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hearTest Occ Health - 2023

hearX[®]group



**RETHINK OCCUPATIONAL
HEARING TESTING**

hearX[®] group

Healthy hearing for everyone, everywhere.

Est. 2016



Our hearing medical device is fully compliant with regulations in; USA (**OSHA 29 CFR 1910.95** audiometric requirements), UK, AU, NZ & RSA.

Certified



TGA

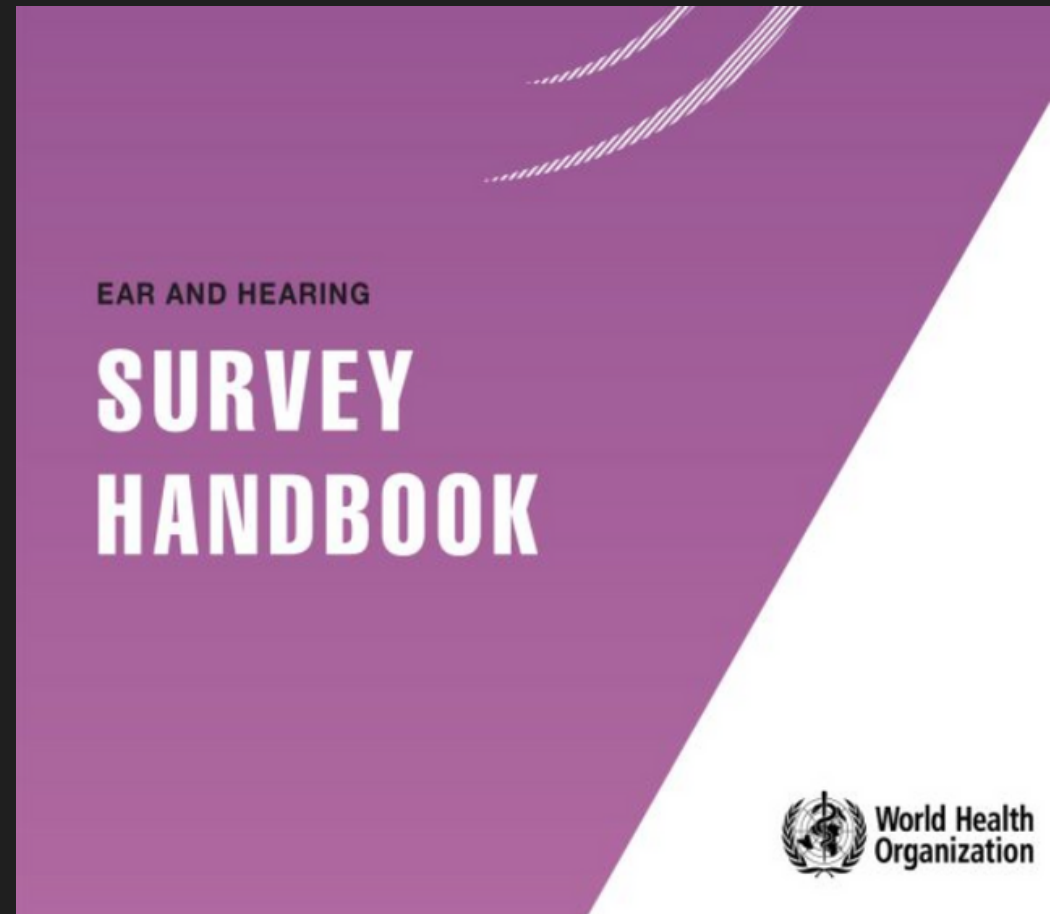


COMPETITOR COMPARISON BY WHO

Independent comparison study
(hearTest, Shoebox & AudCal)

Only hearTest met requirements for in
booth and outside booth testing

Recommended and used by WHO for
population-based audiometric testing



HEARTEST OCCUPATIONAL HEALTH

Accurate & clinically-validated, smart hearing technologies

Occupational Health | Ototoxicity | Audiologists | ENT's



SOUNDBOOTH- JOURNEY

STEP 1:
Patient proceeds to clinic



STEP 2:
The patient enters the clinic
to get examined



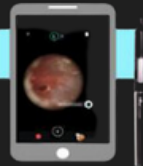
STEP 3:
An onsite facilitator assists the
patient



STEP 6:
The patient is conditioned
within the booth and the
headset placement is
explained to them.
Manual in-booth testing is
conducted on the patient



STEP 5:
An otoscopy examination is
conducted on the patient

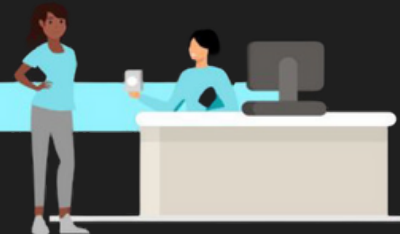


STEP 4:
A consultation is
held to gather information

STEP 7:
The test results and clinical
impressions are recorded.
Data is transferred to EHR
system



STEP 8:
The findings are discussed with
the patient and further
recommendations are
provided



- Dedicated area in clinic (Stationary)
- Decreased Patient Comfort (ventilation, compact, lighting, no human interaction)
- Expensive
- Prolonged Testing (15-20 min per patient)



BOOTHLESS - JOURNEY

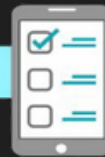
STEP 1

The patient enters the clinic to get examined



STEP 2

Patient information is captured on the device. Patient information can also be imported prior to testing



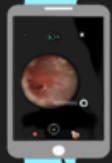
STEP 3

Step by step test instructions are provided on the device. Automated testing is performed



STEP 4

An otoscopy examination is conducted on the patient



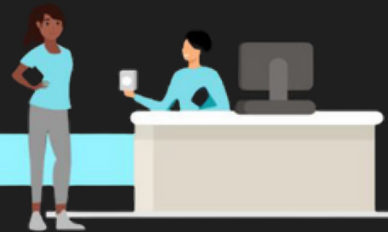
STEP 5

Automatic PLH and STS shifts and reporting. The data is synced in real time to mHealth Studio Cloud



STEP 6

The findings are discussed with the patient and further recommendations are provided



- Increase clinic reach outside of the immediate clinic location
- Cost-Effective
- Offers Portability
- Automated Testing & Reporting
- Reduced Lost Work Time (+- 10 min per test)



FEATURES AND BENEFITS

▶ **OPTIMISED FOR USE OUTSIDE SOUND BOOTH**

Boothless testing. Attenuation equivalent to testing in a 5cm-single walled booth.

▶ **COMPREHENSIVE AND EFFICIENT REPORTING**

Reduced need for paperwork and administration time with on-site patient signatures and online data management.

▶ **INTELLIGENT NOISE MONITORING OF TEST ENVIRONMENT**

Smart noise monitoring before and during testing that is included in the test result.

▶ **DATA MANAGEMENT**

Patient, test and facility data consolidated on a secure online database, mHealth Studio Cloud.

▶ **SMART TEST ALGORITHM AND QUALITY CONTROL**

Intelligent re-test algorithm where ambient noise or user error may have negatively affected results.
Detection of unreliable user responses
Tracking of response times, false positive responses and test-retest agreement.

▶ **AUTOMATED TESTING + REPORTING**

Automated Percentage Loss of Hearing (PLH),
Standard Threshold Shift (STS) calculations.

▶ **TIME-EFFICIENT AND COST-EFFECTIVE**

Using automated testing and smart algorithms, it's significantly faster than traditional audiometers, at a fraction of the cost.

▶ **TESTING PROTOCOLS**

Includes pre-loaded compliant automated protocols for the Baseline, Screening, and Exit assessments.



