Train the Trainers Workshop: Audiology Support Personnel

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Train the Trainers Workshop
Agenda

8:30 am   Welcome

8:45 am   Core competencies in audiology

9:00 am   Professional and patient issues: International
perspective

9:15 am   Introduction to audiological procedures

9:30 am   Clinical simulation in audiology education and
training

10:00 am Break

10:15 am Audiological procedures: Review of principles and
hands-on demonstrations

11:30 am Putting it all together

12 noon   Adjourn

Train the Trainers Workshop
Welcome

- **Rationale for the workshop**
- **Review of agenda**
- **Distribution of pre-workshop questionnaire**

Train-the-Trainer Workshop: Audiology Support Personnel

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Pre-Training Questionnaire

Your Name:

Academic Degree (s):

Professional Status:

Country or Geographical Area:

1. Are there formal audiology educational programs in your country or geographical area?
   If yes, please indicate how many and the academic degree that is awarded.

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Train the Trainers Workshop
Proposed Sustainable Model

- **Identification and training in core competencies for developing countries:**
  - **Efficient, effective, consistent practices**
  - **Tiered "learn while you work" and "work while you learn" model**
  - **Supports recruitment and retention**
  - **Supports clinical competencies by individuals and sustainability of clinical services programs**

Audiology-Proficiency Model

Levels of Training	Pre-requisites	Structure of Study	Program of Study
Audiometric Technician	High School Diploma	Hybrid & Computer Simulations	12 Semester Credits
Audiology Assistant	Audiology Tech. for 12 Months	Hybrid & Computer Simulations & Workshops	24 Semester Credits
Associate Degree	Audiology Asst. for 12 Months	Hybrid & Computer Simulations & Workshops	60 Semester Credits
Bachelor Degree	Audiology Assoc. for 12 Months	Hybrid & Computer Simulations & Workshops & Advanced Studies	120 Semester Credits

Audiology Proficiency Model

Levels of Training	Course Work	Supervision	Recognition
Audiometric Technician	Basic Screenings • Otoscopy • Cerumen Management • Tympanometry • Otoacoustic Emissions Ear Impressions HA Cleaning & Minor Repairs	Direct	Technical Certificate
Audiology Assistant	Behavioral Audiometry • Air / Bone / Speech • Tymp & Acoustic Reflex Arc	Direct & Tele-audiology/Simulations	Audiology Assistant
Associate Degree	Complete Audiology Evals. Adult Hearing Aid Fittings • Real Ear Measurements*	Direct & Tele-audiology/Simulations	AA / AS Audiology
Bachelor Degree	Advanced Audiology Evals. • ABR • Pediatric Evaluation Pediatric Amplification • Real Ear Measurements / RECD*	Direct & Tele-audiology/Simulations	BA / BS Audiology

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Proposed Sustainable Model

- **Sequence of training steps is not necessarily based on our traditional model**
  - **Must meet geographic needs for hearing-health**
- **Emphasis on appropriate clinical skills as needed by the population dynamics**
  - **Identification ↔ treatment ↔ management**
- **Tiered model provides a growth path for clinicians in hearing health services**
  - **Retention & advancement of professionals**

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Core Competencies

- **Common definition across all healthcare services:**
  - *The ability to perform a skill or skills to a specific standard on competency*
  - *Apply the appropriate knowledge and attitudes to achieve optimal job performance*
  - *A continuous approach to learning includes pre-service education, in-service training, and continuing professional education.*

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Core Competencies in Hearing Healthcare Delivery

- **Goal:** **Maximize hearing impaired individual's hearing and communication abilities**
- *Required skills based on Standards of Practice**
  - **Audiologists should be capable of**
    - ◆ **Providing systematic and comprehensive assessment of an individual's hearing and communication difficulties**
    - ◆ **Evaluating an individual's hearing loss and treatment needs**
    - ◆ **Providing appropriate treatment/management directions to include**
      - ○ **Appropriate referral based on findings**
      - ○ **Auditory rehabilitation, and counseling**
      - ○ **Minimizing the psychosocial and quality-of-life consequences of permanent hearing loss.**
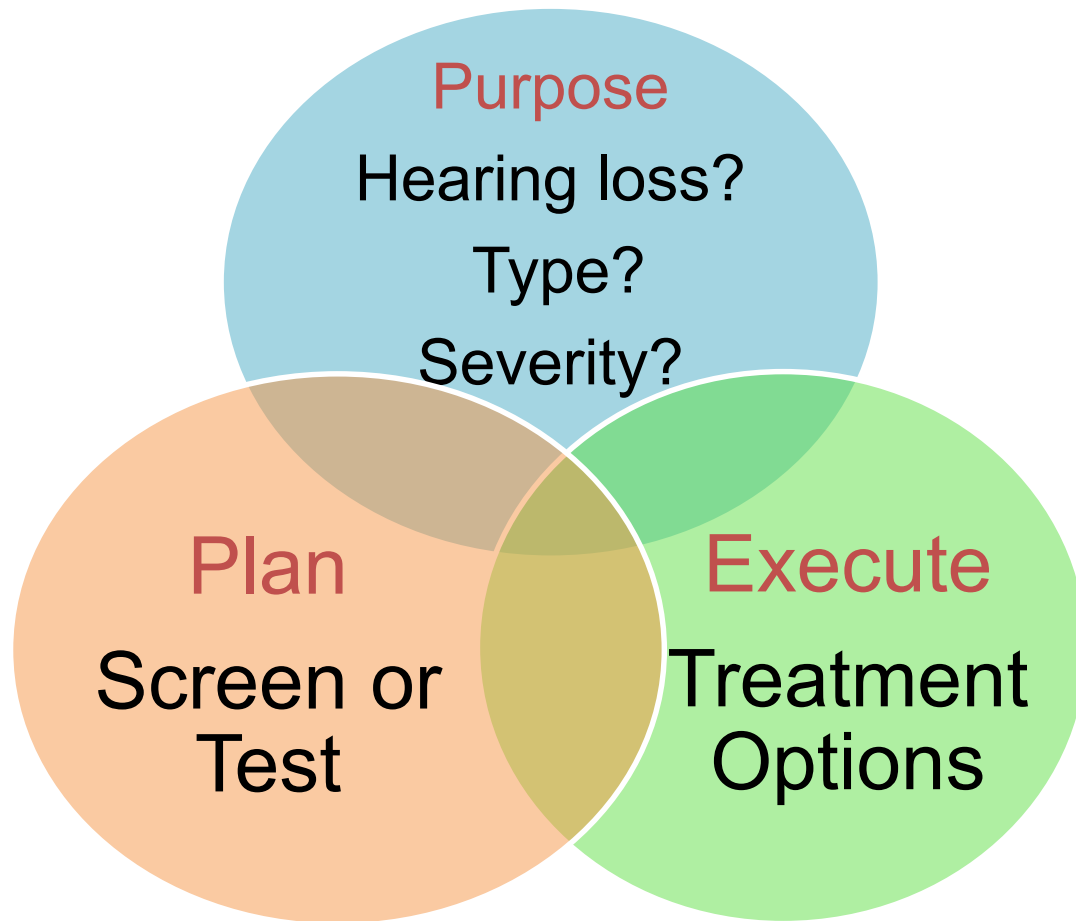
* recommended by ASHA & AAA

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Classification of Hearing Care Services

Disease-Centered **

Accurate diagnosis+ timely medical treatment

Outcome measured timely and successful audiological management/medical or surgical intervention

Optimal Approach: Combination of Both

Function-Centered*

Auditory communicative activities+ social participation

+ quality of life

Outcome measures based on individual's satisfaction to treatment

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Hearing Care Services

Comprehensive Assessment of Hearing and Communication

Pragmatic model based on competencies

- **Case history**
- **Screening**
- **Evaluation**
- **Treatment and management**
- **Appropriate referral**

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Audiology Support Personnel

Range of Responsibilities (Clinical):

- Equipment Maintenance
- Hearing aid Repair
- Neo-natal Screening
- Patient prep for Electrophysiological and Vestibular Testing
- Hearing Conservation & assisting in audiology testing

https://www.audiology.org/publications-resources/document-library/audiologists-assistant

Audiology Support Personnel

Range of Responsibilities (Administrative):

- **Record-keeping**
- **Assist in clinical research**
- **Clerical duties**
- **Other administrative duties**

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How Can We Do More With Less

- **Identify Constraints– *Sound booth/Professional experts***

- **Develop variations without reducing accuracy- Objective assessments**

- ***Utilize tools currently available***
  - ◆ *Case history screening: Does not need a sound booth*
  - ◆ *Otoscopy: Does not need a sound booth*
  - ◆ *Tympanometry: Does not need a sound booth*
  - ◆ *OAE recording: Does not need a sound booth*
  - ◆ *Field professional/Nurses/Medical assistants/Technicians can be trained to provide these tests*

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Train the Trainers Workshop
Professional and Patient Issues

Train the Trainers Workshop
Professional and Patient Issues

- **Professional Issues** *(cite international references)*
  - Support personnel appearance and grooming
  - Hygiene of support personnel
  - Importance of hand washing
  - Appropriate manners and behavior
  - Ethical conduct
  - Prevention of medical errors in audiological practice
- **Patient Issues**
  - Privacy, confidentiality, and security of protected health information (PHI)
  - Safety and fall prevention
  - Infection control and prevention
  - Informed consent for assessment and treatment
  - Honesty and transparency regarding fees and billing

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Train the Trainers Workshop
Professional and Patient Issues …
References and Resources

A DECLARATION ON THE
PROMOTION OF PATIENTS' RIGHTS IN EUROPE

EUROPEAN CONSULTATION ON THE RIGHTS OF PATIENTS
AMSTERDAM 28 - 30 MARCH 1994

Train the Trainers Workshop
Declaration of Promotion of Patient Rights in Europe

- **Human rights and values in health care**
  - **Everyone has the right to respect of his or her person as a human being**
  - **Everyone has the right to self-determination**
  - **Everyone has the right to physical and mental integrity and to the security of his or her person**
  - **Everyone has the right to respect his or her privacy**
  - **Everyone has the right to have his or her moral and cultural values and religious and philosophical convictions respected**
  - **Everyone has the right to such protection of health as is afforded by appropriate measures for disease prevention and health care**

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Train the Trainers Workshop
Professional and Patient Issues …
References and Resources

Genomic resource centre

Patients' rights

Formalized in 1948, the Universal Declaration of Human Rights recognizes "the inherent dignity" and the "equal and unalienable rights of all members of the human family". And it is on the basis of this concept of the person, and the fundamental dignity and equality of all human beings, that the notion of patient rights was developed. In other words, what is owed to the patient as a human being, by physicians and by the state, took shape in large part thanks to this understanding of the basic rights of the person.

