Harmonizing the Classification of Age-related Macular Degeneration

in the Three-Continent AMD Consortium

Online-Only Supplement

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AMD, age-related macular degeneration.

A. Descriptions of Study Populations, Photography and Grading

Beaver Dam Eye Study (BDES)

In 1987-1988, 5,924 persons aged 43 to 84 years and living in Beaver Dam, Wisconsin were identified by a private census.¹⁴ From March 1988 to May 1990, 4,926 persons (83.1%) were examined at baseline and 4,778 (97.0%) had gradable retinal photographs for AMD.¹⁵ There have been four follow-up examinations spaced five years apart, in which 3,722 persons (3,556 with gradable photographs) were examined in March 1993 to June 1995, 2,962 persons (2,831 with gradable photographs) were examined in March 1998 to June 2000, 2,375 persons (2,260 with gradable photographs) were examined in March 2003 to June 2005, and 1913 persons (1,790 with gradable photographs) were examined between November 2008 and November 2010.¹⁶⁻¹⁹

Methods were unchanged across examinations except for additions to the examination protocol. Participants' pupils were pharmacologically dilated and color stereoscopic fundus photographs of Diabetic Retinopathy Study [DRS] Standard Field 1 centered on the disc, Field 2 centered on the fovea, and a non-stereoscopic photograph of Field 3 centered temporal to the fovea were taken of each eye using a Zeiss 30° FF4 film fundus camera (Carl Zeiss Inc., Oberkochen, Germany). Color photographic film was used at all examinations and it was processed at the same laboratory each time.

Prior to grading, a clear plastic grid consisting of three circles concentric with the macula and four radial lines was superimposed over one member of the stereoscopic pair of Field 2 to define nine subfields (Figure 1A). A second clear plastic grid consisting of different sized circles was used to estimate the size of lesions and area of involvement (Figure 1B).

The photographs of each eye were graded in a masked fashion for AMD and other retinal diseases.²⁰⁻²² A multiple-step grading system was used. First, a grader examined the photographs of each eve and assigned an overall score for each AMD lesion in the grid (Online Supplement part B). Next, the photographs were graded in detail by a different grader, who was masked to the first grader's assessment (Online Supplement part C). This grader performed a finer evaluation of each lesion across each subfield within the grading grid according to the Wisconsin Age-Related Maculopathy Grading System (WARMGS).^{20,21} A comparison for agreement between the first and second grading for all lesions was then made. If there was a predefined clinically meaningful disagreement between the gradings (e.g., absence/presence of a lesion, small/medium/large size area of drusen present, most severe type of drusen present), the photographs were re-evaluated by another grader for the lesions in disagreement. For comparisons between AMD gradings across visits, a longitudinal review was performed. During the process, the grader was asked to review the photographs from two visits (masked to which visit came first in time) when the grading suggested there was a change (progression, regression, or incidence) of a lesion. This was to confirm that the change (no matter the direction) was real and not a result of difference in photograph quality or grader variability. A subset of eyes with no change between two visits also underwent longitudinal review to evaluate possible false negative changes in these eyes. Finally, the co-principal investigator (RK) reviewed photographs of all incident late AMD cases and confounding conditions such as macular dystrophy, pathologic myopia, or chloroquine retinopathy.²³⁻²⁷ A 3-step and a 6-step AMD severity scale were developed from this grading system (Online Supplement parts D-E).²⁸

Blue Mountains Eye Study (BMES)

In 1992, 4,433 eligible permanent residents aged 49 years and older were identified in two postcode areas near Sydney, Australia. From January 1992 to January 1994 (baseline survey), 3,654 persons (82.4%) were examined and 3,568 (97.6%) or 3,583 (98%) had gradable retinal photographs of both eyes or at least one eye, respectively.²⁹ There have been three follow-up examinations spaced approximately 5 years apart. In the most recent study phase, 1,149 persons (56.1% of survivors) were examined between 2007 and 2010.

Methods were unchanged across examinations except for additions to the protocol and a change from a film to a digital fundus camera at the most recent examination. At the first three visits, 30° stereoscopic color retinal photographs of the macula and five other retinal fields of both eyes were taken using a film fundus camera (Zeiss FF3, Carl Zeiss, Oberkochen, Germany).²⁹⁻³¹ A 40° digital camera (Canon CF-60 DSi with a Canon EoS 1DS Mark II camera body, Canon Inc., Tokyo, Japan) was used at the fourth visit.

Similar masked photographic grading for AMD lesions was performed following a modification of the WARMGS²⁰ and the International Age-Related Maculopathy Grading System (IARMGS)³² (Online Supplement part F). However, modifications were made to the grading scheme that had been used in the BDES. Lesions were grouped into three zones of the grid (the center, inner, and outer zones) instead of nine subfields. Additionally, the BMES grader employed a hierarchy for grading lesions; the end-stage lesions were graded first, then retinal pigment epithelium (RPE) abnormalities, and finally drusen. RPE abnormalities and drusen were not assessed in persons with signs of late AMD. A single grader performed a detailed grading for all AMD lesions in all persons. If the grader had questions about the lesions graded, confirmation was obtained from the principal investigator (PM, confirming all late AMD cases) or other senior researcher (JJW, confirming questionable early AMD lesions and all incident AMD cases).

After the initial grading, side-by-side comparisons of the baseline and each of three follow-up examination photographs (5-, 10- and 15-year) were performed for any new AMD lesions identified at any follow-up examination. A 3-step AMD severity scale was developed from this grading system (Online Supplement part G).

Los Angeles Latino Eye Study (LALES)

The cohort consisted of 7,789 self-identified Latinos aged 40 years and older identified from lists of households living in six census tracts in and around the city of La Puente, Los Angeles County, California.^{33,34} At the baseline examination from 2000 to 2003, 6,357 persons (82%) were examined, of whom 5,875 (92.4%) had gradable retinal photographs for AMD. One follow-up study cycle was completed in which 4,658 persons were examined from 2004 to 2008.³⁵ A second follow-up cycle started in 2010 and is scheduled to be completed in late 2013 or early 2014.

Methods were unchanged across all examinations except for additions to the protocol and a change from film to digital fundus camera at the current follow-up examination. At the first two examinations, 30° stereoscopic color retinal photographs of the macula and other retinal fields of both eyes were taken using a film fundus camera (Zeiss FF450+, Carl Zeiss, Oberkochen, Germany).³⁴ During the current follow-up examination phase, 30° digital stereoscopic color retinal photographs of the macula and other retinal fields of both eyes were taken with an 11 megapixel digital fundus camera back (TRC-50DX, Topcon America Corporation, Paramus, NJ).