DEVICE MAINTENANCE

- ▶ Annual software licence renewal
- ▶ Daily Biological Tests to ensure hardware conform to standards



HARDWARE

- ▶ Samsung Galaxy Tab A7
- ▶ RadioEar IP30 headphones and Peltor Ear Defenders
- ▶ Disposables:
 - Single-use foam eartips
 - Replacement tubes for earphones
 - Velcro straps for fastening
- ▶ DAC (Dialog-to-Analog Converter)

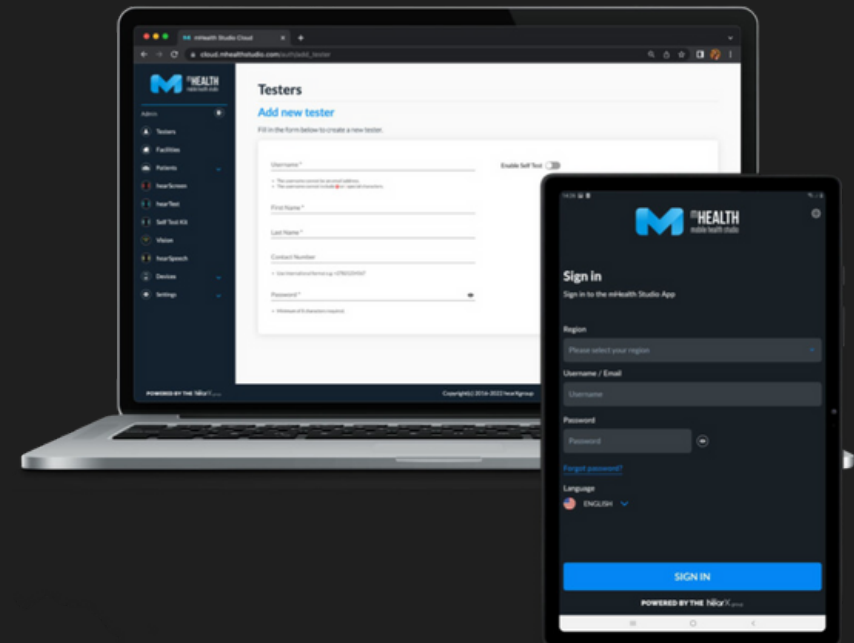


SIGNING IN TO HEARTEST OCC HEALTH

The Administrator signs in on the HIPAA compliant US based cloud server using a registered hearX account and password. From there, the administrator has the ability to create Tester profiles with unique username and password to perform tests.

What information is captured when adding a tester?

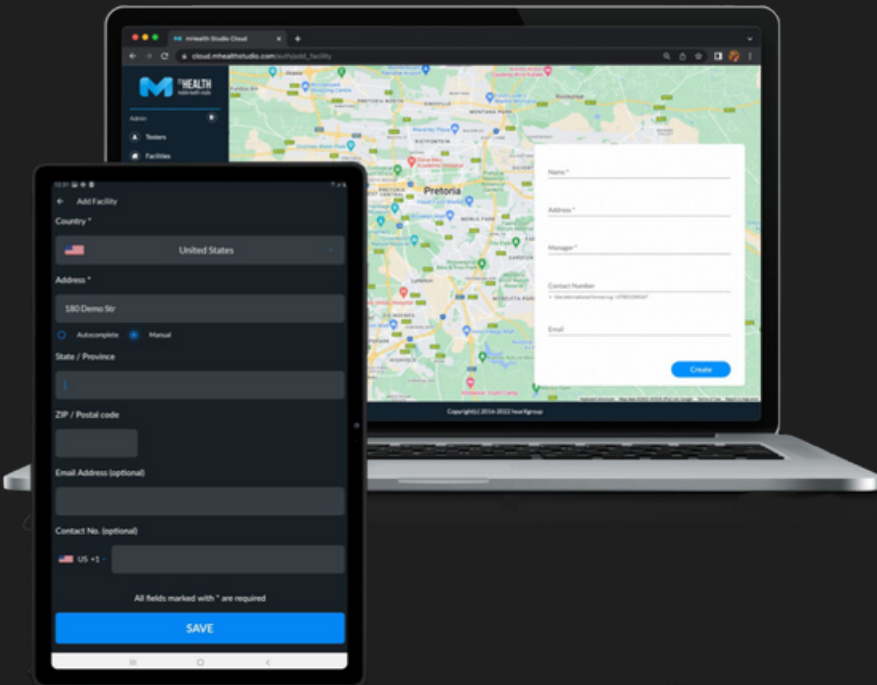
- Name and Surname
- Contact number
- Professional registered number (**optional**)



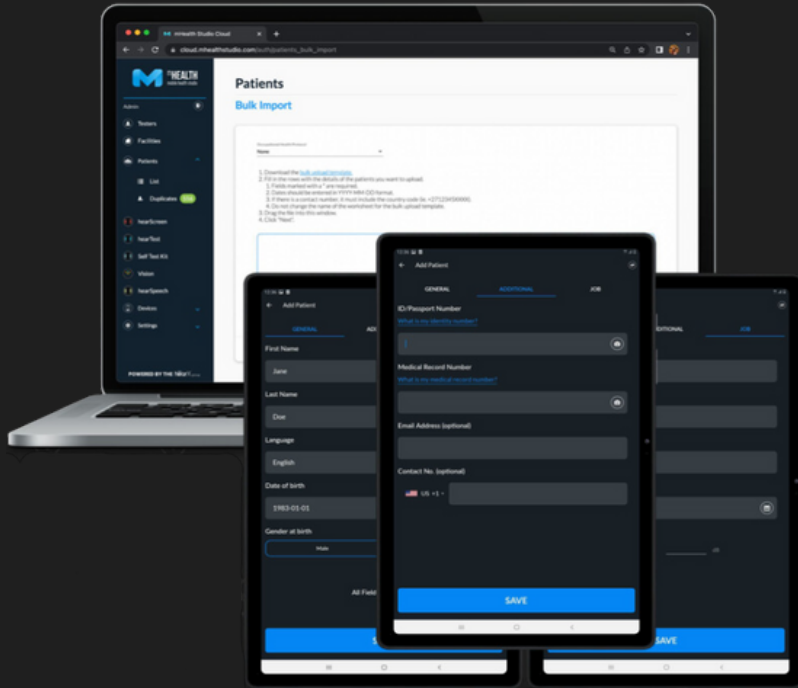
ADD YOUR OWN FACILITIES

Facilities can be added either through the mHealth Studio Cloud Platform or on the heartX device. Details that are captured when adding a facility are:

- Facility Name
- Manager Name
- Country
- Address
- Manager Contact Information **(optional)**
- Facility Address and Postcode **(optional)**



ADD YOUR PATIENT INFORMATION



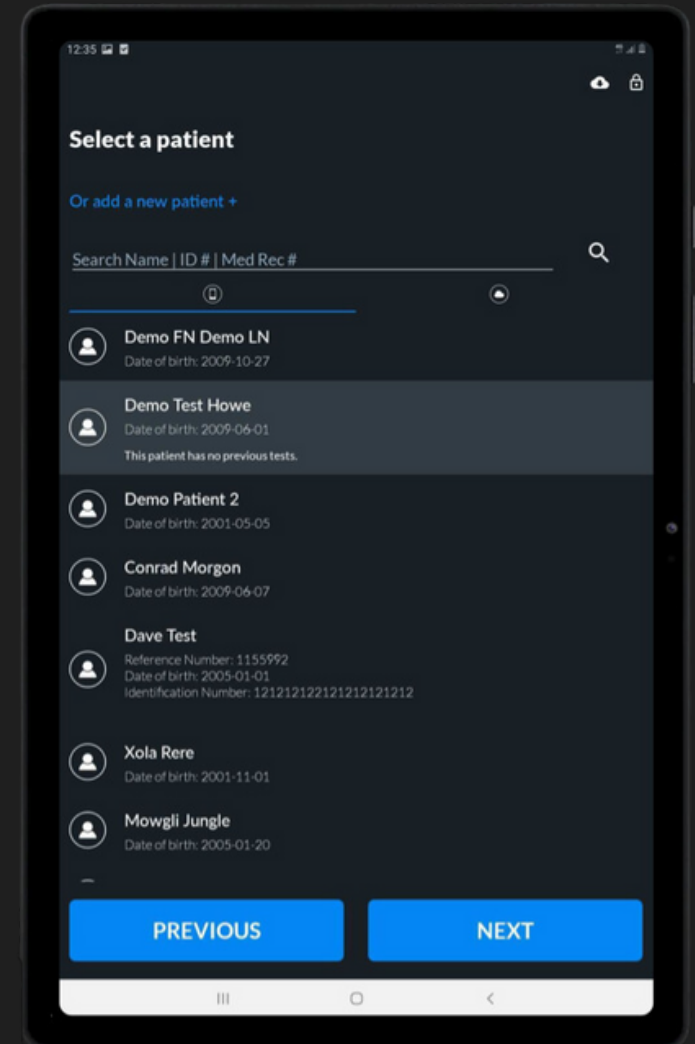
- Bulk upload functionality
- The following information is required to be captured when adding a patient manually:

GENERAL	ADDITIONAL	JOB
First and Last Name	Identity Number	Job Title
Language	Reference Number	Company Name
Date of Birth	Contact Number	Department
Gender	Email Address	Employment Date
		Noise Exposure Level



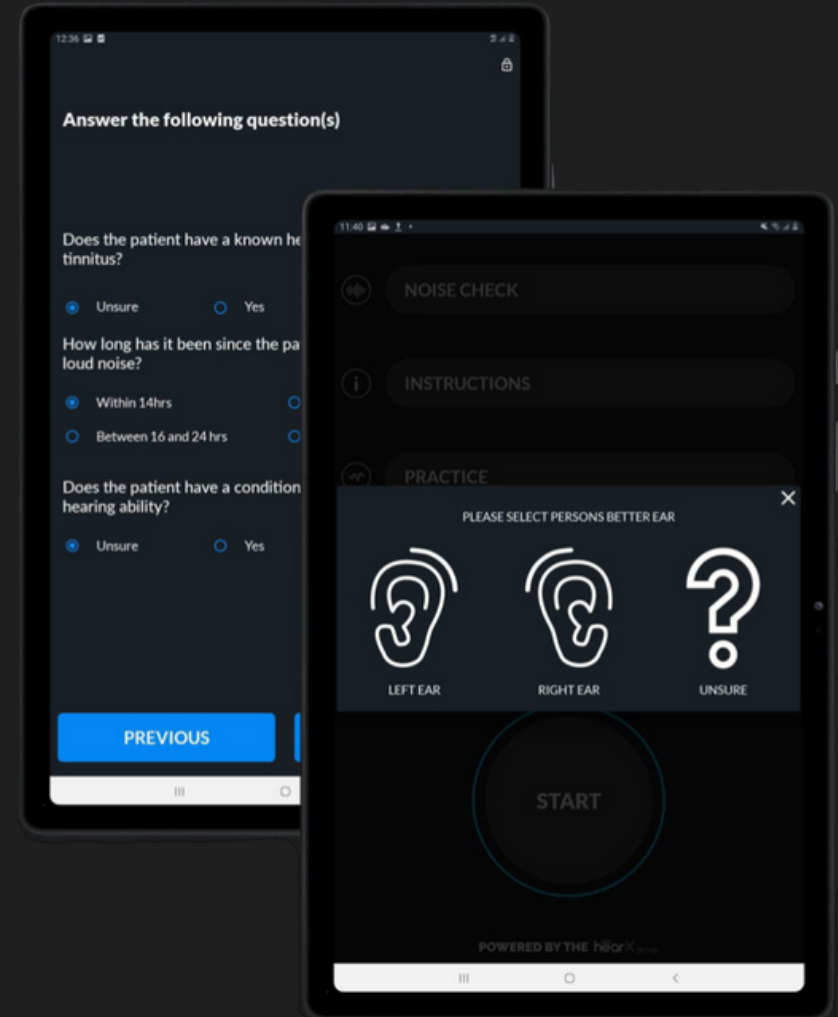
EXISTING PATIENTS

- Select existing patients
- Visibility on patients previous test dates

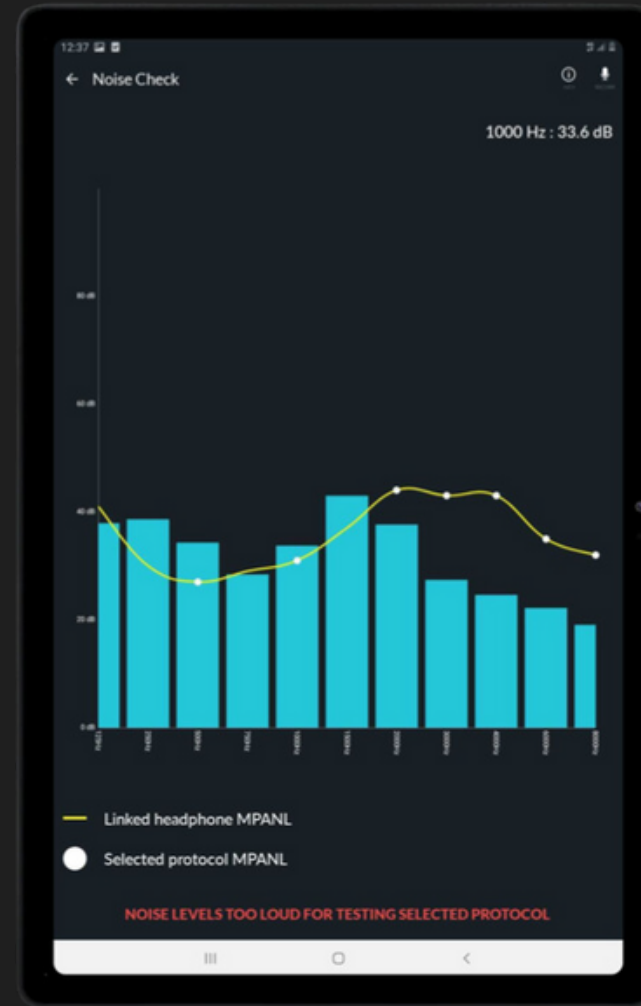
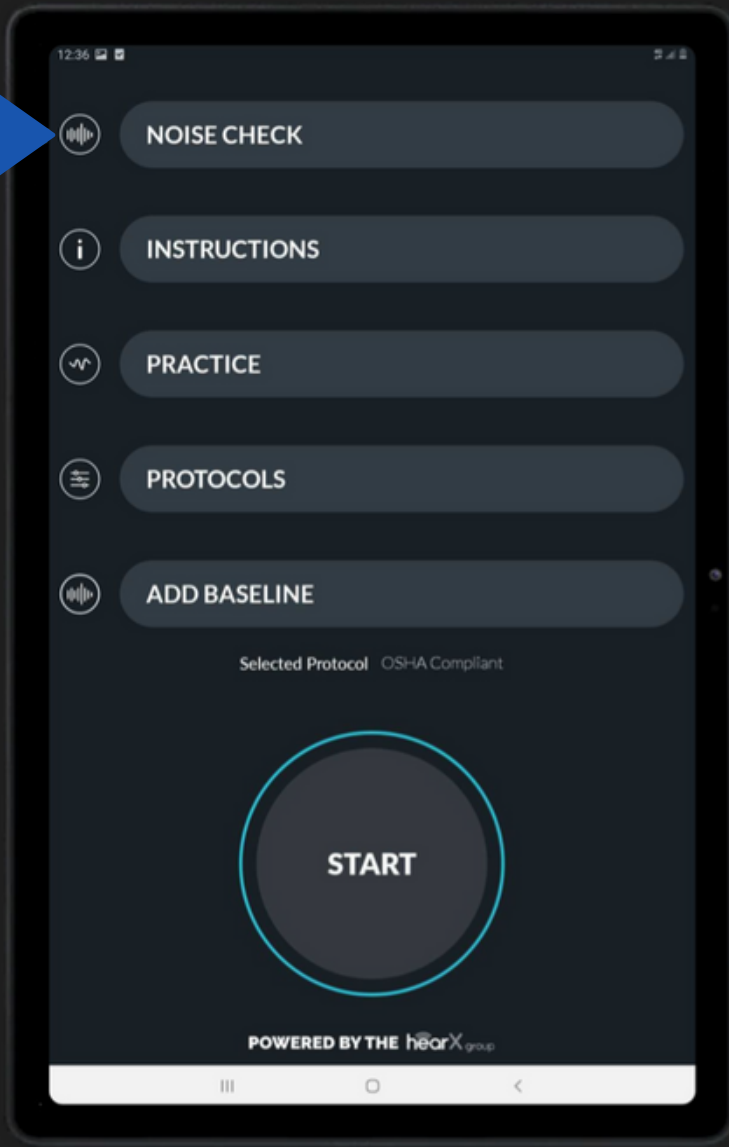


