

Evaluation of A New Eyelid Self-Tonometer: Comparison With Goldmann Applanation Tonometer

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Confidential

Financial interest disclosure

- CEO and Equity owner, Toneasy Inc.
- Patent, Toneasy Inc.

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History of tonometer

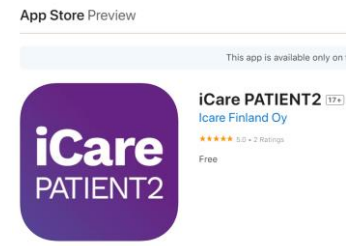
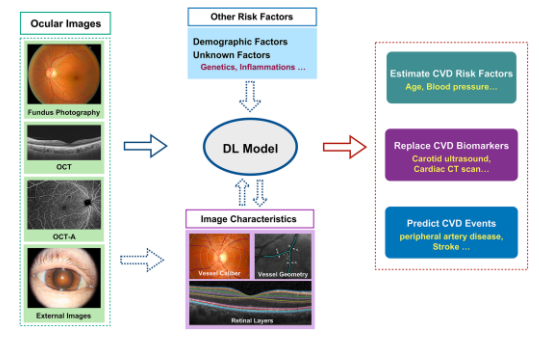
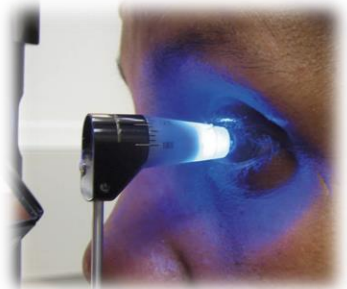
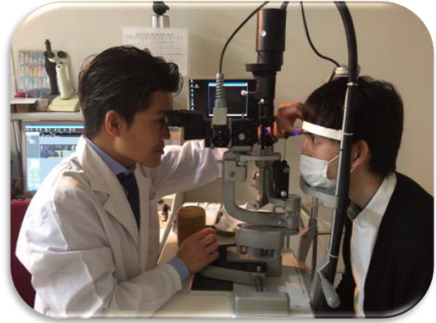
On clinic practice



Off site

Digitalization

Self-monitoring



Goldmann applanation tonometer (GAT)

Handheld portable tonometer

Integrated Data Analytics

- Due to miniaturization and improved operability, self-measurement of IOP has become possible.
- Digitalization enables automatic diagnosis, prevention, and progression prediction.

