Ocular Hypertension Treatment Study: 20-Year Incidence & Severity of Primary Open-Angle Glaucoma (POAG)

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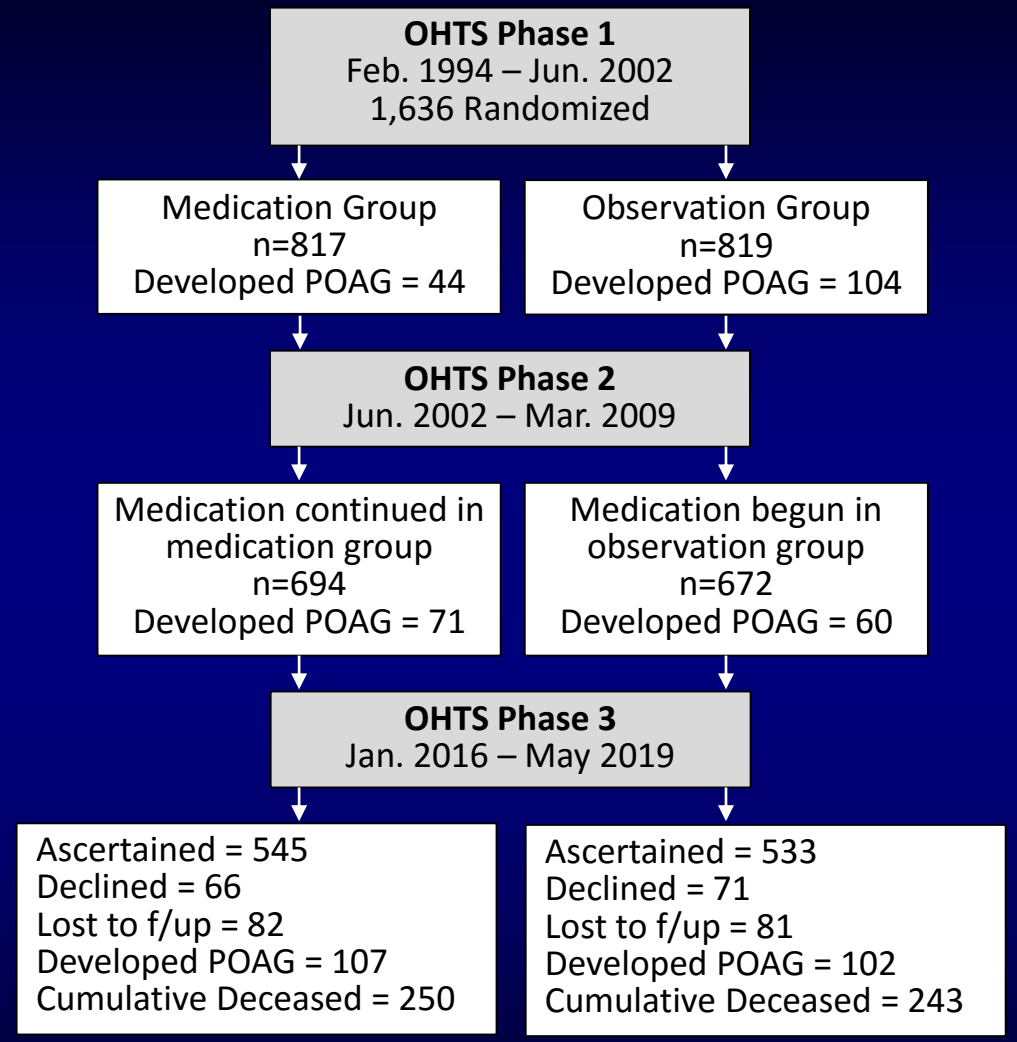
OHTS Consort Diagram



OHTS Phase 1 & 2 Summary

- Early medical treatment reduces the cumulative incidence of POAG.
- Absolute benefit is greatest in high risk individuals.
- Little absolute benefit of early treatment in low risk individuals.