PRE-TEST QUESTIONS

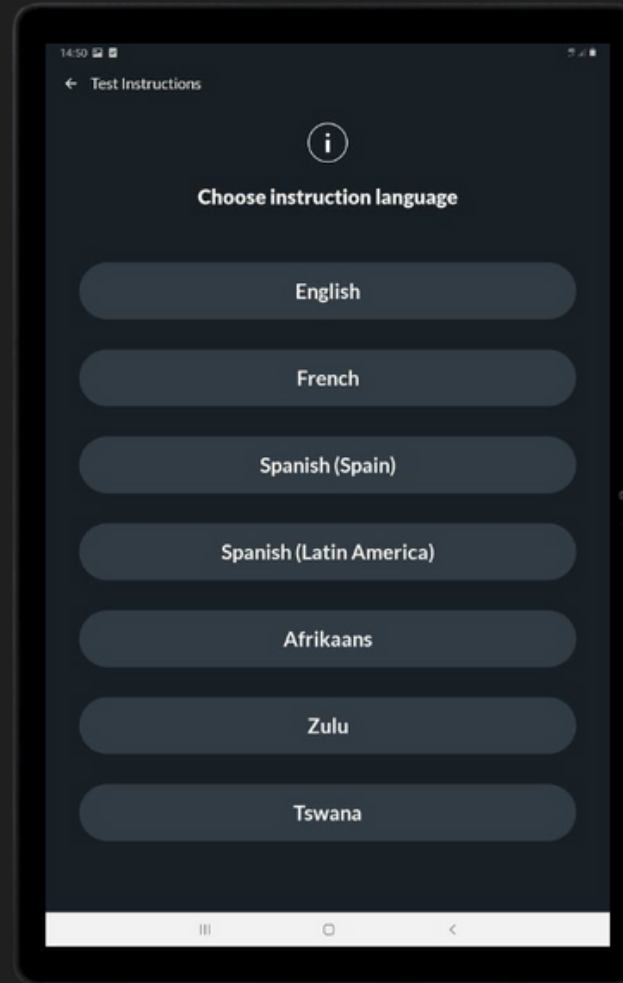
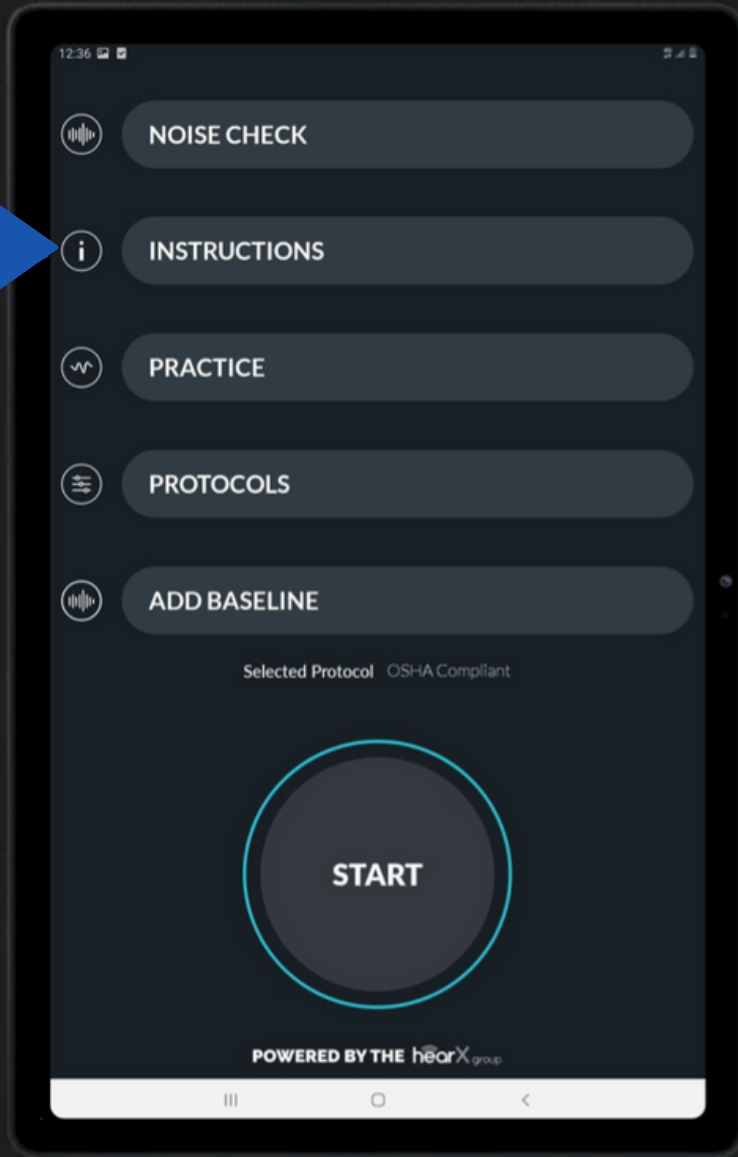
- Better ear question
- Additional Questions
 - Does the person have a known hearing problem or tinnitus?
 - How long has it been since the person was last exposed to loud noise?
 - Does the person have a condition that may affect his or her hearing ability?



