# Michigan Department of Health & Human Services
# Hearing Screening Program

## Hearing Screening Program Protocols:

The MDHHS Hearing Screening Program is a three-stage process designed to identify children with hearing loss and/or middle ear dysfunction. Most of the children screened are between the ages of 3 and 10 years. Over 450,000 services are provided each year in the following way:

STAGE I: Using a pure tone audiometer, a preliminary screening is performed at the frequencies of 1000, 2000 and 4000 Hertz (Hz) at the intensity levels of 20, 20 and 25 decibels hearing level (dB HL) respectively, in each ear. A child passes the screening by responding appropriately to each of the six pure tones. Any child who fails to respond appropriately to any one of the tone presentations is referred for Stage II screening. For children younger than 3 years of age, otoacoustic emissions (OAE) may be performed (if available).

STAGE II: Children referred from Stage I receive a more detailed screening approximately 4 weeks after the initial referral is made. This screening requires the child to respond to 250, 500, 1000, 2000, 4000 and 8000 Hz at the levels of 30, 25, 20, 15, 25, and 40 dB HL respectively, in each ear. A child who responds appropriately to all the sounds is a ‘pass’ and is no longer considered to be at-risk for hearing loss. If the child fails to respond to just one stimulus presentation, an audiogram is immediately conducted for the octave frequencies 250 through 8000 Hz in each ear. Unmasked bone conduction thresholds are also obtained at 250, 500, 1000, 2000 and 4000 Hz.

STAGE III: This is the medical referral and final stage of the screening process. Parents of children with audiograms meeting referral criteria are notified by the Local Health Department to consult with a physician regarding their child's hearing status. The parents may opt to 1. Consult with their own physician 2. Attend a free Local Health Department Otology Clinic or 3. Review options with Local Health Department staff for other means of follow-up. Otology Clinics are sponsored by Children’s Special Health Care Services (CSHCS) and funding for possible diagnostic service and subsequent financial assistance for a covered diagnosis may be possible through the program.

**Referral Criteria:**

Local Health Department hearing technicians utilize the following **referral criterion** to determine when medical intervention is necessary:

1. **Air Conduction**: A child is referred to Stage III if TWO frequencies of the same ear are worse than the following intensity levels:

| 250 Hz | 500 Hz | 1000 Hz | 2000 Hz | 4000 Hz | 8000 Hz |
|---|---|---|---|---|---|
| 30 dB HL | 25 dB HL | 20 dB HL | 15 dB HL | 25 dB HL | 40 dB HL |

2. **Air/Bone Gap**: A child is referred to Stage III when bone conduction thresholds are better than the better ear air conduction thresholds by at least the differences indicated:

| 250 Hz | 500 Hz | 1000 Hz |
|---|---|---|
| 15dB | 15dB | 10dB |

3. **Difference Between Ears**: A child is referred to Stage III when the *pure tone average* for each ear at 500 Hz, 1000 Hz, and 2000 Hz differs by 10dB or more. The technician considers this method only when the child's thresholds do not meet the first two criteria.

4. **History:** Technicians may occasionally encounter results that do not meet the above referral criteria exactly, but a concern remains. A change in threshold along with other factors (history of ear problems, a variation in threshold, parent, or teacher concern) would qualify as reason enough to make a referral. These factors can be used in combination with the referral criteria or in isolation.

This brief explanation may not answer all questions relative to the MDHHS Hearing Screening Program. If you have additional questions or concerns, please contact Jennifer Dakers, MDHHS Hearing Program Consultant at dakersj@michigan.gov.