



Making Hearing Health A Global Priority

Fifth Annual Meeting of the  
**Coalition for Global Hearing Health**  
July 25-26, 2014  
St. Catherine's College, Oxford, United Kingdom



[coalitionforglobalhearinghealth.org](http://coalitionforglobalhearinghealth.org)



## **PURPOSE OF THE COALITION:**

To advocate for hearing health services and policies, to equip and empower hearing healthcare professionals, families, educators, communities and those with hearing loss, and to encourage and perpetuate best practices.

## **MISSION STATEMENT:**

To promote and enhance hearing health services in low-resource communities

## **MEMBERSHIP STATEMENT:**

Join the CGHH movement to support our shared interest in hearing healthcare work and service that reaches low resource communities. As a member, you invest in the CGHH efforts to improve Best Practices, Family/Community Empowerment, Technology options, Education and Training, and Advocacy in related areas of hearing health.

# Welcome to Oxford and the 5th Annual Conference of the Coalition for Global Hearing Health!

Our inaugural conference, held in June of 2010 at the headquarters of the American Academy of Otolaryngology in Alexandria Virginia was a great success. Representatives from 18 countries including professionals from all aspects of hearing healthcare, deaf educators and patient advocates met and discussed common interests.

During our second conference at the House Ear Institute in Los Angeles we engaged in extended discussions about the highest priority concerns in hearing healthcare around the world and especially in low-resource settings. In Los Angeles, we identified areas of need where the Coalition can have the most impact and further refined our goals at our third conference at the EduPlex campus in Pretoria, South Africa. We have divided these goals into five categories: Advocacy and the Media, Training and Education, Technology, Best Practices, and Community / Family Empowerment.

During our fourth conference at Vanderbilt University Medical Center in Nashville, Tennessee we continued to focus on these five goals to further improve on and expand the information that is available to us, and to those around us. This year we will continue this tradition with breakout discussion sessions on these topics that will evolve into CGHH Steering Committees with the goal of continuing this work throughout the year.

The purpose of each annual conference is to enable us to come together to share the challenges we have faced and the solutions we have developed, to raise awareness of important issues and to explore new technologies to help us meet our goals. Thanks to your involvement and to the generous support of St. Catherine's College, Oxford, we continue our work to promote and enhance hearing health services in low resource communities.

[coalitionforglobalhearinghealth.org](http://coalitionforglobalhearinghealth.org)

or find us on Facebook



[facebook.com/c4ghh](https://facebook.com/c4ghh)

## Thank you to our hosts!

### St. Catherine's College Oxford



# AGENDA

Friday — July 25, 2014

- 7:30 - Registration and Coffee
- 8:00 - Welcome & Introductions
- 8:30 - Plenary: Best Practices
- 10:00 - Discussion/Break
- 10:30 - Plenary: Technology
- 11:30 - Discussion
- 12:00 - Plenary: Advocacy/Community Engagement
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- 16:30 - Virtual Presentation: Jeffrey Sachs, PhD
- 17:45 - Cocktail Reception/ Poster Session
- 18:45 - Keynote Presentation
- 19:15 - Dinner: Dining Hall



7:30 – 8:00 Registration (Coffee Available)

8:00 – 8:30 Welcome and Introduction: Saunders & Clark

8:30 – 9:30 **Plenary I: Best Practices**  
12 minute presentations

## **Hearing and Communication Situation of Persons With Intellectual Disability (ID)**

— **Katrin Neumann, Laura Waschkies, Jan-Peter Thomas, Denise Rosenberger, Harald A. Euler (Germany)**

Persons with ID are at an increased risk for hearing and communication disorders. To investigate these disorders we conducted several studies during Special Olympics games and in residential homes. Hearing disorders were found in 24% of ID subjects with a high proportion of hearing loss unknown before. One study confirmed a high validity of pure tone audiometry (PTA) screening in ID subjects. Comparing the ability of persons with ID to self-assess their PTA thresholds by an adaptive self-screening procedure (Magic, Sentiero®, Path medical GmbH) obtained thresholds with the Magic between 0.2 and 5.8 dB HL below the PTA. To assess central auditory processing abilities, a psychoacoustic test was developed. Compared with controls, elevated discrimination thresholds for speech and non-speech stimuli were measured in 50 ID subjects for all stimuli in the range those of children of >4 to 6 years. Another study examined the ability of 249 ID persons to produce plural forms of nonsense nouns and showed a strong impairment of this basic grammatical competence. Together, hearing disorders, central auditory processing difficulties, and language impairment restrict the communication abilities of ID subjects and should be managed by regular audiological/otological checkups, treatment of hearing disorders, and an adapted communication style.

## **Empirical Evidence Supporting a Multi-phase Approach To Hearing Healthcare**

— **David A. Fabry, Tani Austin (USA)**

The Starkey Hearing Foundation is committed to a sustainable model of global hearing healthcare via a three-stage approach to care. In Phase 1 (Preparation), mission partners are identified, patients are screened, and earmold impressions are made. In Phase 2 (Delivery), patients are fitted and initial training and counseling is provided. In Phase 3 (Aftercare), progress/compliance with amplification is monitored, aural rehabilitation is provided, and community-based health workers are educated. This session will provide an overview of the model, describe the methods used, and provide an update on results achieved to date.

## **The Power of Communities in Building Systems for Hearing Health**

— **Christine Yoshinaga-Itano (USA)**

The first systems for universal newborn hearing screening, early hearing detection and intervention were developed without funding through the power of communities. This presentation will focus on how programs established from the bottom-up were developed and thrived. These concepts can be central in

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developing systems in all parts of the world, even when resources are scarce. What works in one country or region may not be suitable for another, but it may provide some key elements that can be adapted for the needs and situations of the community/ies in which it is needed. Best practices from a number of countries throughout the world, including both developing countries and countries with significant financial resources will be presented. The presentation will focus on what works and why it works.