OHTS Phase 3

Specific Aims:

1. Determine the 20-year incidence and severity of POAG
2. Develop a 20-year prediction model for conversion to POAG
3. Develop a prediction model to identify rapid progressors
4. Association of QOL with clinical findings.

OHTS Phase 1

Incidence of POAG is nearly 60% lower in the Medication group.

Hazard ratio for medication group at 60 months

0.40 (0.27-0.59); P ≤ 0.001

Kass, et al. 2002

OHTS Phase 2

Incidence of POAG is not different between Observation and Medication groups.

Hazard Ratio for medication group

1.06 during Phase 2 (0.74-1.50); P = 0.77

Kass, et al. 2010

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Baseline and 20-year OHTS data for ascertained participants

	Randomization Assignment			
	Medication		Observation	
	N	Mean ± SD	N	Mean ± SD
Baseline CCT	511	573.0 ± 39.5	492	576.6 ± 36.5
Baseline IOP	545	24.9 ± 2.7	533	25.0 ± 2.7
IOP when ascertained	482	18.2 ± 4.3	471	18.7 ± 4.6
Baseline Vertical CD Ratio	545	0.4 ± 0.2	533	0.4 ± 0.2
Vertical CD Ratio when ascertained	288	0.5 ± 0.2	292	0.5 ± 0.2
Baseline LOGMAR VA (Snellen)	545	0.0 ± 0.1*	1078	0.0 ± 0.1*
LOGMAR VA (Snellen) when ascertained	384	0.1 ± 0.2*	763	0.1 ± 0.2*

* 0.0 = 20/20, 0.1 = 20/25, 0.2 = 20/32

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Baseline and 20-year OHTS data for ascertained participants

	Randomization Group			
	Medication		Observation	
	N	Mean ± SD	N	Mean ± SD
Age				
Baseline Age	545	55.2 ± 9.2	533	55.3 ± 9.4
Age When Ascertained	535	74.3 ± 8.7	528	74.8 ± 8.7

	Medication		Observation	
	N	%	N	%
Sex				
Male	240	44.0	233	43.7
Female	305	56.0	300	56.3
Race				
Black, Non-Hispanic	125	22.9	109	20.5
Hispanic	4	0.7	14	2.6
White, Non-Hispanic	405	74.3	399	74.9
Other	11	2.0	11	2.1

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Baseline and 20-year OHTS data for ascertained participants

	Randomization Assignment			
	Medication		Observation	
	N	Mean ± SD	N	Mean ± SD
Baseline MD	545	0.2 ± 1.1	533	0.1 ± 1.1
MD when ascertained	474	-2.4 ± 4.7	460	-2.6 ± 4.5
Baseline PSD	545	1.9 ± 0.2	533	1.9 ± 0.3
PSD when ascertained	474	2.7 ± 2.0	460	2.8 ± 2.0

