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**ID: IP060****Autoimmune inner ear disease presenting as Menière's Disease**Presenting Author: **Eu Chin Ho**Eu Chin Ho, Yao Guang Leow  
*Tan Tock Seng Hospital**Learning Objectives:* To highlight Autoimmune Inner Ear Disease as a condition that may mimic Meniere's Disease.*Introduction:* Autoimmune inner ear disease (AIED) is a rare cause of sensorineural hearing loss, accounting for less than 1% of all cases. However, it is also one of the few forms of sensorineural deafness that can potentially be treated. The diagnosis of AIED may be missed for several years as it often mimics the symptoms of other inner ear pathologies such as Menière's disease (MD), with up to 50% of patients meeting the criteria for MD.*Method & Results:* We present a 52-year-old man, previously diagnosed with MD, manifesting the classical symptoms – sensorineural deafness, tinnitus, aural fullness and episodic vertigo. 4 years after the onset of MD symptoms, he was discovered to have autoimmune-associated conditions, namely psoriasis, joint pains and anterior uveitis. Given the patient's autoimmune-related diseases, we suspected the diagnosis of AIED and started him on a therapeutic trial of steroids. He responded favorably to the therapy, and was subsequently switched to a steroid-sparing immunomodulator treatment. His vestibular symptoms were abolished and there was also significant sustained improvement in his hearing tests, demonstrating an autoimmune cause for his audiovestibular symptoms.*Conclusion:* Our case report illustrates the difficulty in differentiating the idiopathic MD from AIED. As the history was typical of MD, it was easy to have concurred with the initial diagnosis. However, this patient had features of autoimmune diseases that raised our suspicion of AIED. The response to immunosuppressant therapy confirmed an autoimmune etiology for his symptoms.

With no diagnostic tests to confirm AIED available, clinicians must maintain a high index of suspicion when treating patients with symptoms of MD who have one or more autoimmune conditions, bilateral symptoms, or a rapid progression of disease. Starting the patient on a trial of treatment with steroids and monitoring his response closely can often be a simple way of confirming the diagnosis.

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**ID: IP061****Efficacy of a parametric assistive listening system to enhance the audibility and intelligibility of speech**Presenting Author: **Eu Chin Ho**Eu Chin Ho<sup>1</sup>, Medapati Vijay Reddy<sup>1</sup>, Santi Peksi<sup>2</sup>,  
Woon Seng Gan<sup>2</sup><sup>1</sup>*Tan Tock Seng Hospital*, <sup>2</sup>*School of Electrical & Electronic Engineering, Nanyang Technological University, Singapore**Learning Objectives:* Parametric speaker system can be used for targeted sound delivery to the hearing impaired.*Introduction:* An ultrasonic transducer together with a traditional transducer were implemented as a Parametric Assistive Listening System (PALS), to produce a directional narrow beam of sound at a target location. We aim to investigate the efficacy of utilizing PALS when compared to a traditional transducer.*Methods:* This abstract is part of a currently ongoing (n = 300), double blinded controlled study. The system was constructed such that the PALS can be enabled (parametric condition) or disabled (non-parametric condition). Under non parametric condition, the system acts like a traditional omnidirectional transducer.*Results:* We present the initial analysis of the data available from some subjects with normal hearing (n = 10) and mild hearing loss (n = 10). Free-field hearing thresholds and speech discrimination scores in +10 dB SNR using recorded NAL-AB words were studied in both the transducer conditions. The order of transducer conditions were randomized such that both the subject and the tester were blinded to the condition being tested. Parametric condition resulted in a significantly improved (>30%) speech discrimination scores in both the groups tested.*Conclusion:* Results of this small sample data available so far are in support of PALS for superior audibility as well as speech intelligibility. Further data collection is under way from a population of normal hearing and various degrees of hearing loss.

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**ID: IP062****Factors Affecting Attitudes towards Loss of Hearing in Individuals with Unilateral Hearing Loss**Presenting Author: **Eu Chin Ho**

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*Tan Tock Seng Hospital**Learning Objectives:* To identify the factors that affect attitudes towards unilateral hearing loss.*Background:* The present study is aimed at investigating if attitudes towards loss of hearing (ALHQ) questionnaire subscale scores in unilateral hearing loss participants are comparable to the established normative data, and also to study if age, gender, duration, tinnitus, cause and degree of hearing loss have any effect on their attitudes.*Participants:* A total of 29 unilateral sensorineural hearing loss case files from both genders (11 male, 18 female) with a mean age of 56.3 years were reviewed retrospectively.