Modified WARMGS²⁰ photographic and grading protocols were adapted by the University of Wisconsin Ocular Epidemiology Group (UWOEG) in Madison, Wisconsin, United States to grade AMD and other retinal conditions in the LALES. The LALES used the same grids as the other three studies (Figure 1) to define the macular subfields and measure the size and area of the lesions. The BDES grading form was simplified to provide evaluation of the most severe size, type, or area of each AMD lesion within the grid and to provide a count of the number of subfields affected by each lesion. This simplification of the BDES AMD grading form still allowed for direct comparison of lesions and severity across studies. Masked photographic grading for AMD lesions was performed as described for the BDES except when the gradings differed among the preliminary graders (Online Supplement part H), detail graders (Online Supplement part I), and edit graders; if they differed, an adjudication was performed by the co-principal investigator (RK) of the UWOEG.³⁴ A 3-step AMD severity scale and the Age-Related Eye Diseases Study (AREDS) AMD severity scale have been used to define the prevalence and incidence and progression of AMD in publications from the LALES (Online Supplement parts D and J).³⁶

Rotterdam Study (RS)

The RS cohort consisted of 7,983 of the 10,275 eligible residents identified in January 1989 aged 55 to 106 years living in Ommoord, a suburb of Rotterdam, the Netherlands.³⁷ Of the 7,983 participants, 6,780 underwent an ophthalmologic examination from July 1989 to September 1993, and 6,419 (94.7%) had retinal photographs gradable for AMD. There have been four follow-up examination cycles. In the most recent study phase, 1,658 persons were examined between 2009 and 2011.^{38,39}

Methods were unchanged across all examinations except for additions to the examination protocol and change from a film fundus camera to a digital one at the third follow-up examination. For the first three examinations, stereoscopic 35° fundus photographs of fields 1 and 2 were taken with a film fundus camera (Topcon TRV-50VT, Topcon Optical Company, Tokyo, Japan), while for the last two examinations a Topcon digital 35° fundus camera (Topcon TRC 50EX with a Sony DXC-950P digital camera; 0.44 megapixel) was used with the Wisconsin grid supplied with Topcon's Imagenet.

Modifications of the WARMGS and IARMGS were used.^{21,32} The same two graders evaluated AMD lesions at all examinations: two graders for the first three phases and one grader for the last two examinations (Online Supplement part K). At baseline, fundus transparencies of the entire cohort were graded in a detailed manner to identify all features of AMD in the macular grid area (radius 3000 μ m). At follow-up, all fundus transparencies of the entire cohort were graded for presence of AMD using

side-by-side grading with the transparencies of the baseline phase. Graders were not masked to date of examination. Consensus sessions and between-grader comparisons were performed regularly. Weighted kappa values ranged from 0.60 for hard drusen (<63 μ m) to 0.88 for drusen area. All photographs with suspected late AMD were referred to principal investigators (PTDJ, JRV, CCWK) at the time of each examination phase to confirm the grading. A 4-step mutually exclusive AMD severity scale was developed from this grading system (Online Supplement part L).⁴⁰

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BEAVER DAM V AGE-RELATED MACULOPATHY GRADING FORM

7) GRADER ______ 8) DATE GRADED ______

9) Does camera equipr	nent diffe	er?	Yes	No				10)	ls eye e	exclude	d? 🗌	Yes	No	_
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< C ₀		0	0	0	0	0	0	0	0	0			Questionable	1
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< Cir. 1			2	2	2	2	2	2	2	2			< C ₁	3
< 2 x Cir. 1		3	3	3		3 3	3	3	3	3			< C ₂	4
< Cir. 2		4	4	4	4	4	4	4	4	4			< l ₂	5
< 2 x Cir. 2		5	5	5		5 5	5	5	5	5			< 0 ₂	6
< 4 x Cir. 2		6	6	6	6	6	6	6	6	6			< ½ DA	7.1
< 50%		7	7	7		7 7	7	7	7	7			≥ 1⁄2 DA	7.5
≥ 50%		8	8	8	8	8	8	8	8	8			CG	8
600 Drusen Type	CPT 641	CC 642	S 643	N 644	ا 645	T 646	S 647	N 648	І 649	T 650	OG 651		Absent 0	
N/A	9	9	9	9		9 9	9	9	9	9	9	(Questionable 1	
Hard indistinct	0	0	0	0	0	0	0	0	0	0	0	F	Present 2 Predominant 3	
Hard distinct	1	1	1	1		1 1	1	1	1	1	1		CG 8	
Soft distinct	2	2	2	2	2	2	2	2	2	2	2		5-669 Types C	ı o
Soft indistinct	3	3	3	3		3 3	3	3	3	3	3	Stipplin		
Reticular	4	4	4	4	4	4	4	4	4	4	4	Hard Di Soft Dis		
CG, ret.	7	7	7	7		7 7	7	7	7	7	7	Soft Inc		
CG, photo	8	8	8	8	8	8	8 8	8	8	8	8	Reticula	ar	
											-			

513 Drusen Confluer Longest Continuou Dimension (If Dru-Type	S	ft)
N/A	9	
None		0
Questionable	1	
< 250 u		2
< 500 u	3	
< 1000 u		4
≥ 1000 u	5	
Reticular Drusen		6