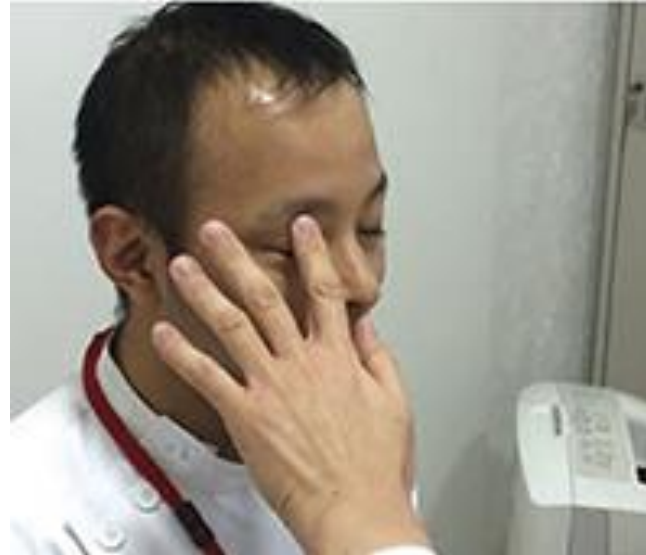


Self-tonometer

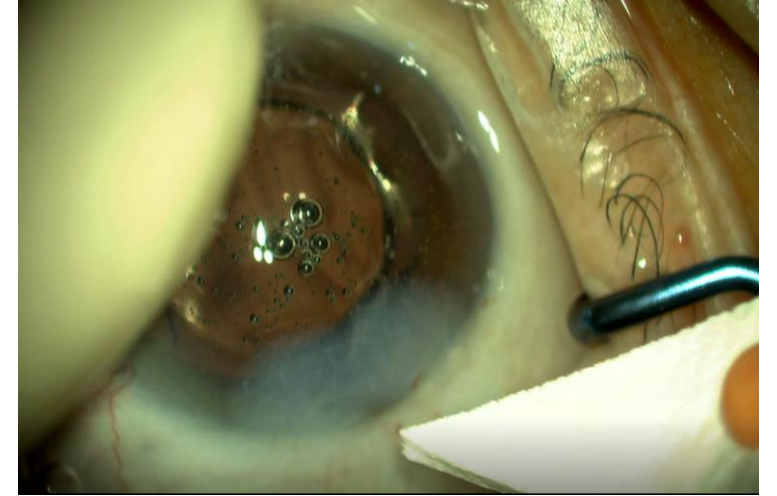
Qualifying IOP using palpation



Before 19 C



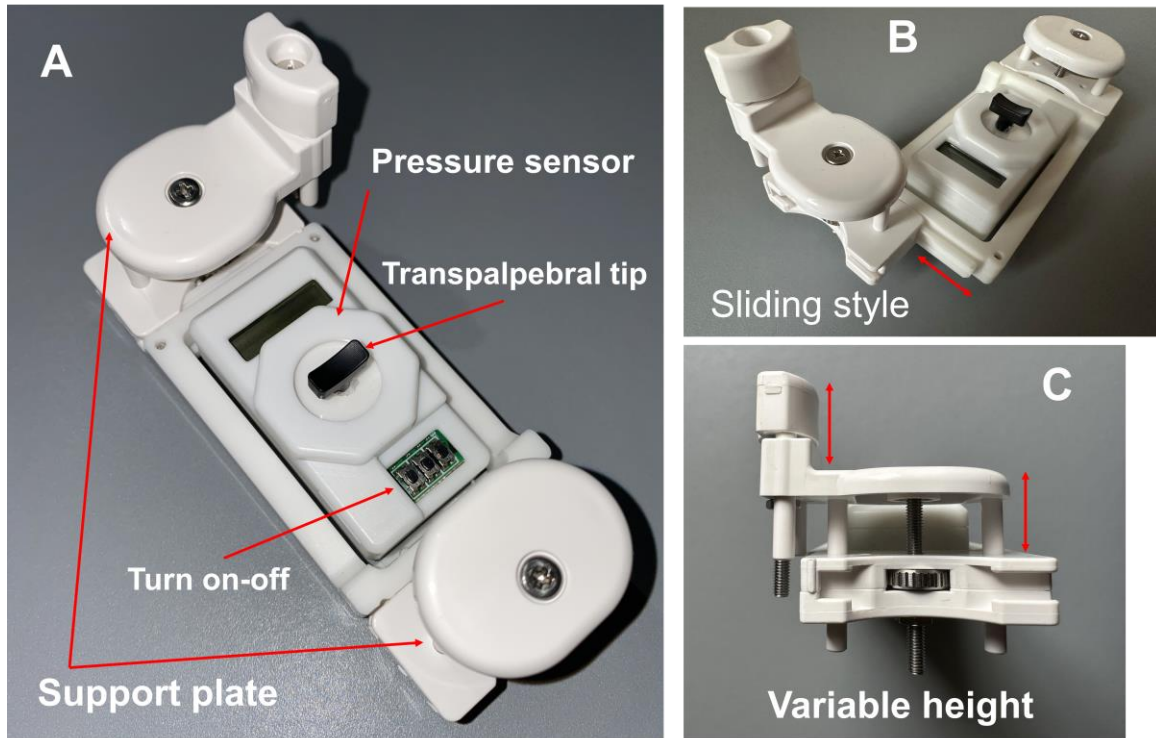
Palpation
(classical)