## **Ensuring Sustainable Best Practice — Sally Harvest (Ireland)**

Delivery of successful ear and hearing care services is linked to (i) early identification and engagement with those impacted by hearing loss (ii) the existence of appropriate service (including affordable appliances) and supports in the first instance and (iii) hands on engagement with clients, their families and colleagues with a view to ensuring empowerment and support.

This presentation will include observations from a study visit to Southern India where different approaches in operation in four different institutions. Included will be a research project based on a small group of Deaf children aged 5 - 7yrs using donated hearing aids.

The objective is to apply an inclusive approach to education programmes ensuring students are able to apply their learning effectively, share best practice and manage challenges as well as find solutions.

Meeting this challenge of increasing capacity through delivery of training and support workshops to local (education, CBR, research) groups working within communities at risk, across all ages coping with hearing loss.

In addition also reviewing/offering support/updating existing ear and hearing care (including audiology) training programmes through consultation with the course developers and training personnel.

By promoting and supporting best practice through education, training and empowerment, capacity will be increased at local and national level, which in the long term should enable countries to manage delivery of services independently.

## **Humanitarian Service Delivery Models: Outcomes Analysis — Gail S. Belus & Ingrid McBride (USA)**

Audiology service projects to developing countries have come into vogue in the last several years. Standard guidelines of practice are well established within developed countries via ASHA, AAA and each state's or country's license regulations. Although a formalized mechanism for audiologic service delivery may or may not exist within a country, the WHO defines an accepted level of professional standards that must be followed when delivering care to the individuals of a resource-poor country. This presentation will reveal data gathered over two humanitarian missions conducted in 2013 and 2014 in Malawi, Africa. Comparisons will be made between the various service delivery models that provide hearing instrument delivery.



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## **CBM's Holistic Approach to the Work in the Area of Ear Care, Deafness, Hard of Hearing and Deafblindness.**

**— Sian Tesni & Diego Santana-Hernández (Germany)**

**Purpose:** CBM is an international Christian development organization, committed to improving the quality of life of people with disabilities in disadvantaged societies. CBM aims at achieving this in partnership with local organizations and in cooperation with stakeholders at regional and international levels. This paper aims at sharing CBM's holistic approach for successful engagement in the work area of ear care, deafness, hard of hearing and deafblindness.

**Methods:** Review of CBM supporting documents, including strategies, position papers, technical guidelines, criteria of success and information related to partners, centres of excellence and model projects.

**Results:** Description of how partner programmes use participatory methods of planning and implementation, involving persons with disabilities and the community. Recommendations on how to develop national or sub-national strategies to impact the lives, and advocate with governments for the rights and inclusion, of people with disabilities.

**Conclusions:** CBM's holistic approach to work in the area of ear care; deafness; hard of hearing and deafblindness includes intervention at all levels of health care provision, Education, CBR and Audiological, Speech Therapy and other interdisciplinary services.

The aim of this presentation is to share CBM's core principles, specific strategic planning and results, together with lessons learnt while searching a sustainable engagement for field work.

## **Establishing a Newborn Hearing Screening Program in Palestine**

**— William Lyman, James Coticchia, Lucia Corradin, & Moien Kanaan (USA)**

Newborn hearing screening is an important tool in general but it gains even more significance in areas where consanguinity may be major contributor to genetically-determined sensorineural hearing loss (SNL). Such a location is the Palestinian West Bank. Estimates of consanguinity in Palestine range up to, approximately, 40 percent of marriages in the West Bank. When this approximation is considered against the backdrop of its multigenerational nature, the potential effect of genetic inbreeding on SNL becomes greater. In order to determine this potential effect and to identify genes, existing and new, associated with SNL in Palestine; we established a newborn hearing-screening program in the southern West Bank. A statistically significant study population is recruited at area birthing hospitals. Before discharge, the newborns undergo a risk factor survey and otoacoustic testing. If the babies fail the screening tests, they are referred to a local children's hospital where a diagnostic algorithm is used that includes auditory brain response testing and, if indicated, tympanometry, infectious disease and imaging studies. If a genetic basis for SNL is indicated, the families receive genetic counseling and the baby is tested for known and, potentially, new genes that can impact hearing. Here, we report our initial epidemiological findings of this recently initiated program.

10:00-10:30

**Discussion/Break**

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10:30-11:30

## Plenary II: Technology

12 minute presentations

### **Pioneering Tele-Audiology in Zambia - Taking Africa Beyond the Mobile Clinic — Shannon Kruyt & Alfred Mwamba (South Africa, Zambia)**

A number of audiology projects using mobile clinics have been successfully implemented in Sub-Saharan Africa. However, relative to the growing burden of hearing loss that this continent currently faces, the patient reach is still extremely limited and there remains a massive need for quality audiology assistance, supervision and training for local clinicians. Very few attempts have been made to introduce the concept of tele-audiology into Africa. This presentation will describe an initiative which was undertaken between Sound Seekers (United Kingdom) and two African audiologists. In November 2013, the team successfully piloted and implemented synchronous and non-synchronous tele-audiology services in Ndola, Zambia, using GeoAxon's KuduWave equipment and local 3G internet connectivity. These services are now used on a regular basis by the team in Ndola to obtain remote audiological assistance, supervision and ongoing training from experienced audiologists located elsewhere in Africa, as well as in the UK and USA. The team is in the process of testing and solidifying all necessary clinical protocols for the site in Ndola so that these may form the basis of a set of universal best practice guidelines for humanitarian missions interested in providing such assistance to other developing countries in Africa and across the globe.