700 RPE Depigmentation Any? □ Yes □ No	CPT 701	CC 702	S 703	N 704	І 705	Т 706	S 707	N 708	І 709	T 710	
None	0	0	0	0	0	0	0	0	0	0	
Questionable	1	1	1	1	1	1	1	1	1	1	
< 6.25% (circle 2)	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	
< 25%		2	2	2	2	2	2	2	2	2	
< 50%		3	3	3	3	3	3	3	3	3	
≥ 50%		4	4	4	4	4	4	4	4	4	
CG, ret.	7	7	7	7	7	7	7	7	7	7	
CG, photo	8	8	8	8	8	8	8	8	8	8	
800 Increased Pigment Any? □ Yes □ No	CPT 801	CC 802	S 803	N 804	І 805	Т 806	S 807	N 808	І 809	T 810	OG 811
None	0	0	0	0	0	0	0	0	0	0	0
Questionable	1	1	1	1	1	1	1	1	1	1	1
< C ₁	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
< C ₂		2	2	2	2	2	2	2	2	2	2
$\geq C_2$		3	3	3	3	3	3	3	3	3	3
Pigment/other	6	6	6	6	6	6	6	6	6	6	6
CG, ret.	7	7	7	7	7	7	7	7	7	7	7
CG, photo	8	8	8	8	8	8	8	8	8	8	8
1700 Geographic Atrophy Any? □ Yes □ No	CPT 1701	CC 1702	S 1703	N 1704	І 1705	T 1706	S 1707	N 1708	І 1709	T 1710	OG 1711
Absent	0	0	0	0	0	0	0	0	0	0	0
Questionable	1	1	1	1	1	1	1	1	1	1	1
< 25%	1.5	1.5	1.5								
< 50%			1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
< 30 %		2	2	1.5 2	1.5 2	1.5 2	1.5 2	1.5 2	1.5 2	1.5 2	1.5 2
≥ 50%		2 3									
			2	2	2	2	2	2	2	2	2
≥ 50% CG, ret. CG, photo	 7 8	3 7 8	2 3 7 8	2	2 3	2 3	2 3 7 8	2 3	2 3	2 3	2 3
≥ 50% CG, ret.	 7	3 7	2 3 7	2 3 7	2 3 7	2 3 7	2 3 7	2 3 7	2 3 7	2 3 7	2 3 7
≥ 50% CG, ret. CG, photo 1800 Surface Wrinkling Any? □ Yes □ No Absent	 7 8 CPT	3 7 8 CC	2 3 7 8 S	2 3 7 8 N	2 3 7 8	2 3 7 8 T	2 3 7 8 S	2 3 7 8 N	2 3 7 8	2 3 7 8 T	2 3 7
≥ 50% CG, ret. CG, photo 1800 Surface Wrinkling Any? □ Yes □ No Absent Questionable	 7 8 CPT 1801	3 7 8 <u>CC</u> 1802 0 1	2 3 7 8 5 1803	2 3 7 8 <u>N</u> 1804	2 3 7 8 1805	2 3 7 8 <u>1806</u> 0 1	2 3 7 8 1807	2 3 7 8 1808	2 3 7 8 1809	2 3 7 8 <u>T</u> 1810 0 1	2 3 7
≥ 50% CG, ret. CG, photo 1800 Surface Wrinkling Any? ☐ Yes ☐ No Absent Questionable Cello. reflx. only	 7 8 CPT 1801 0	3 7 8 CC 1802 0 1 2	2 3 7 8 1803 0	2 3 7 8 <u>1804</u> 0 1 2	2 3 7 8 1805 0 1 2	2 3 7 8 <u>1806</u> 0 1 2	2 3 7 8 <u>1807</u> 0 1 2	2 3 7 8 1808 0 1 2	2 3 7 8 1809 0 1 2	2 3 7 8 <u>1810</u> 0 1 2	2 3 7
≥ 50% CG, ret. CG, photo 1800 Surface Wrinkling Any? □ Yes □ No Absent Questionable Cello. reflx. only Traction lines	 7 8 CPT 1801 0 1 2 3	3 7 8 <u>CC</u> 1802 0 1	2 3 7 8 1803 0 1	2 3 7 8 1804 0 1 2 3	2 3 7 8 1 1805 0 1 2 3	2 3 7 8 1806 0 1 2 3	2 3 7 8 1807 0 1	2 3 7 8 <u>1808</u> 0 1	2 3 7 8 1809 0 1	2 3 7 8 <u>T</u> 1810 0 1	2 3 7
≥ 50% CG, ret. CG, photo 1800 Surface Wrinkling Any? ☐ Yes ☐ No Absent Questionable Cello. reflx. only Traction lines Glial w/o tract.	 7 8 CPT 1801 0 1 2 3 4	3 7 8 CC 1802 0 1 2 3 4	2 3 7 8 1803 0 1 2 3 4	2 3 7 8 <u>1804</u> 0 1 2 3 4	2 3 7 8 <u>1805</u> 0 1 2 3 4	2 3 7 8 <u>1806</u> 0 1 2 3 4	2 3 7 8 <u>1807</u> 0 1 2 3 4	2 3 7 8 1808 0 1 2 2 3 4	2 3 7 8 1 8 0 1 2 3 4	2 3 7 8 <u>1810</u> 0 1 2 3 4	2 3 7
 ≥ 50% CG, ret. CG, photo 1800 Surface Wrinkling Any? □ Yes □ No Absent Questionable Cello. reflx. only Traction lines Glial w/o tract. Glial w/tract. 	 7 8 CPT 1801 0 1 2 3 4 5	3 7 8 <u>CC</u> 1802 0 1 2 3 4 5	2 3 7 8 1803 0 1 2 3 4 5	2 3 7 8 <u>1804</u> 0 1 2 3 4 5	2 3 7 8 1805 0 1 2 3 4 5	2 3 7 8 7 1806 0 1 2 3 4 5	2 3 7 8 <u>8</u> 1807 0 1 2 3 4 5	2 3 7 8 1808 0 1 2 2 3 4 5	2 3 7 8 1 809 0 1 2 3 4 5	2 3 7 8 <u>1810</u> 0 1 2 3 4 5	2 3 7
≥ 50% CG, ret. CG, photo 1800 Surface Wrinkling Any? ☐ Yes ☐ No Absent Questionable Cello. reflx. only Traction lines Glial w/o tract.	 7 8 CPT 1801 0 1 2 3 4	3 7 8 CC 1802 0 1 2 3 4	2 3 7 8 1803 0 1 2 3 4	2 3 7 8 <u>1804</u> 0 1 2 3 4	2 3 7 8 <u>1805</u> 0 1 2 3 4	2 3 7 8 <u>1806</u> 0 1 2 3 4	2 3 7 8 <u>1807</u> 0 1 2 3 4	2 3 7 8 1808 0 1 2 2 3 4	2 3 7 8 1 8 0 1 2 3 4	2 3 7 8 <u>1810</u> 0 1 2 3 4	2 3 7

Global RP 720	E	
None	0	
Quest.		1
<c<sub>2</c<sub>	2	
<i2< td=""><td></td><td>3</td></i2<>		3
<1⁄2 DA	4	
<u>></u> ½ DA		5
CG	8	

Global Inc Pig 820	jmei	nt
Absent	0	
Questionable		1
<c<sub>0</c<sub>	2	
<c1< td=""><td></td><td>3</td></c1<>		3
<c<sub>2</c<sub>	4	
$\geq C_2$		5
Pigment/other	7	
CG		8

1000 \square YES \square NO **LONG FORM**: Are any lesions 900, 1800, 1100, 1300 or 1400 \ge 0? If NO, skip to item 1900.