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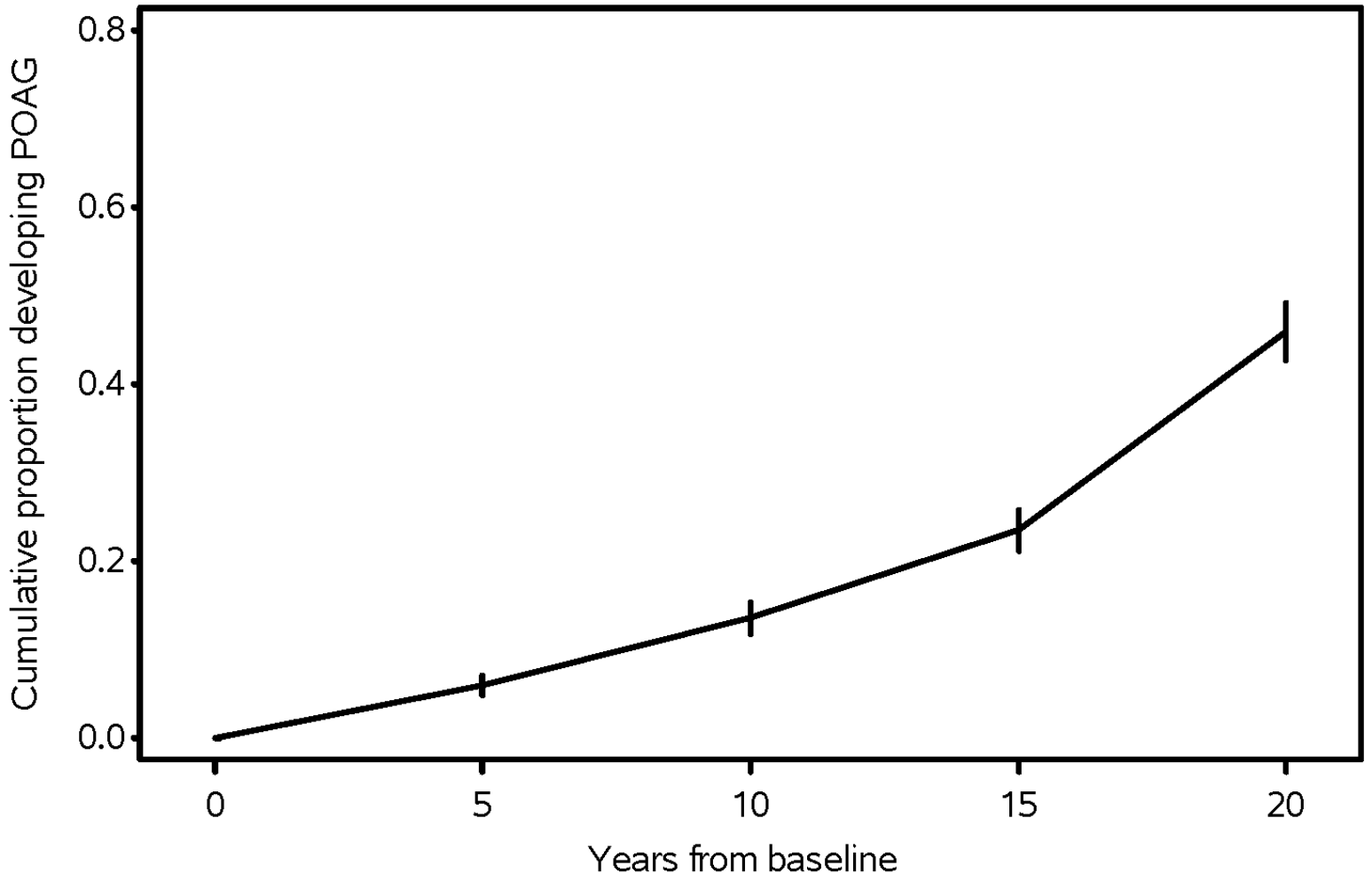
Cumulative Incidence of POAG: All



						Total
Ascertained	1636	1619	1459	1281	897	
POAGs	0	91	107	98	192	488
Deaths	0	46	77	110	260	493

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POAG Conversions in OHTS (1994-2019)
1,636 participants, median follow-up 20 years
26,350 person-years

- 488 participants developed POAG in one or both eyes
  - 201 participants developed **only disc** POAG
    - 64% 128/201 in 1 eye
    - 36% 73/201 in 2 eyes
  - 287 participants developed **visual field** POAG (with or without disc POAG)
    - 67% 192/287 in 1 eye
    - 33% 95/287 in 2 eyes

