

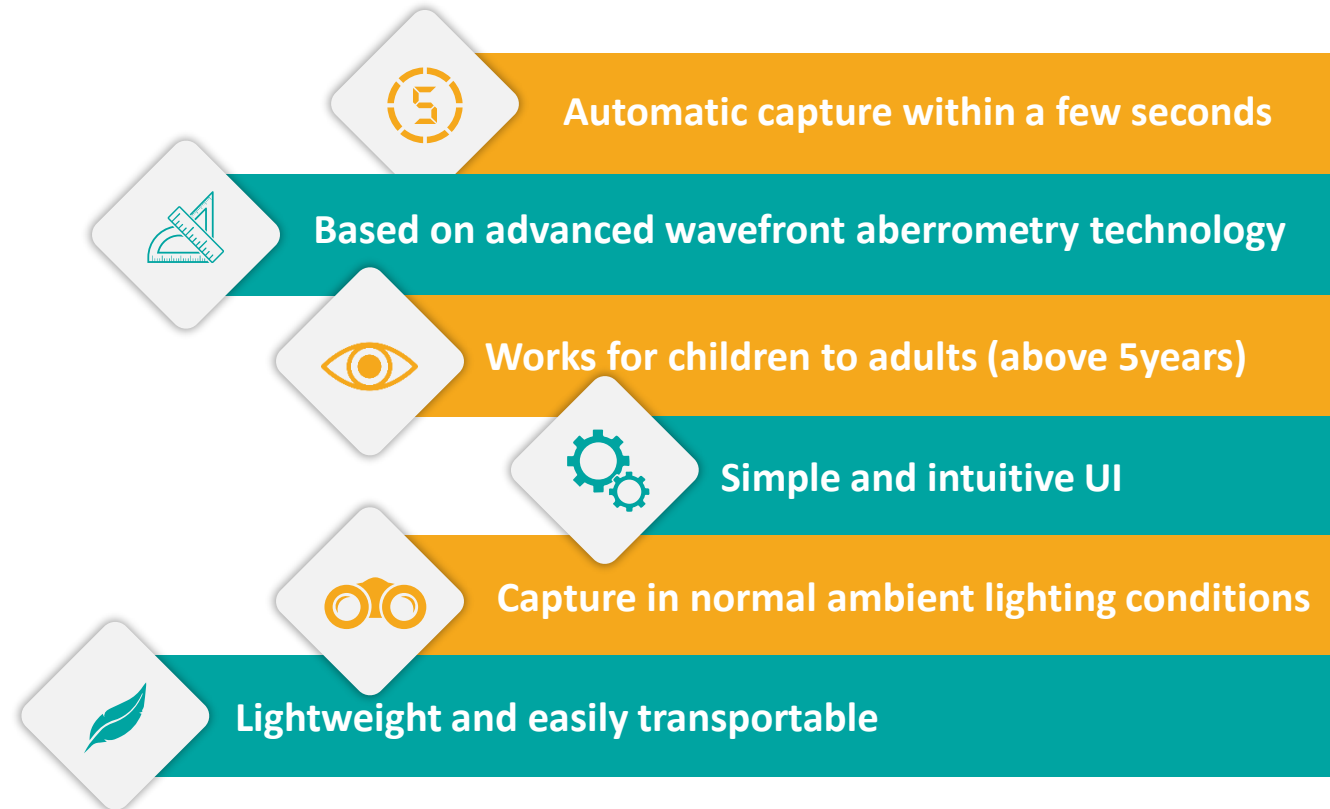


# 3nethra aberro Product Demo and training



# Product Description

## Handheld Auto Refractometer



# Product specification

<b>Spherical Measurement Range</b>	-14D to +14D, increments (0.25D)
<b>Cylindrical Measurement Range</b>	-7D to 0D, increments ( 0.25D)
<b>Axis Measurement Range</b>	0 to 180 degree, 1 degree increment
<b>Min Pupil Diameter</b>	2.5 mm
<b>Vertex Distance</b>	19.5 mm
<b>Patient Age Range</b>	Above 5 years
<b>Accommodation control</b>	Low spatial frequency sinusoidal grating with Gaussian envelop
<b>Technology</b>	Wave-front Sensing
<b>Measurement Time</b>	<5 seconds per eye
<b>Battery Life</b>	8 hours, fully charged ( to charge 4 hours)
<b>Power source</b>	5V DC Micro USB A ,Li-ion battery
<b>Display / Connectivity</b>	3.5" Color touch screen / USB and Bluetooth
<b>Weight / Dimension</b>	650 g / 8.9" X 7.5" X 2.9"
<b>Internal Storage Memory</b>	100 measurements (After 100 Measurements the data will erase automatically)