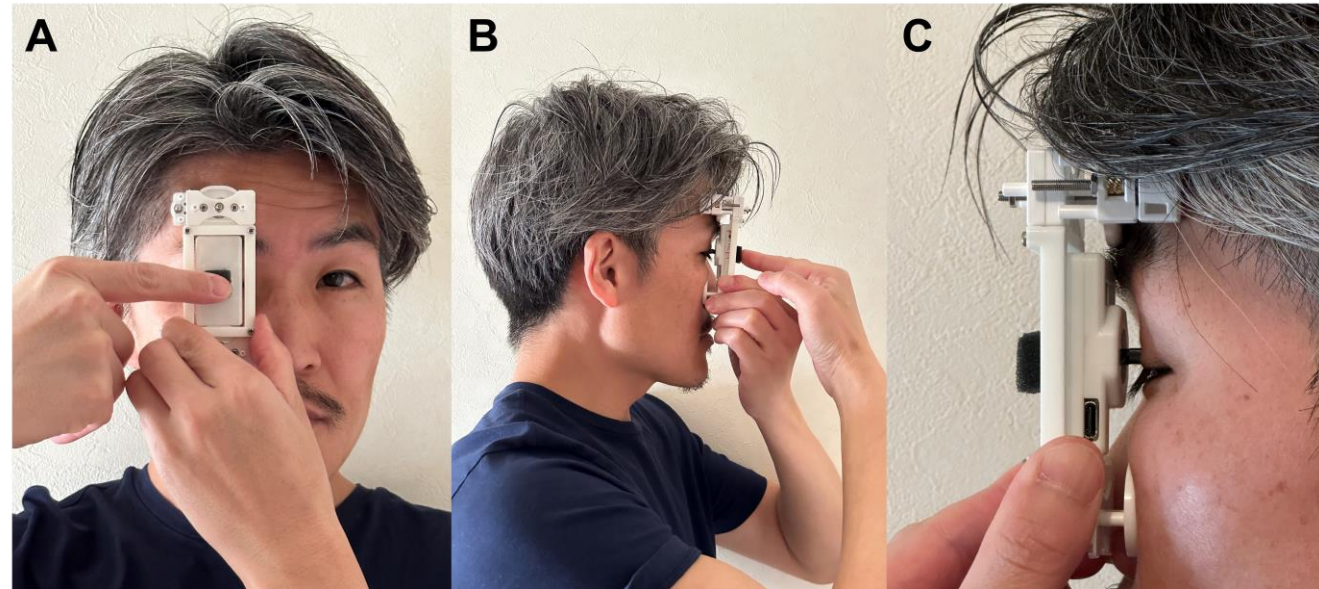
Adjustment of IOP
after surgery

Quantifying IOP using MEMS?