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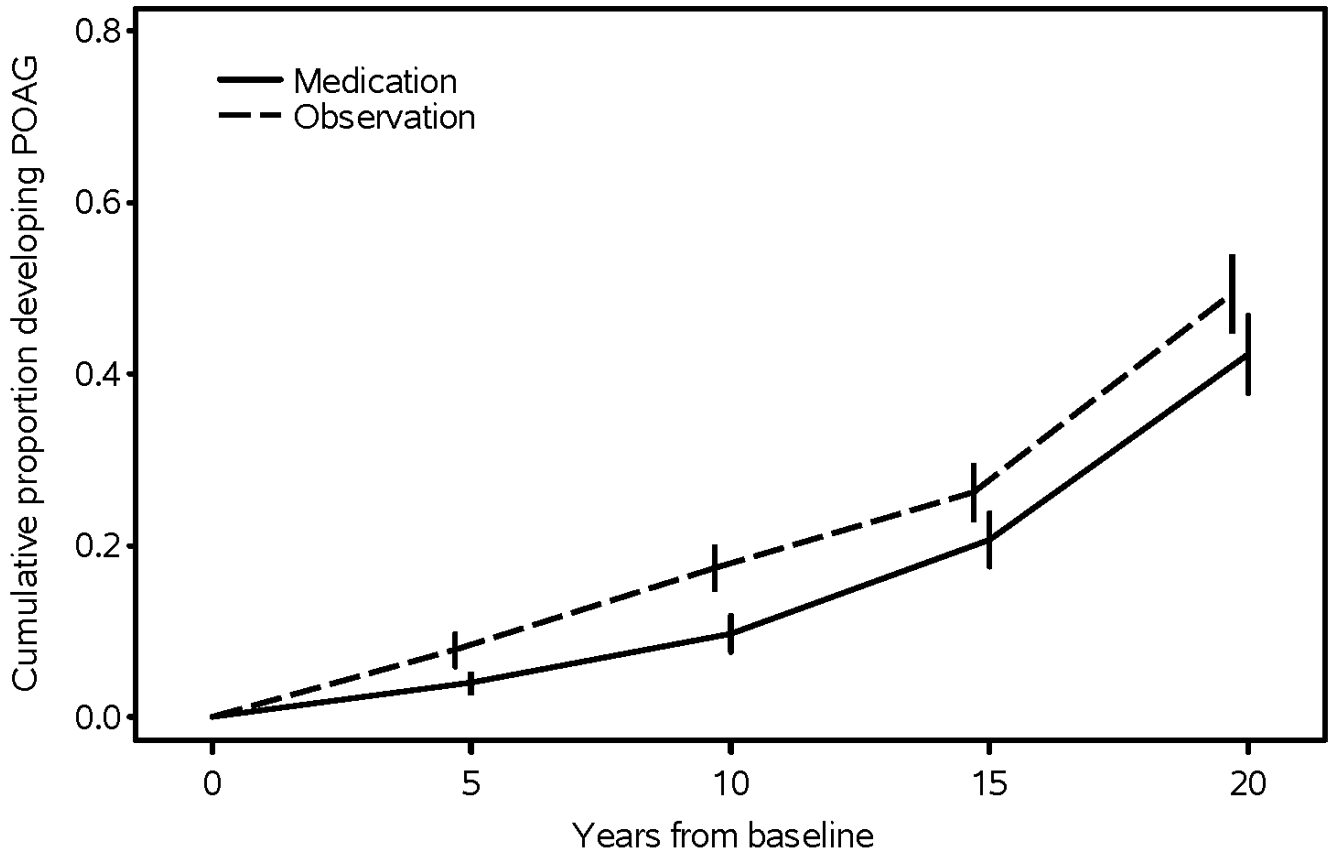
Cumulative Incidence of POAG by Randomization



						Total
Meds Ascertained	817	806	730	653	443	
POAGs	0	31	38	57	96	222
Deaths	0	20	44	62	124	250
Obs Ascertained	819	813	729	628	454	
POAGs	0	60	69	41	96	266
Deaths	0	26	33	48	136	243

