UNIT NO. 4

HEARING

A/Prof Lynne Lim

ABSTRACT

In Singapore, 27.6% of adults 60 years and above felt they had hearing loss. The prevalence of age-adjusted hearing impairment has increased significantly since the 1960s. Many older adults try to lip-read and use context cues. This can result in social withdrawal, reduced work and earning options, depression, poorer cognition and memory, and reduced safety. Hearing loss can progress and requires follow up. In certain conditions, medication and surgery may be needed.

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BACKGROUND

Hearing impairment is highly prevalent amongst older adults, but is often missed and under-diagnosed. In Singapore, 27.6% of adults 60 years and above felt they had hearing loss. 26.7% reported having difficulty following conversations in the presence of background noise (e.g. noise from a TV or radio; traffic noise in the street; people talking at other tables in a crowded restaurant). In America, hearing impairment affects 25% to 40% of those 65 years or older. The prevalence of age-adjusted hearing impairment has increased significantly since the 1960s.

ASSESSMENT

1. Simple Global Question

Ask a global question such as, "Do you or your family think you may have hearing loss?"

2. Hearing Handicap Inventory for the Elderly-Screening (HHIE-S)

The HHIE-S includes 10 questions on hearing functioning. It can be administered in the primary care doctor's clinic in 3 minutes. A total score of 0-8, 10-24 or 26-40 indicates a 13%, 50% and 84% probability of hearing impairment respectively.

For further details about the HHIE-S, refer to Annex H1.

LYNNE LIM HSUEH YEE, Senior Consultant, Department of Otolaryngology - Head, Neck Surgery, National University Hospital & National University of Singapore

3. Audioscope

An Audioscope is a hand-held device combining an otoscope and audiometer. The audioscope is held securely in the ear canal, and gives 25 to 40dB pure tones at 500Hz, 1000Hz, 2000Hz, and 4000Hz. It can be administered in 3 minutes.

If tested at 40dB and failed, then at least a mild hearing loss is present. If tested at 25dB and failed, the test should be redone in a proper sound proof room by a professional audiologist as the result can be due to nonoptimal screening conditions.

INTERPRETING RESULTS

Abnormal Results

1. A global question
   - A positive result (answering 'Yes' to the question) could imply hearing loss

2. HHIE-S
   - Individuals with a score > 8 are referred to an audiologist and/or an otolaryngologist

3. Audioscope at 40dB for four frequencies namely 500Hz, 1000Hz, 2000Hz, 4000Hz
   - Failure to hear at any one frequency requires referral to an audiologist/otolaryngologist.

Individuals with positive results for any one of these 3 tests are referred for audiometric testing to an audiologist and/or otolaryngologist.

USEFUL INFORMATION

Causes of Hearing Loss

Possible causes of chronic hearing loss include:

- Presbyacusis age-related loss (leading cause worldwide)
- Noise-induced hearing loss (2nd leading cause worldwide)
- Middle-ear infection
- Eardrum perforation
- Ossicular chain problems, including otosclerosis
- Meniere's disease

Diagnoses Exclusions

Certain diagnoses that pose a danger to the patient must be excluded in the examination. Though rarer these include: sudden hearing loss, tumours and progressive systemic diseases. They must be treated as early as possible. The ENT specialists may need to evaluate with more specific types of hearing tests, systemic blood tests and CT or MRI scans.

Age-related Hearing Loss (Presbyacusis)

Age-related hearing impairment, also termed presbyacusis, often affects the higher frequencies of hearing (3000 to 8000kHz) first. This results in difficulty hearing the consonants of speech, especially in noisy background situations, meetings or over the telephone. Though the older adults hear words being spoken, they cannot discriminate the exact words. Many older adults try to lip-read and use context cues. This can result in social withdrawal, reduced work and earning options, depression, poorer cognition and memory, and reduced safety.