### **Sustainable Hearing Healthcare: iPad Point of Care Diagnostic Audiometry in Uganda — Matthew Bromwich, Ryan Rourke, Brian D. Westerberg, Katie de Champlain, Jean Philippe Vaccani, Doreen Nakku, Victoria Nyaiteera (British Columbia)**

Background: In Africa there are only 160 audiologists for over 1 billion people. Apple's iPad ® present a valuable and portable medium to perform conditioned play audiometry (CPA). Methods: Our iPad application, "Shoebbox Audiometer", enables children to perform a hearing test by playing an iPad game, can be driven by the children themselves and is fast and age specific. Screening audiograms were collected on school aged children (4-18 years) in the Mbarara region, Uganda. The entire class was first instructed how to conduct the hearing test. Groups of ten were then brought to the testing room. If any of the children appeared to not understand the task, they were individually re-instructed by the tester. Results: Randomly selected classes in six schools were visited. Over 640 students were tested over 2 weeks and audiograms were completed on average in approximately 5 minutes. The screening audiograms enabled testers to identify potential hearing losses and referral for medical follow-up. Conclusions: The iPad App "Shoebbox Audiometer" is easy to learn and can be administered in low-resource settings even by those without a healthcare background. It enables a large number of individuals to be screened without burdening a hospital, creating a more efficient healthcare system.

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## **Challenges Associated with Accessing Hearing Aids and Accessories in Developing Countries — Eneche Audu Danlami (Nigeria)**

Hearing aids are central in the (re)habilitation of persons with hearing impairment, hearing health professionals are even more important in this regards, as the importance of the role they play cannot be over emphasized. In developing countries, the level of development in both the hearing health profession and assistive devices technology leaves much to be desired. In this paper we are going to focus on access to hearing and the difficulties associated with it.

Since the invention of the first electronic hearing aid-the Akouphone by an American, Miller Reese Hutchison in 1898, a lot of hearing aid manufacturing and assembling companies sprang up in many American, European and more recently, Asian countries. In Africa, only South Africa could be credited with manufacturing hearing aids, about three others may be assembling.

Hearing aids are not affordable in most developing countries and the blame cannot be laid only at the foot of the manufacturer alone, activities of middlemen representing or fronting for the hearing aid manufacturers in various countries needs to be checked. Clinicians also add to the dilemma faced by patients in terms of cost so much that at the end, the patient reaches a conclusion of living with the problem, without an assistive device. There is a lot we can do to change the game in favor of the disadvantaged in this industry.

## **World Wide Hearing Care for Developing Countries and Deserving Communities — Brother Andrew A.L. de Carpentier (Jordan, Hashemite Kingdom of)**

World Wide Hearing Care for Developing Countries and Deserving Communities - for short "WWHearing" or [WWH], was created to help fill an enormous gap in the provision of services for some 80 million children and over 200 million adults with a disabling hearing loss in developing countries. Although they can be helped fairly simply with a relatively low cost intervention- hearing aids, somehow they tend to fall through the mazes of the global disability net. Only 1 per 50 or less children can access a hearing aid. WWHearing aims to revolutionize hearing aid fitting by promoting multi-track audiology and hearing aid services, with a special focus on better hearing in the community. "Hearing Express" uses self-programmable "intelligent" hearing aids, which are taken out of the exclusive world of medicine into the world of sound and "better hearing" and of (micro) audio products, such as mobile telephones, MP3 players, etc. Trained "community hearing aid technicians" use Micro-consignment service delivery systems - with a specially designed service kit - for community and home-based services.

11:30-12:00

**Discussion**

12:00-12:45

**Plenary III: Advocacy/Community Engagement**  
12 minute presentations



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## **Status of WHO Programs**

— **Shelly Chadha (India, Switzerland)**

360 million persons in the world have disabling hearing loss, the majority of whom live in low and lower-middle income countries. Despite this, there are only a few countries which implement program or policies for hearing loss prevention and management. Human resources and services are least available where they are most needed. The WHO program for prevention of deafness and hearing loss focuses on promoting ear and hearing care within primary health care in WHO Member States. One of WHO's key roles is to effectively advocate for development of suitable program to address the needs of hearing loss at the global, regional and national levels, through development and use of suitable advocacy tools. Promoting the International Ear Care Day as a global advocacy event is one such tool. The program endeavors to provide full technical support to countries in the development, implementation and monitoring of strategies for prevention, identification and management of ear and hearing conditions. For this purpose, WHO works to develop evidence-based tools, guidelines and training materials. In the current phase of the program, WHO PDH is working with many Member States across all regions to implement country-appropriate and sustainable strategies for ear and hearing care. A network of collaborating centers has been established to support the activities of PDH. Collaboration with other WHO programs is important to address the diverse issues relating to hearing loss. Partnerships at international and national level play an important role in advancing WHO's agenda in this field. The key role played by professionals and organizations in developing the program for prevention of hearing loss across the world is outlined in this presentation. The priorities, principles, challenges faced and possible opportunities in the program are discussed along with ongoing activities and future plans.

## **World Wide Hearing - HEARING EXPRESS™, with The Holy Land Institute for Deaf and Deafblind Children, Jordan**

— **Brother Andrew A.L. de Carpentier (Jordan, Hashemite Kingdom of)**

World Wide Hearing Care for Developing Countries and Deserving Communities for short- for short "WWHearing" or (WWH), was created to help fill an enormous gap in the provision of services for some 80 million children and over 200 million adults with a disabling hearing loss in developing countries. Although they can be helped fairly simply with a relatively low cost intervention – hearing aids, somehow they tend to fall through the mazes of the global disability net. Only 1 per 50 or less children can access a hearing aid. WWHearing aims to revolutionize hearing aid fitting by promoting multi-track audiology and hearing aid services, with a special focus on 'better hearing in the community'. "Hearing Express™" uses self-programmable 'intelligent' hearing aids, which are taken out of the exclusive world of medicine into the world of sound and "better hearing" and of (micro) audio products, such as mobile telephones, MP3 players, etc. Trained "community hearing aid technicians" use Micro-consignment service delivery systems – with a specially designed service kit - for community and home-based services.

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## **Global Status of Newborn Hearing Screening**

**— Karl R. White & Karen Munoz (USA)**

There are published reports of newborn hearing screening programs in at least 70 countries. The available information suggests that at least 9 of these countries are screening 90% or more of their newborns, 12 have implemented pilot programs that affected fewer than 25% of their babies.