# Instruction to the Operator

- Ensure the below points before taking readings
- Place the target(provided with the package) at 4 meter distance.
- If there is a space constraint use the mirror at 2 meter distance(target will be behind patient max possible distance)
- Avoid bright light above patient.
- Avoid sun light direct exposure to patient eye
- Place the target at centre of the device with 4 meter distance(while doing measurement with stand)
- Don't block left eye while taking measurement with Right eye(vice versa)

# Instruction to the Patient

## Non-Dilated Eye:

- Don't look into the device
  - Look straight
  - Look far to see the target
  - Wide open the eye
- 
- This instruction is important to get patient cooperation and accuracy of reading.
  - Especially for Patient below 20 years, their eye can accommodate easily.
  - For patient with small pupil – wide opening of eye will help

# Dilated Eye

- Enable internal fixation for the dilated Eye's before taking reading.  
(make sure to un check the box while normal use)
- Inform the patient to look inside the internal fixation target and Close the other eye using hand as per the below image
- Look into the device
- Look inside the internal fixation of the centre
- Look into the red dot
- Wide open the eye



Hold the device to the patient's eye and align their pupil to the circle. The circle will change colors to help you with alignment . Please select an eye you would like to begin with

☒ ENABLE INTERNAL FIXATION

START OD  
(RIGHT)

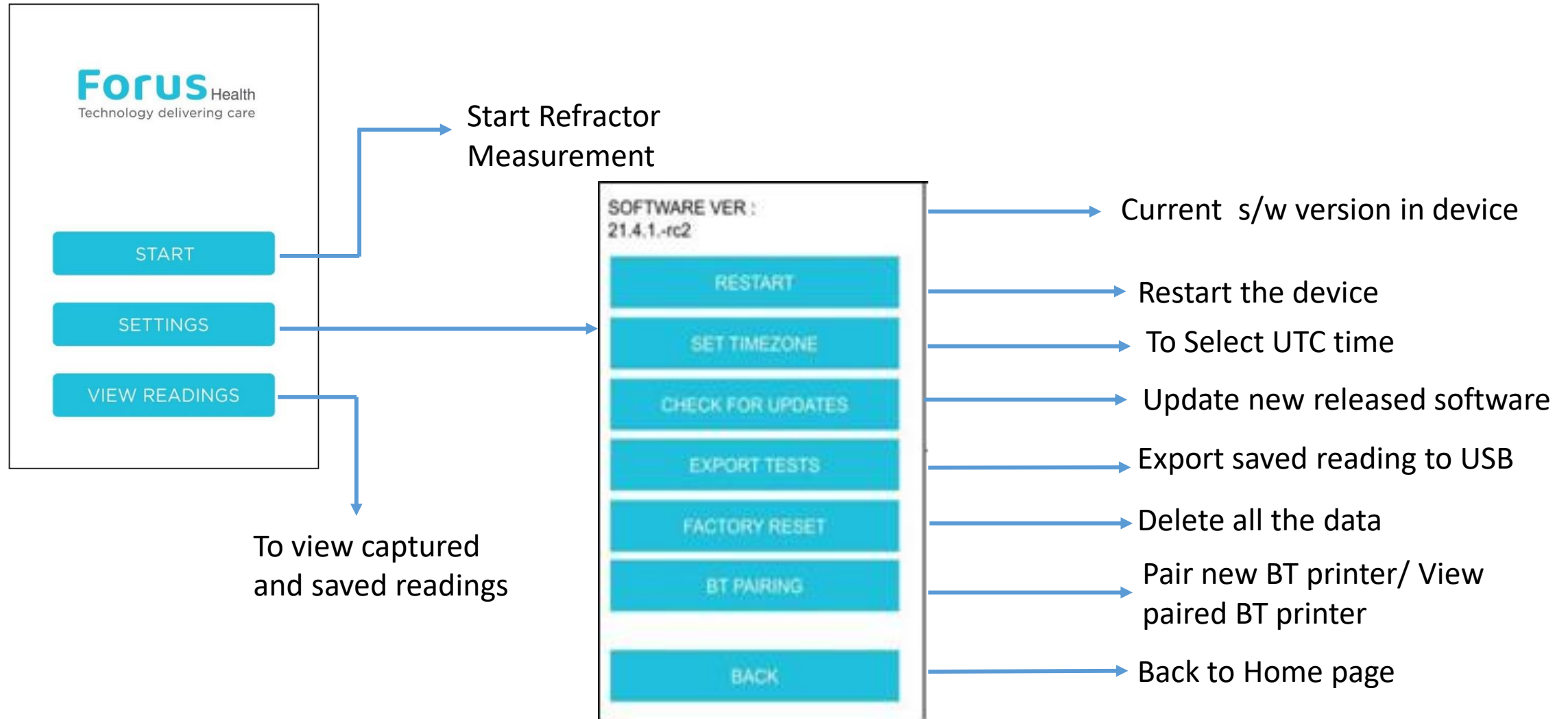
START OS  
(LEFT)