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Professional and Patient Issues …
References and Resources

International / multinational patient rights documents

Declaration of Alma-Ata, International Conference on Primary Health Care (1978)

    Declaration on the Promotion of Patients' Rights in Europe
    pdf, 159kb

Ljubljana Charter on Reforming Health Care (1996)

Universal Declaration on the Human Genome and Human Rights, UNESCO (1997)

Convention for Protection of Human Rights and Dignity of the Human Being with Regard to the Application of Biology and Biomedicine: Convention of Human Rights and Biomedicine, Council of Europe (1997)

Patient's Rights and Citizen's Empowerment: Through Visions to Reality (1999)

Council of Europe: Recommendations – Health and Quality of Life (2000)

Office of the United Nations High Commissioner for Human Rights: Human Rights and Biotechnology (2002)

International Digest of Health Legislation (Belgium)

International Digest of Health Legislation, 50 (1) (Denmark, Turkey, Lithuania)

International Digest of Health Legislation, 50 (1) (Denmark, Lithuania, and Turkey)

Le Service Public de L'Accès au Droit (France)

Patient's Charter (Hong Kong)

Rights and Obligations of Healthcare Workers (Hungary)

How to Enforce Patients' Rights (Hungary)

Patient Advocacy According to Act CLIV of 1997 on Health (Hungary)

Patient's Rights Act, 1996 (Israel)

Patients' Rights Ombudsman (Japan)

Law on the Rights of Patients and Compensation of the Damage to their Health (Lithuania)

Patient's Rights (Malaysia)

Patient's Responsibilities (Malaysia)

The Patient's Charter (Malaysia)

Patient's Responsibilities (Malaysia)

The Patients' Rights Charter (South Africa)

Patient Rights and Responsibilities: A Draft for Consultation (Scotland)

The Royal Marsden Hospital Patients' Charter (United Kingdom)

Your Guide to the National Health System (United Kingdom)

The Hippocratic Oath (USA)

American Nurses Association Code of Ethics (USA)

American Hospital Association Patient's Bill of Rights (USA)

Testimony on Access to Medical Treatment Act (USA)

Mental Health Patient's Bill of Rights (USA)

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Professional and Patient Issues …
References and Resources

International Digest of Health Legislation (Belgium)

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Testimony on Access to Medical Treatment Act (USA)

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Practical Guidelines for Infection Control in Health Care Facilities

World Health Organization
Regional Office for Western Pacific, Manila
Regional Office for South-East Asia, New Delhi

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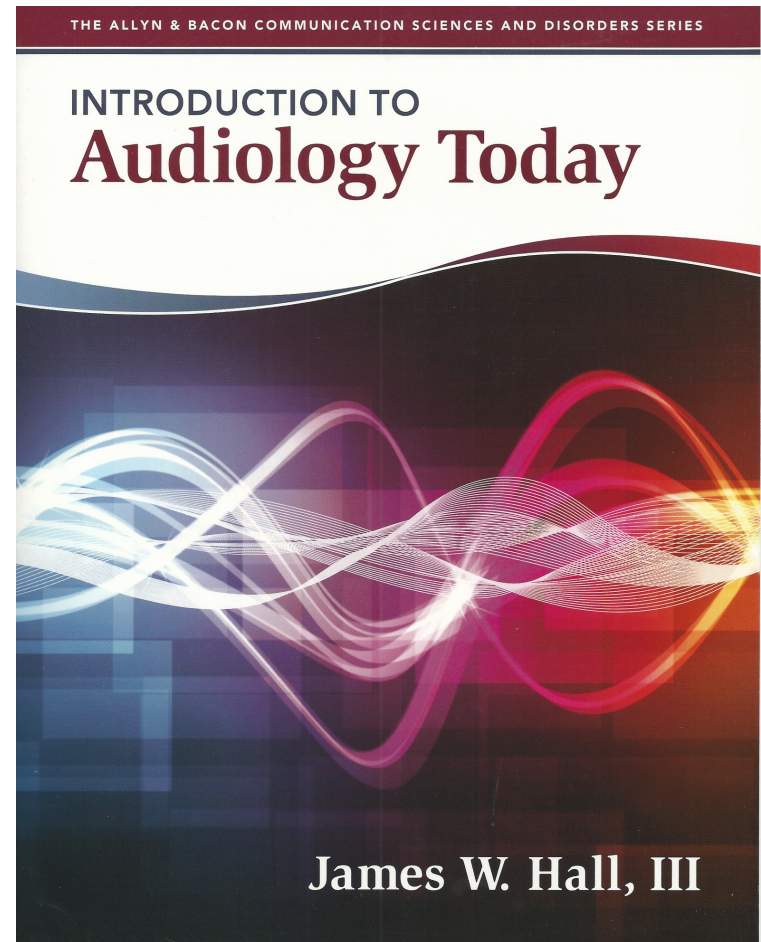## *Professional and Patient Issues …*
References and Resources

https://www.pearson.com/us/higher-education/program/Hall-Introduction-to-Audiology-Today/PGM142846.html

2014
Pearson Educational

Also available via Amazon.com

THE ALLYN & BACON COMMUNICATION SCIENCES AND DISORDERS SERIES

INTRODUCTION TO
Audiology Today

James W. Hall, III

Train the Trainers Workshop
Professional and Patient Issues … References and Resources

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Train the Trainers Workshop
Introduction to Audiological Procedures

- **Bloom's Taxonomy for Education**
- **Facts and knowledge for support personnel**
  - Practical review of relevant anatomy and physiology
  - Important terminology and definitions
  - Overview of required technology and instrumentation
  - Step-by-step explanation of essential techniques
  - Script for instructing patient about performing the task
  - Short list of possible concerns or contraindications
  - Guide for trouble shooting problems with equipment or technique
  - Recording test findings
  - Simple analysis of test findings

Train the Trainers Workshop
Introduction to Audiological Procedures

Bloom's Taxonomy

Technical Skills
Performing
Procedures

Facts &
Concepts

create — Produce new or original work
Design, assemble, construct, conjecture, develop, formulate, author, investigate

evaluate — Justify a stand or decision
appraise, argue, defend, judge, select, support, value, critique, weigh

analyze — Draw connections among ideas
differentiate, organize, relate, compare, contrast, distinguish, examine, experiment, question, test

apply — Use information in new situations
execute, implement, solve, use, demonstrate, interpret, operate, schedule, sketch

understand — Explain ideas or concepts
classify, describe, discuss, explain, identify, locate, recognize, report, select, translate

remember — Recall facts and basic concepts
define, duplicate, list, memorize, repeat, state

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Train the Trainers Workshop
Introduction to Audiological Procedures

- **Bloom's Taxonomy for Education**
- **Facts and knowledge for support personnel for each audiological technique and procedure**
  - **Practical review of relevant anatomy and physiology**
  - **Important terminology and definitions**
  - **Overview of required technology and instrumentation**
  - **Step-by-step explanation of essential techniques**
  - **Script for instructing patient about performing the task**
  - **Short list of possible concerns or contraindications**
  - **Guide for trouble shooting technical problems**
  - **Recording test findings**
  - **Simple verification of reliability and validity of test findings**

Train the Trainers Workshop
Some Guidelines for Training Support Personnel (1)

- **Begin with instruction and selected readings to assure that support personnel understand basic facts and concepts**
  - **Verify knowledge with brief tests**
  - **Schedule annual refresher sessions and repeat tests**
- **Repeatedly emphasis cautions, contraindications, and patient safety.**
  - **When support personnel are functioning semi-independently adhere to the motto … "When in doubt … refer out!"**
  - **When support personnel are functioning under direct supervision of an audiologist adhere to the motto : "When in doubt … give me a shout!"**
- **Verify technical competence with equipment before support personnel are allowed to perform procedures with patients**

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Train the Trainers Workshop
Some Guidelines for Training Support Personnel (2)

- **Support personnel should**
  - **Communicate effectively with patients**
  - **Obtain consent to diagnosis and treat from patients**
  - **Follow step-by-step protocols when possible**
  - **Comply with clinical practice guidelines**
  - **Carefully document everything that is done with the patient**
- **Whenever feasible, support personnel should utilize automated versus manually-operated technology**
  - **Automated operation of equipment**
  - **Automated analysis of data**
- **Consistently adhere to "clinical etiquette" by following "golden rule" of audiology (examples to follow for each procedure)**

Train the Trainers Workshop
Some Guidelines for Training Support Personnel (3)

The Cross-Check Principle in for Diagnosis of Hearing Loss in Children
(Jerger J & Hayes D. Arch Otolaryngol 102: 1976)

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"The basic operation of this principle is that no result be accepted until it is confirmed by an independent measure."

Application of the Crosscheck Principle in Audiology Services Provided by Support Personnel

Aural Immittance Measures
- **Tympanometry**
- **Acoustic reflex (BBN ART)**

Normal? ← → **Abnormal?**

Normal? ← **DPOAEs** → **Abnormal?**

Automated Audiometry *(AC only)*

Complete Pure Tone Audiometry *(AC & BC with masking)*

Normal? → **Speech Audiometry**

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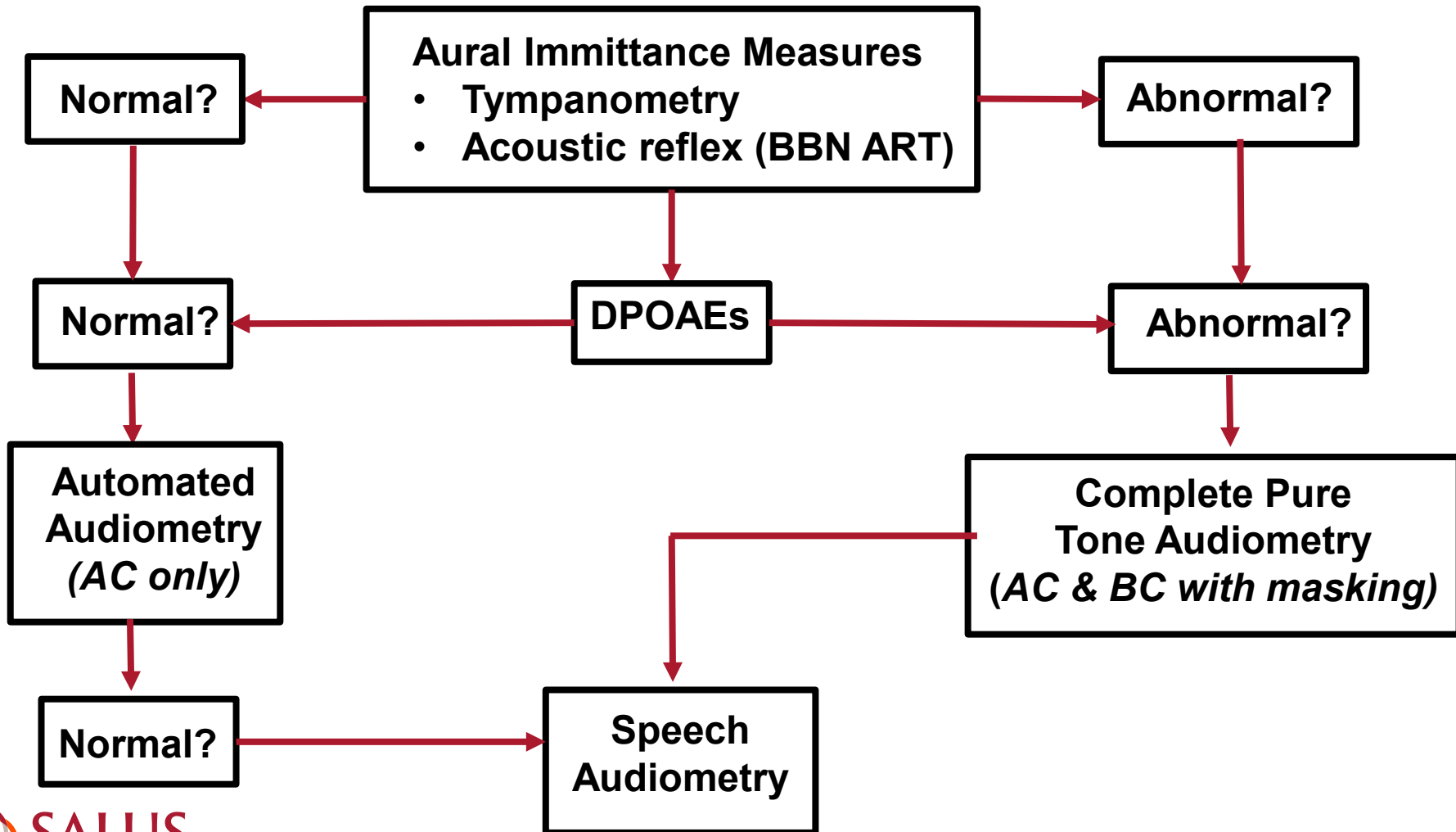
Train the Trainers Workshop
Introduction to Audiological Procedures
(*Note: Automation is an option for all procedures*)