**Results:** No significant difference in the mean score was observed between the present study and the normative data. There was a significant effect of tinnitus & cause of hearing loss on denial of hearing loss subscale and significant association between duration of hearing loss and negative coping strategies subscale. No significant effect of age, gender and degree of hearing loss was noticed on any subscales.

**Conclusion:** These results suggest that the identification of such factors during routine audiological evaluation can assist the clinician in planning appropriate intervention strategies.

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#### ID: IP063

### Translation and Cross-cultural Adaptation of Hearing Handicap Inventory for the Elderly - Screening (HHIE-S) in the Bilingual Singapore Population - A Pilot Study

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**Learning Objectives:** Commonly used hearing questionnaires can be translated and cross-culturally adapted into non English languages using a validated translation process.

**Introduction:** This study aims to to preliminarily assess the validity and reliability of a Mandarin translation of the HHIE-S questionnaire and measure its feasibility.

**Method:** We adopted a translation process adapted from the MAPI Institute for cross-cultural studies, involving 3 independent forward translations by clinicians, 1 back-translation by a non-clinician and final consensus by a review panel.

15 bilingual patients at Tan Tock Seng Hospital completed the Mandarin HHIE-S after their audiometric assessment. At an interval of about 30 minutes later, patients completed the English HHIE-S. They were given the same Mandarin HHIE-S and instructed to complete one week later.

**Results:** Mean age of all participants is 70.4 (Standard Deviation 4.42) and mean pure tone audiometry (PTA<sub>0.5,1,2,4kHz</sub>) of the better ear was 34.58 dB (Standard Deviation 14.34). Self-rated English and Mandarin language proficiencies were comparable.

#### Validity of Mandarin HHIE-S

1. Mandarin and English total scores are significantly correlated, showing a strong positive relationship (Pearson Coefficient 0.885,  $p < 0.001$ ).
2. Analysis of HHIE-S categories of non-significant hearing-loss and Significant hearing-loss with corresponding categories on Gold Standard criterion of PTA<sub>0.5,1,2,3kHz</sub> showed poor agreement (Kappa coefficient = 0.0367,  $< 0.2$ ). User feedback was sought regarding problematic questions.

#### Reliability

1. Internal consistency of the 10 items in the Mandarin HHIE-S is good with a Cronbach's alpha of 0.8499 ( $> 0.8$ ).
2. Test-retest reproducibility of the first and second Mandarin HHIE-S at one-week interval is strong. Among 80% of patients, difference between the 2 mandarin scores is less than 5.

User acceptance scores were positive in terms of readability, comprehensibility and relevance.

**Conclusion:** The Mandarin HHIE-S demonstrated high reliability though low validity. A larger scale validation study incorporating user feedback from this pilot study should be carried out in the future.

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#### ID: IP064

### Utility of WHODAS 2.0 (Quality of Life Assessment) in detecting Changes in Quality of Life in Hearing Impairment

Presenting Author: **Eu Chin Ho**  
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**Learning Objectives:** WHODAS 2.0 may not be sensitive enough in detecting quality of life change in hearing-related disability.

**Introduction:** The objective of this study is to evaluate the relationship of pure tone audiogram (PTA) score, screening questionnaire and quality of life assessment via World Health Organisation Disability Assessment Schedule 2.0 (WHODAS 2.0) in our Singaporean population.

**Methods:** A retrospective review of 56 participants who were recruited for hearing screening held in a Singaporean Tertiary General Hospital from 29–30th May 2013 was done. Information recorded include general demographics, self-perception of hearing level, Hearing Handicap Inventory for Elderly Screening (HHIE-S) for participants  $> 60$  years old, Hearing Handicap Inventory for Adults (HHIA) for participants PTA (0.5, 1, 2, 4 kHz) done by an experienced audiologist. WHODAS 2.0 was measured as a total global score (maximum: 100) as well as specific domain scores for 6 domains: Cognition, Mobility, Self-Care, Getting along, Life activities and Participation.

**Results:** The mean total WHODAS score was 42.3 (Range: 32–96, SD: 14.5). Mean specific domain scores include: Cognition at 8.9 (Range: 6–19, SD: 3.6), Mobility at 6.6 (Range: 5–17, SD: 3.02), Self-Care at 4.4 (Range: 5–12, SD: 1.53), Getting along at 6.1 (Range: 5–17, SD: 2.49), Life activities at 5.14 (Range: 4–14, SD: 2.54).

There was no significant correlation found between total WHODAS score and PTA score of better ear ( $p = 0.322$ ) and between domain specific WHODAS score and PTA score, except for the Getting Along domain ( $r = 0.26$ ,  $p = 0.031$ ). There was also no significant correlation found between HHIA or HHIE and any WHODAS score (all  $p > 0.05$ ).