BACK

# Accuracy based on clinical evaluation

- 3nethra aberro achieves 95% accuracy compared with desktop auto refractor.
- 3nethra aberro achieves 90% accuracy compared with subjective refraction.
- Publication – Clinical Evaluation of 3nethra aberro handheld autorefractrometer(JOVR-Journal of ophthalmic vision and research)

# Training - UI Features





# Training - How to take, save and print the readings?

## STEP-1

**Forus** Health  
Technology delivering care

START

SETTINGS

VIEW READINGS

Hold the device to the patient's eye and align their pupil to the circle. The circle will change colors to help you with alignment. Please select an eye you would like to begin with

☐ ENABLE INTERNAL FIXATION

START OD  
(RIGHT)

START OS  
(LEFT)

BACK

## STEP-3

Align pupil to target circle



OVERRIDE

CANCEL

## STEP-4

Align pupil to target circle



OVERRIDE

CANCEL

## STEP-5

3AOF-BXXX-XXXX  
Date : DD/MM/YYYY

Right (OD)	Left (OS)
SPH: +0.50	SPH: +0.50
CYL: -0.00	CYL: -0.00
AXIS: 10	AXIS: 10
PD: 6	PD: 6

Measurements Notes :

SHARE

SAVE

RESTART EYE

FINISH

Results: Test ID: 15  
2019/04/15

Right (OD)	START LEFT
SPH: +15.75D	
CYL: -0.25D	

Saving Readings

SAVE/PRINT

RESTART EYE

FINISH

# Training – Update Software

**STEP-1**



**STEP-2**



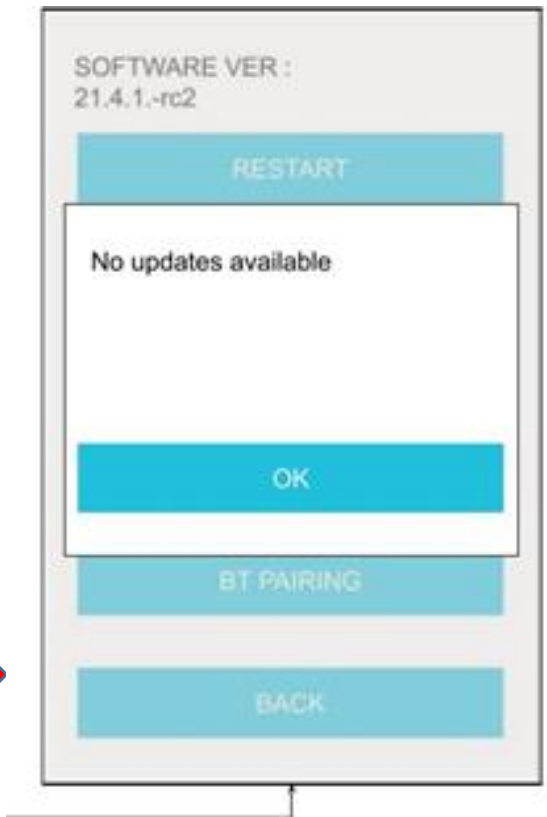
Forus Health

Updating...  
Please Wait

DO NOT REMOVE POWER

**STEP-3**

**Alert**



# Training – Export Tests/Saved Data

## STEP-1

**Forus** Health  
Technology delivering care

START

SETTINGS

VIEW READINGS

## STEP-2

SOFTWARE VER :  
21.4.1.-rc2

RESTART

SET TIMEZONE

CHECK FOR UPDATES

EXPORT TESTS

FACTORY RESET

BT PAIRING

BACK

7 TESTS  
READY TO EXPORT

Exporting 1 of 7  
Do not remove USB  
drive

EXIT

## STEP-3

7 TESTS  
READY TO EXPORT

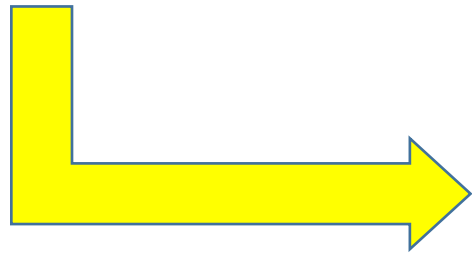
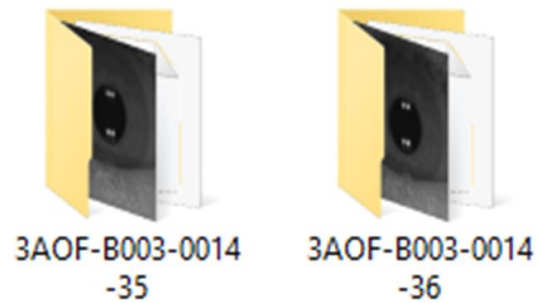
Tests Export Successful.  
Please remove the USB Drive

EXIT

## STEP-4

# Training – Export Tests/Saved Data

## STEP-1



## STEP-2



Note: The device will capture five images for each eye. Device shall be considered best three images out of five images for the refractive error calculation