- **Aural immittance measurements**
  - **Tympanometry**
  - **Acoustic reflexes**
- **Otoacoustic emissions**
  - **Automated OAEs**
  - **Screening protocol**
  - **Diagnostic protocols**
- **Pure tone audiometry**
  - **Air conduction**
  - **Bone conduction**
- **Speech audiometry**
  - **Speech detection or awareness threshold**
  - **Speech reception threshold**
  - **Word recognition**
  - **Speech perception in noise**
- **Auditory brainstem response/ASSR**

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Train the Trainers Workshop
Aural Immittance Facts & Basic Concepts

- **Functional anatomy of**
  - **External and middle ear**
  - **Acoustic reflex pathways**
- **Basic understanding of aural immittance, including**
  - **Admittance components**
  - **Measurements, e.g.,**
    - ◆ **Ear canal volume**
    - ◆ **Tympanometry**
- **Cautions and contra-indications, e.g.,**
  - **Draining ear**
  - **Recent ear surgery**
  - **External otitis**
  - **Foreign objects in external ear canal**
- **Importance of probe calibration**
- **Patient instructions (follow script)**

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Train the Trainers Workshop
Aural Immittance Technical Skills

- **Patient instructions (follow script)**
- **Selection of correct probe tip size**
- **Proper technique for insertion of probe tip**
- **Trouble shooting probe problems**
- **Performing tympanometry**
- **Noting ear canal volume**
- **Other immittance measurements?**
- **Performing acoustic reflex measurement**
- **Verifying acoustic reflex threshold (automated)**
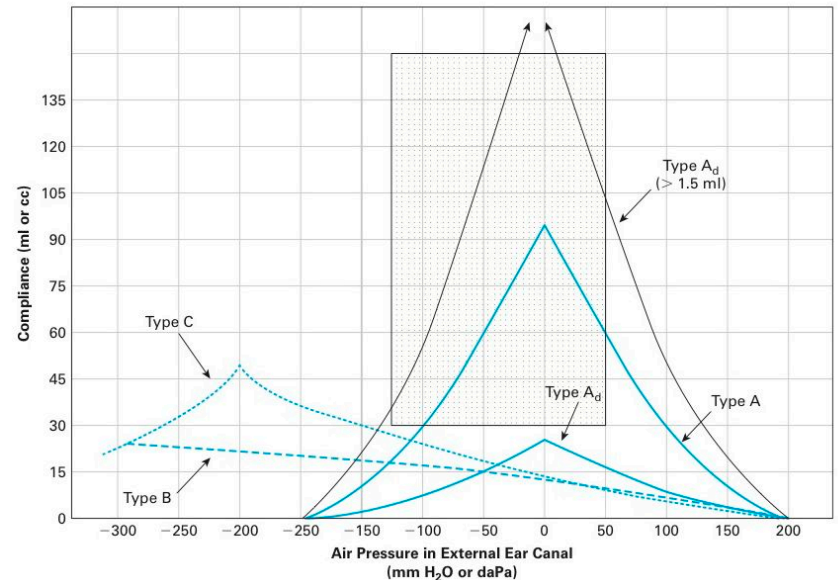
**From: Hall JW III (2014). Introduction to Audiology Today.
Boston: Pearson Educational**

Train the Trainers Workshop
Otoacoustic Emissions Measurement Facts & Basic Concepts

- **Functional anatomy of**
  - **Influence of external ear canal (EAC)**
  - **Role of middle ear system**
  - **Cochlea (especially outer hair cells)**
- **Basic understanding of OAE measuremen**
  - **Generator mechanisms**
  - **Types of OAEs**
  - **OAE stimulus and response parameters**
  - **Guidelines for selection of OAE protocols**
- **Cautions and contra-indications, e.g.,**
  - **Cerumen and foreign objects in EAC**
  - **Middle ear dysfunction**
  - **Perforation of TM**
- **Importance of probe calibration**
- **Patient instructions (follow script)**

OTOACOUSTIC EMISSIONS
PRINCIPLES, PROCEDURES, AND PROTOCOLS
Second Edition

SUMITRAJIT DHAR
JAMES W. HALL III

PLURAL PUBLISHING INC.

A Volume in the Core Clinical Concepts in Audiology Series

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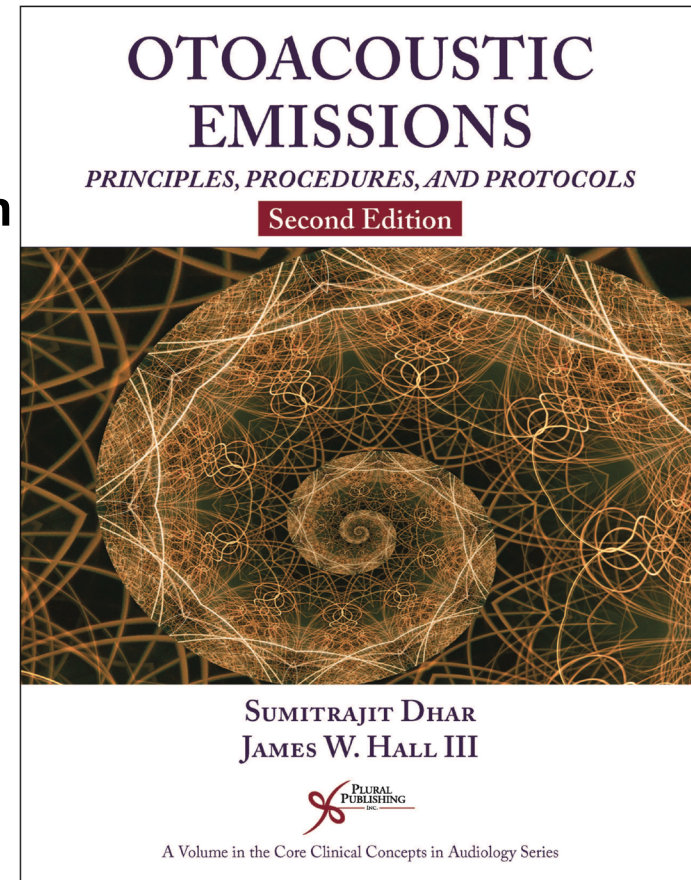
Train the Trainers Workshop
Otoacoustic Emissions Measurement Technical Skills

- **Selection of correct probe tip size**
- **Proper technique for insertion of probe tip**
- **Verification of low noise floor levels**
- **Verification of stimulus intensit**
- **Trouble shooting measurement problems**
- **Recording OAEs (e.g., DPgram)**
- **Importance of replication**
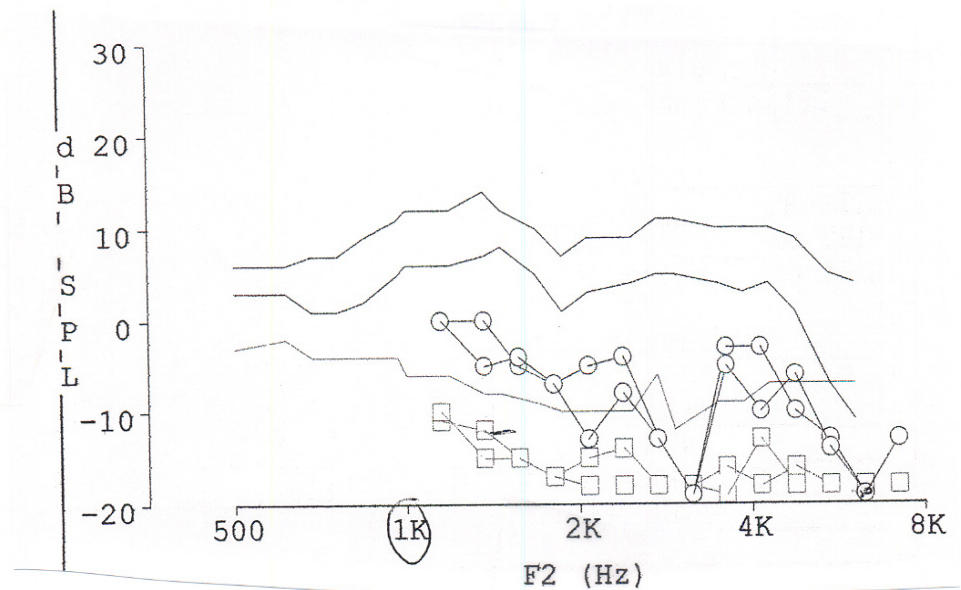
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Pure Tone Audiometry Technical Skills (1)

- **Introduction to pure tone audiometer**
- **Review of transducer types**
- **Earphone and bone oscillator placement (remember red = right and blue = left)**
- **Patient instructions (follow script)**
- **Step-by-step method for estimating hearing threshold**
- **Determining when masking is needed**
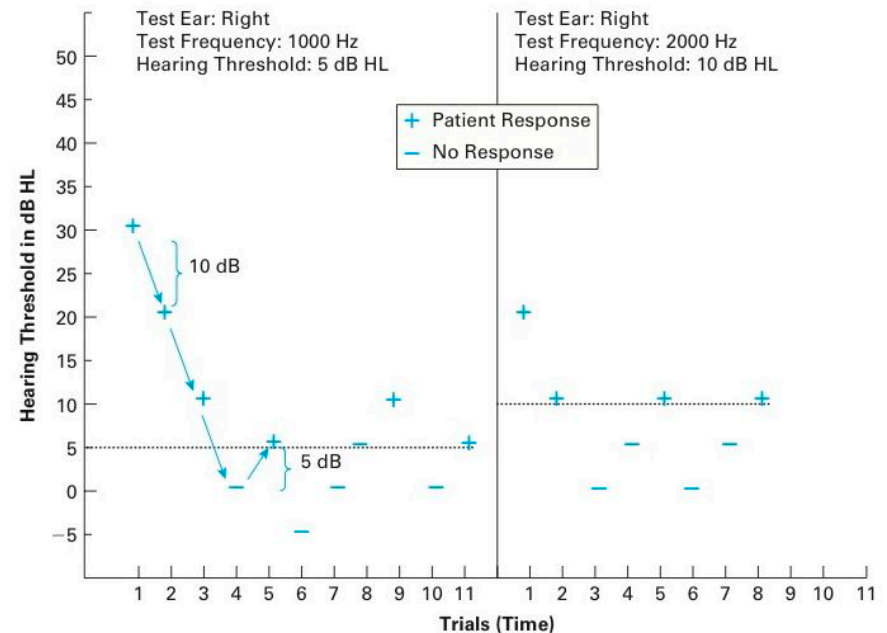
From: Hall JW III (2014). Introduction to Audiology Today. Boston: Pearson Educational