1200 PED/RD Any? □ Yes □ No	CP 120		C(12(S 120		N 120		ا 12(05	T 12(06	ې 12	S 07	N 12(ا 120	09	T 12	10	00 121	
Absent	0		0		0		0		0		0		0		0		0		0		0	
Questionable		1		1		1		1		1		1		1		1		1		1		1
PED ≥90%	2		2		2		2		2		2		2		2		2		2		2	
MIXED		3		3		3		3		3		3		3		3		3		3		3
RD ≥90%	4		4		4		4		4		4		4		4		4		4		4	
CG, ret.		7		7		7		7		7		7		7		7		7		7		7
CG, photo	8		8		8		8		8		8		8		8		8		8		8	

.

1214. \Box **YES** \Box **NO** Is F2 total $\ge 1/2$ DA? **1215.** If 1214 is YES, give total amount in disc areas _____

1500 Subret. Hemorrhage Any? □ Yes □ No	CPT 1501	CC 1502	S 1503	N 1504	І 1505	T 1506	S 1507	N 1508	І 1509	T 1510	OG 1511
Absent	0	0	0	0	0	0	0	0	0	0	0
Questionable	1	1	1	1	1	1	1	1	1	1	1
Present	2	2	2	2	2	2	2	2	2	2	2
CG, ret.	7	7	7	7	7	7	7	7	7	7	7
CG, photo	8	8	8	8	8	8	8	8	8	8	8
1600 Fibrous Scar Any? □ Yes □ No	CPT 1601	CC 1602	S 1603	N 1604	І 1605	Т 1606	S 1607	N 1608	І 1609	Т 1610	OG 1611
Absent	0	0	0	0	0	0	0	0	0	0	0
Questionable	1	1	1	1	1	1	1	1	1	1	1
< 25%	2	2	2	2	2	2	2	2	2	2	2
< 50%		3	3	3	3	3	3	3	3	3	3
≥ 50%		4	4	4	4	4	4	4	4	4	4
CG, ret.	7	7	7	7	7	7	7	7	7	7	7
CG, photo	8	8	8	8	8	8	8	8	8	8	8

1900 Any lesions 2001 - 39 > 0? If NO, STOP.	903				All Fie	lds							All of	F2						Ce	nter P	oint		٦
Any? □ Yes □ No		Noi	ne	Q	Yes	CG ret.	CG pho			No	ne	Q	Yes	CG ret.	CG pho			None	Q		Yes	CG ret.	CG pho	
Angioid Streak	2001		0	1	2	7	1 1 1 1 1 1	8	2002		0	1	2	7		8	2003	(1	2	7		8
Asteroid Hyalosis	2101	0		1	2	7	8		2102	0		1	2	7	8									
Br. Art. Occlusion	2201		0	1	2	7		8	2202		0	1	2	7		8	2203	C)	1	2	7		8
Br. Vein Occlusion	2301	0		1	2	7	8		2302	0		1	2	7	8		2303	0	1		2	7	8	
Ctr. Art. Occlusion	2401		0	1	2	7		8	2402		0	1	2	7		8								
Ctr. Vein Occlusion	2501	0		1	2	7	8		2502	0		1	2	7	8									
Chorioretinal Scar	2601		0	1	2	7		8	2602		0	1	2	7	,	8	2603	C)	1	2	7		8
Coloboma or Staphyl.	2701	0		1	2	7	8		2702	0		1	2	7	8		2703	0	1		2	7	8	
Large C/D	2741		0	1	2	7		8																
Retinal Edema	2751	0		1	2	7	8		2752	0		1	2	7	8		2753	0	1		2	7	8	
RH/MA	2761		0	1	2	7		8	2762		0	1	2	7	,	8	2763	()	1	2	7		8
Hard Exudate	2771	0		1	2	7	8		2772	0		1	2	7	8		2773	0	1		2	7	8	
Diab. Ret. (Lev. 20-55)	2801		0	1	2	7		8	2802		0	1	2	7	,	8								
Diab. Ret. (Lev. ≥ 60)	2901	0		1	2	7	8		2902	0		1	2	7	8									
Art. Changes	3001		0	1	2	7		8	3002		0	1	2	7	,	8								
Hollenhorst Plaque	3005	0		1	2	7	8		3006	0		1	2	7	8									
Macular Hole	3101		0	1	2	7		8	3102		0	1	2	7	,	8	3103	C)	1	2	7		8
Macular Cyst	3105	0		1	2	7	8		3106	0		1	2	7	8		3107	0	1		2	7	8	
Nevus, Choroidal	3201		0	1	2	7		8	3202		0	1	2	7	,	8	3203	C)	1	2	7		8
Medull. Nrve. Fbr.	3205	0		1	2	7	8		3206	0		1	2	7	8									
POHS	3301		0	1	2	7		8	3302		0	1	2	7	,	8	3303	C)	1	2	7		8
Hypopigment. of RPE	3401	0		1	2	7	8		3402	0		1	2	7	8		3403	0	1		2	7	8	
Preret. Hem./Vit. Hem.	3501		0	1	2	7		8	3502		0	1	2	7	•	8	3503	C)	1	2	7		8
Glial/Vit. Opac.	3505	0		1	2	7	8		3506	0		1	2	7	8		3507	0	1		2	7	8	
Photocoag. Scars	3601		0	1	2	7		8	3602		0	1	2	7	•	8	3603	C)	1	2	7		8
Local Rx for ARM	3605	0		1	2	7	8		3606	0		1	2	7	8		3607	0	1		2	7	8	
Peripapillary Atrophy	3701		0	1	2	7		8	3702		0	1	2	7	•	8	3703	C)	1	2	7		8
Calcified Drusen	3705	0		1	2	7	8		3706	0		1	2	7	8		3707	0	1		2	7	8	
Pseudotemporal Drusen	3751		0	1	2	7		8	3752		0	1	2	7	•	8								
Subret. Neovascul.	3801	0		1	2	7	8		3802	0		1	2	7	8		3803	0	1		2	7	8	
Choroidal Deg./Other	3805		0	1	2	7		8	3806		0	1	2	7	•	8	3807	C)	1	2	7		8
OTHER - EXPLAIN	3901	0		1	2	7	8		3902	0		1	2	7	8		3903	0	1		2	7	8	

4000) COMMENTS: _____

D. Beaver Dam Eye Study and Los Angeles Latino Eye Study 3-Step Age-related Macular Degeneration (AMD) Severity Scale

Late AMD

Any of the following lesions are present:

- Geographic Atrophy
- Pigment epithelial detachment/sensory serous retinal detachment
- Subretinal hemorrhage, or subretinal new vessels visible
- Subretinal fibrous scar
- Laser treatment for AMD

Early AMD

- Any Drusen present plus pigmentary abnormalities (Increased Pigment and/or Retinal Pigment Epithelial Depigmentation) present.
- Soft Indistinct Drusen or Reticular Drusen present in the absence of pigmentary abnormalities.