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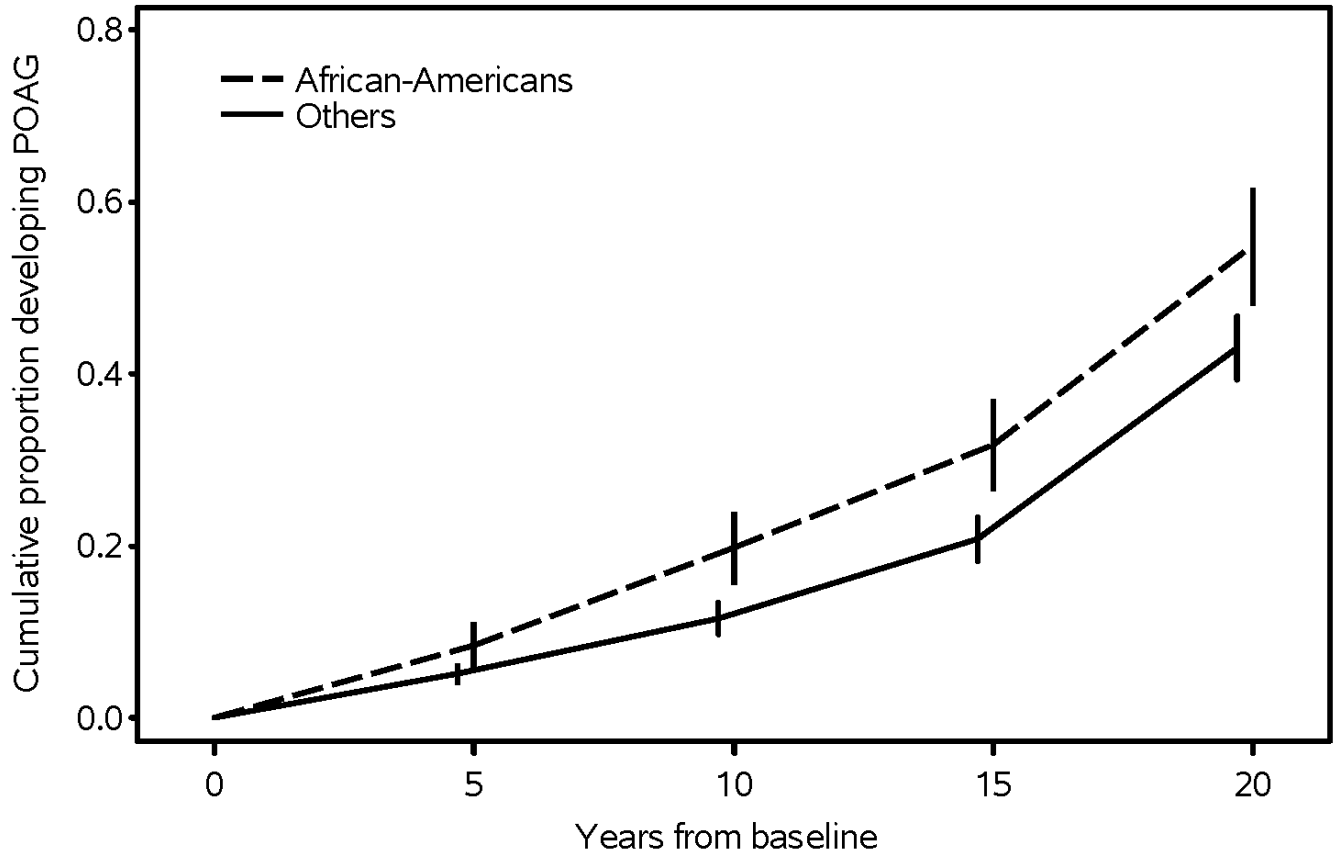
Cumulative Incidence of POAG by Race



							Total
AA	Ascertained	407	399	355	304	201	
	POAGs	0	31	40	25	48	144
	Deaths	0	10	20	23	56	109
Other	Ascertained	1229	1220	1104	977	696	
	POAGs	0	60	67	73	144	344
	Deaths	0	36	57	87	204	384

