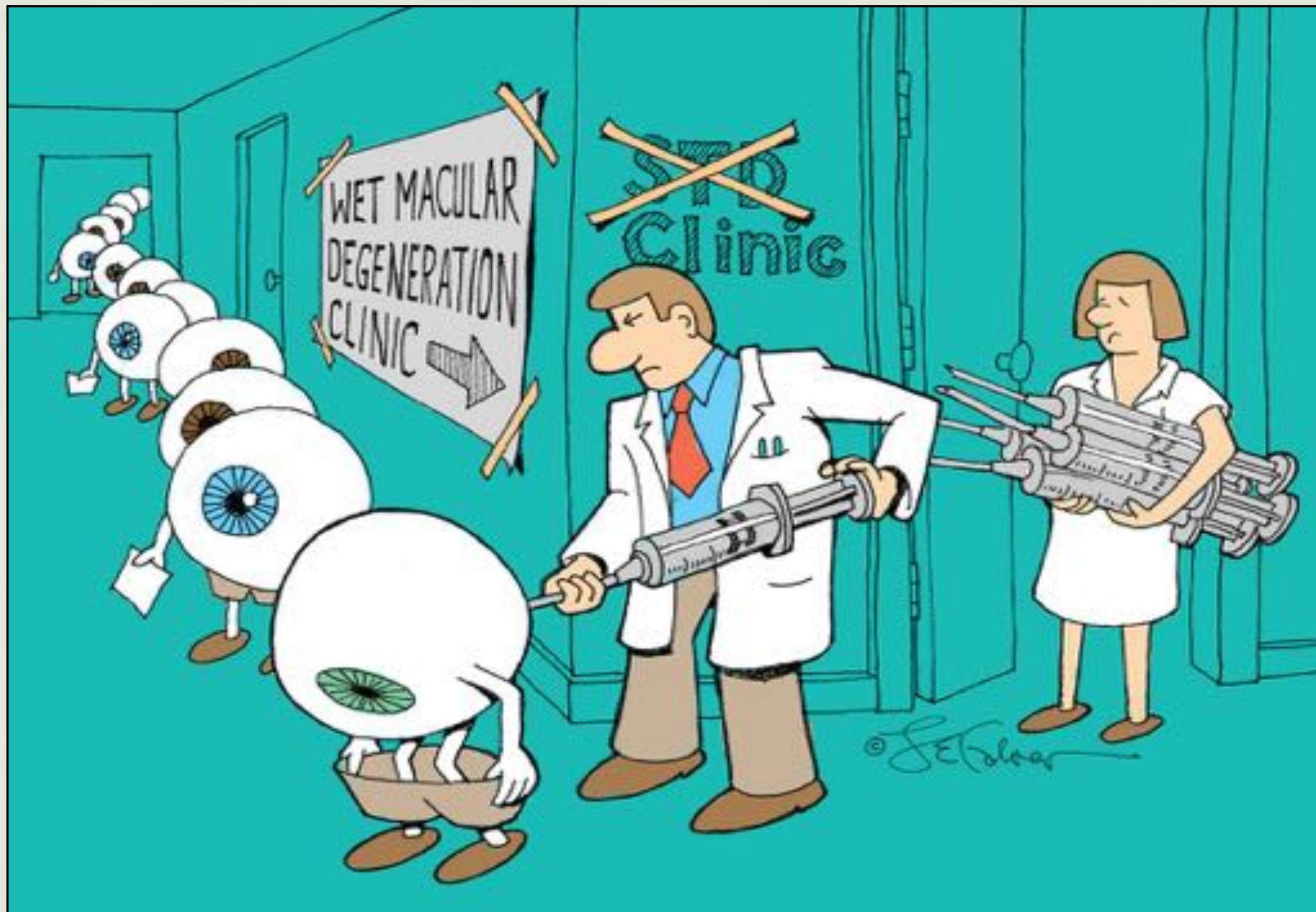


Image courtesy of David Callanan, MD - Texas Retina Associates

Loss to Follow Up

- ◆ Defined as no visit 12 months after an intravitreal injection
- ◆ High Rate in Neovascular AMD
- ◆ 22% among the 9,007 patients in a large private practice with 13 sites
- ◆ Obeid et al. *JAMA Ophthalmol.* 2018; 136 (11) 1251-1259.