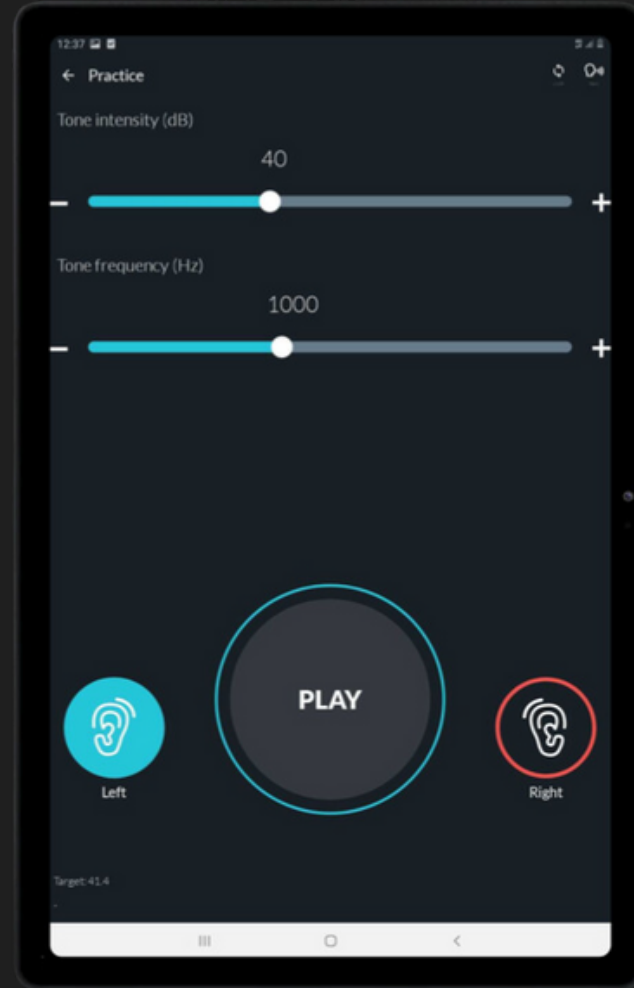
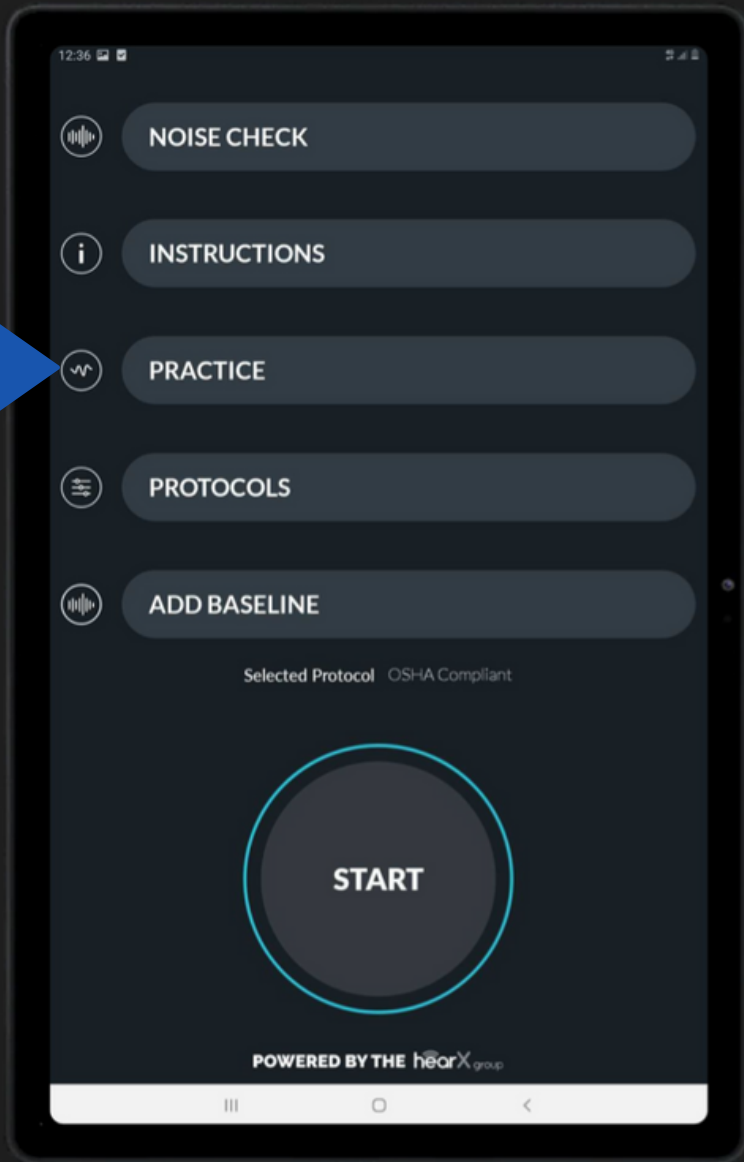
NOISE CHECK



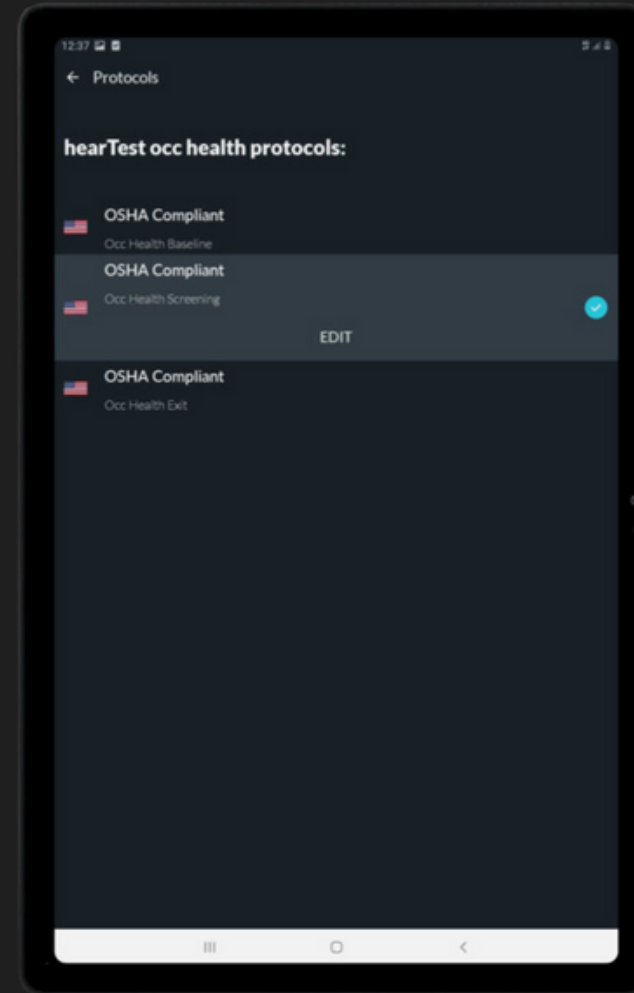
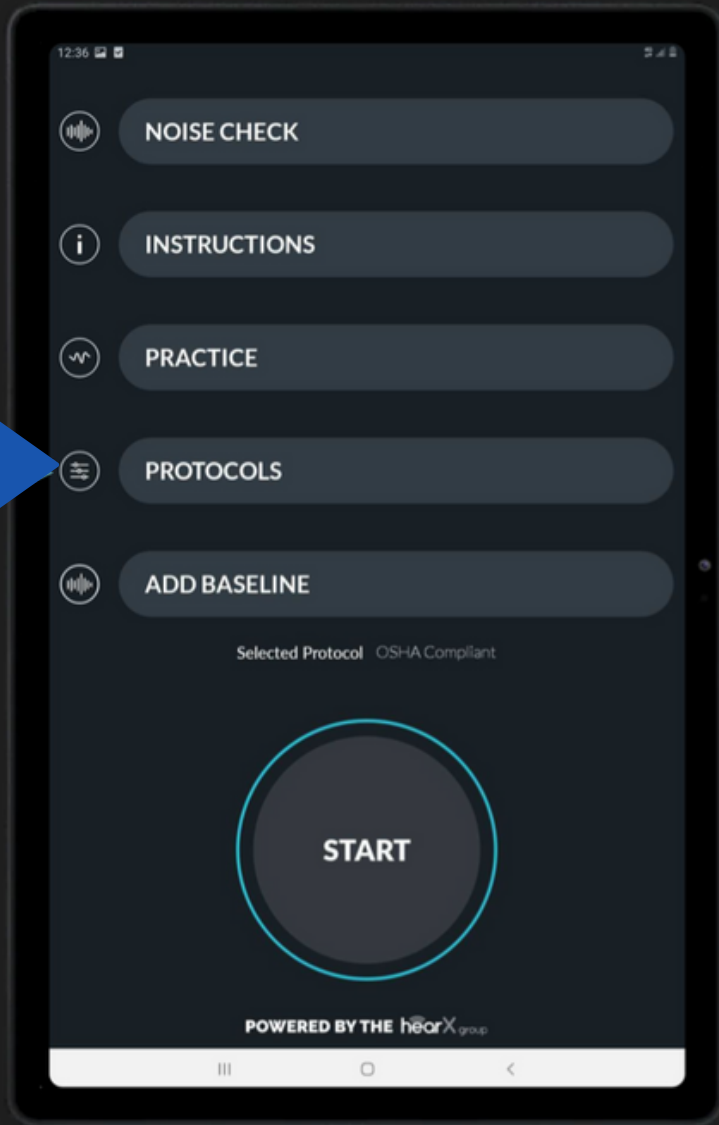
INSTRUCTIONS