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Train the Trainers Workshop
Pure Tone Audiometry Technical Skills (2)

- **When pure tone audiometry is performed manually**
  - **Following appropriate sequence for testing**
  - **Learning symbols for air- and bone conduction pure tone thresholds**
  - **Plotting results accurately**
  - **Verifying reliability of patient responses**
  - **Removing earphones safely**
  - **Returning audiometer to "neutral" settings**
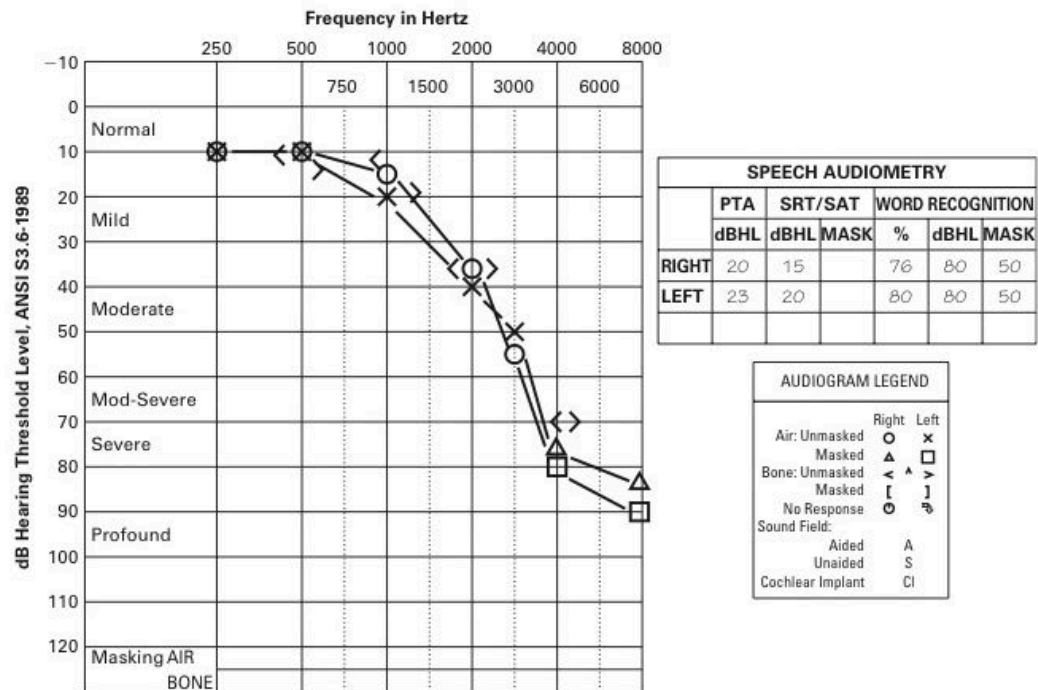
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Modern Pure Tone Audiometers

- **Pure tone thresholds plotted by device**
- **Data saved for later inspection by audiologist**
- **Data transfer to database**

Train the Trainers Workshop
Automated Pure Tone Audiometry

GSI AMTAS
(Automated Method for Testing Auditory Sensitivity
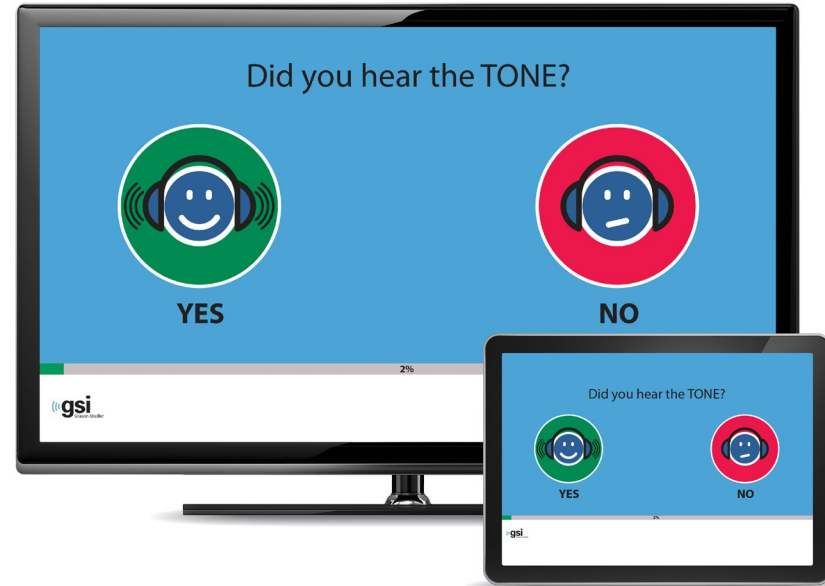
Train the Trainers Workshop
Automated Pure Tone Audiometry
Selected References on AMTAS Technique

- **Margolis RH et al (2010). AMTAS: automated method for testing auditory sensitivity: validation. Int J Audiology, 49: 185-194.**

- **Margolis RH, Frisina R & Walton JP(2011). AMTAS(®): automated method for testing auditory sensitivity: II. Air conductdion audiograms in children and adults. Int J Audiology, 50: 434-437.**

- **Margolis RH & Moore BC (2011). AMTAS(®): automated method for testing auditory sensitivity: III. sensorineural hearing loss and air-bone gaps.. Int J Audiology, 50: 440-447.**

- **Eikelboom RH, Swanepoel de W et al (2013). Clinical validation of the AMTAS automated audiometer. Int J Audiology, 52, 342-349**

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Other Options for Automated Pure Tone Audiometry

KuduWave

(https://www.kuduwave.com**)**

Diagnostic Pure-Tone Audiometry in Schools: Mobile Testing without a Sound-Treated Environment

De Wet Swanepoel*†‡
Felicity Maclennan-Smith*
James W. Hall*

Abstract

Purpose: To validate diagnostic pure-tone audiometry in schools without a sound-treated environment using an audiometer that incorporates insert earphones covered by circumaural earcups and real-time environmental noise monitoring.

Research Design: A within-subject repeated measures design was employed to compare air (250 to 8000 Hz) and bone (250 to 4000 Hz) conduction pure-tone thresholds measured in natural school environments with thresholds measured in a sound-treated booth.

Study Sample: 149 children (54% female) with an average age of 6.9 yr (SD = 0.6; range = 5–8).

Results: Average difference between the booth and natural environment thresholds was 0.0 dB (SD = 3.6) for air conduction and 0.1 dB (SD = 3.1) for bone conduction. Average absolute difference between the booth and natural environment was 2.1 dB (SD = 2.9) for air conduction and 1.6 dB (SD = 2.7) for bone conduction. Almost all air- (96%) and bone-conduction (97%) threshold comparisons between the natural and booth test environments were within 0 to 5 dB. No statistically significant differences between thresholds recorded in the natural and booth environments for air- and bone-conduction audiometry were found ($p > 0.01$).

Conclusions: Diagnostic air- and bone-conduction audiometry in schools, without a sound-treated room, is possible with sufficient earphone attenuation and real-time monitoring of environmental noise. Audiological diagnosis on-site for school screening may address concerns of false-positive referrals and poor follow-up compliance and allow for direct referral to audiological and/or medical intervention.

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Other Options for Automated Pure Tone Audiometry

The first clinically validated iPad audiometer

SHOEB⬤X

A Clinically Validated
iPad Audiometer

SHOEB⬤X
AUDIOMETRY

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Train the Trainers Workshop
Automated Pure Tone Audiometry
> 100 Peer-Reviewed Publications

PubMed ▼	automated pure tone audiometry ⊗

Format: Summary   **Sort by**: Most Recent   **Per page**: 20

Search results

Items: 1 to 20 of 100

☐ Cross-sectional assessment of hearing acuity of an unscreened 85-year-old cohort - Including a 10-year longitudinal study of a sub-sample.
1. Göthberg H, Rosenhall U, Tengstrand T, Rydberg Sterner T, Wetterberg H, Zettergren A, Skoog I, Sadeghi A.
Hear Res. 2019 Oct;382:107797. doi: 10.1016/j.heares.2019.107797. Epub 2019 Sep 5.
PMID: 31525615

☐ Association between a High-Potassium Diet and Hearing Thresholds in the Korean Adult Population.
2. Jung DJ, Lee JY, Cho KH, Lee KY, Do JY, Kang SH.
Sci Rep. 2019 Jul 4;9(1):9694. doi: 10.1038/s41598-019-45930-5.
PMID: 31273228   **Free PMC Article**

☐ Development and evaluation of a tablet-based diagnostic audiometer.
3. Thoidis I, Vrysis L, Markou K, Papanikolaou G.
Int J Audiol. 2019 Aug;58(8):476-483. doi: 10.1080/14992027.2019.1600204. Epub 2019 Apr 15.
PMID: 30987489

☐ **Automated** Smartphone **Audiometry**: A Preliminary Validation of a Bone-Conduction Threshold Test App.
4. Dewyer NA, Jiradejvong P, Lee DS, Kemmer JD, Henderson Sabes J, Limb CJ.
Ann Otol Rhinol Laryngol. 2019 Jun;128(6):508-515. doi: 10.1177/0003489419828770. Epub 2019 Feb 11.
PMID: 30744390

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Train the Trainers Workshop
Speech Audiometry Facts & Basic Concepts

- **Functional anatomy of auditory system**
- **Description of different speech audiometry measures**
  - Speech reception threshold in dB HL
  - Word recognition in % correct
  - Speech in noise (in SNR)
- **Importance of using recorded speech materials whenever possible**
- **Cautions and contra-indications, e.g.,**
  - **Developmentally immature or delayed**
  - **Cognitive impairment**
  - **Indication for masking on non-test ear**
- **Importance of patient native language**
- **Patient instructions (follow script)**

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Train the Trainers Workshop
Speech Audiometry Technical Skills