To determine the Incidence of **Loss to Follow Up** in
patients with Neovascular Age-related Macular Degeneration
treated with anti-VEGF therapy in the United States

Methods

- ◆ National Registry (IRIS, AAO)
- ◆ Patients diagnosed with Neovascular AMD between January 1, 2013 - December 31, 2015 and treated with anti-VEGF therapy from January 1, 2013 to December 31, 2018.
- ◆ Loss to Follow Up was defined as visit greater than 12 months from last intravitreal injection
- ◆ Multivariable logistic regression analysis involving baseline demographic and clinical conditions were utilized to determine odds ratios (OR) and 95% confidence intervals (CI).

Patient Population

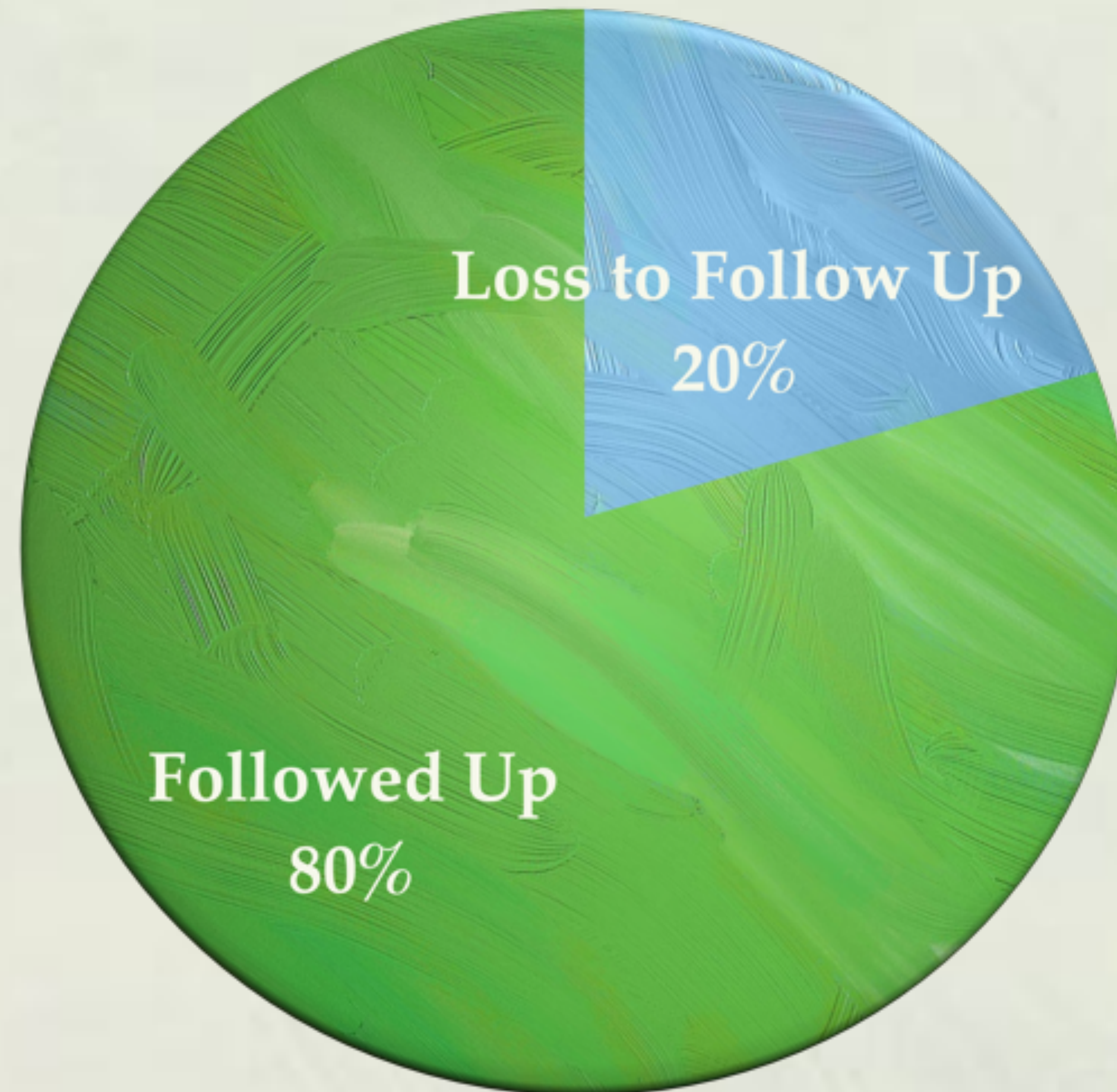
Neovascular AMD between 2013-2015
n= 717,019