Having better information about the status of newborn hearing screening programs in countries around the world would be helpful for policy makers, government leaders and health care providers in all countries. This presentation will describe an innovative method for collecting and updating such information using a self-correcting approach similar to wikipedia. A website that has been created for this purpose will be demonstrated and used as the basis for discussing the efficacy of this approach.

## **New Approaches are Needed for Advocacy to Raise Awareness About Hearing Loss**

**— Andrew Smith, Joanna Anderson & Daksha Patel (UK)**

A fundamental reason why prevention of hearing loss is neglected and resources are not allocated is the widespread lack of awareness about the size of the problem and the opportunities for intervention.

Recent reports from the World Health Organization have shown that prevalence of hearing loss continues to increase throughout the world, especially in low and middle income countries. In addition, deafness and hearing impairment have profound social and economic effects and contribute to poverty and reductions in quality of life. To obtain further evidence, WHO emphasizes that more population-based studies are needed in LMI countries.

Despite these reports, there is a general lack of awareness of issues about deafness and hearing impairment throughout society. People generally are not aware of the specific effects this problem has on individuals or to society at large but also that there are opportunities for prevention and early management that can significantly reduce the disabling hearing loss.

Since the magnitude of the problem is not accurately known in many countries, there is a lack of political will to deal with it and hence a lack of resources for programme development. Even though WHO and the GBD initiative have shown that the burden of hearing loss is at least as great as that for vision loss, it is far more difficult to raise awareness and mobilize resources for the former. This may also relate to the stigma and irritation associated with hearing loss and the perception that people with hearing loss, especially children, are mentally or developmentally challenged when they actually have hearing impairment.

In order to raise awareness better about the problem of hearing loss, it is essential to develop more effective advocacy tools and disseminate new ways of raising awareness. This presentation will discuss further the problems of raising awareness, and outline new approaches to advocacy.

12:45-13:00

## **Discussion**

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13:00-14:00

Lunch

14:00-15:00

## Plenary IV: Advocacy/Community Engagement

12 minute presentations

### **Hearing and Communication Across the Lifecourse – A Public Health Perspective — Adrian Davis (UK)**

The Global Burden of Disease studies show the importance of understanding the population approach to health over the lifecourse. It distinguishes between things that kill us and those that ail us and importantly the trends in these over time. It then tries to partition risk across different sorts of factors so that policy decisions can be made about how to reduce the impact of amenable risks. Hearing is not an underlying cause of death, even though there is emerging evidence that raised hearing thresholds are associated with earlier mortality. Across the lifecourse the key importance of hearing is in being a major channel of communication - to develop language and cognition, to benefit from education, to gain and maintain good employment, form family ties and contribute to and participate in society. The major role of Population Hearing Health in determining and maintaining the good health and wellbeing of the population is unrecognized by society. Over the last 25 years there has been a steady decline in premature mortality in most countries and an increase in life expectancy. However the burden has shifted from mortality to morbidity, with the inevitable costs in managing many more people with morbidity and increasingly multi - morbidity. What do we need to do in terms of creating the best strategy for research, translation and implementation to inform policy makers, clinicians and populations about the crucial role of hearing and communication in creating added healthy years to life? Perhaps, we should look at the success of newborn hearing screening, how it creates the first and best chance to promote population hearing health across the life-course and learn from that about how we can personalize the message and support for those whose need is greatest. A global problem needs a personalized local solution.

### **Combining Hearing and Vision Screening at Primary Level in Poor Communities — Peter Ackland (UK)**

The presentation will examine some examples from developing countries of how primary eye care has been promoted at community level. It will review examples of where hearing and vision loss efforts have been combined. Opportunities for future collaborative approaches will be discussed.

### **Psychotherapy for the Deaf Population in South Africa - Current Status and Challenges**

— Magteld Smith (South Africa)

Assessing and diagnosing mental disorders or problems in people with deafness or hearing loss is fraught with difficulties. The effects of deafness and hearing loss are likely to have an impact on the person's development, socially, emotionally,

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psychologically and behaviorally. The health sector, especially the fields of psychiatry and psychotherapy need to understand that persons with deafness or hearing loss face the most life-threatening forms of discrimination. The study is a qualitative empirical study by means of direct personal experience and self-report questionnaires concerning mental health services. The study group consisted of four adults born with profound deafness using sign language as method of communication, seven adults born with hearing loss using conventional hearing aids, and three adults with profound deafness using cochlear implants. There are currently no published studies regarding specialized mental health services for people with deafness or hearing loss in South Africa. The results highlighted several areas where the therapeutic relationship is challenged, including issues which occur before and during psychotherapy. Mental health service providers may mistake cultural, language, additional hidden disabilities and communication issues for developmental delays, mental disabilities or even intellectual disabilities. Persons with deafness or hearing loss with additional disabilities, mostly undiagnosed, face a health care system that is sorely inadequate and too often fraught with ideological and monetary battles between educators and other disciplines. Moreover, because persons with deafness or hearing loss are a low incidence population, health practitioners are typically unaware of the specialized needs and training required to work with this population, resulting in misdiagnoses and misperceptions of other conditions. The reality is that professionals have not appropriate training and experience to provide services to this population. The situation of mental health services for persons with deafness or hearing loss in SA is woefully inadequate.

## **Interdisciplinary Collaboration in Field Visit to Burkina Faso — José Barajas de Prat & Diego Santana-Hernández (Germany)**

During one week in October 2013, the Spanish NGO “Fundación Doctor Barajas” and the International NGO “CBM” collaborated in a field visit to Ouagadougou, the capital of Burkina Faso, a developing country in the francophone region of Western Africa, with the intention to contribute to the development of health, education and community programmes, systems and services, in the area of ear and hearing care.

