PATH MEDICAL – SELECTED SCIENTIFIC PUBLICATIONS

AUTUMN 2026

THE SOUND OF SCIENCE.

PATH MEDICAL

TABLE OF CONTENTS

Selected publications on the clinical applications of PATH MEDICAL technologies

The Sound of Science 03

FLEXIBLE DIAGNOSTICS
Flexible hearing diagnostics for individual needs 04

INNOVATION
Reliable DPOAE testing – even when it gets noisy 05

ABR / ASSR
ASSR thresholds closely reflect pure-tone audiometry 06

NHS
From screening to follow-up –
building newborn hearing care in Ghana 07

PAEDIATRIC AUDIOLOGY
Child-friendly and engaging speech audiometry –
adapted across languages 08

PAEDIATRIC AUDIOLOGY
When hearing screening becomes a game –
MAGIC for preschool children 09

Selected publications 10

THE SOUND OF SCIENCE

PATH MEDICAL develops innovative audiology solutions that make hearing diagnostics simple, reliable, and practical for all ages.

Since 2007, PATH MEDICAL's highly qualified team of experts composed of experienced scientists and young researchers has been developing new methods and technologies to assess different aspects of hearing function. The use of the most advanced measurement methods enables a reliable diagnosis of hearing impairment at an early stage.

These methods include tympanometry, otoacoustic emissions, auditory evoked potentials, pure-tone audiometry, speech intelligibility tests, hearing screenings and audiological tests for occupational medicine.

NHS tracking supports structured follow-up after newborn hearing screening. PATH MEDICAL combines audiological research with practical diagnostic technology. Our systems are used worldwide by research institutions, hospitals, medical practices and speech and language therapy practices – science made in Germany.

Download publications
Scan the QR code to access all publications online
or visit pathme.de.

Germany | 2026 | SENTIERO | MAGIC | OAE | ASSR

FLEXIBLE HEARING DIAGNOSTICS FOR INDIVIDUAL NEEDS

Hearing Impairments in People With Intellectual Disabilities: A Prospective Cohort Study on Prevalence and Healthcare Utilization

Mathmann et al.

A large prospective outreach study investigated hearing impairment and hearing care in people with intellectual disabilities directly in their living and working environments.

- **1,053 participants** aged 1–90 years
- Recruitment and testing across **166 facilities**
- Testing was adapted to each participant's ability to cooperate, combining behavioural and objective audiological methods

44% — **of participants had clinically relevant hearing impairment**
Demonstrates the substantial need for systematic hearing assessment in this underserved population.

69.8% — **of the identified hearing impairments were previously unknown**

96.7% — **Conclusive hearing assessment**

- **Alternatives when standard pure-tone audiometry is not feasible**
  MAGIC, DPOAE and objective electrophysiological methods provided alternative approaches to hearing assessment.
- **Mobile hearing diagnostics – take the test to the patient**
  The portable SENTIERO ADVANCED enabled audiological assessments directly in participants' living and working environments – outside conventional clinical settings.

More information

Scan the QR code for a study summary and a link to the original publication.

Germany | 2026 | QSCREEN | OAE | ADAPTIVE NOISE CANCELLING

RELIABLE DPOAE TESTING – EVEN WHEN IT GETS NOISY

Distortion Product Otoacoustic Emissions with Adaptive Noise Cancelling

Lodwig & Smurzynski

Adaptive Noise Cancelling (ANC) was evaluated on QSCREEN to reduce the impact of environmental noise on DPOAE measurements.

- DPOAE measurements in **26 normal-hearing ears**
- ANC **ON vs. OFF** comparison
- Cafeteria and Fastl test noise up to **70 dBA**

Up to 45 sec — **Shorter test time with ANC**

70 dBA — **Greatest ANC benefit among the tested noise levels**
The benefit increased with higher levels of environmental noise.

1–2 kHz — **Strongest effect**
Within this frequency range, ANC produced the most changes from REFER to PASS.

- **Fewer false-positive screening results**
  ANC reduced false-positive results at higher environmental noise levels.
- **Real-world ready**
  ANC reduces the impact of constant background noise such as ventilation and air-conditioning systems – relevant for maternity wards, clinics and schools.

More information

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Japan | 2026 | SENTIERO | ASSR | CHIRP | PURE-TONE AUDIOMETRY

ASSR THRESHOLDS CLOSELY REFLECT PURE-TONE AUDIOMETRY

Hearing evaluation with the SENTIERO, a Next-Generation ASSR Testing Device, in Individuals with Normal Hearing and Hearing Loss

Abe et al.

