Target IOP Update

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TARGET INTRAOCULAR PRESSURE IS DEFINED AS

"THE MEAN INTRAOCULAR PRESSURE OBTAINED WITH TREATMENT THAT PREVENTS FURTHER GLAUCOMATOUS DAMAGE"

- Moustafa Kamal Nassar, M.D. Target Intraocular Pressure http://www.glaucoma-egypt.org/Glaucoma-news/200102.pdf accessed Oct 2014

TARGET IOP: DEFINITION

TARGET IOP MAY BE DEFINED AS A PRESSURE, RATHER A RANGE OF INTRAOCULAR PRESSURE LEVELS WITHIN WHICH THE PROGRESSION OF GLAUCOMA AND VISUAL FIELD LOSS WILL BE DELAYED OR HALTED

REF: SURVEYS OF OPHTHALMOLOGY 2003; 48 (SUPPL 1): 53-57

REVIEW OF LITERATURE

The early-manifest glaucoma treatment study showed that IOP reduction by at least 25% reduced progression from 62 to 45% in the treated group compared to an untreated group

Heijl A, Leske MC, Bengtsson B, Hyman L, Bengtsson B, Hussein M, et al. Reduction of intraocular pressure and glaucoma progression: Results from the Early Manifest Glaucoma Trial. Arch Ophthalmol. 2002;120:1268–79.

Rajul S Parikh, Shefali R Parikh, Shoba Navin, Ellen Arun, And Ravi Thomas. Practical approach to medical management of glaucoma; Indian j ophthalmol. 2008 may-jun; 56(3): 223–230

THE COLLABORATIVE INITIAL GLAUCOMA TREATMENT STUDY (CIGTS)

- LOWERED THE IOP BY 35%,
- DEMONSTRATED EQUIVALENCE OF MEDICAL AND SURGICAL TREATMENT,
- DECREASED DISEASE PROGRESSION TO LESS THAN 15%.

Feiner L, Piltz-Seymour JR. Collaborative Initial Glaucoma Treatment Study: A summary of results to date. Curr Opin Ophthalmol. 2003;14:106–11. [PubMed]

- IOP LOWERING NEEDS TO BE INDIVIDUALIZED WITH THE GOAL OF PREVENTING ANY DECREASE IN THE QOL DURING THE PATIENT'S LIFETIME.

- THERE IS, HOWEVER, NO HARD EVIDENCE FOR THE CONCEPT OR THE METHODS USED TO DETERMINE THE TARGET.

Rajul S Parikh, Shefali R Parikh, Shoba Navin, Ellen Arun, And Ravi Thomas. Practical approach to medical management of glaucoma; Indian j ophthalmol. 2008 may-jun; 56(3): 223–230

FACTORS SHOULD BE CONSIDERED AT THE TIME OF PRESENTATION TO CUSTOMIZE THE TARGET IOP:

- **STRUCTURAL DAMAGE**: OPTIC DISC AND RNFL
- **FUNCTIONAL DAMAGE** ON WWP
- **BASELINE IOP** AT WHICH THE DAMAGE OCCURRED (CORRELATE THE ABOVE TWO WITH BASELINE IOP).
- **AGE**
- PRESENCE OF **ADDITIONAL RISK FACTORS**