- **Introduction to speech audiometer with diagnostic audiometer**
- **Earphone selection and placement (remember red = right and blue = left)**
- **Patient instructions (follow script)**
- **Step-by-step method for measuring**
  - **SRT**
  - **Word recognition scores**
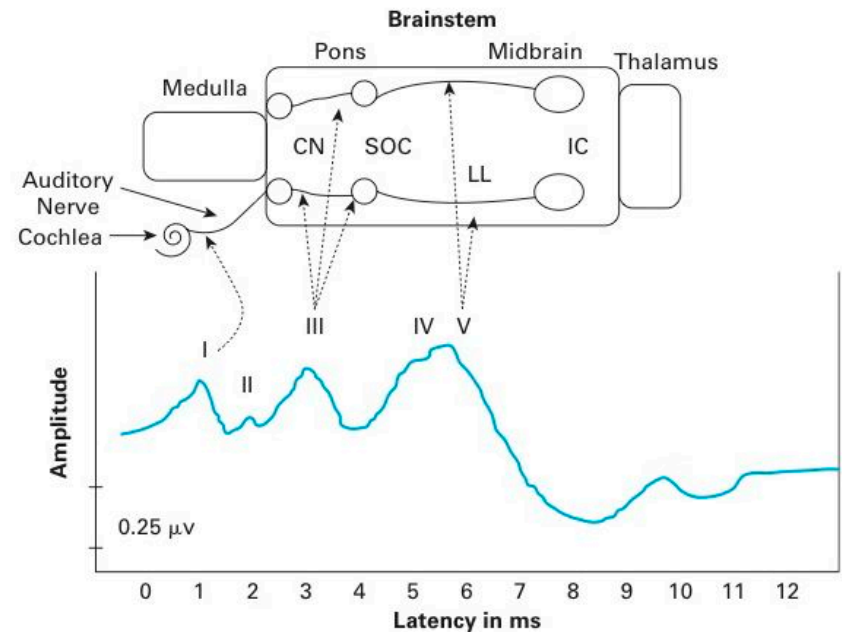 - **Speech perception in noise**
- **Recording test results**
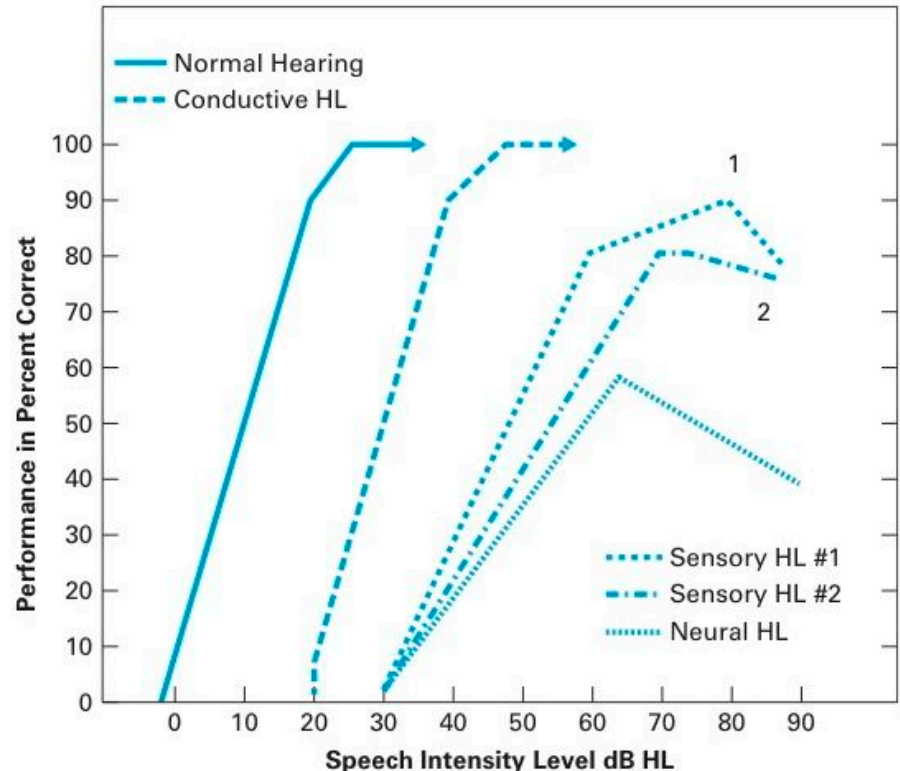
From: Hall JW III (2014). Introduction to Audiology Today. Boston: Pearson Educational

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Train the Trainers Workshop
ABR Facts & Basic Concepts

- **Functional anatomy of ABR pathways**
- **Basic understanding of auditory electrophysiological measurements**
  - **Inter-electrode impedance**
  - **Signal averaging**
  - **Response parameters**
- **Cautions and contra-indications, e.g.,**
  - **Quiet patient state**
  - **Electrical and muscle interference**
  - **Crosscheck principle (ABR is not a complete test of hearing)**
  - **Allergies**
- **Patient or parent instructions (follow script)**

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Train the Trainers Workshop
ABR Technical Skills

- **Selection of appropriate test protocol**
- **Selection of correct insert earphone size**
- **Proper electrode technique**
  - Preparation of site
  - Placement
  - Impedance testing
- **Trouble shooting impedance and other problems**
- **Following efficient test process**
  - Click and tone burst stimuli
  - Right and left ear
  - Bone conduction as indicated
- **Verification of response**
- **Replication as necessary**

From: Hall JW III (2014). Introduction to Audiology Today. Boston: Pearson Educational

Train the Trainers Workshop
Agenda

8:30 am   Welcome

8:45 am   Core competencies in audiology

9:00 am   Professional and patient issues: International perspective

9:15 am   Introduction to audiological procedures

9:30 am   **Clinical simulation in audiology education and training**

10:00 am   Break

10:15 am   Audiological procedures: Review of principles and hands-on demonstrations

11:30 am   Putting it all together

12 noon   Adjourn

Disclosure

Owner of **AudProf.com**, an educational company that manufactures simulation products

Train the Trainers Workshop
Clinical Simulation

'Simulation is a technique — not a technology — to replace or amplify real experiences with guided experiences that evoke or replicate substantial aspects of the real world in a fully interactive manner'

(Gaba, 2004, p. i2)

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Simulation

- **Allows the learner to separate the equipment/test from the patient**
- **Allows the learner to practice and make mistakes in a safe environment without concern for the patient – manikins don't care how many times you need to practice until you feel comfortable**
- **Can learn and practice on multiple pieces of equipment**
- **Exposure to a wide variety of clinical cases**
- **Accurate quantification of clinical skills**

Steps for Planning

- Define the problem
- Determine the learning objectives
- Select assessment and evaluation methods
- Design simulation event
- Select simulation type/modality
- Identify resources
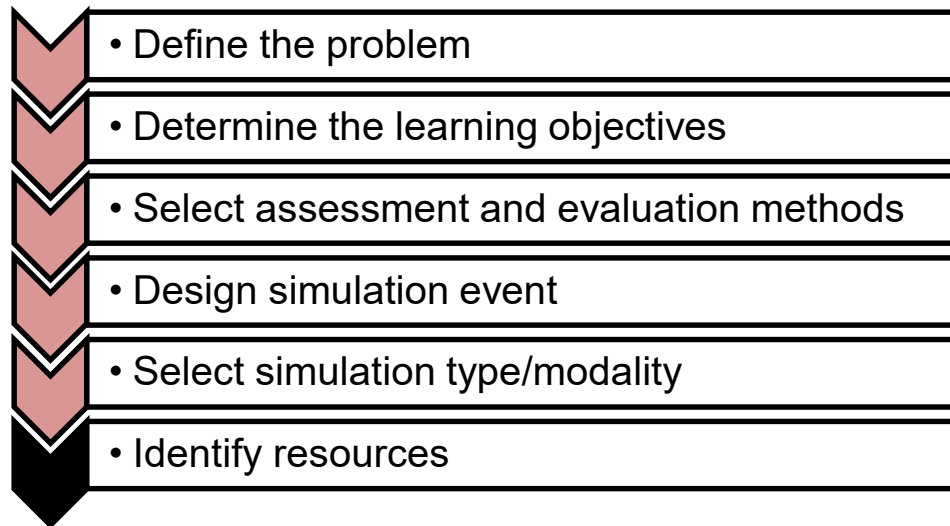
Pre-Brief Session

- **Discuss learning format and/or software interface**
- **Review critical components of the simulation**
- **Ensure relevancy to clinical experiences**
- **Prepare for frustration-resolution moments (highly emotional)**

Debriefing is the 'heart and soul' of any simulation experience

Rall, Manser & Howard (2000)

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The De-Brief Activity

- **Establish set de-briefing times**
  - **How did it go?**
  - **What did you do well?**
  - **What could you do better?**
  - **What will you do differently next time?**
  - **How does this apply to what you have already experienced or will experience?**
- **Provide formal thought time/reflection for learners to recollect and report 'lessons learned'**

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The Standardized Patient

Types of Simulation

- Standardized Patients [SPs] are individuals trained to portray a specific patient case in a realistic and reproducible manner

Task Trainer

Types of Simulation

- **Provide the key elements of the procedure or skill being learned**

- **Allow learners to acquire the basic skills for specific skills or procedures**
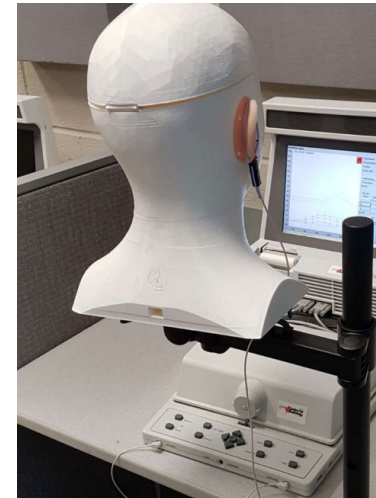
High Tech Manikins

Types of Simulation

- **Life-sized human-like simulators**
- **Allow learners to practice and fine-tune procedures using life-size patient models that can be programmed to display patient responses**

Web-based Simulations

Types of Simulation

- Computer access

- Allows for repeated and independent practice

- Group or independent work

- Available commercially

- Can be cost effective

USC Virtual SP
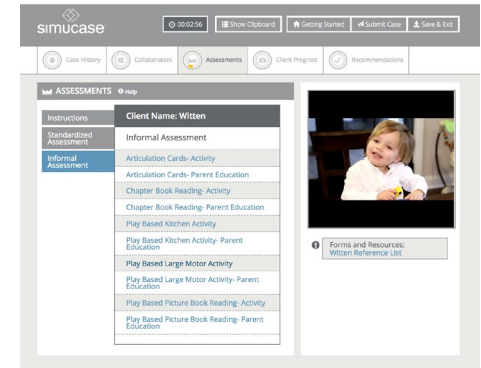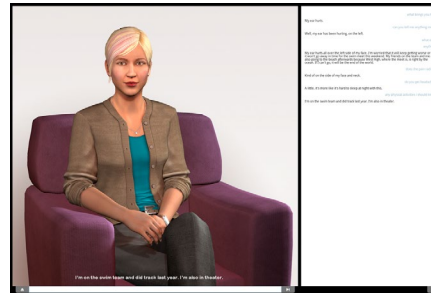
AudSim Flex
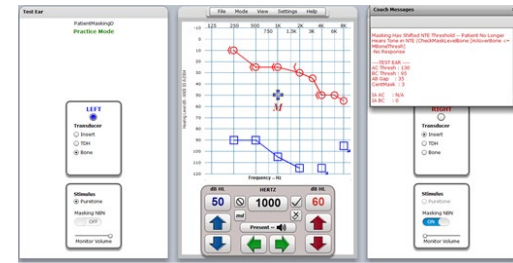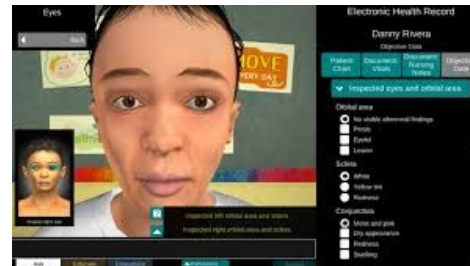
Virtual Reality