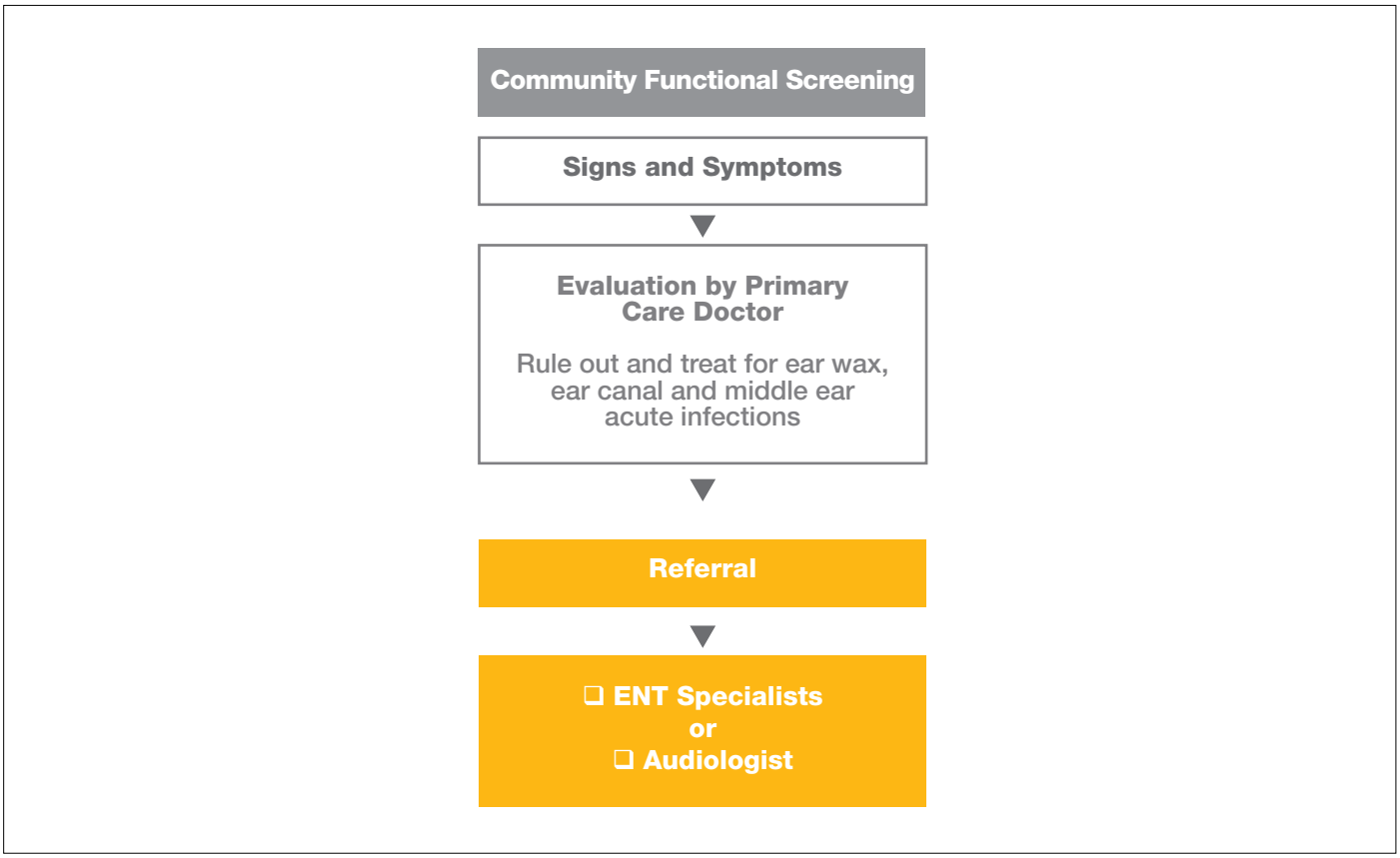
Hearing aids, if properly fitted, are often helpful. Assistive devices can be used. When hearing aids do not work, it could be that inappropriate ones have been fitted or that the fine tuning of the hearing aid has not been properly done. For example, a behind the ear (BTE) hearing aid may be more suitable than the small in-the-canal (ITC) cosmetic ones. Hearing loss can progress and requires follow up. In certain conditions, medication and surgery may be needed. Proper education, committed follow up and the involvement in support groups can further help the older adult sustain his hearing rehabilitation efforts.

Initial Management

Before referral to an audiologist or ENT specialist rule out and treat for ear wax, acute ear canal and middle ear infections. Advise on the importance of ensuring optimal hearing for quality of life, work and social options, and the importance of ruling out rarer but dangerous conditions. Advise on the importance of buying hearing aids only after proper medical consultation and hearing tests.

CLINICAL PATHWAY

Figure 1: Clinical pathway from screening to intervention



Source: 'Community Functional Screening Follow Up Resource for Primary Care Doctors', March 2011

REFERRAL

Refer to an audiologist or ENT specialist if the hearing does not improve after treating for ear wax and acute infection. The audiologist in some centres can conduct gold standard hearing tests. The ENT specialists in some centres can order audiology tests, radiology and systemic tests, and offer medical and surgical treatment.

RESOURCES

For further information, prescribe to the patient:

- HealthLine - 1800 223 1313 to speak to a Nurse Advisor (available in 4 languages)
- Health Promotion Board website - http://www.hpb.gov.sg

LEARNING POINTS

- **The HHIE-S includes 10 questions on hearing functioning. It can be administered in the primary care doctor's clinic in 3 minutes.**
- **Age-related hearing impairment, also termed presbyacusis, often affects the higher frequencies of hearing (3000 to 8000 kHz) first.**
- **Before referral to an audiologist or ENT specialist rule out and treat for ear wax, acute ear canal and middle ear infections.**
- **Hearing loss can progress and requires follow up. In certain conditions, medication and surgery may be needed.**
- **Proper education, committed follow up and the involvement in support groups can further help the older adult sustain his hearing rehabilitation efforts.**

ANNEX H1– HEARING HANDICAP INVENTORY FOR ELDERLY-SCREENING (HHIE-S)

Box 1. Questions From Hearing Handicap Inventory for the Elderly-Screening Version (HHIE-S)*

1. Does a hearing problem cause you to feel embarrassed when meeting new people?
2. Does a hearing problem cause you to feel frustrated when talking to members of your family?
3. Do you have difficulty hearing when someone speaks in a whisper?
4. Do you feel handicapped by a hearing problem?
5. Does a hearing problem cause you difficulty when visiting friends, relatives, or neighbors?
6. Does a hearing problem cause you to attend religious services less often than you would like?
7. Does a hearing problem cause you to have arguments with family members?
8. Does a hearing problem cause you difficulty when listening to TV or radio?
9. Do you feel that any difficulty with your hearing limits or hampers your personal or social life?
10. Does a hearing problem cause you difficulty when in a restaurant with relatives or friends?

*The HHIE-S scores are yes, 4 points; sometimes, 2 points; or no, 0 points, to each question about a particular handicap. Scores range from 0 (no handicap) to 40 (maximum handicap). Adapted with permission.[36,37]

Source: Weinstein BE. Validity of a screening protocol for identifying elderly people with hearing problems. ASHA. 1986; 28:41-45.

"The above extract is taken from the 'Community Functional Screening Follow Up Resource for Primary Care Doctors', published by the Health Promotion Board in partnership with A/Prof Lynne Lim, March 2011."