Hodapp E, Parrish RK, 2nd, Anderson DR. St Louis: Mosby and Co; 1993. Clinical decisions in glaucoma; pp. 63–92.
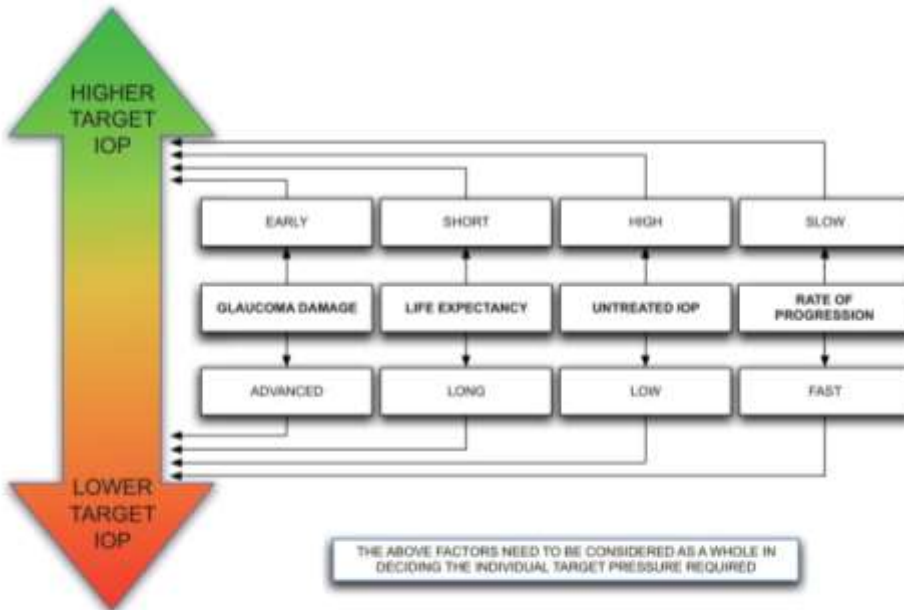
TARGET IOP HAS TO BE INDIVIDUALIZED

BASED ON PATIENT'S CLINICAL PROFILE.

THIS CAN BE CALCULATED USING TABLES,
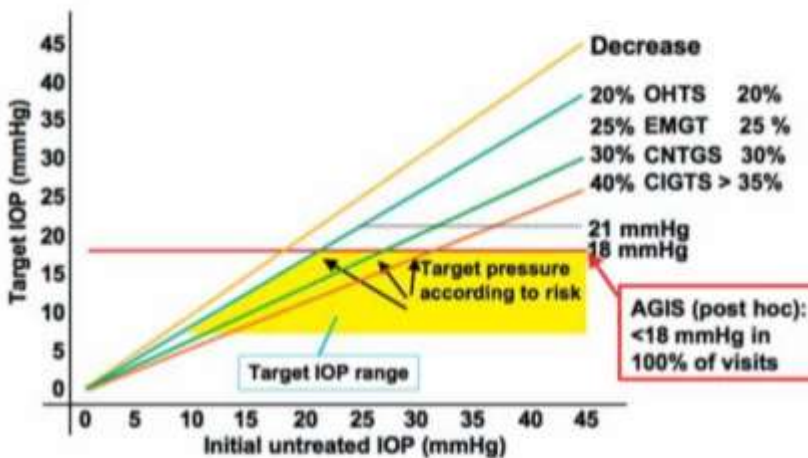
GRAPHS OR FORMULAE.

VI. TARGET IOP

THE ABOVE FACTORS NEED TO BE CONSIDERED AS A WHOLE IN DECIDING THE INDIVIDUAL TARGET PRESSURE REQUIRED
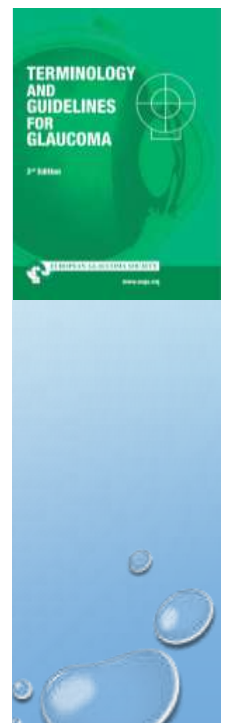
FLOWCHARTS

Target IOP

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Fig. 3.2.1 - Target IOP

Diagrammatic evaluation of the desired IOP lowering. The target pressure is frequently situated within the shaded area. The percentage of IOP reduction targeted (i.e. 20%, 30%, 40% respectively) depends mainly on the degree of VF damage at diagnosis and on rate of progression (RoP).