Types of Simulation

https://www.virtualiteach.com/vr-edu-model
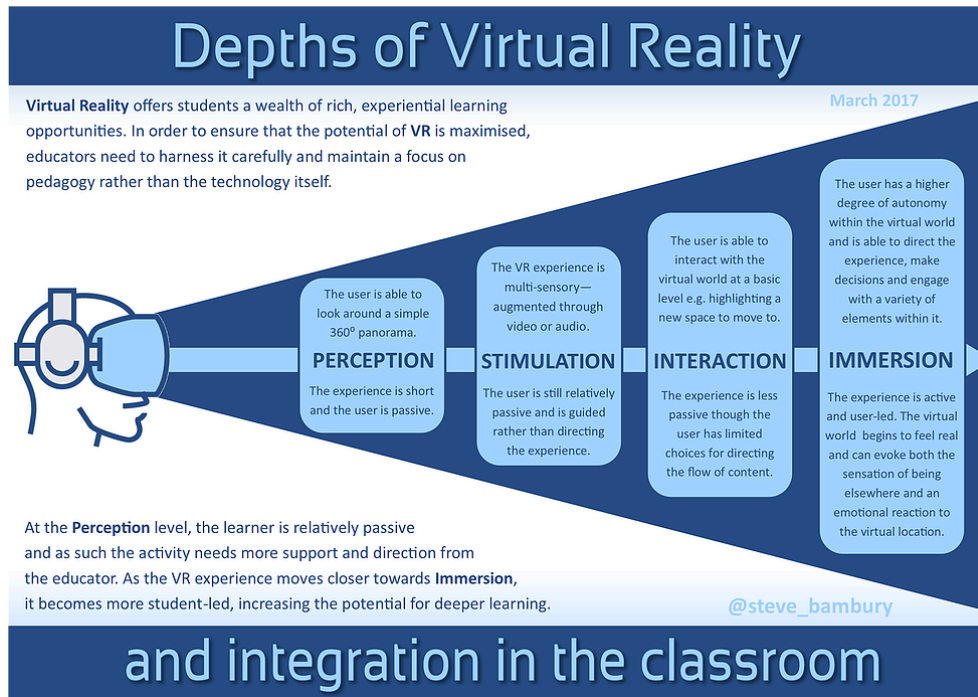
Learner Outcomes & Evaluation

Evaluation of Learner Performance

▶ **Formative Evaluations**

  ▶ **provide feedback during the learning process and allow learners to improve**

▶ **Summative Evaluations**

  ▶ **Used to rank learner's skills or determine if they have achieved their goals**

FORMATIVE SUMMATIVE

WHEN THE CHEF TASTES THE SOUP

WHEN THE GUESTS TASTE THE SOUP

@bryanMMathers

FROM STEVE WHEELER'S BLOG "THE AFL TRUTH ABOUT ASSESSMENT"

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Rubrics

- **An attempt to standardized and communicate expectations of quality around a task**

- **Used to delineate a consistent criteria for grading**

- **Allows both trainers and learners to evaluate criteria, which can be complex and subjective**

CPEIII Threshold ABR Rubric

Student Name _____ Unit: _____

Set up equipment as if you were to conduct a one channel (ipsi) threshold ABR for the Right ear of an infant.

Time

Start Time _____ Stop Time _____ Time (5 pts) _____(5)
-subtract one point for every 2 minutes past 25 minutes

Set up

Montage and Response Parameters (1 pt each)
_____ Electrode montage   Non-inverting (Active/Positive) Fz
                             Inverting (Reference/Negative) – Earlobe/mastoid
                             Ground - Fpz
_____ Filter settings – 30-100 – 1500 Hz   (1pt)
_____ Window size   20 – 24 ms   (1pt)
                                                          _____(5)

Stimulus Parameters
_____ Intensity 30 dB nHL (1pt)
_____ Rate – ~37-41/sec (1pt)
_____ Polarity (alternating split/condensation or rarefaction) (1pt)
_____ Frequency choices and rationale _____ (4pt)
                                                          _____(7)

Conducting the Response

_____ examine in EEG   (1pt)
_____ Describe the stopping criteria   (2pt)
_____ Determine residual noise value ($\leq$ 0.05)   (2pt)
_____ calculate cross correlation value ($\geq$ 0.70)   (2pt)
_____ 2 repeatable tracings of at least 1500 clicks   (2pt)
_____ Determine the presence /absence of repeatable waveform   (2pt)
_____ Determine where to go from first waveform - increase 20/decrease 10 dB   (2pt)
                                                          _____(13)

Analyzing the Response

_____ Correctly mark Wave V for all AC at both 0.5 & 2.0kHz   (4pt)
_____ Correctly mark Wave V for all BC at both 0.5 & 2.0kHz   (4pt)
_____ Using the worksheet (on back), plot the presence/absence of Wave V at each intensity tested   (2pt)
_____ Using the worksheet (on back), determine threshold at 2000 and 500 Hz for both AC & BC   (2pt)
_____ Describe the procedure to determine type and degree of loss   (4pt)
_____ Using the worksheet (on reverse), determine type of loss   (2pt)
_____ Using the worksheet (on reverse), determine degree of loss   (2pt)
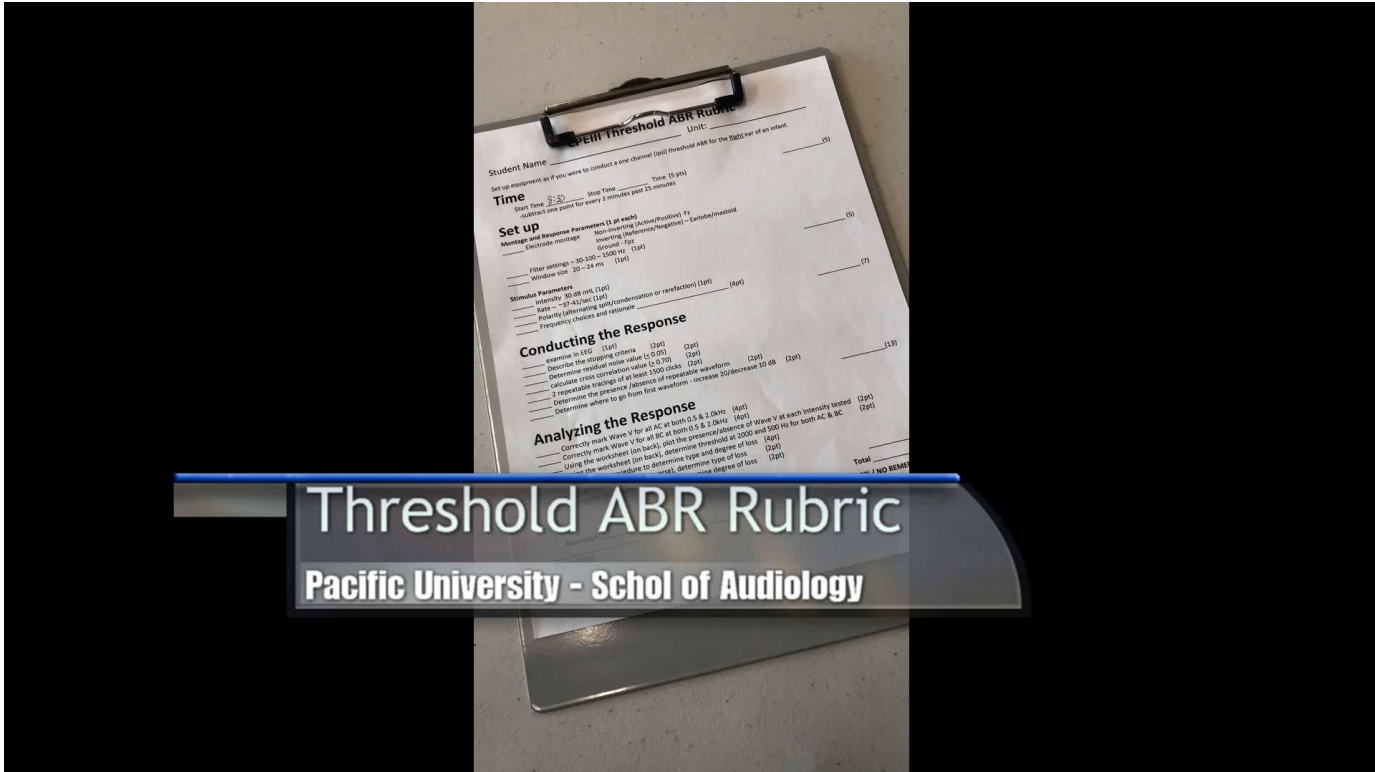   _____(20)

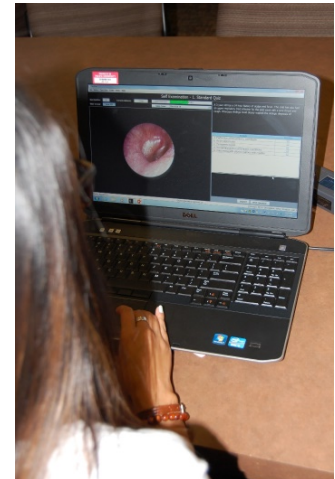   **Total** _____(50)

Examiner: _____   **REMEDIATION / NO REMEDIATION**

COMMENTS:

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Assessment

Remediation

After *not achieving* a skill/knowledge level

▶ **Group or self study to review information that is not up to standard**

▶ **Self-evaluation to determine comfort level with material**

▶ **Re-evaluation to determine skill/knowledge level**

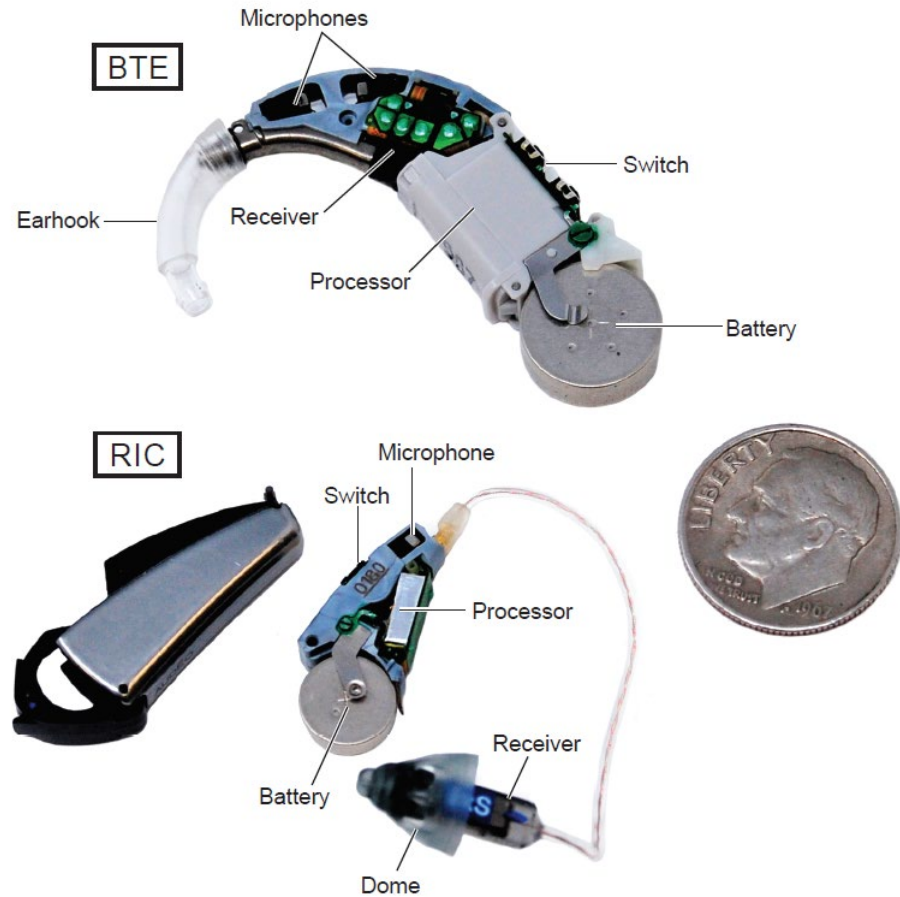# Quick Overview

Simulation Example:
Infection Control

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Infection Control Exercise

Amplification

Simulation Example

Ear Mold Impressions

Not all learners are at the same level, some need additional practice before being assessed on a skill