The interdisciplinary team which contributed to the success of this venture included persons from CBM's Regional Office for West Africa, in Lome, Togo; CBM's Country Coordination Office in Burkina Faso; the Ministry of Health, through its National Plan for the Prevention of Deafness; the ENT Department at the “Yalgado Ouedraogo” University Hospital; local partners and stakeholders, including the school and centre for the Deaf “CEFISE” and OCADES (Caritas); audiology and otorhinolaryngology experts from “Fundación Doctor Barajas” and education and health advisors from CBM International Office.

The objectives of this visit where:

1. To better evaluate the current reality and possibilities for development of health and education services in this area of work, in the country and the region.
2. To carry out a Course-Workshop for Training of Trainers in PEHC (Primary Ear & Hearing Care), using WHO Training Resource for Basic and Intermediate Levels, with the intention to initiate the training replication cascade in the French language.
3. To raise awareness about international cooperation at Government level, within its National

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Programme for Prevention of Deafness, and to help strengthening its relationship with their local representatives in Burkina Faso.

4. To engage the Ministry of Health, Community workers, NGOs, other stakeholders and professionals, to share their expertise and knowledge, and to create the basis for development of Private-Public partnerships.

5. To encourage CBM partner organizations in Burkina Faso (like Light For The World and CEFISE), to coordinate efforts in the areas of Health, Education and the Rights of persons with disability, related to field work in these areas.

The aim of this presentation is to share our experience of interdisciplinary and inter-organizational cooperation in a low income country setting, stimulating the exchange of ideas by focusing on the need for exhaustive ground work and careful pre-planning, before embarking in a field visit of this kind.

15:00-15:30

## Discussion

15:30-15:45

## Plenary V: Advocacy/Community Engagement

12 minute presentations

### **Ndlovu Wits Audiology Project: Improving Hearing Health Care in Rural South Africa** — Karin Joubert (South Africa)

Hearing impairment is regarded as the most common sensory deficit in the human population. Of the more than 270 million people living with permanent disabling hearing loss, two thirds live in developing countries such as South Africa. In South Africa, HIV/AIDS, tuberculosis and other environmental risk factors contribute to the increase in the prevalence of hearing impairment. Despite this hearing impairment has received limited institutional support, research funding, and political advocacy in South Africa. This negatively impacts on the availability of and access to comprehensive audiological services, especially in under-resourced rural communities such as Elandsdoorn in the Limpopo Province of South Africa. The Ndlovu Wits Audiology (NWA) clinic addresses this challenge by providing comprehensive ear- and hearing health services at a primary health care clinic in Elandsdoorn. This paper will present an overview of the services provided by the NWA clinic, highlighting our successes and challenges in providing ear and hearing health services in this rural community.

### **Kenya: Infrastructure for Hearing Health Care** — Debara L. Tucci & Serah Ndegwa (USA)

The establishment of hearing health care in Kenya requires an infrastructure of trained professionals. There are currently very few trained audiologists and speech pathologists in country, limiting the establishment of meaningful hearing health care in most parts of the country. Efforts are currently underway to train hearing



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health care and related professionals, in Nairobi. The purpose of this study is to survey the availability of services in the country as a first step to advocate for training programs to fill this void.

## **Mindfulness Based Tinnitus Stress Reduction (MBTSR) Pilot Study: A Symptom Perception-Shift Program**

— Jennifer J. Gans (USA)

This pilot study aims to investigate whether a novel mind-body intervention, Mindfulness Based Tinnitus Stress Reduction (MBTSR), may be a beneficial treatment for chronic tinnitus. Eight tinnitus patients who had previously received Tinnitus Counseling (standard of care) at the University of California, San Francisco (UCSF) Audiology Clinic participated in the MBTSR program. The program included eight weeks of group instruction on mindfulness practice, a one-day retreat, supplementary readings, and home-based practice using meditation CDs. Using a pre-post intervention design, mean differences (paired t-tests) were calculated. Benefits were measured by a reduction in clinical symptoms, if present, and a tinnitus symptom perception shift. Tinnitus symptom activity and discomfort as well as psychological outcomes were assessed by self-report questionnaires. Both quantitative and qualitative data were gathered. Results indicate that Effect Sizes, if supported by a larger study, may be clinically significant and demonstrate a substantial decrease for items measuring perceived annoyance and perception of handicap of tinnitus. Change scores on study measures all moved in the hypothesized direction, with the exception of negligible change found for the Acting with Awareness ( $d=-.05$ ) factor of mindfulness. This pilot study provides preliminary evidence that an eight-week MBTSR program may be an effective intervention for treating chronic tinnitus and its co-morbid symptoms, and may help reduce depression and phobic anxiety while improving social functioning and overall mental health. These promising findings warrant further investigation with a randomized controlled trial.

## **Developing a National Plan on Ear and Hearing Care in Malawi**

— Wakisa Mulwafu (Malawi)

Malawi with a population of 14 million people, is one of the least developed countries in the world. The 4 year Malawi National Plan on ear and hearing care was signed by Minister of Health in November 2013. The objectives of the National plan are to develop institutional capacity, through appropriate infrastructure, for ear care services by providing support for equipment and material and training personnel, to strengthen the existing inter-sectoral linkages for continuity of the rehabilitation programme, for persons with deafness To establish structures within the Ministry that will provide a more coordinated approach to ear and hearing care, To prevent the avoidable hearing loss on account of disease or injury. To medically rehabilitate persons of all age groups, suffering with deafness. There six key outputs are Training, Infrastructure, Equipment and IT, Procurement of supplies, Reduction and Prevention of ENT Diseases, Research, Monitoring and Evaluation, Management and Supervisory teams. So far achievements include training 15 ENT Clinical Officers, building an ENT unit in Blantyre

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## **The Relationship Between Tone Perception and Sentence Perception in Mandarin-Speaking Children with Cochlear implants**

**— Yuan Chen, Lena L. N. Wong, Fei Chen & Xin Xi (Hong Kong S.A.R. (China))**

**Objectives:** The purpose of this study was to explore the relationships between tone perception in quiet and sentence perception in quiet and sentence perception in noise in young Mandarin-speaking children with cochlear implants (CIs)

**Design:** 96 participants, aged from 2.41 years to 7.09 years, were recruited in mainland China. These children received their unilateral implants at an average age of 2.72 years (range: 0.69 to 5 years of age) and exhibited normal cognitive abilities. The Tone Perception subtest of the Mandarin Early Speech Perception test and the Mandarin Pediatric Sentence Intelligibility test were used to measure tone perception in quiet and sentence perception, respectively.