AAO GUIDELINES: TARGET IOP

- GLAUCOMA PATIENTS WITH MILD DAMAGE (OPTIC DISC CUPPING BUT NO VISUAL FIELD LOSS)
  - → REDUCTION OF 20-30% FROM BASELINE
- GLAUCOMA PATIENTS WITH ADVANCE DAMAGE
  - → REDUCTION OF 40% OR MORE FROM BASELINE
- NORMAL PRESSURE GLAUCOMA
  - → REDUCTION OF 30% FROM BASELINE
- OCULAR HYPERTENSION
  - → REDUCTION OF 20% FROM BASELINE

SURVEYS OF OPHTHALMOLOGY 2003; 48 (SUPPL 1): 53-57

AAO GUIDELINES: TARGET IOP

- OPEN ANGLE GLAUCOMA WITH IOP IN THE MID TO HIGH 20S→ TARGET IOP RANGE 14-18 MMHG
- ADVANCED GLAUCOMA → TARGET IOP < 15 MMHG
- OHT WHOSE IOP > 30 MMHG WITH NO SIGN OF OPTIC NERVE DAMAGE → TARGET IOP < 20 MMHG

REF: SURVEYS OF OPHTHALMOLOGY 2003; 48 (SUPPL 1); 53-57

THE FORMULA USED

CIGTS

$$\left(1 - \frac{\text{Reference IOP} + \text{Visual field score}}{100} \times \text{Reference IOP}\right)$$

JAMPLE

$$\text{Target pressure} = \left[\text{IOP} \times 1/\frac{\text{IOP}}{100} - Z + Y\right] \pm 1$$

SAIF

$$Y_2 = Y_0 + A_1 e^{X/T}$$

Jample's formula for calculating target IOP.

Z = *Optic nerve damage*
1. Norm disk Norm Field
2. Abnormal Disk Norm Field
3. Field loss not threatening fixation
4. Field loss threatening fixation
Y = *Burden of therapy*
No effects on QOL
Small effect
Moderate effect
Large effect

S.T.A.R Glaucoma Risk Calculator

mivision | 25 June 2010

SAIF TABLE

cd	pi	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33
		0.009	0.011	0.012	0.014	0.015	0.017	0.019	0.023	0.027	0.036	0.041	0.055	0.109	0.145	0.282	0.364	0.455	0.545	0.636	0.727	0.818	0.909
0	0.091	0.050	0.051	0.051	0.052	0.053	0.054	0.055	0.057	0.059	0.064	0.066	0.073	0.100	0.118	0.186	0.227	0.273	0.318	0.364	0.409	0.455	0.505
0.1	0.109	0.059	0.060	0.060	0.061	0.062	0.063	0.064	0.066	0.068	0.073	0.075	0.082	0.109	0.127	0.195	0.236	0.282	0.327	0.373	0.418	0.464	0.514
0.2	0.145	0.077	0.078	0.079	0.080	0.080	0.081	0.082	0.084	0.086	0.091	0.093	0.100	0.127	0.145	0.214	0.255	0.300	0.345	0.391	0.436	0.482	0.532
0.3	0.178	0.094	0.095	0.095	0.096	0.097	0.098	0.099	0.100	0.103	0.107	0.110	0.116	0.144	0.162	0.230	0.271	0.316	0.362	0.407	0.453	0.498	0.548
0.4	0.189	0.099	0.100	0.100	0.101	0.102	0.103	0.104	0.106	0.108	0.113	0.115	0.122	0.149	0.167	0.235	0.276	0.322	0.367	0.413	0.458	0.504	0.554
0.5	0.255	0.132	0.133	0.133	0.134	0.135	0.136	0.137	0.139	0.141	0.145	0.148	0.155	0.182	0.200	0.268	0.309	0.355	0.400	0.445	0.491	0.536	0.586
0.6	0.353	0.181	0.182	0.182	0.183	0.184	0.185	0.186	0.188	0.190	0.195	0.197	0.204	0.231	0.249	0.317	0.358	0.404	0.449	0.495	0.540	0.585	0.635
0.7	0.473	0.241	0.242	0.242	0.243	0.244	0.245	0.246	0.248	0.250	0.255	0.257	0.264	0.291	0.309	0.377	0.418	0.464	0.509	0.555	0.600	0.645	0.695
0.8	0.582	0.295	0.296	0.297	0.298	0.299	0.300	0.300	0.302	0.305	0.309	0.311	0.318	0.345	0.364	0.432	0.473	0.518	0.564	0.609	0.655	0.700	0.750
0.9	0.727	0.368	0.369	0.370	0.370	0.371	0.372	0.373	0.375	0.377	0.382	0.384	0.391	0.418	0.436	0.505	0.545	0.591	0.636	0.682	0.727	0.773	0.823
1	0.818	0.414	0.415	0.415	0.416	0.417	0.418	0.419	0.420	0.423	0.427	0.430	0.436	0.464	0.482	0.550	0.591	0.636	0.682	0.727	0.773	0.818	0.868

