

# Gatekeeper for Children with Delayed-onset Hearing Loss: Standardizing Clinical Guidelines for Preschool Hearing Screening

Tsung-hui Yang, Tzu-Yi Wang, Shang-Wei Wesley Huang, Grace Su-Feng Lin, Ying-Chuan Julie Ma, Au. D.  
Children's Hearing Foundation, Taiwan

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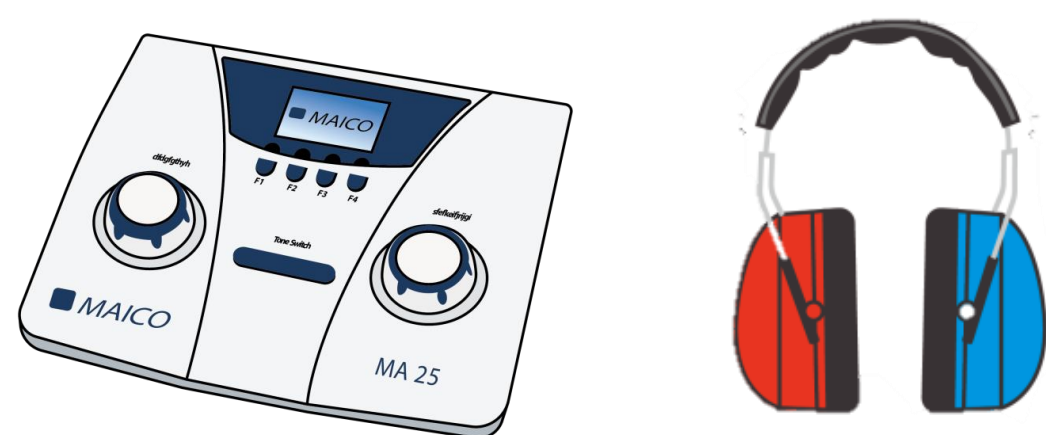


## Introduction

- In Taiwan, preschool hearing screening (PHS) was first implemented in 1995 and conducted by public health nurses. However, following the adoption of UNHS in 2012, resources allocated to PHS have been significantly reduced. Additionally, public health nurses face challenges including the variability of preschool environments the diverse personalities and cognitive development of children, which urged us to develop a standardized procedure to enhance the efficiency and accuracy of PHS.
- Children's Hearing Foundation (CHF) initiated a project in 2023 to develop a comprehensive PHS guideline. This guideline was conducted by CHF's audiologists and reviewed by a committee of otolaryngologists, pediatricians, professors specializing in Speech and Hearing Sciences, special education experts, and health bureau representatives.
- In addition to the PHS guidance, this guideline also provides solutions to common challenges and outlines steps for follow-up diagnosis and management, aiming to help screeners access relevant information.

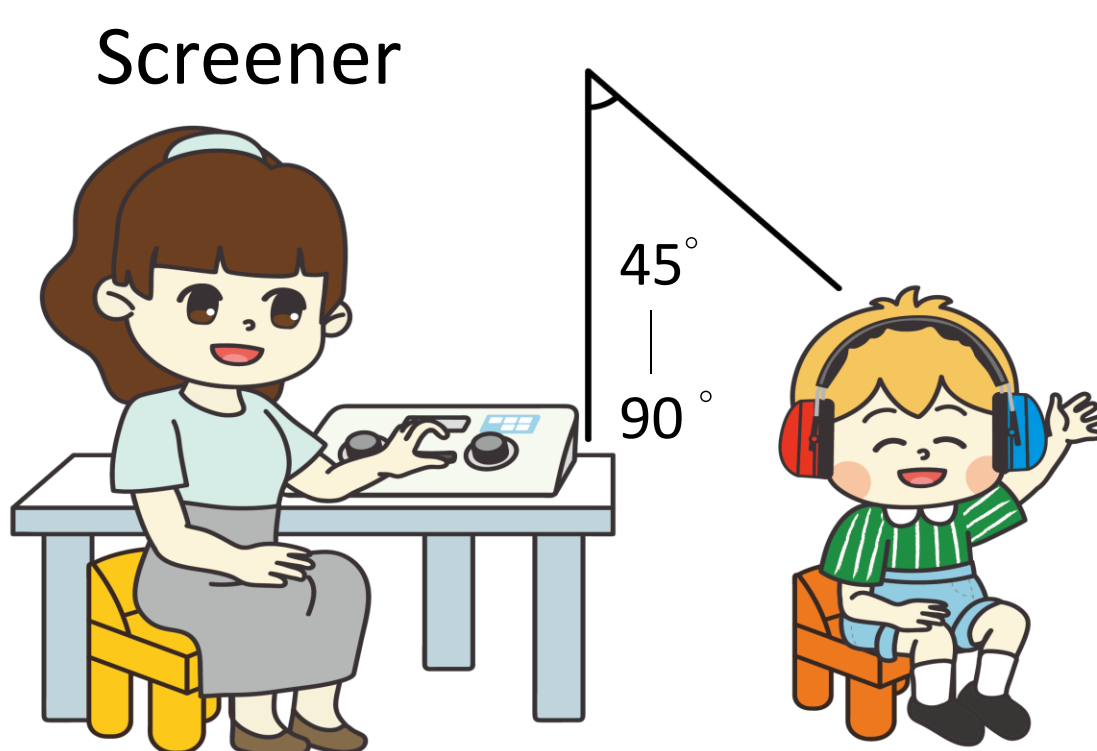
## Proposed procedure in the PHS Guideline

### Preparation



#### Screening Tool

- Use a standard manual audiometer, with supra-aural or circum-aural headphones.
- Calibration is needed before each screening session.



#### Seat arrangement

- Choose a quiet, well-lit, well-ventilated space, away from noise sources like play areas.
- Position the screener and child at a 45 to 90-degree angle.
- Use a partition to block the child's view to the audiometer.

### Screening Protocol

Participants	4-year-old children / Preschooler *Exclude those had been diagnosed and fitted with amplification
Stimuli	pulse Pure tone / pulse Warble tone 1000、2000、4000 Hz ; 25 dB HL
Noise control	Use a sound level meter (SLM) to ensure background noise is under 55 dBA

### Implementation

- Let children watch instruction video prior to screening
  - Give oral instruction
  - Start with a 2000Hz, 50dB stimulus tone, providing visual or tactile guidance as needed.
  - Reduce to 25dB and screen in the following sequence :  
**Right ear** 2k – 4k – 1k (Hz) → **Left ear** 1k – 2k – 4k (Hz)
- Pass criteria : Correctly responds to each frequency twice.
  - Note : Do not present each frequency more than four times.

### Proper Referral

- During the initial screening, if there is no response to any frequency in either ear, it indicates a failure and rescreening is recommended.
- If the child fails the rescreening, a referral should be made to hospital ENT department, including the provision of a referral form and monitoring subsequent diagnostic outcomes.

To ensure the implementation of screenings smoothly and facilitate subsequent support services, CHF also provides a PHS instructional video, health education handouts, Kid's Listening Performance Checklist (KLIP), and lectures for the following groups.

- For Screeners
  - ✓ PHS training program
  - ✓ On-site observations and supervision
- For Interventionists
  - ✓ Hearing management strategies
  - ✓ Collaborative case discussions with CHF's Auditory-Verbal Therapists

## Outcome

The CHF's proposed PHS guideline has been adopted and implemented by 8 out of 22 counties in Taiwan. Moving forward, we aim to expand cooperation to ensure that all children with hearing loss are properly referred and receive appropriate interventions.

Scan the QR codes for more information (content in Mandarin)



CHF website  
for PHS details



PHS instruction video