- By using manikins learners can practice with or without trainer present
- When they are comfortable with the skill, then they can proceed to an assessment
- Learners can practice as much as is required
- Need to give them a standard to work towards

Ear Mold Impressions

EMI Self Assessment

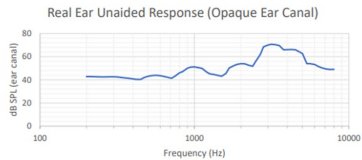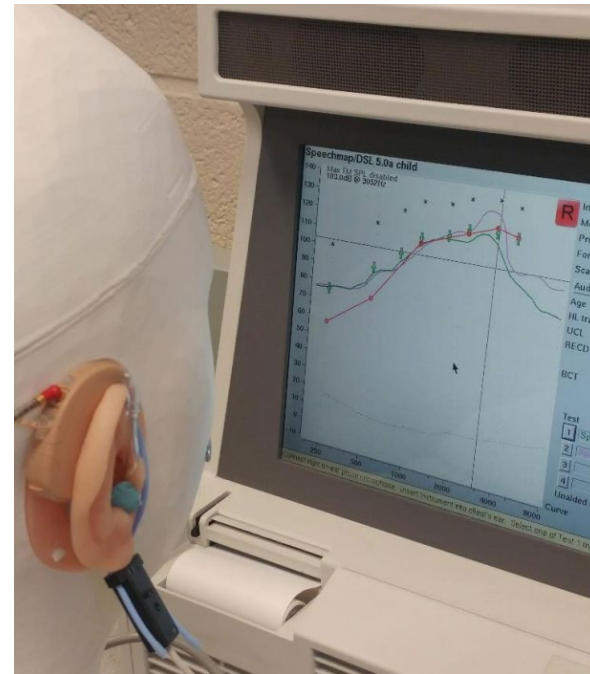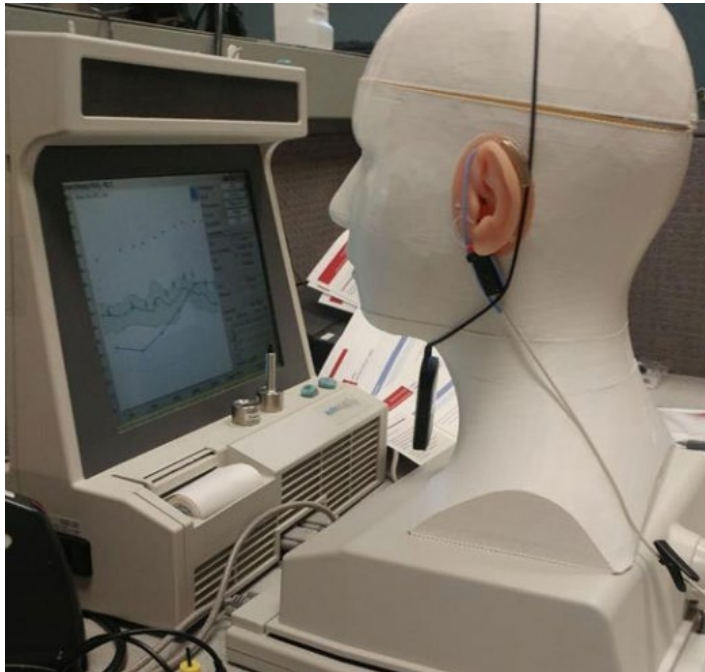| Date		
Otoblock		
Otoblock depth (visual inspection)		
Otoblock "seal" (visual inspection)		
EMI		
Helix fully filled		
Tragus fully visible in impression		
2-4 mm past the 2nd bend		
No air bubbles		
No cracks		
No stratifications (striations)		
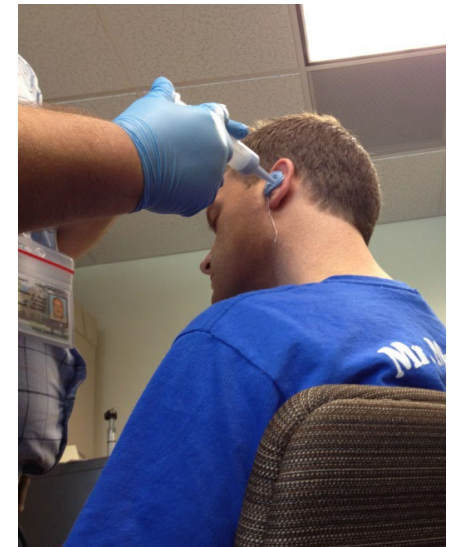
Turn in 5 perfect EMIs on the manikin before moving onto people

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Hearing Aid Fitting

Earhook

Tubing

Earmold

Thin wire

Non-custom
open eartip

Slim tube

Probe Tube Placement

Real Ear Unaided Response (Transparent Ear Canal)

Real Ear Unaided Response (Opaque Ear Canal)

AHead Simulations 1.2

License   Help

Go Back   Switch Ear

Distance From Eardrum

~4mm

5 mm

Camera

Sound

Hold (Or use 'H') To View
Ear Perspective

Exit

AHead
Simulations

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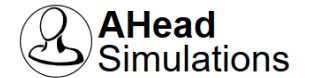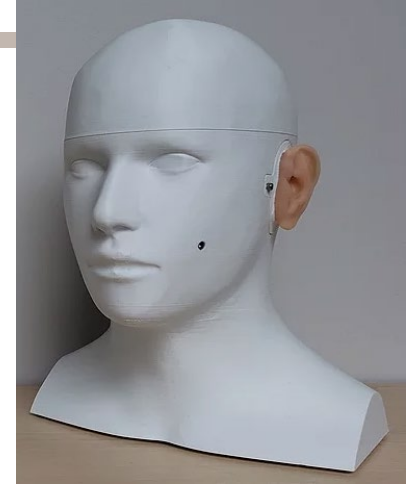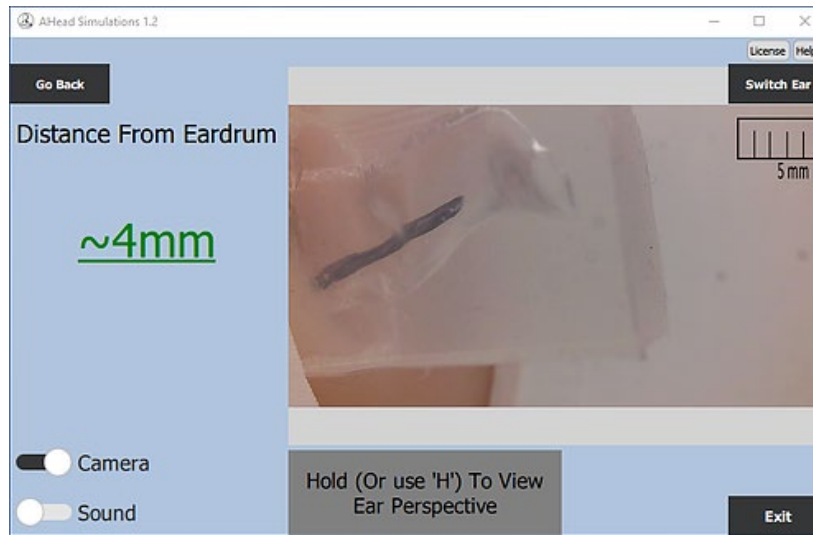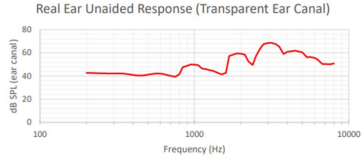
Matching Targets and Verification

Simulation Example

Evoked Physiologic Responses
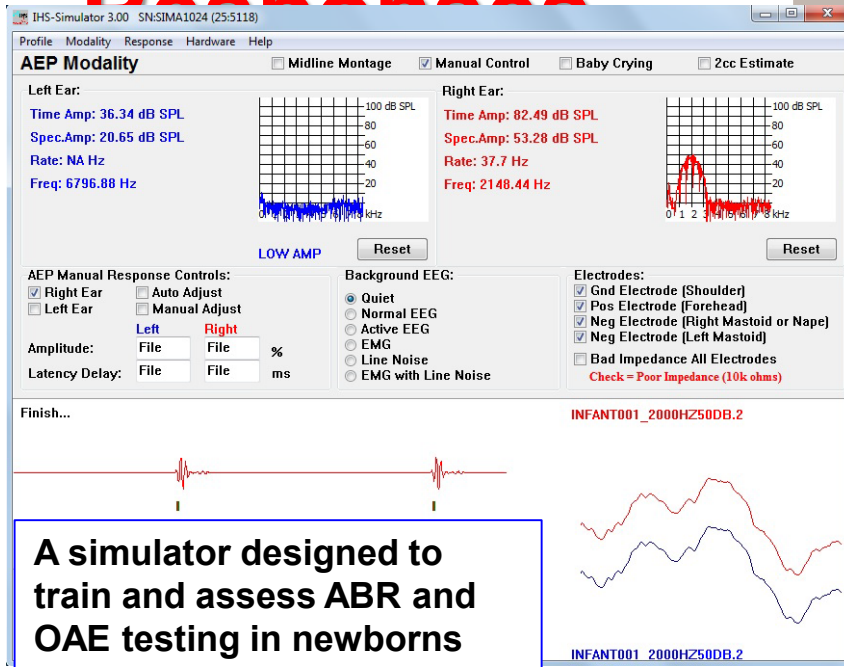
Teaches/Assesses:
- **Electrode placement**
- **Testing technique**
- **Problem solving**