TapEye: self-tonometer

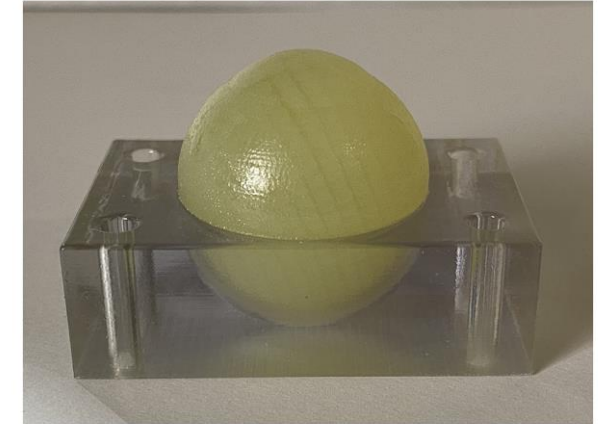
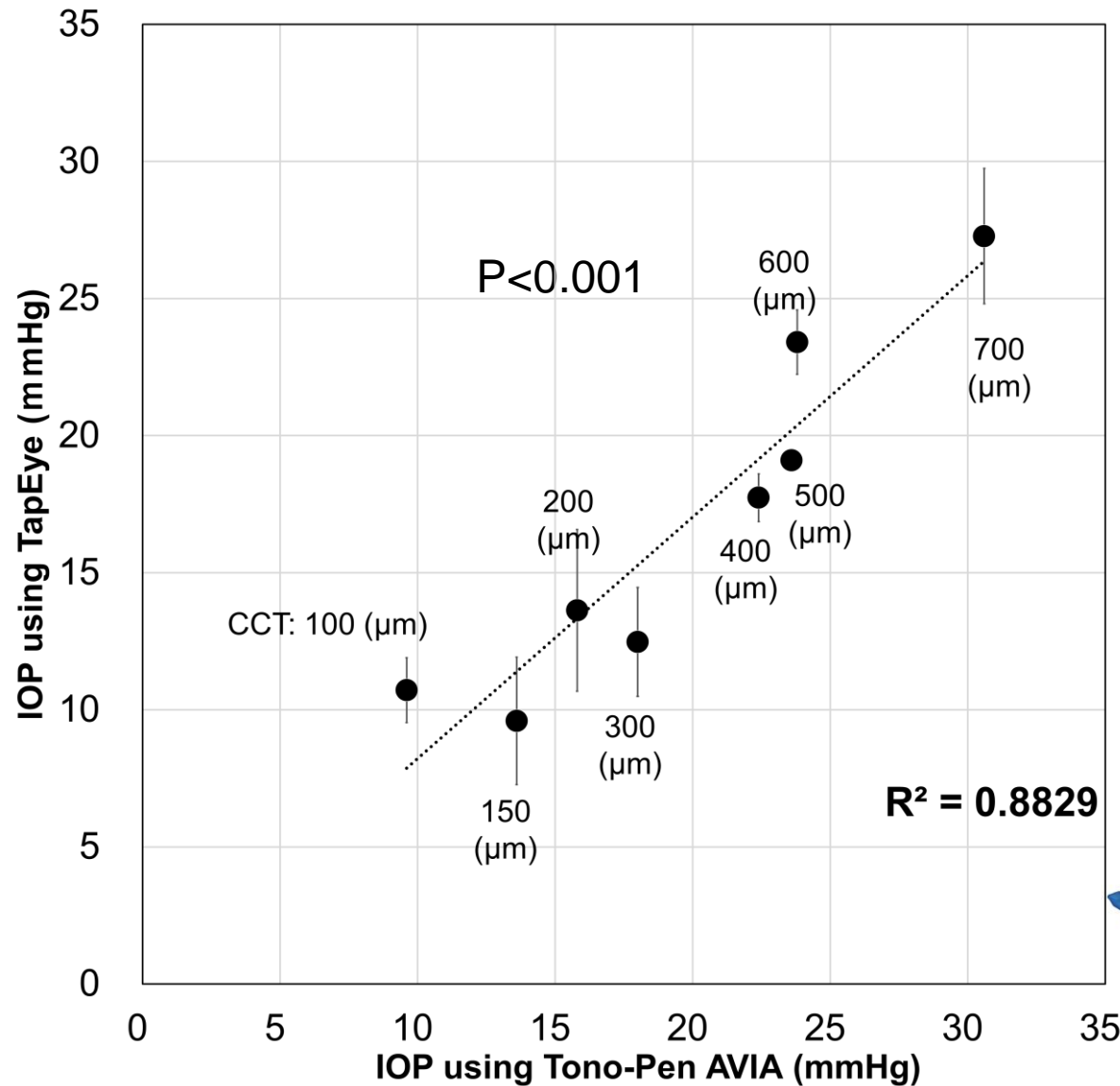


Tap the device by a finger



The upper eyelid is naturally closed. The subject places the tonometer's tip onto their eyelid, approximately 1 to 3 mm behind the lid margin of the upper eyelid; the tip position corresponds to the corneal center.

Correlation between two tonometer in model eyes (Ex Vivo)



Mean difference
(TapEye-Tono-Pen)
-2.9 ± 2.3 mmHg



TapEye tonometer: a pilot study

- Subject: Normal eye and Glaucoma
- Sample size: 100 subjects 200 eyes
- Age: 18 yrs or more
- Innervation: 3-tonometers: TET, GAT, NCT
- Visit: Baseline and 1-month
- IRB: **jRCTs032220268**



TET_1



TET_2-1&2

Entry
Baseline
(visit_1)



1M
(visit_2)