# Training – Exported Tests

## STEP-1

F O R U S H E A L T H

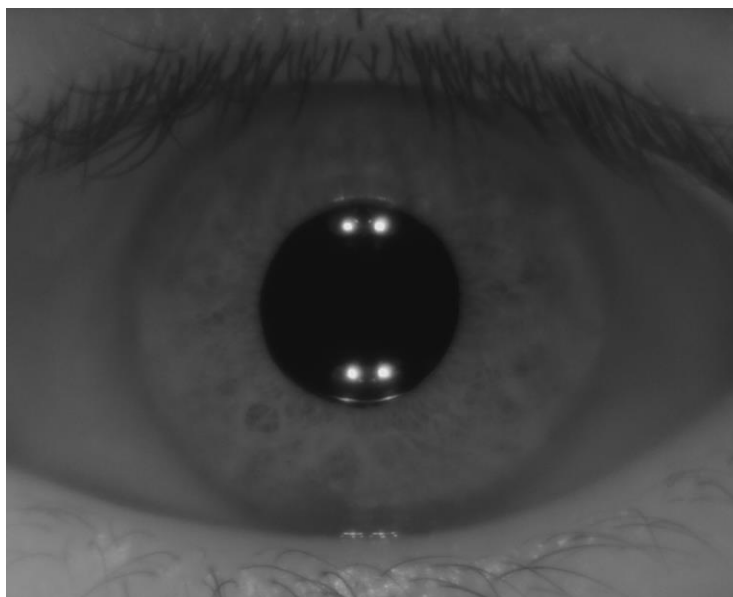
Device ID: 3AOF-B003-0014

Test ID: 35

UTC Date/Time: Sat Jan 1 00:16:54 2000

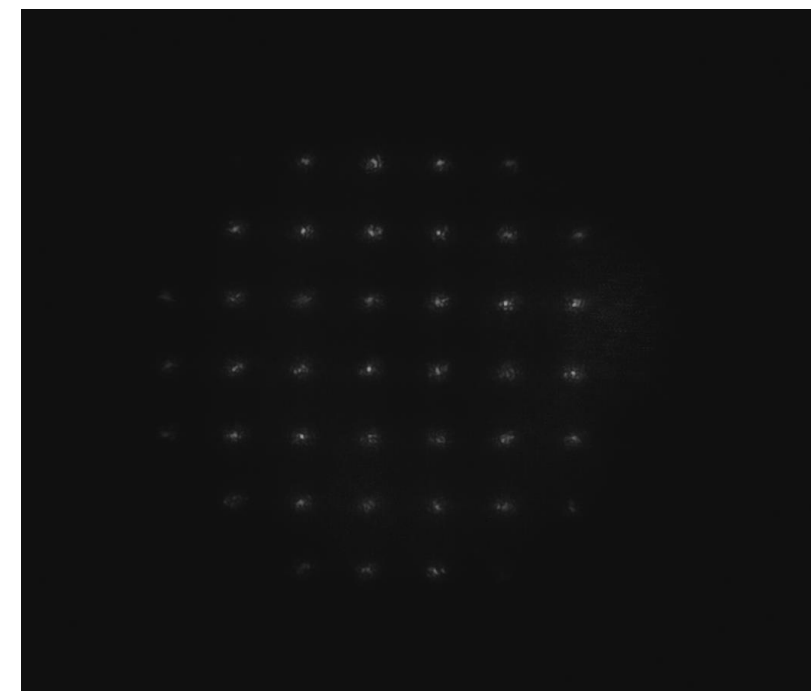
Eye	Sphere	Cylinder	Axis	Pupil Diameter
Right (OD)	-2.75 D	-1.00 D	41 degrees	5.0 mm
Left (OS)	-2.50 D	-0.25 D	135 degrees	4.8 mm

## STEP-2



*Keratometer*

## STEP-4



*Wave front pattern*

# Training –Connecting Printer to the Device

## STEP-1

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Technology delivering care

START

SETTINGS

VIEW READINGS

## STEP-2

SOFTWARE VER :  
21.4.1.-rc2

RESTART

SET TIMEZONE

CHECK FOR UPDATES

EXPORT TESTS

FACTORY RESET

BT PAIRING

BACK

SOFTWARE VER :

PAIR TO

PRINTER

PC/MOBILE

BACK

## STEP-3

## STEP-4

Paired Printer Details:  
Printer name:  
BlueTooth  
  
Printer MAC Address :  
AB:CD:XX:XX:XX:XX

BACK

PAIR NEW

Scanned Printer Details:  
Printer name:  
BlueTooth  
  
Printer MAC Address :  
AB:CD:XX:XX:XX:XX

BACK

PAIR

## STEP-5

# STEP-1 Training – Connecting to PC/Mobile to the Device

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Technology delivering care

START

SETTINGS

VIEW READINGS

**STEP-2**

SOFTWARE VER :  
21.4.1.-rc2

RESTART

SET TIMEZONE

CHECK FOR UPDATES

EXPORT TESTS

FACTORY RESET

BT PAIRING

BACK

SOFTWARE VER :