No AMD

• Neither Late nor Early AMD definitions are met and Maximum Drusen Size is gradable.

Cannot Grade

• Does not meet Late, Early, or No AMD definitions and Maximum Drusen Size is not gradable.

E. Beaver Dam Eye Study 6-Step Age-Related Macular Degeneration Severity Scale

Level	Description
10	Hard drusen or small soft drusen (< 125 microns in diameter) only, regardless of area of involvement, and no pigmentary abnormality (increased retinal pigment or RPE depigmentation) present.
20	Hard drusen or small soft drusen (< 125 microns in diameter), regardless of area of involvement, with any pigmentary abnormality (increased retinal pigment present and/or RPE depigmentation) present
	OR
	Soft drusen (\geq 125 microns in diameter) with drusen area < 196,350 square microns (equivalent to a circle with a diameter of 500 microns) and no pigmentary abnormalities
30	Soft drusen (≥ 125 microns in diameter with drusen area < 196,350 square microns (equivalent to a circle with a diameter of 500 microns) with any pigmentary abnormality (increased retinal pigment present and/or RPE depigmentation) present
	OR
	Soft drusen (\geq 125 microns in diameter) with drusen area \geq 196,350 square microns (equivalent to a circle with a diameter of 500 microns) with or without increased retinal pigment but no RPE depigmentation.
40	Soft drusen (\geq 125 microns in diameter) with drusen area \geq 196,350 square microns (equivalent to a circle with a diameter of 500 microns) and RPE depigmentation present, with or without increased retinal pigment.
50	Pure geographic atrophy in the absence of exudative macular degeneration.
60	Exudative macular degeneration with or without geographic atrophy present.

RPE, retinal pigment epithelium.

Fields gradeable ungradeable not preser None None Field 2 None 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	ole 1	0 1 2 Quest Quest Y	0 1 2	$ \begin{array}{r} 0\\1\\2\\ \hline uest or Def\\\hline Yes 2\\Yes 2 \end{array} $		within fie	1 2 3 CG 8 eld 2 ofields Yes	Stereo 1 2 3 DA
None None Field 2 None 0 0 0 0 0 0 0 0	$\begin{array}{c c} \text{nt} & 2 \\ \hline \text{None} & 0 \\ \hline 1 \\ 1 \\ \end{array}$	2 Quest Quest Y	2 Q 1 1 1 X es 2	2 uest or Def Yes 2 Yes 2 CG 8	2 2 Area C entral + None	3 within fie Inner Sul Quest	3 CG 8 eld 2 ofields Yes	3 DA
None None Field 2 None 0 0 0 0 0 0 0 0	Vone 0 0 0 Quest 1 1	Quest Quest Y	Q1 1 1 <u>Yes</u> 2	uest or Def Yes 2 Yes 2 <u>CG</u> 8	2 Area C entral + None	within fie Inner Sul Quest	CG 8 eld 2 ofields Yes	D/
None None Field 2 None 0 0 0 0 0 0 0	0 0 Quest 1 1	Quest	1 1 Yes 2	Yes 2 Yes 2 CG 8	Area C entral + None	within fie Inner Sul Quest	eld 2 ofields Yes	
None None Field 2 None 0 0 0 0 0 0 0	0 0 Quest 1 1	Quest	1 1 Yes 2	Yes 2 Yes 2 CG 8	Area C entral + None	within fie Inner Sul Quest	eld 2 ofields Yes	
None Field 2 None 0 0 0 0 0 0 0	0 Quest 1 1	Quest	1 <u>Yes</u> 2	Yes 2 CG 8	Central + None	Inner Sul Quest	ofields Yes	
Field 2 None 0 0 0 0 0 0 0	Quest 1 1	Y	<u>res</u> 2	CG 8	None	Quest	Yes	C
None 0 0 0 0 0 0 0	1		2	CG 8	None	Quest	Yes	C
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None	0			0		((-
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15. Other Ocular Lesions

	Non	e	Yes	CG		
Quest/Def Present	0		2	8		
	No	Quest	Yes	CG	Lesion #	Description/Abbreviation
Lesion 1	0	1	2	8		
Lesion 2	0	1	2	8		
Lesion 3	0	1	2	8		
Lesion 4	0	1	2	8		
Lesion 5	0	1	2	8		
Lesion 6	0	1	2	8		
Lesion 7	0	1	2	8		
Lesion 8	0	1	2	8		

Abbreviations for Common Lesions

Retinop		Possible diabetic retinopathy, (add:Haem, MA, or H/MA)
Def Ret	С	Definite diabetic retinopathy
Chor Scr		Chorioretinal scar > 1500 microns from centre (various causes)
Mac Scr	С	Chorioretinal scar < 1500 microns from centre (various causes)
ToxoP	C?	Old chorioretinal scar typical of Toxoplasmosis
Mac Oed	С	Macular oedema
Mac Hole	С	Macular hole/cyst
Mac Oth	С	Macular other lesion, < 1500 microns from centre
SWR	C?	Surface wrinkling retinopathy (preretinal fibrosis), with folds, tension
		lines or a patch (confounding if ≥ 1 disc area in extent)
Cello R		Cellophane reflex only
Vit Det		Prominent posterior vitreous detachment
Laser		Photocoagulation scars, other (i.e. non-AMD)
Laser C	С	confounding if < 1500 microns from centre
P/V Haem	С	Preretinal or vitreous haemorrhage
Ret Det	С	Retinal detachment
Myop Ret	С	Myopic crescent, > half longest disc diameter
RAO	С	Retinal artery occlusion, central or branch
BRVO	С	Branch retinal vein occlusion
CRVO	С	Central retinal vein occlusion
Ret Emb		Retinal artery embolus (Hollenhorst plaque)
Naevus		Choroidal Naevus
Op Atr		Optic atrophy
Op Oed		Optic disc oedema
Op Dru		Optic disc drusen
Gl Rem		Glia remnant, optic disc
PP Atr		Peripapillary Atrophy
Ang Stk	C?	Angioid streaks
Ast Hyl		Asteroid Hyalosis
Lg Cup		Large opticcup, cup-disc ratio
		(add characteristics: undercutting, notching, rim eroded)
Cat	С	Cataracts preclude grading
	С	Lesion confounding grading of drusen or other AMD lesions

Comments, Other Lesions

G. Blue Mountains Eye Study 3-Step Age-Related Macular Degeneration (AMD) Severity Scale

No AMD was defined as the absence at the macula of large (>125 µm in diameter), indistinct soft or reticular drusen or combined large, distinct soft drusen and retinal pigmentary abnormalities or signs of late AMD.