Target IOP

C/D ratio	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
Target IOP	18	17	16	15	14	13	11	10	9

Legend

Normal	Possible	probable	highly probable	definite

1. Sayed S E H Saif, M Yasser S Saif, Ahmed T.S.Saif; Early Detection of Glaucoma , A New Scoring System. Bull Ophthalmol Soc Egypt, 2005; Vol 98, Number 3, 351-358
2. Sayed S E H Saif, M Yasser S Saif, Ahmed T S Saif; Target IOP What is New; Bull Ophthalmol Soc Egypt, 2006; Vol 99, Number 3, 445-449
3. Sayed S E H Saif, M Yasser S Saif, Ahmed T S Saif; Glaucoma is it still a dilemma in the 21st century; Bull Ophthalmol Soc Egypt, 2007; Vol 100, Number 3, 395-399
4. Sayed S E H Saif, M Yasser S Saif, Ahmed T.S.Saif; Early Detection of Glaucoma , A New Scoring System. Highlights of Ophthalmology website 2005; http://www.elibraryweb.net/index.php?option=com_content&task=category&sectionid=9&id=24&Itemid=59
5. Sayed S E H Saif, M Yasser S Saif, Ahmed T.S.Saif; Early Detection and Managment of Glaucoma , A New Scoring System. Highlights of Ophthalmology 2007; Volume 35, Number 6, 2-4 (English Version)
6. **Sayed S E H Saif, Moh Yasser S Saif, Ahmed T S Saif ; The Glaucoma suspect, the dilemma. What is new? Bull Ophthalmol Soc Egypt, 2008; Vol 101,**
7. **Mohamed Yasser Sayed Saif, Ahmed Tamer Sayed Saif, Passant Sayed Saif, Wessam Salah ElDen,** The Glaucoma suspect , the dilemma. What is new? Research in Ophthalmology 2013; 2(1): 10-14 doi:10.5923/j.ophthal
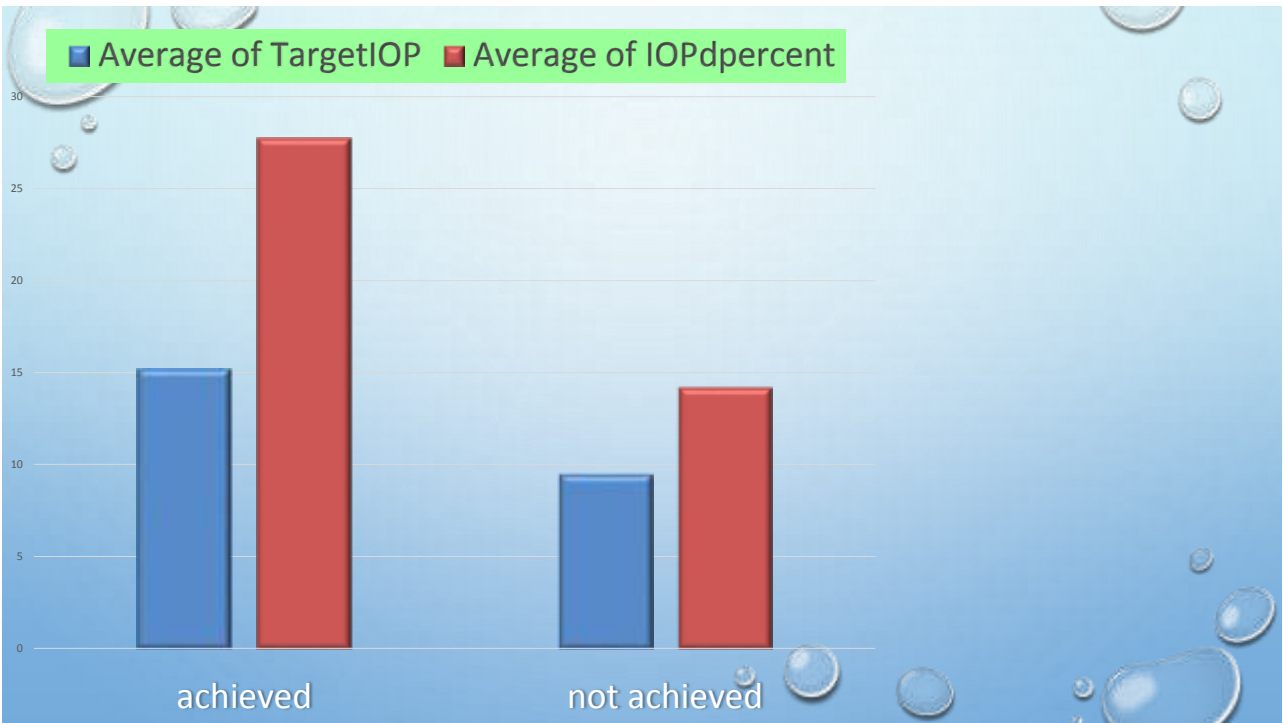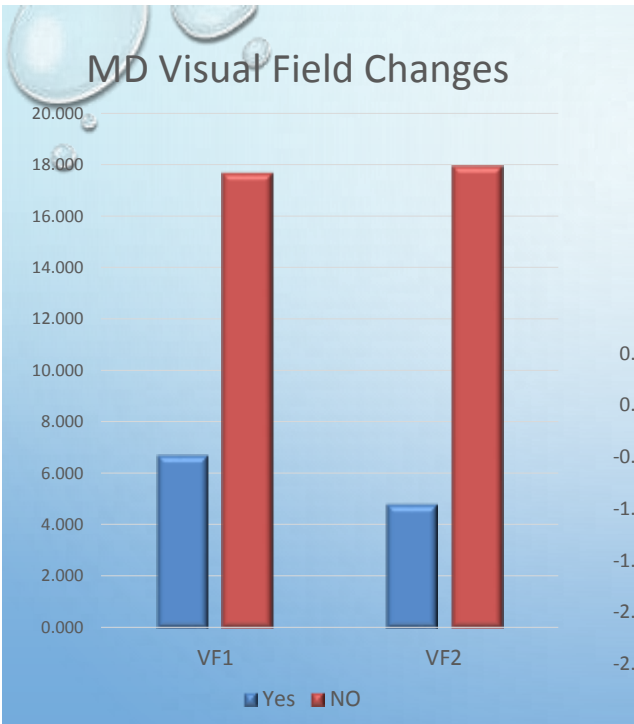
SUBJECT AND METHODS