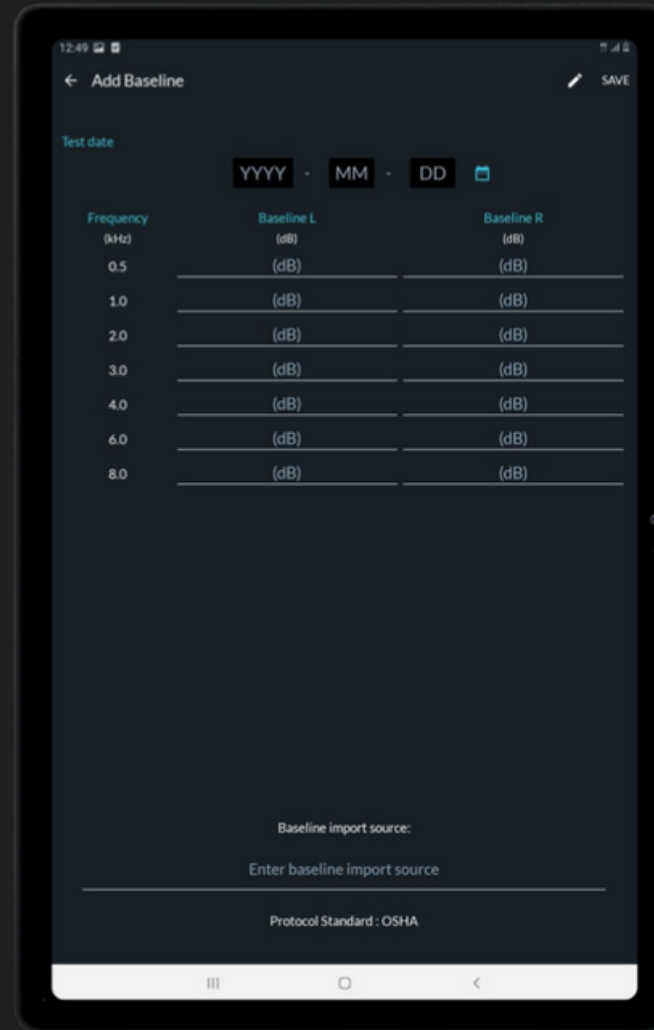
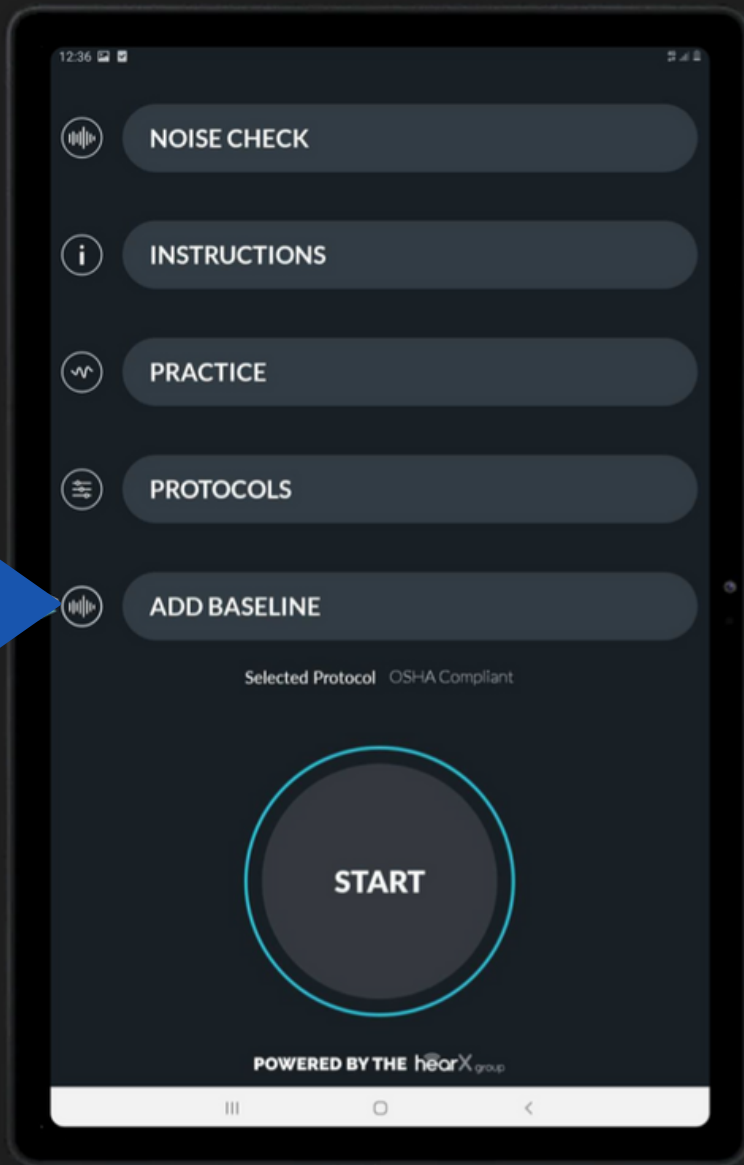
PRACTICE