PAIR TO

PRINTER

PC/MOBILE

BACK

**STEP-3**

**STEP-4**

Paired PC/Mobile Details :  
PC/Mobile Name:  
LPXXXXXX

PC/Mobile Address:  
AB:BC:XX:XX:XX:XX

BACK

PAIR NEW

Scanned PC/Mobile Details :  
PC/Mobile Name:  
LPXXXXXX

PC/Mobile Address:  
AB:BC:XX:XX:XX:XX

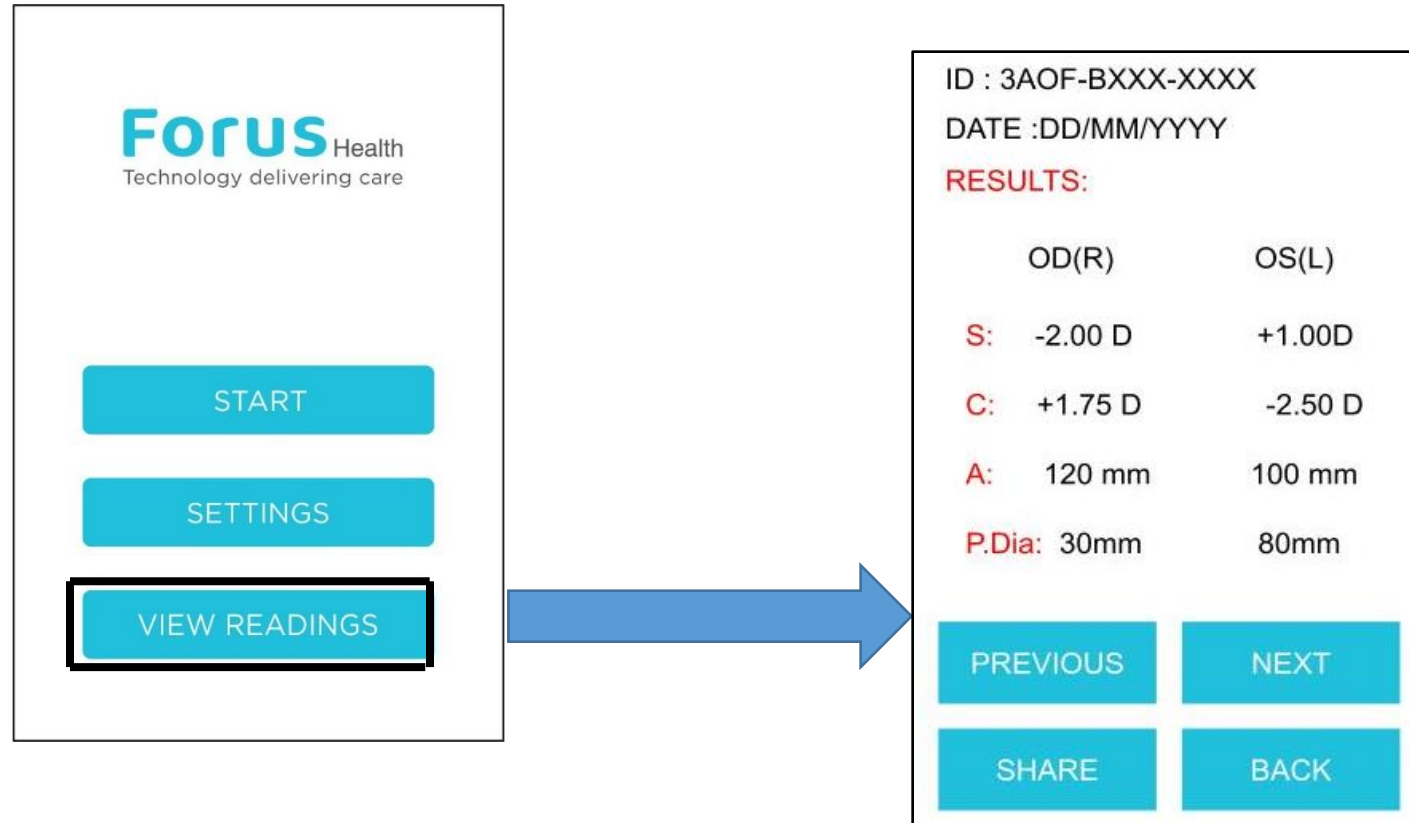
BACK

PAIR

**STEP-5**

# Training – View Readings

## STEP-1



## STEP-2

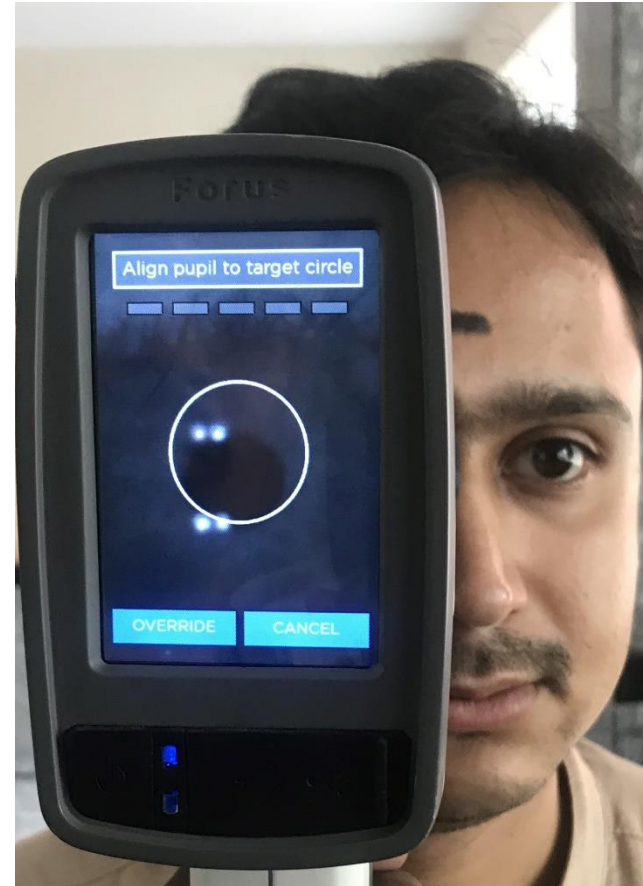
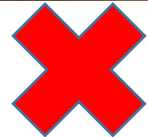
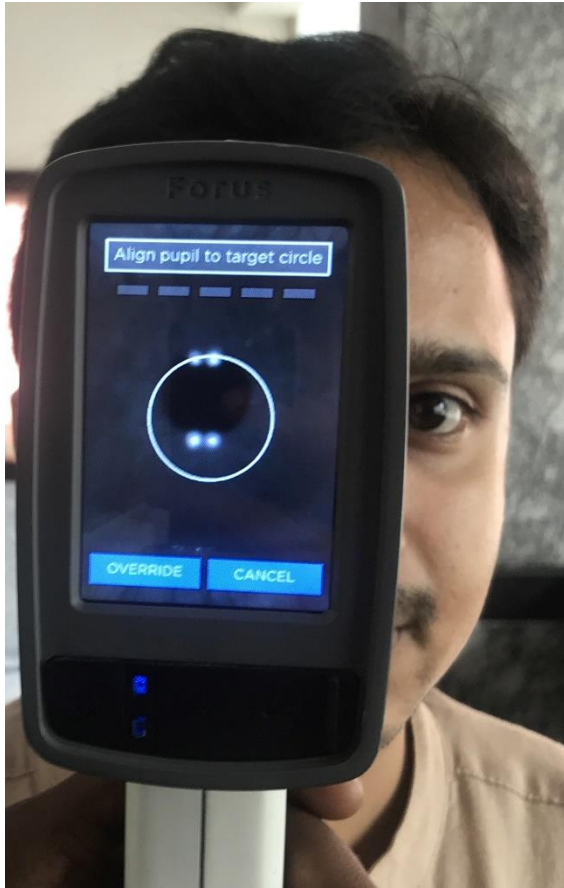


# Do's and Don't – Operator Position



- Operator should not block the long distance view of patients.

# Do's and Don't – Align the Pupil

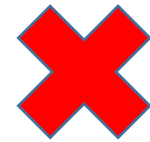


➤ Align the pupil to the centre of the white circle

Patient not cooperating – How to find it



# Do's and Don't – Device position



➤ Operator should position the device straight to the patient axis.

# Special Note

- If the message appears as the circled are ,for the patient with pupil diameter less than 3mm dia results may have reduced accuracy of 0.5D to 1.5D – Spherical readings
- During this time take the readings again by dimming the lights and ask patient to close the eye for sometimes (or using single dilation drop or short dilation mode, if needed )
- For diseased eye and very low pupil eyes – in case of not able to take readings, Pl use override mode with best pupil alignment position without shaking the hand. But the readings will be taken with errors ( +/- 1D) and the pupil diameter reading will be Zero

Results:

Test ID: 15  
2019/04/15

Right (OD)	LEFT (OS)
SPH: +1.75D	SPH: +0.75D
CYL: -0.25D	CYL: -0.50D
AXIS: 131	AXIS: 150
PD: 0.0mm	PD: 0.0mm

Measurement Notes:  
The patient has a pupil diameter under 3.0mm. Results may have reduced accuracy.

