- Otoacoustic Emissions (OAE) Hearing Screening Equipment - Criteria for Evaluating the Appropriateness of Screening Equipment for Lay Screeners Working with Children 0 – 3 Years of Age

This document provides a description of how early childhood health and education providers can evaluate OAE hearing screening equipment before making purchasing decisions. All OAE equipment does not work equally well when it comes to screening infants and toddlers--the best way to assess the utility of a particular unit is by actually using it to screen a number of young children and noting the ease of use and speed of screening. Specifically, prior to buying equipment, a program's hearing screening coordinator should work with a local audiologist to:

1) Arrange with equipment vendors/manufacturers to obtain several different brands of portable OAE equipment on loan for a short period of time.
2) Become familiar with the equipment components, including the probe and probe covers, as well as the screening menu that allows the screener to begin and run the procedure.
3) Select a number of young children of different ages (some who are very comfortable being screened, some who are not) and try to screen each child with each type of equipment. Vary the conditions under which the screening is conducted. Take notes on how easy/difficult it is to get a good probe fit and whether the probe will stay firmly seated in the ear canal even if the child is moving. Also pay attention to the speed with which the test runs when conditions are optimal (quiet child and environment) and when conditions are less than optimal (child is wiggling, ambient noise in the environment created by other children talking and playing). <u>It is extremely important to note that well-designed OAE screening equipment should allow you to screen in the child's natural environment</u>. Very loud sounds, such as a child crying or manipulating a very noisy toy, may make it difficult/impossible to complete the screening, but in general, the sound of children talking or laughing nearby should not interfere significantly with being able to complete the test.
4) Purchase a piece of screening equipment only when you feel satisfied that it is able to perform consistently under a variety of screening conditions and with a variety of children.

On the following pages you'll find a few more specific features to consider in evaluating OAE equipment.

Name of Equipment: _____

Manufacturer: _____

Manufacturer/Distributor Contact:_____

Equipment specs: ___DPOAE ___TEOAE ____Both

Default pass/fail criteria: ___ 4 out of 4 frequencies
___ 3 out of 4 Frequencies
___ 2 out of 4 frequencies

Is data available documenting how many children this equipment has formally been tested on/their age range/outcomes, etc? Sensitivity/specificity?

Purchase and Maintenance:

Assess:	Cost & Other Info.
1. What is the cost of the equipment? 2. What is the cost of a replacement probe or microphone? 3. What is the cost for each disposable probe cover or tip?	
4. What is the cost of battery replacement? 5. What is the cost of each replacement nozzle/filter /probe coupler? 6. What is the cost of annual maintenance/calibration?	
7. What accessories are included in the standard package? (extra probe, battery printer, printer labels, etc.) What options are available for substituting accessories if some are not needed? 8. What software upgrades are included in the purchase price?	
9. Is this unit considered the basic model most appropriate for screeners? Does it have an “easy mode” for screeners?	

Manufacturer/Distributor Support:

Assess:	Yes	No
10. Are customers allowed to use the machine on a trial basis prior to purchase? On what terms? 11. Is local support available and, if so, from whom?		
12. Are "hands-on" in-service and follow-up visits (if needed) included as part of the purchase?		
13. Does the service contract provide quick, reliable repair and include loaner equipment if the equipment must be returned to the manufacturer for more extensive repair?		
14. Is the manufacturer's warranty satisfactory? What are the terms?		
15. Does the equipment come with sufficient training materials such as a training video, user's guide and quick reference sheet?		

Screening Unit Inspection:

Assess:	Yes	No
16. Is the equipment handheld? Easy to hold? Easy to place on a floor or tabletop and use? 17. Can the equipment be kept clean easily? Is there an infection control sleeve? 18. Does the display have a lighted option for screening in low light?		
19. Is a carrying case provided that allows easy access, minimizes cord damage and the need to disconnect the probe from the unit?		
20. Can the equipment run on either battery or a plug-in power source? 21. How long does the battery maintain a charge? (Should hold a charge for 3 hours of testing or be able to perform 50-100 tests before needing to be recharged.) 22. How long does it take the battery to charge? (Should fully charge in 3 hours or less.)		
23. Does it have a memory? How many tests does it hold/store in memory?		

Assess:	Yes	No
24. Is there software available that allows the unit to link to specific databases? 25. Are there options for changing the default pass/fail criteria? Could this be accidentally changed by screeners?		

Probe Inspection:

Assess:	Yes	No
26. Is the probe easy to clean and service?		
27. Is the length of the cord from the machine to the probe 48” or longer? 28. Does it have a "clip" allowing the screener to attach the cord to the child's clothing to keep the cord weight from pulling the probe from the child's ear, leaving the screener's hands free to run the equipment and work with the child?		
29. Is the probe designed so that once it is inserted in the ear the screener does not hold it in place while the test is run?		
30. Are foam or similar compressible/expandable probe covers available? 31. Does the probe come with a selection of probe tip covers for all ages? 32. Are the disposable probe tips easy to change? (easy to place snugly on the probe, also easy to remove in one piece) 33. If the probe itself become clogged, is it easy to clean (or to replace the clogged part?		

Ease of Use:

Assess:	Yes	No
34. Is the equipment easy to turn on and use right away? (should not have to navigate through many menus). If not, does it have an easy mode, featuring only essential capabilities? 35. Does the display allow you to quickly begin, stop and restart tests?		
36. Is the probe easy to place in the ear? 37. Does the probe stay firmly seated in the ear canal of an upright child while s/he is moving?		

Assess:	Yes	No
38. Does the unit allow for screening a child with PE tubes? 39. Is it necessary to manually change something when screening a child with PE tubes?		
40. Does the display tell you if the probe fit is good, poor or if there is too much noise? 41. Are error messages intuitive/easy to understand? 42. Does the screening proceed even with a modest amount of ambient noise? 43. Can the screening be completed quickly (2 minutes or less on a cooperative child?) 44. Does the equipment provide an overall outcome (pass, refer/fail) that is simple to understand and requires no interpretation? 45. Are ear-specific results saved?		

Overall Result: Equipment well suited for lay screeners screening children 0 – 3 years of age? Yes _____ No _____

Comments: _____

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