Early AMD was defined as the presence at the macula of large (>125 µm in diameter), indistinct soft or reticular drusen or combined large, distinct soft drusen and retinal pigmentary abnormalities with the absence of signs of late AMD.

Late AMD was defined to include neovascular AMD and geographic atrophy.

H. Los Angeles Latino Eye Study preliminary grading form LALES2 Preliminary Grading Form

0 Name (Name Code				Grader		Dat	e Graded	/	/
OD PHOTO QUALITY					Reasons	Good	Fair	B/P Ex	B/P Unex	CG
Good	0		Ţ		Focus	0	1	2	3	8
Fair		1			Field	0	1	2		8
Borderline	2		To I	Reasons	Stereo	0	1	2	3	8
Poor-Ungrad		3			Other	0	1	2	3	8
NA-No Pix	9		1		OD Retakes Req		No = 0	Yes =		
ARM EXCLUDE					I					
No	0		I Myopia	c Degen	5	l I non-AF	RM RPE Chan	ge	10	
Trauma		1	Histo /	/Toxo		non-AF	RM Detach			11
Laser Rx	2		Inflam	matory	7	l Unknov	wn Etiology		12	
Vessel Occlusion		3	Colobo	oma / Staph		Other				15
Dystrophy	4		RLF		9					
Max Drusen Size			<u></u>		OD ARM LESION	IS	No	Q	Yes	CG
None		0			Increased Pigmen	nt	0	1	2	8
Quest/Stip			1		RPE Depigmentat	tion	0	1	2	8
< Std C _o		2			Geographic Atrop	hy	0	1	2	8
< Std C ₁			3		PED/RD Detachm	nent	0	1	2	8
< Std C ₂		4			Subret Hem		0	1	2	8
Std C ₂			5		Subret Scar		0	1	2	8
Retic		6			ARM Rx		0	1	2	8
CG			8		ARM Progression	n	0 Better	1 Same	2 Worse	8 CG
Drusen Area					OD DIABETIC F	RET LEV	'EL			
None - Q		0				No	Q	Y	CSME	CG
<125 µ			1		Macular Edema	0	1	2	3	8
<350 µ (l₂)		2			OD OTHER LESI	ONS	NO = 0	Yes = 2	CG = 8	
<650 µ (O ₂)			3				No	Q	Y	CG
<u>></u> 650 μ (O ₂)		4			Recent BVO/CVO)	0	1	2	8
CG			8		Hollenhorst Plaqu	ie	0	1	2	8
Max Drusen Type					Mac Hole		0	1	2	8
None		0			Large C/D		0	1	2	8
н			1		Other		0	1	2	8
HD		2			OD COMMENTS	;				
SD			3							
SI/Retic		4								
CG			8							

LALES2 Preliminary Grading Form

OS PHOTO QUALITY					Reasons	Good	Fair	B/P Ex	B/P Unex	CG
Good	0				Focus	0	1	2	3	8
Fair		1			Field	0	1	2		8
Borderline	2		To F	Reasons	Stereo	0	1	2	3	8
Poor-Ungrad		3			Other	0	1	2	3	8
NA-No Pix	9				OS Retakes Req	uested?	No = 0	Yes =	20	
ARM EXCLUDE										
No	0		Myopic	: Degen	5	non-AR	RM RPE Chang	ge	10	
Trauma		1	Histo /	Тохо		non-AF	RM Detach			11
Laser Rx	2		Inflam	matory	7	Unknov	wn Etiology		12	
Vessel Occlusion		3	Colobo	oma / Staph		Other				15
Dystrophy	4		RLF		9					
Max Drusen Size					OS ARM LESION	IS	No	Q	Yes	CG
None		0			Increased Pigmer	nt	0	1	2	8
Quest/Stip			1		RPE Depigmenta	tion	0	1	2	8
< Std C _o		2			Geographic Atrop	hy	0	1	2	8
< Std C ₁			3		PED/RD Detachm	nent	0	1	2	8
< Std C ₂		4			Subret Hem		0	1	2	8
Std C ₂			5		Subret Scar		0	1	2	8
Retic		6			ARM Rx		0	1	2	8
CG			8		ARM Progressio	n	0 Better	1 Same	2 Worse	8 CG
Drusen Area					OS DIABETIC I	RET LEV	EL			
None - Q		0				No	Q	Y	CSME	CG
<125 µ			1		Macular Edema	0	1	2	3	8
<350 µ (l₂)		2			OS OTHER LESI	ONS	NO = 0	Yes = 2	CG = 8	
<650 µ (O ₂)			3				No	Q	Y	CG
<u>≥</u> 650 µ (O₂)		4			Recent BVO/CVC)	0	1	2	8
CG			8		Hollenhorst Plaqu	е	0	1	2	8
Max Drusen Type					Mac Hole		0	1	2	8
None		0			Large C/D		0	1	2	8
HI			1		Other		0	1	2	8
HD		2			OS COMMENTS					
SD			3							
SI/Retic		4								
CG			8							