- 108 PATIENTS : FEMALES 66 , MALES 42

- FULL OPHTHALMIC EXAMINATION

- VISUAL FIELD TEST

- OCT

- SAIF TABLE

- FOLLOW UP : RANGED FROM 9 MONTH – 4.6 YRS

Mean age	female	male
achieved	35.87	44.25
not achieved	46.33	54.33
Grand Total	38.72	48.57

Average C/D ratio

Treatments

Results
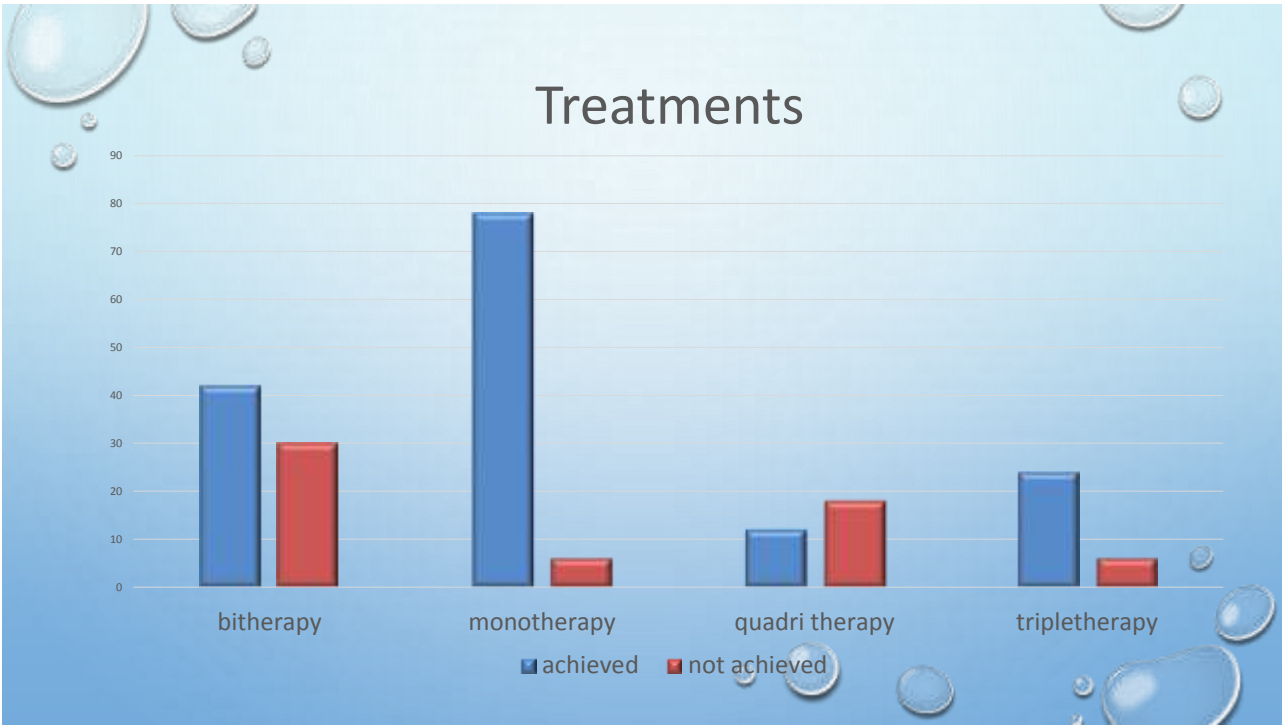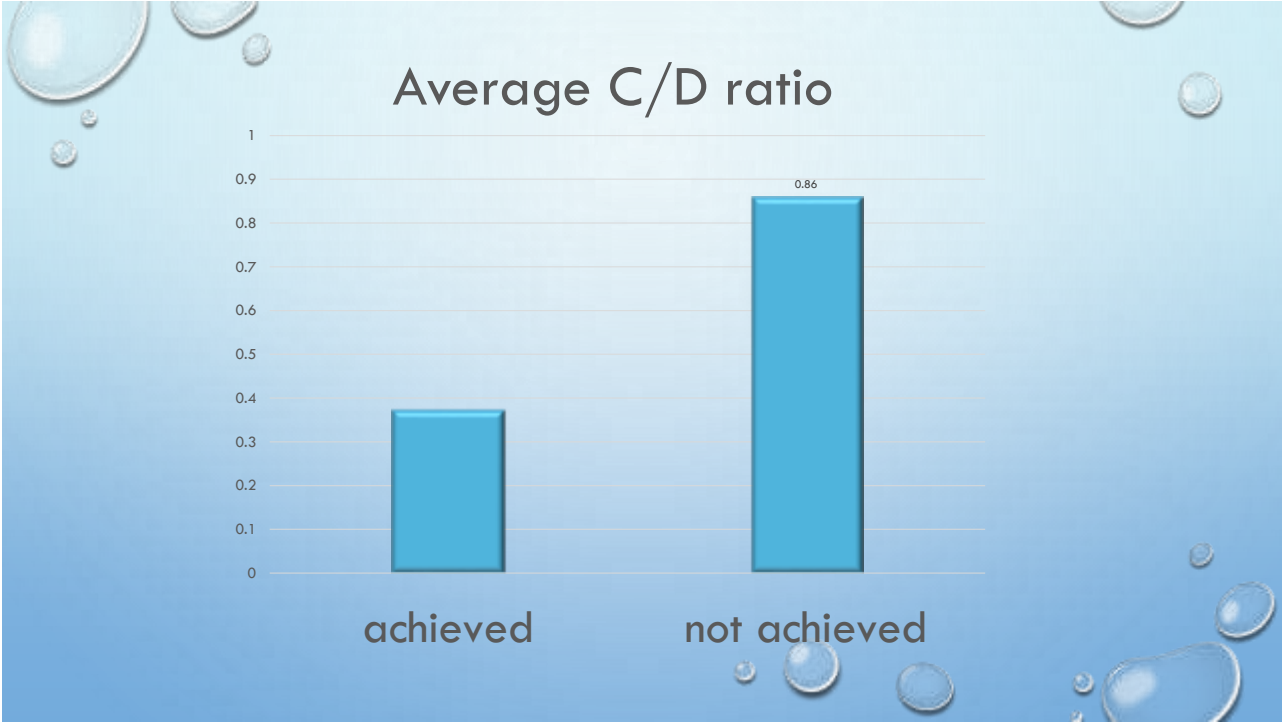
MD Visual Field Changes