PROTOCOLS

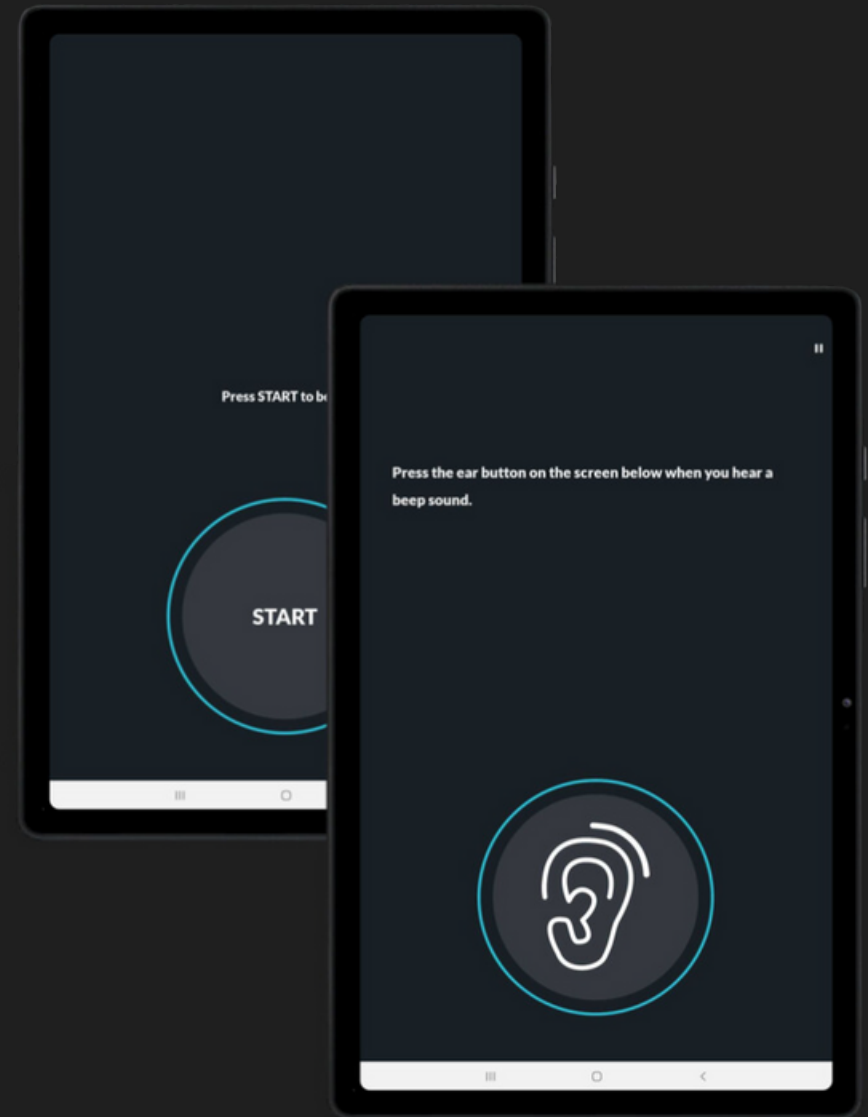


ADDING A BASELINE



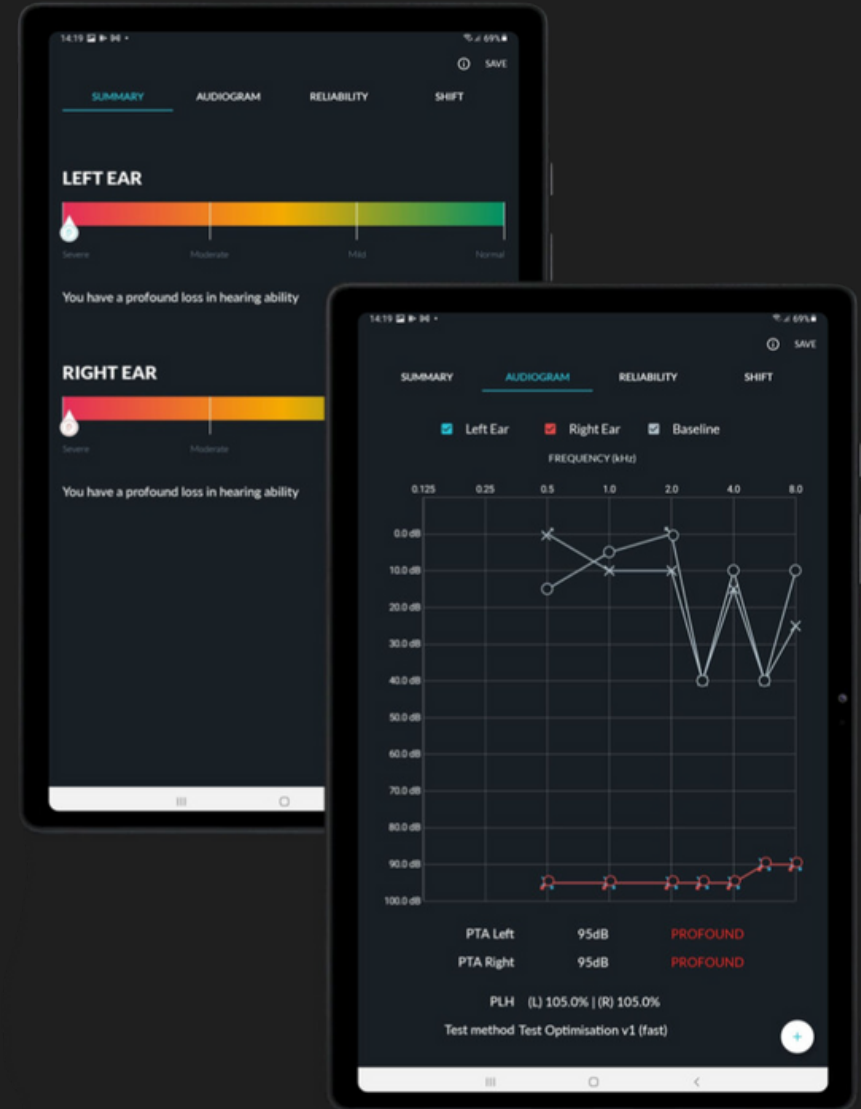
TESTING

- **Method:** Shortened Ascending Method
- **Pure-tone Testing Frequencies:** 125, 250, 500, 750, 1000, 1500, 2000, 3000, 4000, 6000, 8000 Hz
- **Test Intensity Levels:** 0 to 95 db HL



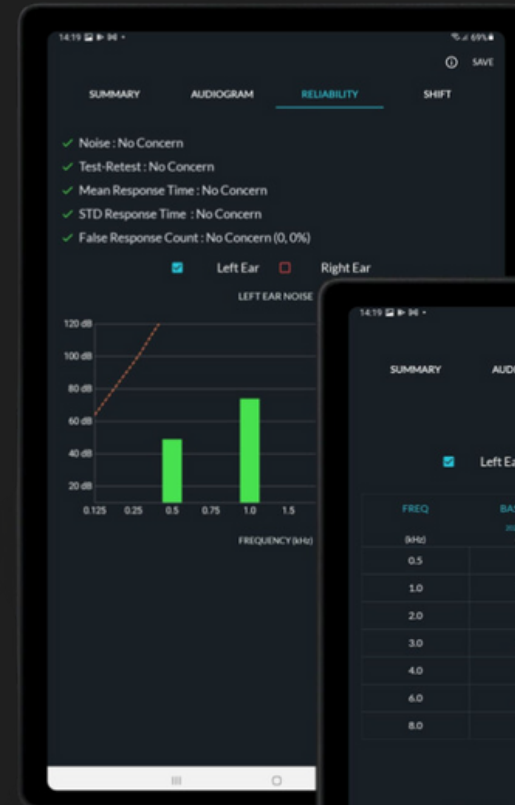
TEST RESULTS

- **Audiogram** that indicates the response per frequency with audiometric symbols
 - Results for left ear, and or right ear
 - PTA per ear
 - PTA classification per ear
 - Audiogram



TEST RESULTS

- **Reliability** - The background noise at each testing frequency.
- **Shift** - The standard threshold shift is calculated per frequency as a difference between the baseline test and the screening test
 - PTA per ear with categorisation
 - SANS; OHSA; HSA category
 - Unilateral hearing loss result



FREQ (kHz)	BASELINE (with 12/2021)	SCREEN (with 12/2022)	SHIFT (with 12/2022)
0.5	0	95	95
1.0	10	95	85
2.0	10	95	85
3.0	40	95	55
4.0	15	95	80
4.0	40	90	50
8.0	25	90	65

PTA Left: 95dB **PROFOUND**
 PTA Right: 95dB **PROFOUND**
 STS Left: 73.33dB **CONCERN**
 STS Right: 78.33dB **CONCERN**
 PLH (L) 105.0% (R) 105.0%