I. Los Angeles Latino Eye Study detail grading form H:\DOCUMENT\$\Grading Forms\LALE\$\LALE\$2 detail grading form.wpd

LALES2 Detail Grading

ID	OD	OD	GRAD	OTHER LESIONS		НМА	NVE	
Namecode			B/P G/F	Any? 0 No	2 Yes	None 0	None 0	
	F	1	No Y Y		All Flds	Quest 1	Quest	1
Photodate		0 2	0 1 2		N Q Y PT CG	-	<1⁄2 DA 2	
Grader		0 2	0 1 2		0 1 2 - 8	Def HMA 3	/ = = · ·	3
Date Graded		0 2 0 2	0 1 2 0 1 2		0 1 2 - 8 0 1 2 - 8	Std 1 (4 flds) 4 Std 2A 5	CG 8 IF NVE GRADED 1/2/3	
OD ARM GRADING	147		v 1 2		0 1 2 - 8	Std 2A (2/3 flds) 6		Q Pr CG
MAX DRU SIZE	DRU AREA		IAX DRU TYPE	0	0 1 2 - 8	Std 2A (4 flds) 7		1 2 8
None 0	None / NA 0		lone 0		0 1 2 - 8	CG 8		1 2 8
Quest/HI 1		10 H			0 1 2 - 8	HE	F3 0	1 2 8
<c<sub>0 2</c<sub>	<105µ 20		ID 2		0 1 2 - 8	None 0	F4 0	1 2 8
<c1 3<="" td=""><td></td><td>25 S</td><td>D 3</td><td></td><td>0 1 2 - 8</td><td>Quest 1</td><td>F5 0</td><td>1 2 8</td></c1>		25 S	D 3		0 1 2 - 8	Quest 1	F5 0	1 2 8
<c<sub>2 4</c<sub>	<250µ (C ₂) 30	S	I/Retic 4	Ast Hyalosis	0 1 2 - 8	Present 2	F6 0	1 2 8
C ₂ 5	<350 (l ₂) 3	35 C	G 8	Nevus	0 1 2 - 8	CG 8	F7 0	1 2 8
Retic 6	<500 40			Chorioret Scar	0 1 2 3 8	LOOPS	FP	PRH-VH
CG 8	< 650 (O ₂) 4	45 #	Subfields (0-9):	SWR Tension	0 1 2 3 8	None 0	None 0	None 0
	<1⁄2 DA 50			SWR Cello Reflex	0 1 2 - 8	Quest 1	Quest 1	Quest 1
# Subfields (0-9):		60		Mac Hole	0 1 2 3 8	Present 2	FPE Only 2	< 1DA 2
	1 DA 70			Histoplasmosis	0 1 2 3 8	CG 8	,	<u>></u> 1 DA 3
		8		Ret Detach	0 1 2 3 8		FPD+FPE 4	CG 8
DRU GRID TYPE	INC PIGMENT		PE DEPIGMENT	Large C/D	0 1 2 - 8	SE	CG 8	
Absent 0	None 0		lone 0		0 1 2 - 8	None 0	MAC-ED	PC-SCAR
Quest 1			luest 1		0 1 2 3 8	Quest 1	None 0	None 0
Present 2	<c<sub>0 2</c<sub>		C ₁ 20	DIABETIC RETINOPATHY		Definite 2		Quest/Incomplete 1
Predom/# 3			C ₂ 30	DR Absent	10	CG 8	,	Local 2
CG 8	<c<sub>2 4</c<sub>		l ₂ 35	Non-Diabetic	12	IRMA		Scatter Only 3
	2		O ₂ 40	Questionable	13	None 0	Non-Diab 7	Scatter + Local 4
	O ₂ 6		1/2 DA 50	HE, SE, IRMA, W/O MAs	14	Quest 1		CG 8
Stip HD	Pig/Other CG 8		1 DA 60 I DA 70	Hem Only, No MAs	15 20	Definite 2 Definite (4 flds) 3	CTR None 0	FOC-RX None 0
SD	CG 8		G 8	Microaneurysms Only Mild NPDR	20 31	Definite (4 flds) 3 Std 8A 4		None 0 Quest 1
SI			0	Mild/Moderate NPDR	37	CG 8	Pr, CSME 2	MAs Rx Only 2
Retic	# Subfields (0-9):	#	Subfields (0-9):	Moderate NPDR	43	VB		Grid Only 3
		_	CC CPT CG	Moderately Severe	47	None 0	Non-Diab 7	MAs + Grid Rx 4
			2 3 8	Severe NPDR	53	Quest 1		CG 8
	· · · · ·	-	2 3 8	FP Only	60	Definite 2		00 0
			2 0 0	No Ret w/RX	61	Def (2/more flds) 3		
ANY 0	No 2 Y	′es 8	CG	MA's Only w/RX	62	CG 8	ART-NAR	A/V-NICK
			CG	Early NPDR w/RX	63	NVD	None 0	Absent 0
Geographic Atrophy		3 4	8	Mod/Severe NPDR w/RX	64	None 0		Quest 1
PED/RD		3 4	8	Moderate PDR	65	Quest 1	<std #19="" 2<="" td=""><td>Present 2</td></std>	Present 2
SubRet Hem		3 4	8	DRS HRC	71	<std 10a="" 2<="" td=""><td></td><td>No A/V Xing 7</td></std>		No A/V Xing 7
SubRet Scar		3 4	8	Severe DRS HRC	75	Std 10A 3	CG 8	CG 8
ARM RX		3 4	8	Advanced PDR	81	CG 8		
				End-Stage PDR	85	COMMENT	-	
GA # DAs in Grid (0-16)	: Ex # DAs	s in Grid (0-1	6):	Cannot Grade	90			