GAT_1



GAT_2



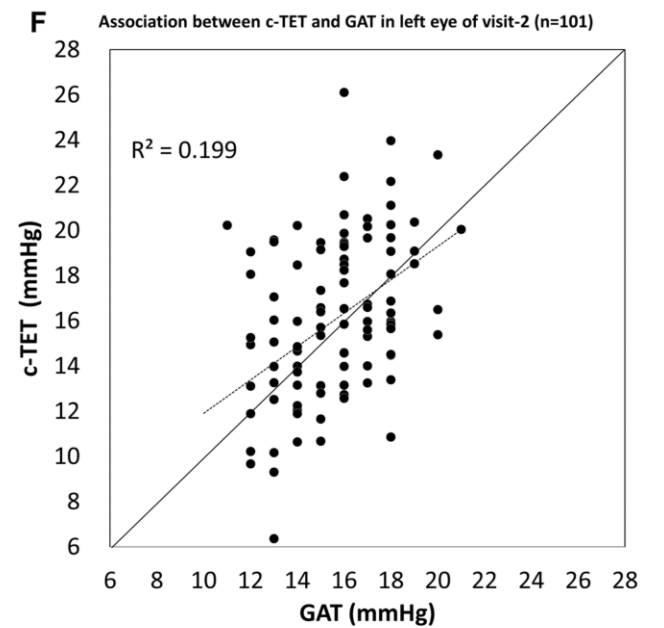
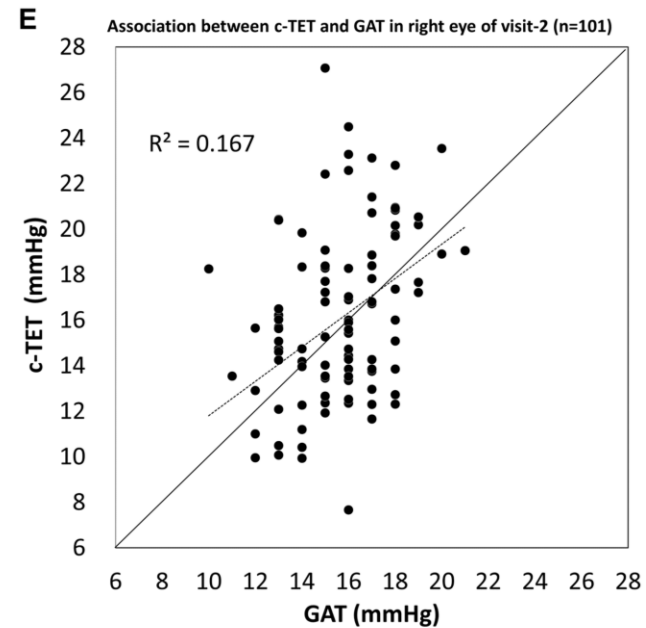
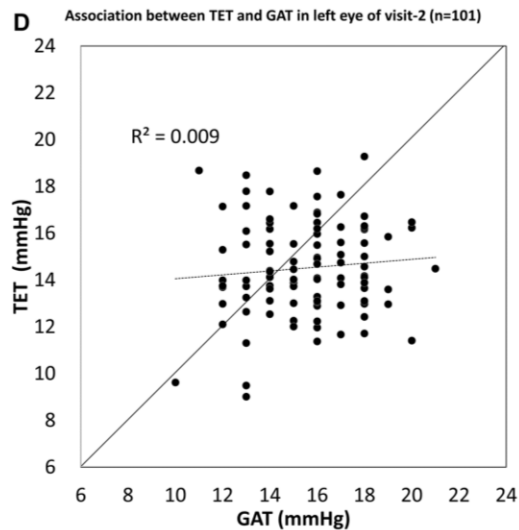
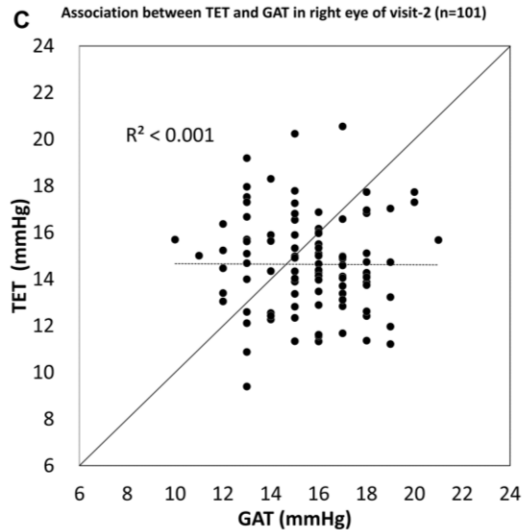
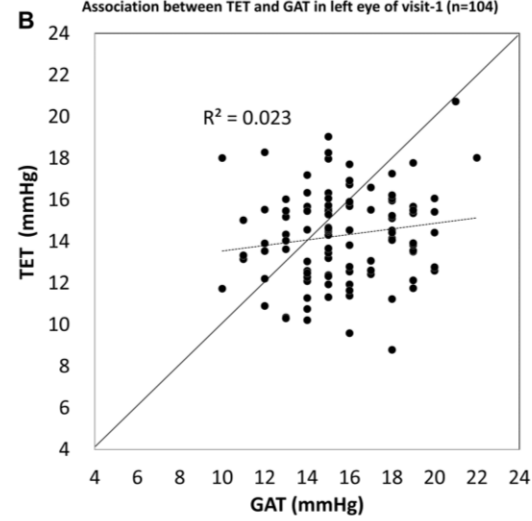
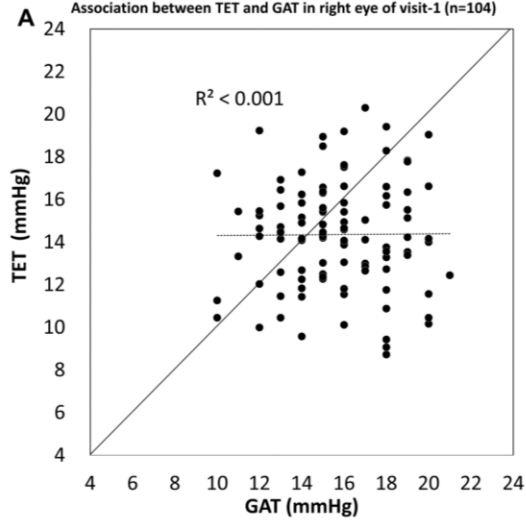
NCT_1