| | achievedIOP | | | | | |
| | Yes | | | NO | | |
	Mean	Median	Stand Dev	Mean	Median	Stand Dev
IOPdiff	4.73	4.50	2.95	5.10	5.00	6.35
VFdiff	-1.90	-1.03	4.92	.27	.03	1.48
VF1	6.691	3.080	7.335	17.687	19.875	9.981
VF2	4.794	2.265	6.515	17.957	19.020	9.335

Visual Field MD difference
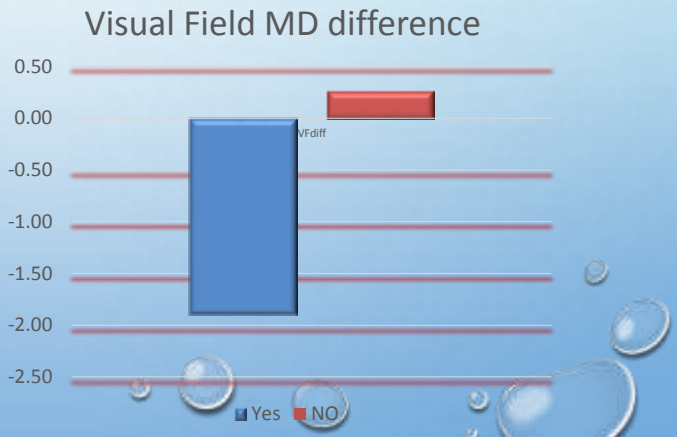
Hypothesis Test Summary

	Null Hypothesis	Test	Sig.	Decision
1	The distribution of VF1 is the same across categories of achievedIOP.	Independent-Samples Mann-Whitney U Test	.000	Reject the null hypothesis.
2	The distribution of VF2 is the same across categories of achievedIOP.	Independent-Samples Mann-Whitney U Test	.000	Reject the null hypothesis.

Asymptotic significances are displayed. The significance level is .05.

CONCLUSION

- TARGET IOP SHOULD BE INDIVIDUALIZED AS PER PATIENT AND SHOULD BE A FLEXIBLE EVER CHANGING VARIABLE VARYING WITH THE PROGRESSION OF THE DISEASE

- THE CONCEPT OF A TARGET IOP SHOULD BE A PART OF THE STANDARD OF CARE FOR PHYSICIANS WHO TREAT GLAUCOMA PATIENTS

- THE METHODS USED TO MAINTAIN THE TARGET PRESSURE SHOULD BE SUSTAINABLE OVER THE LONG TERM WITH MINIMAL ADVERSE EFFECTS