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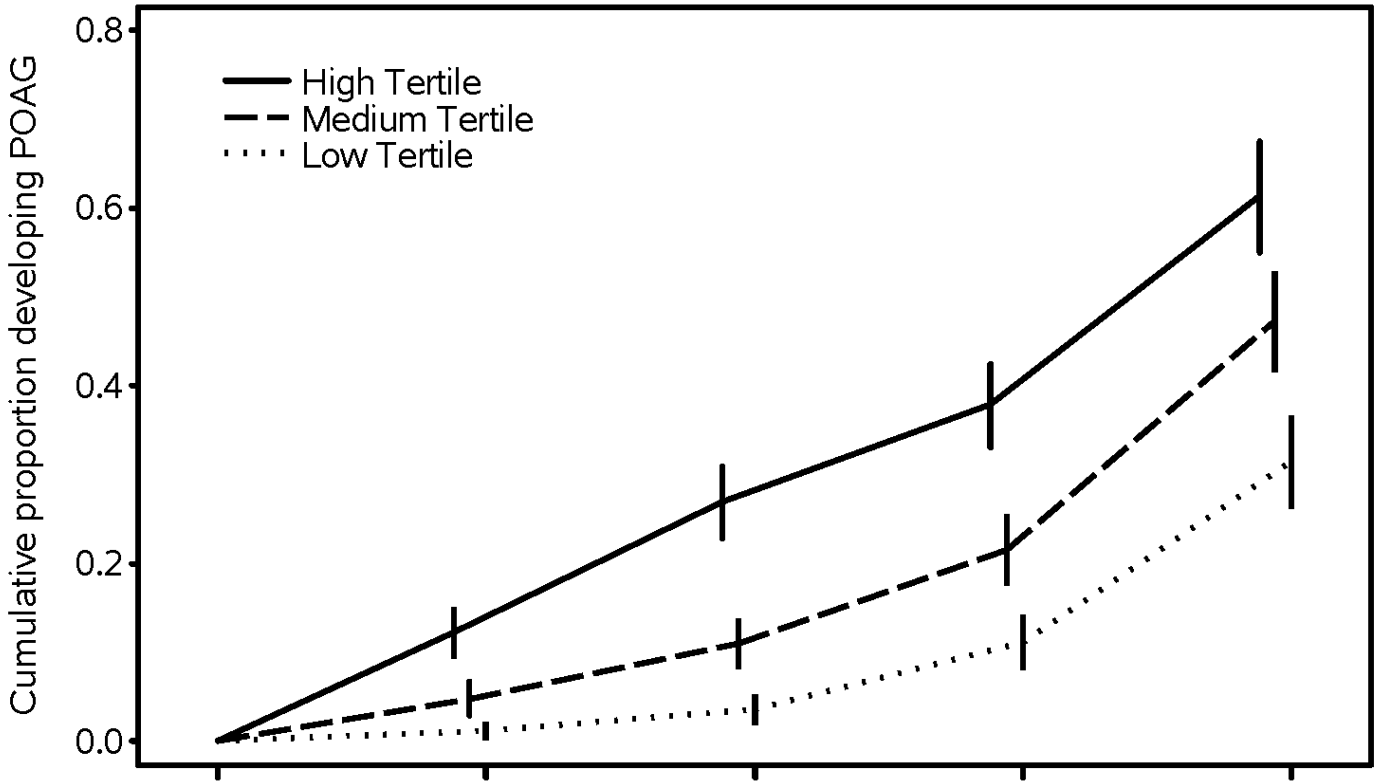
Cumulative Incidence of POAG by Risk Tertiles



					Total
High Risk POAGs	0	59	65	36	50	210
Med. Risk POAGs	0	22	30	35	77	164
Low Risk POAGs	0	6	11	25	62	104

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Future Reports

1. Risk factors for conversion/progression

2. Impact of POAG on QoL and clinical findings

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