Received Anti-VEGF
injections between
2013-2018
n= 393,372

Exclude patients with PDR, DME,
RVO, Myopic Degeneration,
Idiopathic CNV
n=314,912

*Neovascular AMD initiated with
Anti-VEGF therapy*
n=**310,912**

Results



Among those LTFU, only 1.3% had later follow up

Baseline Characteristics- AGE

Age			OR (95% CI)	P-Value
<70			1 (Reference)	
71-75			1.12 (1.07, 1.18)	<0.0001*
76-80			1.18 (1.13, 1.23)	<0.0001*
81-85			1.34 (1.29, 1.39)	<0.0001*
86-90			1.62 (1.56, 1.68)	<0.0001*
>90			2.08 (2.00, 2.17)	<0.0001*

Baseline Characteristics- SEX

Sex	OR (95% CI)	P-Value
Male	1 (Reference)	
Female	0.90 (0.88, 0.92)	<0.0001*
Unreported	1.88 (1.50, 2.36)	<0.0001*

Baseline Characteristics- Race / Ethnicity

Race/Ethnicity	OR (95% CI)	P-Value
White	1 (Reference)	
African-American	1.03 (0.93, 1.15)	0.56
Asian	0.85 (0.78, 0.93)	0.0004*
Hispanic	0.99 (0.94, 1.06)	0.91
Other	1.08 (0.93, 1.27)	0.31
Unreported	1.76 (1.72, 1.81)	<0.0001*

Baseline Characteristics- Eye Involvement

Eye Involvement	OR (95% CI)	P-Value
Bilateral	1 (Reference)	
Unilateral	4.98 (4.88, 5.09)	<0.0001*

Baseline Characteristics- Baseline Vision

Baseline Vision	OR (95% CI)	P-Value
> 20/40	1 (Reference)	
20/50- 20/200	0.98 (0.96, 1.00)	0.09
< 20/200	0.61 (0.59, 0.64)	<0.0001*

Baseline Characteristics- REGION

Region		OR (95% CI)	P-Value
South		1 (Reference)	
East		0.90 (0.88, 0.92)	<0.0001*
Midwest		0.77 (0.75, 0.79)	<0.0001*
West		0.92 (0.89, 0.95)	<0.0001*

Baseline Characteristics- INSURANCE

Insurance	OR (95% CI)	P-Value
Private	1 (Reference)	
Dual Medicare & Medicaid	0.76 (0.72, 0.80)	<0.0001*
Government/Military	1.15 (1.03, 1.27)	0.0119*
Medicaid	0.99 (0.89, 1.11)	0.90
Medicare	0.75 (0.72, 0.78)	<0.0001*

Baseline Characteristics- Provider Zip Codes

Median Household Income for Provider Zip Code	OR (95% CI)	P-Value
>\$100,000	1 (Reference)	
\$75,001- \$100,000	1.17 (1.11, 1.24)	<0.0001*
\$50,001- \$75,000	1.20 (1.14, 1.26)	<0.0001*
< \$50,000	1.22 (1.16, 1.28)	<0.0001*

Clinical Characteristics

			Loss to Follow Up	NOT Lost to Follow Up	P-Value
Time to Last Follow Up			15 months	42 months	<0.0001*
Number of Injections			9.1	8.8	<0.0001*
Visual Acuity Outcomes					
Change in Vision from Baseline			-2.2 letters	-0.3 letters	<0.0001*
> 20/40			52%	59%	<0.0001*
< 20/200			10%	7%	<0.0001*

Conclusions

- ◆ High Rate of Loss to Follow up in Neovascular AMD
- ◆ Risk Factors include Increasing Age, Male Sex, Unreported Ethnicity, Unilateral Involvement, Private Insurance, Govt/Military Insurance
- ◆ Improving Adherence key to Optimizing Long Term Outcomes

Limitations

- ◆ Retrospective Report
- ◆ Electronic Medical Records: Data Entry and Coding Errors
- ◆ Unable to rule out Deaths