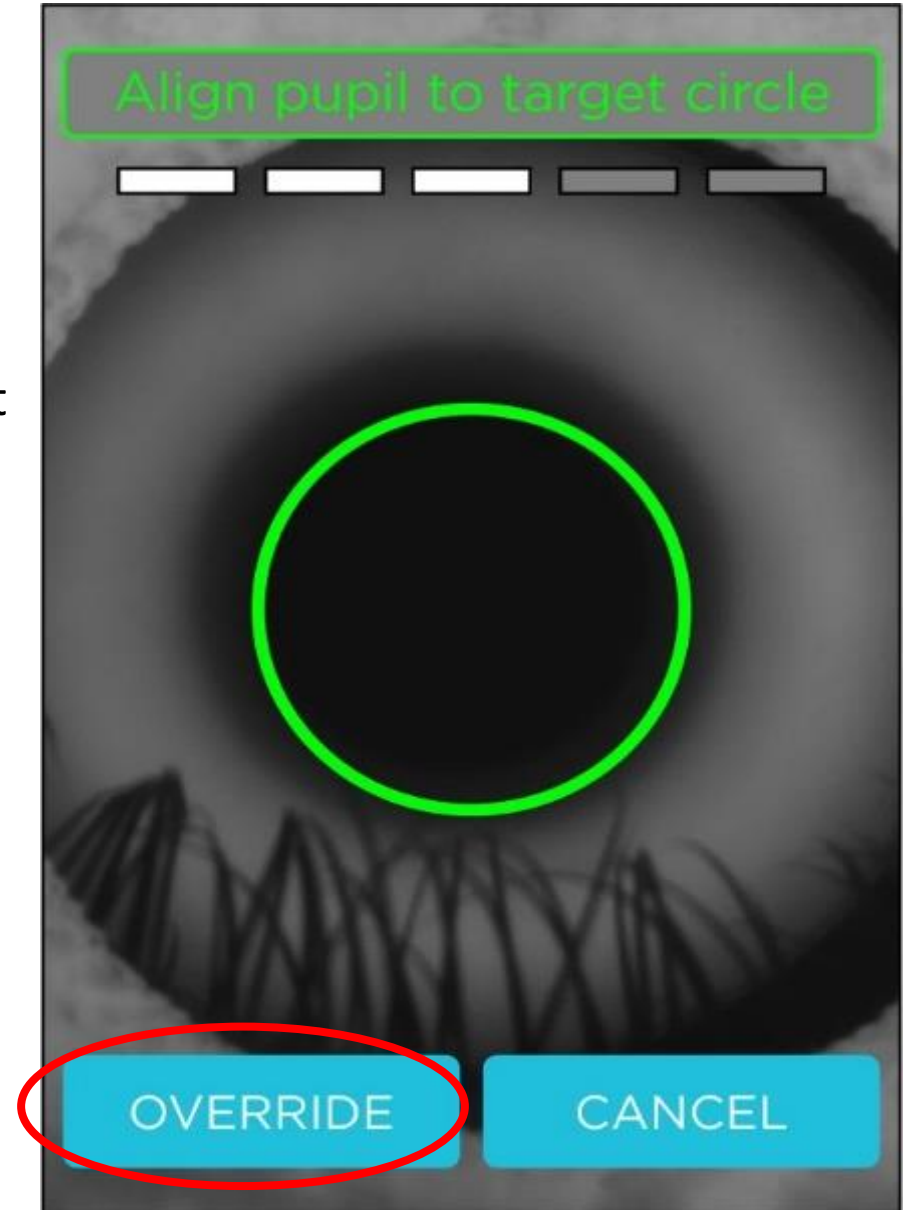
SAVE/PRINT

RESTART EYE

FINISH

# Special Note

- For diseased eye or very low pupil eyes or some eye even after aligned properly not able to take readings, Pl use override mode with best pupil alignment position without shaking the hand. But the readings will be taken with errors (  $\pm 1D$  ) and the pupil diameter reading will be Zero.



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**Thank You**



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