

# Introduction to AR

DR. JEHAN ALSALMI



## Background

- ▶ Hearing impairment is one of the most common and serious disabling conditions in the world, regardless of age or gender.
- ▶ In 2005 it was estimated by the World Health Organization (WHO) that 278 million people worldwide suffered from a moderate to profound hearing impairment.
- ▶ This number is gradually increasing across all types and degrees of hearing loss because of global population growth and longer life expectancy.

## Background

- ▶ Saudi Arabia has the third highest population of deaf people in the Middle East region, after Algeria and Iraq. However, it has the highest percentage rate of deaf people in the general population, with a figure of 3.55% according to World Federation of the Deaf.
- ▶ This number is high because of the frequent practice of consanguineous marriage, increasing the chance of transmitting inherited conditions such as certain types of hearing impairment.

## ASHA

Aural rehabilitation refers to services and procedures for facilitating adequate receptive and expressive communication in individuals with hearing impairment. (ASHA, 1984, p. 37)

(American Speech-Language-Hearing Association. (2001). *Knowledge and Skills Required for the Practice of Audiologic/Aural Rehabilitation* [Knowledge and Skills]

# Audiologic/aural rehabilitation

Audiologic/aural rehabilitation (AR) is an ecological, interactive process that facilitates one's ability to minimize or prevent the limitations and restrictions that auditory dysfunctions can impose on well-being and communication, including interpersonal, psychosocial, educational, and vocational functioning.

## Terms

- ▶ Auditory Training
- ▶ Aural Rehabilitation
- ▶ Audiological Rehabilitation
- ▶ Speechreading
- ▶ Lipreading
- ▶ Communication Rehabilitation
- ▶ Habilitation
- ▶ Rehabilitation

## Rehabilitation vs. Habilitation

- ▶ Rehabilitation
  - ▶ Restore lost function
  - ▶ Adults
  - ▶ Acquired hearing loss
- ▶ Habilitation
  - ▶ Develop skill not present beforehand
  - ▶ Infants/children
  - ▶ Congenital or pre-lingual onset

## Aural Rehabilitation vs. Audiologic Rehabilitation

- ▶ Aural Rehabilitation
  - ▶ Broad breadth of services
  - ▶ Variety of professional providers
- ▶ Audiologic Rehabilitation
  - ▶ Narrow breadth of services
  - ▶ Audiology professional providers

## Roles

### Audiologist: Audiologic Rehabilitation

- ▶ Audiologic diagnostic evaluation
- ▶ Fitting, dispensing and evaluation of hearing aids
- ▶ Mapping cochlear implants
- ▶ Evaluating, fitting and dispensing ALDs

### SLP: Aural Rehab

- ▶ Evaluating speech/language receptive and expressive abilities
- ▶ Treatment of speech/language disorders

## Services Included in AR Plan

- ▶ Diagnosis & quantification of hearing loss
- ▶ Hearing assistance technologies
- ▶ Auditory training
- ▶ Communication strategies training
- ▶ Informational/educational counseling
- ▶ Personal adjustment counseling
- ▶ Psychological support
- ▶ Communication partner training
- ▶ Speechreading training
- ▶ Speech-language therapy

## Main Variables

- ▶ Time of Onset
- ▶ Degree of Loss
- ▶ Type of Loss
- ▶ Etiology



## Other Variables

- ▶ Progressive
- ▶ Acceptance
- ▶ Family support
- ▶ Time of identification
- ▶ Time for implementation of AR
- ▶ Intelligence
- ▶ Motivation





# Four Levels of Auditory Skills

Detection

Discrimination

Identification

Comprehension

## Detection

- ▶ The ability to respond to presence and absence of sound
- ▶ In response to sound, a child may:
  - ▶ Turn head
  - ▶ Cease activity
  - ▶ Startle
- ▶ In therapy, what types of sounds can we use to determine a child's detection level?
  - ▶ Environmental sounds
  - ▶ Speech sounds
  - ▶ Music
- ▶ How can we elicit detection?
  - ▶ "I hear that!"
  - ▶ Visual – pointing to ear
  - ▶ Hand over hand, modeling, etc.