**Results:** The mean score for tone identification was 77% (SD= 12%; chance level=50%). Tone 2/Tone 3 was the most difficult tone contrast to identify. For sentence perception, the number of participants who performed significantly above chance and who scored within the normal range of their aged peers

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with normal hearing declined consistently as the test condition became more challenging. While there was a modest correlation between tone perception and sentence perception in quiet ( $r_s = 0.47$ ,  $p < 0.001$ ), the correlation between tone perception in quiet and sentence perception in noise was much weaker ( $r_s = -0.28$ ,  $p < 0.05$ ).

Conclusions: The weak to moderate correlation between tone perception in quiet and sentence perception is likely attributed to different processes being involved in the perception of tones and sentences. The finding in this study implies that novel CI speech processing strategies that are able to significantly improve tone perception in quiet may not necessarily improve sentence perception performance, especially in noise. Implications of these findings will be discussed.

## **Provision of Integrated Services in Resource Poor Settings- A Case Study from India — Suneela Garg, Deeksha Khurana, Ritesh Singh & Arun Agarwal (India)**

Hearing impairment affects 5.3% of the world population and 50% of cases are preventable. Both eye and ear care are public health issues and both have lack of trained manpower to address them. In August 2010, CBM and Society for Sound Hearing initiated a project to assess the feasibility of integrating ear and eye care services at the primary level.

Vision Technicians were trained in primary ear care using the WHO 'Intermediate Module for Primary Ear and Hearing Care Workers' for duration of three months. Basic equipment to provide ear care at primary level were provided at two vision centres. The evaluation of the pilot project was carried out in November 2012 to devise strategies for sustainability.

Results show that stakeholders were strongly in favour of integrating the ear care services to the already existing eye care services. Trainers felt that the 'WHO modules for are a good resource. However it was suggested that field testing of training material should be carried out and necessary modifications made. Though they felt that the project is not financially viable presently, in long term the demand for ear services will increase many fold and become self-sustainable, once the people know that such services are being provided at their door step.

The target population of the vision centres was satisfied about the services being provided at the vision centres and the behavior of the Vision Technicians.

Conclusion: The novel idea of leveraging existing Vision Centres to provide primary ear and hearing care services used in the pilot project proved found to be an effective way of delivering ear care services to the beneficiaries in the resource poor setting by carrying out optimum utilization of the existing infrastructure and manpower.

## **Hearing Loss Within a Marriage: Perceptions of the Spouse with Normal Hearing — Nicole Ginelle Govender, Nicole Maistry, Nadiya Soomar, Jessica Paken (South Africa)**

Objective: The objective of the study was to determine the perceptions of a spouse about the influence of his or her partner's hearing loss on their relationship as it may have an impact on aural rehabilitation. Design: A descriptive survey design was utilized. A questionnaire, adapted from The Significant Other Scale for Hearing Disability was used for data collection. Participants: Through purposive sampling, 35 individuals who reported experiencing no hearing difficulties and

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who were married to a person with an acquired hearing loss contributed data for this study. These data were analyzed using Stata® version 9. Results and discussion: The majority of the participants identified a range of communication-related difficulties within their marriage, such as repeating themselves extensively in conversation with their hearing-impaired partners (97%), raising the volume of their voices (83%), and having to maintain face-to-face contact with their spouse (74%). These difficulties may have led to negative feelings within the marriage as during communication, 69% of participants reported feeling frustrated because of difficulties experienced in respect of their partner's hearing impairment. Participants reported that they had to accept a hearing impairment in their marriage. Seventy-one per cent of participants expressed concern for their hearing-impaired partners, and specifically with regard to fearing for their safety, e.g. when alarms or warning bells were not heard. Conclusion: A partner's acquired hearing impairment may lead to the development of negative feelings within a marriage. Therefore, audiologists must be aware of the perceptions of spouses with normal hearing when providing aural rehabilitation to both the hearing-impaired individuals and their partners, and thereby preventing disharmony in the marriage, while ensuring effective service delivery.

## **The Impact of Cochlear Implantation on Recipient Quality of Life — Selena Heman-Ackah (USA)**

In the auditory rehabilitation of both pediatric and adult patients with severe to profound sensorineural hearing loss, cochlear implantation is gaining widespread popularity internationally. Cochlear implants convert acoustic energy into electrical stimulation bypassing endogenously dysfunctional cochlear structure. The performance of patients following cochlear implantation can be quite variable; performance is dependent upon a number of factors including age of onset of deafness, duration of deafness, age of implantation, etiology of deafness, use of hearing aids, mode of communication, cognitive ability, motivation, and psychosocial support system to name a few. Cochlear implantation has a significantly, positive impact on the lives of deaf individuals as is evident by the numerous testimonials from grateful cochlear implant recipients who describe the remarkable impact that cochlear implantation has had on various aspects of their lives. In addition to these valuable anecdotal accounts, it is critically important to quantify this positive impact that cochlear implantation has on the lives of cochlear implant recipients to gain further support for cochlear implantation related healthcare policy evolution and advancement. This is the role of the health-related quality of life instrument. Health related quality of life instruments allow for the quantitative measurement of subjective experiential data allowing for objective comparative analyses of the effect of various interventions. Health-related quality of life may be defined as the subjective evaluation of the influence that one's health status has on both positive and negative aspects of life within the multidimensional construct of physical, mental, and social domains. The assessment of health-related quality of life has gained increasing importance and concern internationally in driving changes in patient management and healthcare policy. Relative to cochlear implantation, great effort is underway to evaluate and quantify the impact of cochlear implantations on health related quality of life in

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deaf individuals. This presentation provides background on current health related quality of life instruments utilized in the evaluation of cochlear implant recipients. Additionally, a review of the literature regarding outcomes among pediatric and adult cochlear implant recipients will be presented.