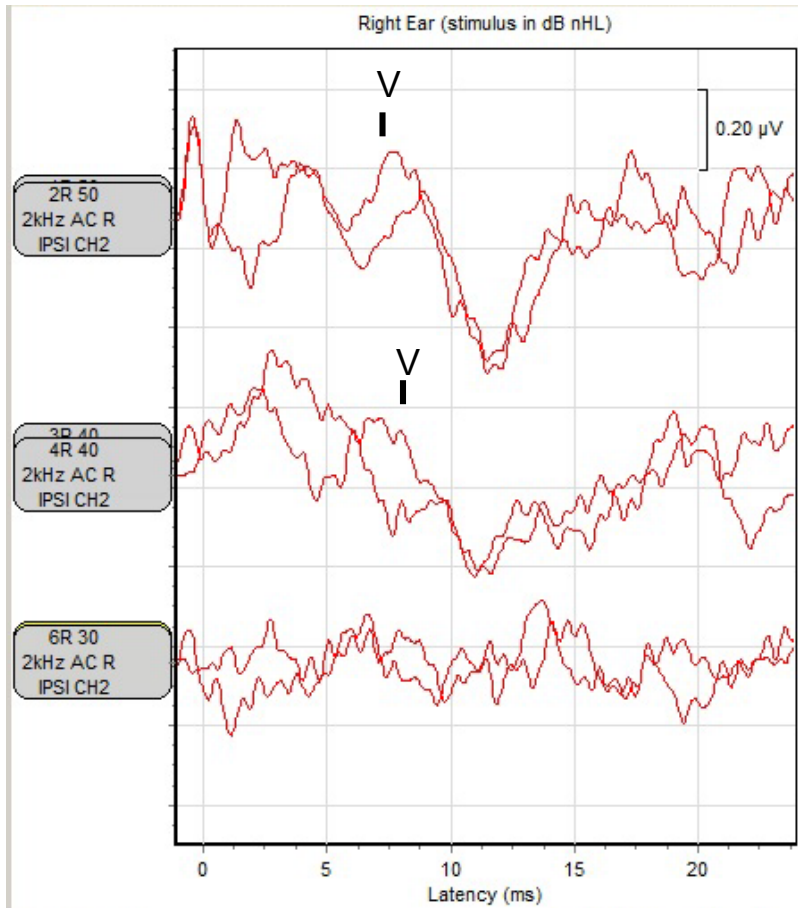A simulator designed to train and assess ABR and OAE testing in newborns

Newborn Simulator – Baby Isao
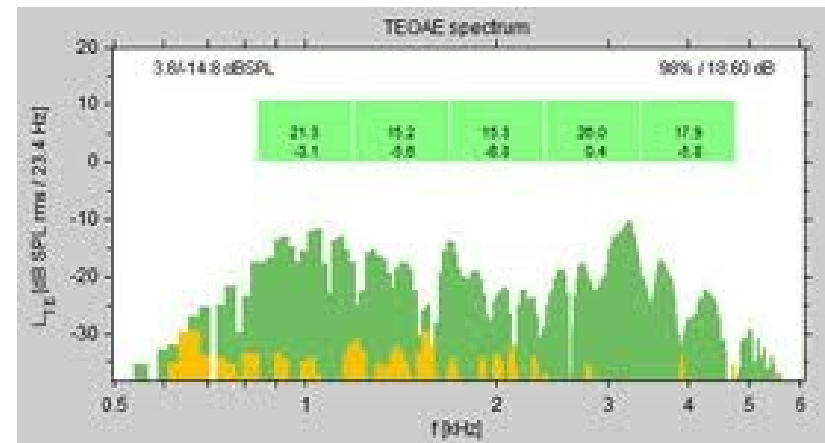**Intelligent Hearing Systems**

ABR Simulator
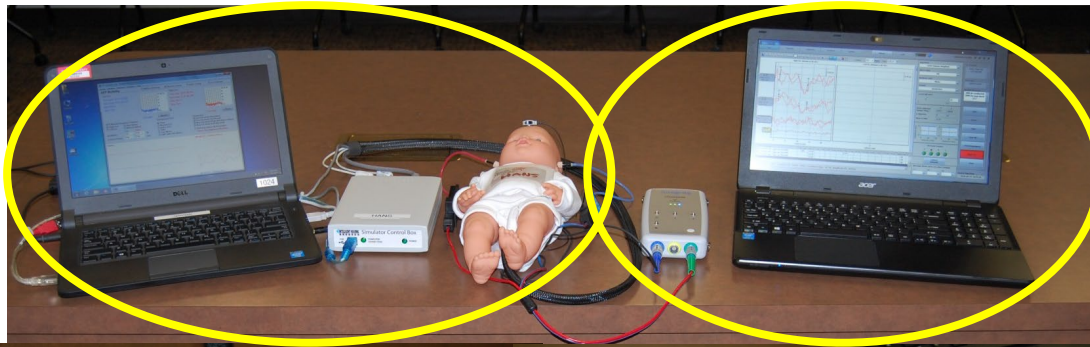
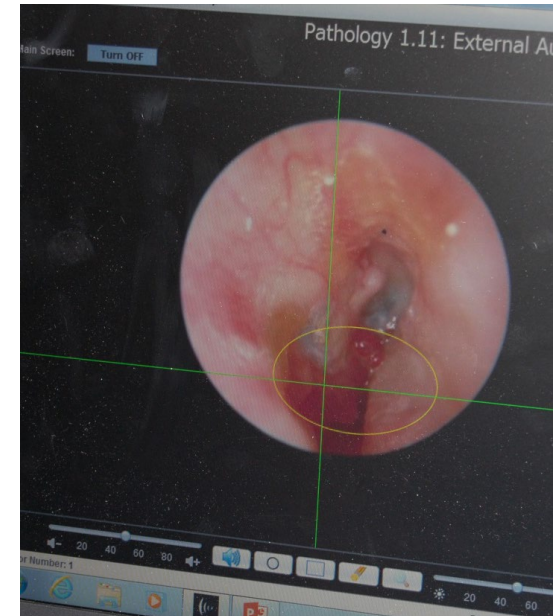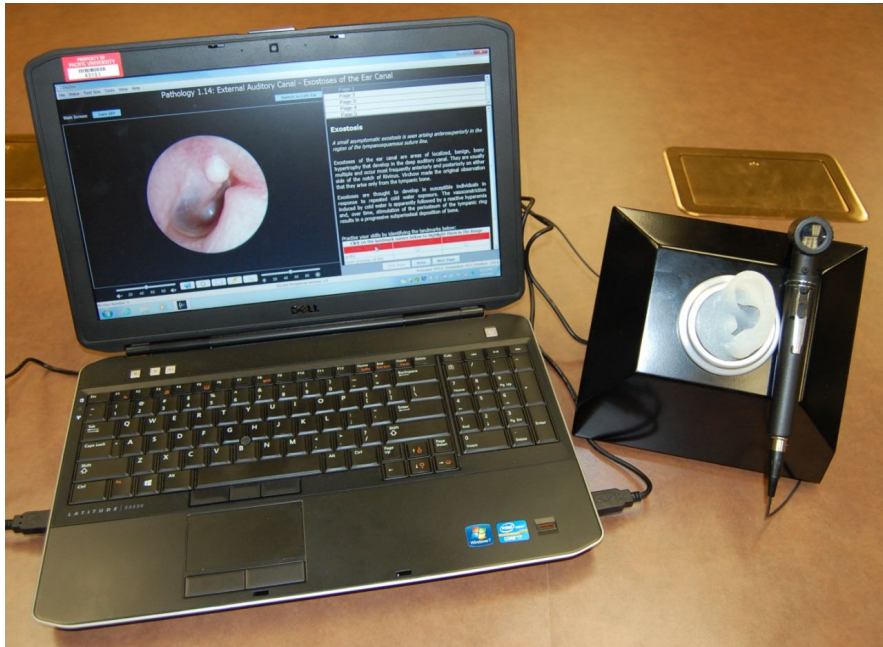# Newborn/Infant Assessments

Otoacoustic Emission Simulator

How to simulate an acoustic signal generated by the human body in response to an acoustic stimuli.

Otoscopy Training

Simulation Example

OtoSim 2™

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Cerumen Management

Simulation Example

- 1st exposure to CM can be unnerving
- Use of manikin allows learners to focus on the skills and becoming proficient with the tools
- After practice learners become more confident to work with patients

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Patient Interaction

Simulation Example

Using standardized patients to practice:

- **Taking a case history**
- **Giving instructions**
- **Delivering bad news**

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Standardized Patients

There are a number of key elements to an effective standardized patient program including:

    (1) case development
    (2) training of standardized patients
    (3) development of the objective structured clinical examination (OSCE)
    (4) procedures for conducting the OSCE
    (5) recruitment and training of judges
    (6) measurement and evaluation

Zraick (2012)
Davidson & Theodoros (2010)
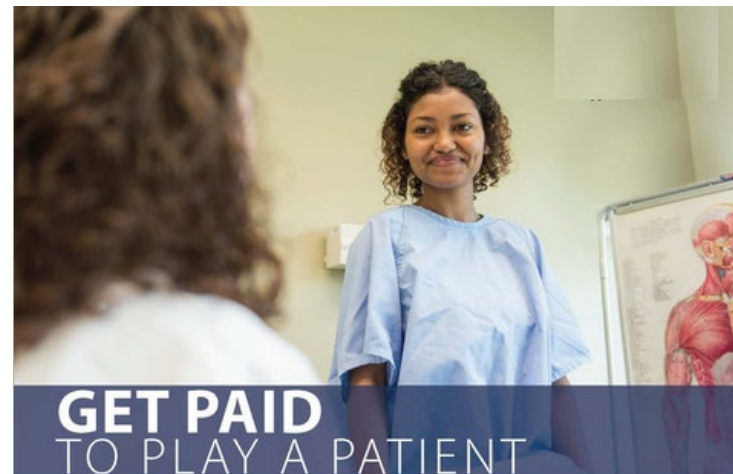
GET PAID
TO PLAY A PATIENT

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Student _____   Evaluator _____   Date _____

Instructions: Circle a number to evaluate each counseling skill on a 1 – 5 scale (1 = Not at All; 5 = Definitely or Always).

A. Getting started. This section looks at how the audiologist prepared for the parental consultation. The environment should allow private and comfortable communication, and the audiologist should indicate that a transition in the appointment was taking place.

1. Did the audiologist arrange the environment well?	1	2	3	4	5

The audiologist may have:
- selected a room with a closed door and comfortable lighting
- ensured that the desk was not in between him/her and parents
- arranged to have tissues within reach
- ensured that files, paperwork were put aside but easily accessible

- placed the chairs at an angle to allow for eye contact
- ensured wastebasket, other items were out of the way
- taken measures to prevent interruptions
- Other:

2. Did the audiologist make parents feel comfortable?	1	2	3	4	5

The audiologist may have:
- walked with the parents to the counseling room
- asked parents if they would prefer their child and/or other children to play in another room (attended by office staff).

- offered the parents comfortable seating
- offered to provide parents with toys for children
- Other:

3. Did the audiologist clearly indicate the purpose of this next period of the appointment?	1	2	3	4	5

The audiologist may have:
- stated the purpose of the next period of the appt (e.g., "Now we can go over the results and talk about what they mean.")
- Other:

Score for "Getting Started" _____ / 15 possible

B. Breaking the News. This section focuses on the audiologist's ability to impart diagnostic information to parents with sensitivity and compassion. This can be done by using lay terminology, attending to parental reactions, responding only to the questions posed, and resisting tendencies to "fill up the talk time" with professional monologue.

4. Did the audiologist begin with a "warm-up" type of comment, such as "I know you've been anxious about the results of all those tests" or "I have some difficult news to share with you now."	1	2	3	4	5

The audiologist might have:
- made eye contact first before speaking
- attended to facial expressions and body language
- Other

- spoken more slowly or more softly.
- added, "I'm sorry"

Best Practices in Healthcare Simulations: Communication Sciences and Disorders

CAPCSD's first eBook, *__Best Practices in Healthcare Simulation: Communication Sciences and Disorders__* by Dudding, Brown, Estis, Szymanski & Zraick is now available.

Download it for free!

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Train the Trainers Workshop
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8:45 am   Core competencies in audiology

9:00 am   Professional and patient issues: International perspective

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12 noon   Adjourn

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