# Discrimination

- ▶ The ability to perceive differences in supra segmental features or in the acoustic properties of speech sounds
- ▶ This level can be particularly helpful in determining if there is a "speech" or an "auditory" problem
- ▶ Same vs. Different
  - ▶ "ahhh" vs. "ahhh ahhh ahhh" – duration
  - ▶ "oooo" vs. "eeee" – pitch
  - ▶ "AHHHH" vs. "ahhh" - Intensity

# Identification

- ▶ The ability to reproduce a speech stimulus by naming or identifying by pointing to a picture or repeating what was heard
- ▶ Example:
  - ▶ Early Speech Perception Test – Low Verbal, Pattern Perception Subtest:
    - ▶ Ball, baby, hotdog, icecream cone
    - ▶ More than just same or different discrimination. This task involves auditory skills, pragmatic skills (taking turns), joint attention
    - ▶ \*What you will often see with pediatric patients is imaginary play with the objects! This is a good thing! You want to see this. Why?



# Comprehension

- ▶ The ability to understand the meaning of what has been heard

## Auditory Development: A More Detailed Perspective



Nancy S. Caleffe-Shenck, M.Ed., C.E.D., CCC-A, Cert. AVT (Adapted from Doreen Pollack, 1985)

## ICF (WHO: 2001)

**Hearing impairment** is a broad term used to describe the loss of hearing in one or both ears. There are different levels of hearing impairment:

**hearing impairment** refers to complete or partial loss of the ability to hear from one or both ears. The level of impairment can be mild, moderate, severe or profound;

**deafness** refers to the complete loss of ability to hear from one or both ears.

## ICF (WHO: 2001)

**Impairment** is 'a loss or abnormality of body structure or physiological or psychological function'

**Activity limitation** is 'the nature or extent of functioning at the level of the person'

**Participation restriction** is 'the nature or extent of a person's involvement in life situations in relation to impairment, activities, health conditions, and contextual factors'

**Health-related Quality of Life** is 'the functional effect of an illness and its consequent therapy upon the patient.'

**Satisfaction** is the subjective assessment by the patient that his/her needs or expectations have been met.



## Applying WHO Taxonomy to HL

- ▶ **Anatomy and physiology:** Physical and functional integrity, including integrity of outer ear, middle ear, cochlea, neural pathways to the brain, and the brain itself. A major concern is with the status of the cochlea. With older patients, integrity of neural structures is important.

## Applying WHO Taxonomy to HL

- ▶ **Function:** Includes hearing threshold, dynamic range, frequency range, spectral and temporal resolution, acoustic pattern discrimination, direction and distance perception, attention, auditory working memory, processing speed, and ability to listen in noise.

## Applying WHO Taxonomy to HL

- ▶ **Participation:** The contribution of these activities to daily life, include social interactions and relationships, employment, leisure, learning, control, creativity, etc.

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## ICF (WHO: 2001)

**Psychological factors** pertains to attitudes, self-image, motivation and assertiveness, etc.

**Social factors** are the viewpoint of society



# Impact of HL on Quality of Life

- ▶ Physical health
- ▶ Emotional & mental health
- ▶ Other's perceptions of a person's mental acuity
- ▶ Social skills
- ▶ Family relationships
- ▶ Self-esteem
- ▶ Work & school performance
- ▶ Dementia in elderly
- ▶ Household income by up to \$12,000/year

# Mild HL Linked to Brain Atrophy in Older Adults

- ▶ Early intervention could prevent slide toward speech comprehension difficulties
- ▶ Research suggests that hearing sensitivity has cascading consequences for the neural processes supporting both perception and cognition