## **Factors Influencing Hearing Aid Usage in Adolescents at a South African School for the Hearing Impaired**

— **Bomikazi Hulana, Sandile Kgotshane, Vusi Msimango, Jessica Paken (South Africa)**

**Aim:** To explore the factors that influence hearing aid usage in adolescents at a school for the hearing impaired. **Study Design:** A descriptive survey design was utilized. A questionnaire by Bertoli, Staehlin, Zemp, Schindler, Bodmer, et al. (2009) was adapted and used for data collection. **Study Sample:** Through purposive sampling, 31 adolescent learners from a school for the hearing impaired contributed data for this study. **Results:** Seventy-four percent reported using their hearing aids frequently; however, 52% reported little or no benefit. Seventy-eight percent of participants were fitted with hearing aids later in life. Seventy-seven percent of participants were fitted monaurally. Ninety percent of participants reported feeling comfortable and not concerned about wearing their hearing aids on school premises while 10% were concerned. However, outside of the school premises, 42% of participants reported concerns with the size of their hearing aids, whereas 58% reported no concerns with their hearing aids. Sixty-four percent of participants reported having supportive family members. Eighty-four percent of participants were able to trouble their hearings aids, displaying good knowledge of the device. **Conclusion:** Adequate informational counselling, self- perceived benefit, comfort and satisfaction promote hearing aid use. The size of the hearing aid, late fitting of hearing aid, monaural fitting, school policies, stigma of being deaf and Deaf identity were identified as hindrances to hearing aid usage. Therefore, audiologists needs to be cognisant of these factors when fitting hearing aids and providing aural rehabilitation to adolescents with hearing impairments; thereby, ensuring effective service delivery.

## **Quality and Readability of Information Pamphlets on Hearing and Paediatric Hearing Loss in South Africa**

— **Karin Joubert & Esther Githinji (South Africa)**

The implementation of early hearing detection and intervention (EHDI) programmes are necessary in order to facilitate the early identification of hearing loss. International and national guidelines stipulate that comprehensive, unbiased and appropriate information pamphlets should be provided to parents as part of EDHI programmes. However little is known about the availability and readability of such materials in South Africa. The objectives of this study was to determine the availability of information pamphlets on hearing and hearing loss in children at public hospitals in the Gauteng Province of South Africa. In addition, the quality and readability levels of these pamphlets were determined. Information on the availability of leaflets at public health hospitals was obtained through a telephonic survey. Only 73% of audiology departments at public hospitals in Gauteng had information pamphlets available. Twenty-one information pamphlets were then evaluated to determine the quality and readability levels. The majority presented



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with 'serious problems' questioning the quality of the content included. The readability level of these pamphlets were higher than the recommended fourth-grade reading level. This research highlighted the need for quality, context-specific educational material focused on providing parents with unbiased and comprehensive information. Proposed guidelines were recommended to assist audiologists in this endeavour.

## **Screening and Diagnostics – a Piece of Cake – Now for the Hard Part!**

— Jean L. Johnson, Robert C. Johnson (USA)

Research has shown that populations in developing countries often have disproportionately higher prevalence of hearing and speech-language disorders. People living in the Pacific Island nations that are politically connected with the United States have been documented to have the highest known rates of chronic middle ear disease. These nations lie in an expanse of ocean larger than the continental U.S. Consisting of thousands of tiny islands with small populations, they are without a single local ENT specialist or audiologist. Thus, screening, diagnostic and intervention services for hearing health are unavailable to these people with high need.

Demands on health care systems in these nations put services for communication disorders at low priority. Provision of primary health care is further challenged by chronic and endemic diseases, high rates of teen pregnancy, and low rates of immunization. Widespread poverty, inadequate island infrastructure, and vast geographical distances between islands confront efforts to develop needed medical and therapeutic services.

The good news is that, because of U.S. national interest and legislation for identifying deaf babies at birth, federal funds have become available for newborn hearing screening in these small nations. Through the establishment of screening programs, diagnostic services, and visiting specialists, after services are provided to the babies identified by the program, these expanded resources provide access to hearing health for older children and adults. Further the newborn hearing screening program is utilized as a venue for raising awareness of the importance of good hearing among the local population and policy makers.

## **Assessment of Hearing Status in Children with Non-syndromic Cleft Lip and/or Palate in China**

— Xiaoran Ma, Bradley McPherson & Lian Ma (Hong Kong S.A.R. (China))

Non-syndromic cleft lip and/or palate (NSCL/P) is a common congenital craniofacial malformation worldwide, and there are a large number of babies born with CL/P every year in China. Children with NSCL/P often have a high prevalence of middle ear disorder because of Eustachian tube dysfunction. However, the degree of possible conductive hearing loss and distribution of affected frequencies of pure tone test thresholds in school age children with NSCL/P have been rarely reported in China or other developing countries. In addition to peripheral hearing loss, children with NSCL/P may have a higher than typical prevalence of (central) auditory processing disorder [(C)APD] reflected in their poor academic performance and delayed speech or language development. This study aimed to use a medical history survey and routine hearing tests to evaluate the prevalence of peripheral hearing loss and how the hearing abilities

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were affected on different frequencies in a large sample size of school age children with NSCL/P. Also, an auditory questionnaire for parents was utilized to determine whether children with cleft and normal peripheral hearing function have potentially more auditory processing difficulties compared to craniofacially normal children.