A clinical study compared SENTIERO ASSR thresholds with pure-tone audiometry (PTA) thresholds and evaluated test duration.

- 34 participants / 68 ears
- 13 participants with normal hearing and 21 with hearing loss
- 6 frequencies from 250 to 8,000 Hz

≤10 dB — **Mean differences between ASSR and PTA thresholds at each tested frequency**

6 FREQUENCIES — **Positive correlation between ASSR and PTA thresholds at each tested frequency**

28 min — **Average test duration**

- **Objective hearing threshold estimation**
  An objective alternative when reliable behavioural audiometry is difficult to perform.
- **Extended ASSR frequency range**
  Frequency-specific hearing threshold estimation from 250 to 8,000 Hz.

More information

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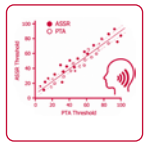

ABR / ASSR

Ghana | 2026 | QSCREEN | SENTIERO | OAE | AABR | pathTrack

FROM SCREENING TO FOLLOW-UP – BUILDING NEWBORN HEARING CARE IN GHANA

Quality-Controlled Newborn Hearing Screening in Ghana: Outcomes and Challenges from a Pilot Project

Bilson-Amoah et al.

A multicentre pilot study investigated the feasibility of quality-controlled newborn hearing screening across four hospitals in Ghana.

- **11,058 newborns screened**
- TEOAE/AABR screening combined with centralised tracking via **pathTrack**
- Centralised data collection with pathTrack supported follow-up and documentation.

99.6% — **of registered newborns were screened**

4 HOSPITALS — **Multicentre implementation**

3 CASES — **of permanent hearing loss diagnosed**

- **TEOAE + AABR · Two-stage screening**
  Combination of complementary objective screening methods.
- **Screening → Tracking → Follow-up**
  Centralised pathTrack data supported follow-up and outcome tracking.

More information

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NHS

Hungary/Germany | 2026 | MATCH | SENTIERO | SPEECH AUDIOMETRY

CHILD-FRIENDLY AND ENGAGING SPEECH AUDIOMETRY – ADAPTED ACROSS LANGUAGES

Developing the Hungarian Version of the MATCH Test from the Original German Language: An Evidence-Based Protocol for the Translation, Cultural Adaptation and Validation of Paediatric Speech Audiometry Tests from One Language into Another

Vasvári et al.

An evidence-based six-phase study protocol describes the planned adaptation and validation of the German MATCH speech test for Hungarian-speaking children aged 3–6 years.

- **Picture-based speech audiometry with four touchscreen response options**; a response is not forced
- **26 age-appropriate words**
- **Structured process** for translation, standardisation and validation

3–6 YEARS — **Target group: preschool children**

26 WORDS — **Age-appropriate test items**

4 PICTURES — **Intuitive touchscreen task**
Children select one of four pictures on the touchscreen.

6 PHASES — **Structured adaptation and planned validation**
From linguistic and cultural adaptation through to planned clinical validation.

- **German → Hungarian · Cross-language adaptation**
  A structured approach to adapting the test for additional languages.

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PAEDIATRIC AUDIOLOGY

China | 2025 | MAGIC | SENTIERO | PURE-TONE SCREENING

WHEN HEARING SCREENING BECOMES A GAME – MAGIC FOR PRESCHOOL CHILDREN

Feasibility of MAGIC Pure Tone Screening in Children Aged 3 to 6 Years

Cui et al.

A clinical feasibility study evaluated game-based MAGIC pure-tone hearing screening using the AuDX PRO FLEX (a branded variant of SENTIERO DESKTOP) in 366 preschool children aged 3–6 years and compared the results with DPOAE and acoustic immittance measurements.

- Picture-based, interactive pure-tone hearing screening on a touchscreen
- 366 children / 732 ears
- Comparison with DPOAE and acoustic immittance measurements

98.6% — **Successful MAGIC test completion**
Testing was completed in 722 of 732 ears.

~2 min — **Average test duration**
The MAGIC assessment took approximately 116 seconds on average.

4 FREQUENCIES — **Frequency-specific screening**
500 · 1,000 · 2,000 · 4,000 Hz

- **Similar PASS rates across screening methods**
  Overall PASS rates did not differ significantly between MAGIC, DPOAE and acoustic immittance testing.
- **Child-friendly visual screening approach**
  Game-based visual interaction supports pure-tone hearing screening in children aged 3–6 years.

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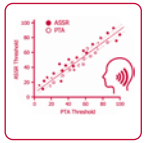

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Get in touch with us – and let's work together to advance audiology.

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