J. Age-Related Eye Disease Study 11-step AMD severity scale used in the Los Angeles Latino Eye Study

LALES (AREDS) Severity Scale

Level	Drusen Area	Inc Pigment	RPE Depigment	GA	Any Exud PED, Srhem, Srscar, Rx
1	<125µ (0 - 25)	0	0	0	0
2.1	<u>></u> 125µ - < 250µ (30)	0	0	0	0
2.2	<125µ (0 - 25)	<u>></u> Q (1-6)	0	0	0
2.3	<125µ (0 - 25)	NA	<u>></u> Q - <350µ (1 - 35)	0	0
3	<u>></u> 250µ - <350µ (35)	0	0	0	0
4.1	<u>></u> 350µ - <650µ (40, 45)	0	0	0	0
4.2	≥125µ - <350µ (30 - 35)	<u>></u> Q (1-6)	0 - < 350µ (0-35)	0	0
4.3	<u>></u> 125µ - <350µ (30 - 35)	NA	<u>></u> Q - <350µ (1 - 35)	0	0
4.4	<250µ (0 - 30)	NA	<u>></u> 350µ - <½ DA (40, 50)	0	0
5.1	<u>≥</u> 650µ - <½ DA (50)	0	0	0	0
5.2	<u>></u> 350µ - <650µ (40, 45)	<u>></u> Q (1-6)	0 - < 350µ (0 - 35)	0	0
5.3	<u>></u> 350µ - <650µ (40, 45)	NA	<u>></u> Q - <350µ (1-35)	0	0
5.4	<u>></u> 250µ - <350µ (35)	NA	<u>></u> 350µ - <½ DA (40, 50)	0	0
6.1	<u>≥</u> ½ DA (60, 70)	0	0	0	0
6.2	<u>></u> 650µ - <½ DA (50)	<u>></u> Q (1-6)	0 - < 350µ (0 - 35)	0	0
6.3	<u>></u> 650µ - <½ DA (50)	NA	<u>></u> Q - <350µ (1 - 35)	0	0
6.4	<u>></u> 350µ - <650µ (40, 45)	NA	<u>></u> 350µ - <½ DA (40, 50)	0	0
7.1	<u>≥</u> ½ DA (60, 70)	<u>></u> Q (1-6)	0 - < 350µ (0 - 35)	0	0
7.2	<u>≥</u> ½ DA (60, 70)	NA	<u>></u> Q - <350µ (1 - 35)	0	0
7.3	<u>></u> 650µ - <½ DA (50)	NA	<u>></u> 350µ - <½ DA (40, 50)	0	0
8.1	<u>≥</u> ½ DA (60, 70)	NA	<u>></u> 350µ - <½ DA (40, 50)	0	0
8.2	Any (10-70)	NA	<u>≥</u> ½ DA (60, 70)	0	0
9	Any (10-70)	NA	NA	noncentral (2)	0
10	NA	NA	NA	central (3-4)	0
11	NA	NA	NA	NA	any (2-4)

K. Rotterdam Study AMD Grading Form

klaver 16-02-95

Rotterdam Study Age-related Maculopathy (ARM) Grading Form

Date of photo grading:	••••••••••••••••••••••••••••••••••••
ID grader:	
ID participant:	
Date of photography:	

OD / OS

Photo:

3 <u>></u> 20

3 <u>></u> 20

Prese	nce	Focus		Fields	Findings
No	0.0 unknown	CG	0.0 photo	0 none	0 no
	0.1 no eye exam		0.1 cataract	1 central	1 Q
	0.2 no mydriasis		0.2 mydriasis	2 central, middle	2 yes
Yes	1.1 1 slide	Fair	1.0 photo	3 all	7 CG
	1.2 2 slides	• 2	1.1 cataract		8 NA
NA	8.8		1.2 mydriasis		•••••••••••••••••••••••••••••••••••••••
		Good	2.2		

Drusen:			Drusen in grid:		
Number	in grid	outside grid	Largest size	Most frequent type	Confluence
< C ₀	0	0	1 Q	1 Q	0
	1 < 10	1 < 10	2 < C ₀	2 < C ₀	1 Q or < 10%
	2 < 20	2 < 20	3 < C ₁	3 < C ₁	2 < 50%
	3 <u>></u> 20	3 <u>></u> 20	4 < C ₂	4 < C ₂	3 <u>></u> 50%
< C ₁	0	0	5 <u>></u> C ₂	$5 \ge C_2$	7 CG
	1 < 10	1 < 10	6 reticular	6 reticular	8 NA
	2 < 20	2 < 20	7 CG	7 CG	
	3 <u>></u> 20	3 <u>≥</u> 20	8 NA	8 NA	
$\geq C_1$	0	0			i en
	1 < 10	1 < 10			
	2 < 20	2 < 20			

klaver 16-02-95

Drusen type	central	inner	outer	Drusen area	central	inner	outer
hard	0	0	0	< 1%	0 < 2xC ₀	$0 < C_1 + C_2$	$0 < 4xC_2$
soft < C ₁	1	1	1	< 10%	1	1	1
soft distinct	2	2	2	< 25%	2	2	2
soft indistinct	3	3	3	< 50%	3	3	3
reticular	4	4	4	<u>></u> 50%	4	4	4
CG	7	7	7	CG	7	7	7
NA	8	8	8	NA	8	8	8

Increased pigment	RPE degeneration
0 no	0 no
1 Q or outside grid	1 Q or outside grid
2 < C ₁	2 < C ₂
3 < C ₂	3 < 5x C ₂
$4 \ge C_2$	4 < central circle
5 pigment, other	5 <u>></u> central circle
7 CG	7 CG
8 NA	8 NA

AMD:

Geographic Atrophy 0 no 1 yes

Neovascular MD 0 no 1 yes

1

kiaver 16-02-95

If GA, presence	central	inner	outer	If NMD, presence	central	inner	outer
none	0	0	0	none	0	0	0
Q	1	1	1	Q	1	1	1
< 25%	2	2	2	< 25%	2	2	2
< 50%	3	3	3	< 50%	3	3	3
<u>> 50%</u>	4	4	4	<u>></u> 50%	4	4	4
CG	7	7	7	CG	7	7	7
NA	8	8	8	NA	8	8	8

If NMD, features	serous detachment	subretinal hemorrhage	fibrous scar	hard exudates
absent	0	0	0	0
Q	1	1	1	1
present	2	2	2	2
CG	7	7	7	7
NA	8	8	8	8

Other Observations:

6

Dot/blot hemorrhages	Arteriovenous nicking	
exact number	0	
77 CG	1 Q	
88 NA	2 present	
	7 CG	
	8 NA	

3.

4.

1. ICD-9 classification 000.00 remark 777.77 CG 888.88 NA

2. ICD-9 classification 000.00 remark 777.77 CG 888.88 NA

Remarks

..... ICD-9 classification 000.00 remark 777.77 CG 888.88 NA

 ICD-9 classification

 000.00
 remark

 777.77
 CG

 888.88
 NA

3

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Stage	Definition
0 a	No signs of AMD at all
0 b	Hard drusen (< 63 µm) only
1 a	Soft distinct drusen (≥ 63 µm) only
1 b	Pigmentary abnormalities only, no soft drusen (≥ 63 µm)
2 a	Sift indistinct drusen (≥ 125 µm) or reticular drusen only
2 b	Soft distinct drusen (\geq 63 µm) with pigmentary abnormalities
3	Soft indistinct (\geq 125 µm) or reticular drusen with pigmentary abnormalities
4	Atrophic, neovascular, or mixed AMD

L. Rotterdam Study 4-Step Age-Related Macular Degeneration Severity Scale

AMD, age-related macular degeneration.

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(alphabetical by last name)

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