NCT_2

Endpoint	Item
Primary	Correlation between (TET) and (GAT)
Secondary	Repeatability was determined using the intraclass correlation coefficients (ICC)

Correlation with Goldmann tonometer (n=410)



In visit-2, this study derived the corrected-IOP value of TET (c-TET) from the difference between the TET and GAT in visit-1 (Δ IOP).

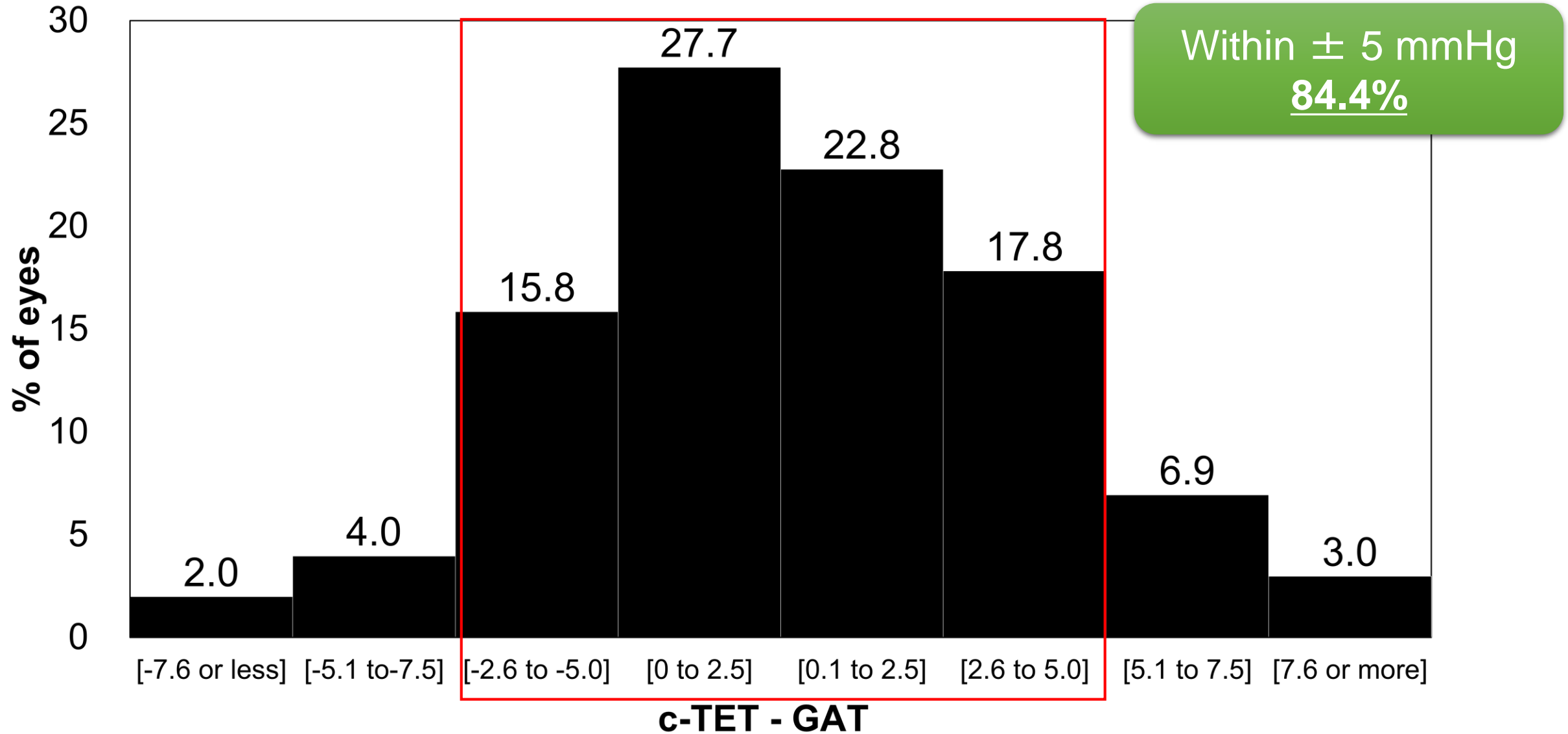
The formula to calculate c-TET was initially suggested as:

$$\mathbf{c-TET = TET_{visit-2} - \Delta IOP}$$

where

$$\mathbf{\Delta IOP = TET_{visit-1} - GAT_{visit-1}}$$

Distribution of agreement of c-TET with GAT



Tonometers on the market

Our product is for self-measurement



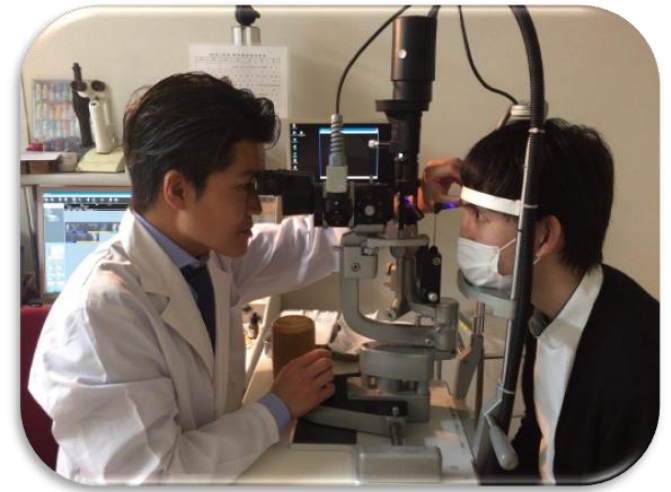
	Goldmann	Non-contact	Tonopen	Icare Home	Triggerfish	This product
Contact	Cornea	Non	Cornea	Cornea	Cornea	Eyelid
Portable	×	×	✓	✓	✓ But wireless power source too big	✓
Anesthesia	Necessary	Unnecessary	Necessary	Unnecessary	Unnecessary	Unnecessary
Invasive	+++	+	++	+	+++	Zero
Self-measure	×	×	×	✓	△	✓
Accuracy	High	Moderate	Low	Moderate	Low	Moderate
Price (USD)	\$1,500	\$10,000	\$5,000	\$2,000	\$500/lens	\$200 to 400
Company	HAAG-STREIT (Germany)	Nidek (JP)	Reichert (US)	icare (Finland)	SENSIMED (Switzerland)	Toneasy
Remote medicine	×	×	×	✓ Too expensive	✓	✓

Future image in our service



Monitoring IOP

Remote medicine



Clinic,
hospital



眼圧値 (mmHg)

21:30 右 **18** 左 **16**

Correcting data



Cloud data

Patient

We are providing the service of self-monitoring of IOP using TapEye.

- Safe and less invasive
- Effective management of glaucoma treatment

Conclusions

- ◆ After performing a correction based on the difference between the TET and GAT measurements at the initial visit, the corrected IOP value of the TET was correlated with that of the GAT at the second visit.
- ◆ The TET has the potential to address an unmet need by providing a tool for minimally invasive IOP measurements.