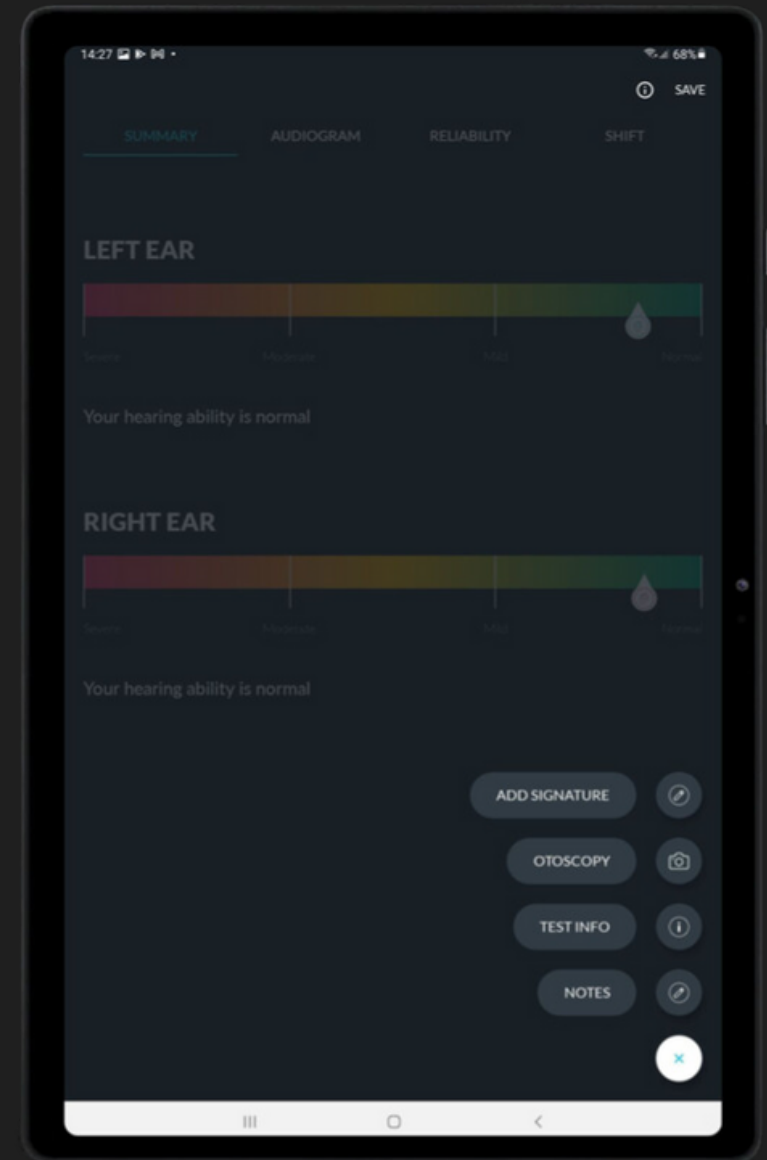


TEST RESULTS

- Add additional information
 - Add baseline test
 - Manual capture baseline test
 - Add signature
 - Otoscopy
 - Add-on: hearScope to capture and attach images
 - Select otoscopy images from Gallery
 - Test Information

Patient	Test duration	Baseline Date
Test Date	Mean Response Time	Baseline Source
Headphones	STD Response Time	

- Notes

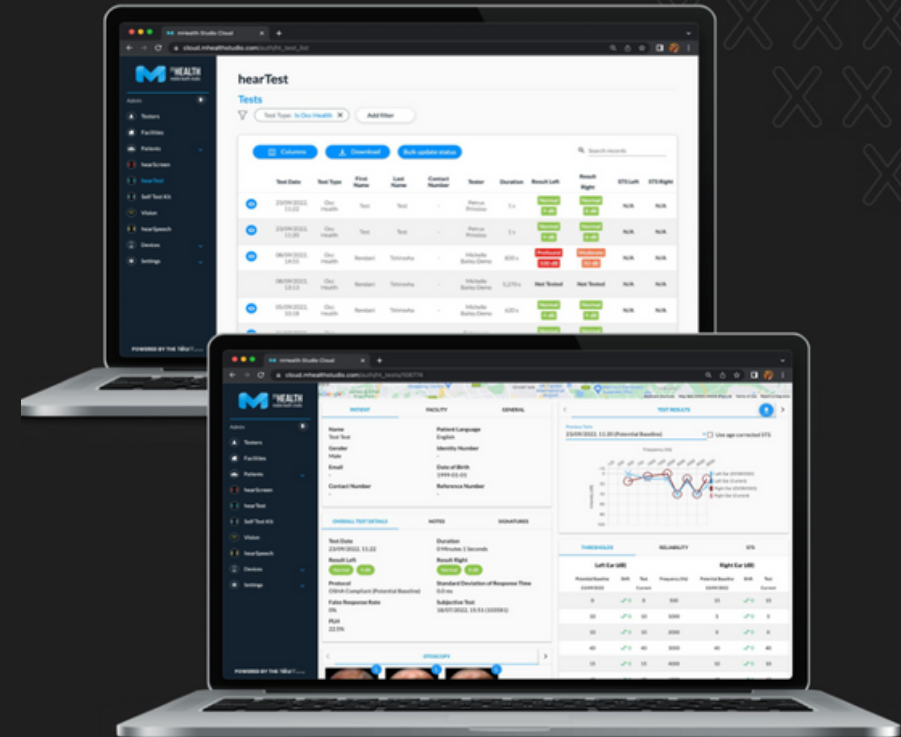


MHEALTH STUDIO CLOUD

Data seamlessly sync to mHealth Studio Cloud for efficient data and referral management

mHealth Studio Cloud

- List view: Summary view of all tests
- Detailed view:
 - Patient, Facility and General Test info
 - Overall test details, notes and signatures (tester and patient)
 - Test results (screening and baseline)
 - Thresholds, Reliability and STS



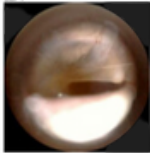
MHEALTH STUDIO CLOUD

TEST REPORT

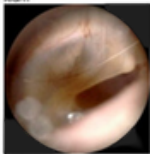
- Patient and tester information
- Pre-test questions and responses
- Thresholds
 - PTA classification
 - Unilateral hearing loss category
- Shift
- Patient response summary
- Equipment
- Notes
- Tester and patient signature

OTOSCOPY

LEFT



RIGHT



PATIENT INFORMATION

FALSE RESPONSE RATE
14.3 %

STANDARD DEVIATION OF RESPONSE TIME
2221.9 ms

PHONE MODEL
SM-TS15

HEADSET TYPE
Sennheiser_HDA_300 (50t5440d)

NEXT CALIBRATION DATE
2022-09-14

TESTER
PC Piroso

OTOSCOPY IMAGES ATTACHED

[Handwritten Signature]

PATIENT SIGNATURE

OCCUPATIONAL HEALTH HEARING REPORT

TEST DATE: 2022-01-12 02:17:22 PM SAST
TEST LOCATION: Mt. Mel, 1234, South Africa
PROTOCOL NAME: OSHA Compliant Potential Baseline

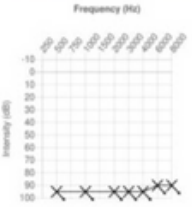
NAME: Anonymous Anonymous GENDER: Male
IDENTITY NUMBER: DATE OF BIRTH: 1980-10-15
REFERENCE NUMBER: Migration Run COMPANY:
JOB TITLE:

THRESHOLDS

Hz	250	500	750	1000	1500	2000	3000	4000	5000	8000
Left Ear (dB)	-	95	-	95	-	95	95	95	90	90
Noise (dB)	-	49	-	74	-	55	59	63	67	60
Right Ear (dB)	-	95	-	95	-	95	95	95	90	90
Noise (dB)	-	53	-	58	-	62	62	65	64	61

Noise is measured at -5 dB or at minimum testing intensity, if patient responded at that level.

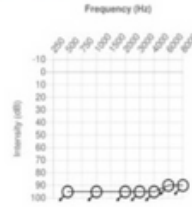
Frequency (Hz)



FL 3000 %

PTA LEFT 95.0 dB Profound

Frequency (Hz)



RH 3000 %

PTA RIGHT 95.0 dB Profound

	Left	Right
X	X	O
All Candidates	No Response	All Candidates
		O
		No Response

Powered by hearX Group Page 1 of 2

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FEATURES AND BENEFITS

CENTRAL, SECURE DATA STORAGE

mHealth Studio combines all the data collected from all the hearX® kits to one central location through integrated synchronous updates from the kits when connected to the internet.

DATA PROTECTION

mHealth Studio allows for the encryption of data between the phone/tablet and the cloud.

BULK DATA UPLOAD

mHealth Studio allows for the bulk upload of patient details and would allow Concentra to pre-load all patient and facility details on the platform before screening. Also potential to link to other databases to automatically populate with patient records.

MANAGEMENT OF HEARX® KITS AND TESTERS

Manage tester records, access, profiles, number of tests per tester and kits/assets.

QUALITY MANAGEMENT OF TESTERS

Testers are monitored for quality and for volume of screenings completed. Testers with low quality scores are identified for retraining.

REPORTING

mHealth Studio has built-in reporting features, including the bulk download of data in an excel format as well as PDF reports.

OFFLINE TESTING

mHealth Studio allows for offline testing, allowing for patients to be tested in the absence of an internet connection or power supply.