The routine hearing tests included tympanometry, acoustic reflex threshold measures, and pure tone audiometry. The questionnaire used was a Chinese version of Fisher's Auditory Problems Checklist (FAPC), which was completed following bilingual translation work. All of the participants were 6 to 15 years old native Mandarin speakers, and they were visiting the outpatient department of the Cleft Lip and Palate Clinic Center, Beijing Stomatology Hospital at the time of data collection. They were divided into three subgroups by cleft type: isolated cleft lip (CL), isolated cleft palate (CP), and combined cleft lip and palate (CLP). Initial findings from the current study are presented and their implications for the future study in this area are outlined.

## **Audiology India: 3 Year Update of Success and Challenges** — Vinaya K. C. Manchaiah (UK)

Audiology India ([www.audiologyindia.com](http://www.audiologyindia.com)) is a non-profit and non-governmental organization registered in India during January 2010. The professional organization aims to act as a single platform to perform activities in the following three main domains in the area of ear and hearing healthcare in India. The three aims include: (1) provide information and resources; (2) develop guidelines and procedures for better practice and to address various educational, professional and service delivery issues; and (3) conducting community services. Over the last 3 years the organization has conducted many activities with little resources. This presentation aims to provide an update of success and challenges with particular emphasis to legal, ethical and moral aspects of charity work and these are based on the reflections of the past and current practice. This is an attempt to raise appropriate questions, which needs careful consideration and further investigations.

## **Scaling Up Access to Ear and Hearing Healthcare in Zimbabwe** — John Matsekete, Ruvimbo Chidziva & Clemence Chidziva (Zimbabwe)

Background: Ear and hearing conditions are among the most neglected Non-Communicable Diseases in developing countries and Zimbabwe is not an exception. With ear and hearing healthcare (EHHC) services concentrated at tertiary institutions in Zimbabwe, the majority of patients, particularly the rural poor, have limited access to these services. We set out to investigate barriers to EHHC services and feasible strategies to scale up access to EHHC in Zimbabwe.

Methodology: This was an in-depth study based on secondary data. Literature was searched from Public Health databases including Global Health, Pubmed and Popline. Grey literature was searched for using the Google search engine. A conceptual framework was used to explore the barriers to services and to appraise different strategies to scale up access to EHHC and analyze their applicability to the Zimbabwean context.

Findings: Feasible strategies to increase access to EHHC in Zimbabwe included adoption of the "Health Ear Districts Approach" as a model for EHHC delivery

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supported by community outreach. The health workforce could be increased rapidly through task shifting and awareness could be raised through health persuasion and mobile short message services.

Conclusion: Scaling up access to EHHC services would require raising the agenda of EHHC to higher priority by government and introduction of services at the Secondary level of care through the "Health Ear Districts Approach"

## **The Effectiveness of Teacher-Administered Questionnaires for Hearing Screening in Ecuadorian Schools**

**— Karen Muñoz, Edith Luzuriaga, Ana Caballero, Karl White, Catherine Callow-Heusser & Eduardo Ortiz (USA)**

Childhood hearing loss negatively impacts speech-language, social-emotional, and cognitive development. Because of limited access to hearing healthcare, children often become isolated and have a reduced quality of life. Even though early identification of hearing loss through newborn screening is becoming more common in developed countries, it is not common in developing countries, Worldwide, more than 90% of children born with hearing loss will not be identified early. Having a systematic mechanism to provide low-cost hearing screening during childhood is critical for optimizing future academic and vocational success for children with hearing loss.

A national study conducted by Ecuador's Vice Presidency's Office in 2010, found that hearing disability had the third highest incidence of occurrence among disabilities in Ecuador. As a result of this study, a national initiative to screen the hearing of children was launched in 2011 using a teacher-administered questionnaire for 6-9 year old children in public schools and hospital-based screening for newborns.

The purpose of the current study was to evaluate the accuracy and effectiveness of the teacher-administered hearing screening questionnaire by comparing the results of the questionnaire with the results of screening using pure tone audiometry administered by trained health care professionals. To obtain a sample of children for the comparison of the hearing screening questionnaire to pure tone audiometry, schools that participated in the national hearing screening effort in 2012 were randomly selected. The study was completed in two phases to include schools from each region of the country (i.e., Amazon, Highlands, Coastal). The sample for Phase 1 included 3,197 first grade students from 82 schools, and the sample for Phase 2 included 1750 first grade students from 37 schools. Results showed that the teacher-administered questionnaire passed many children with hearing loss and failed many children with normal hearing. The study concluded that alternative screening methodologies for school aged children should be considered.

## **The Smartphone as a Hearing Instrument for Global Hearing Healthcare of Underserved Populations**

**— Gerardo Murillo (France)**

Solar Ear (<http://www.solarear.com.br/solar/>), a social enterprise, is launching mDREET, a holistic program in hearing care,. This program takes advantage of

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the digital technology reachable with a smart-phone and employs the strength and penetration of mobile technology to make this device work as a hearing instrument. This approach suppresses the need for dedicated and expensive hearing devices, providing functionality at practically zero cost supplement for the smart-phone owner. To distribute and service our solution, we will use and amplify an established network of indigenous health-care micro-entrepreneurs who presently sell other wellness related services and products.

mDREET tackles the problem of the dearth of audiologists, hearing-care facilities, equipment and devices in developing countries. It focuses on providing hearing care services to help children and their families in under-served communities.

The Equipment component in mDREET provides a specific smartphone assistive listening application to individuals with hearing difficulties. This application will basically transform smart-phone into a high-performance body-worn hearing aid, suited for our context (e.g. pre-configured hearing correction patterns).

mDREET will exploit multiple other functionalities available on a smart-phone to provide fun-full educational interactive audio-video games, facilitating skill acquisition. Accessibility features such as haptics communication technology (e.g. vibration) for warning purposes will also be featured.

The social impact of our program is to be measured by the long term results over a set of metrics about better quality of life, such as raising the number of years at school; access to higher education; access to better work; higher income, improvement in integration to the society, less health problems.

## **Developing the RAPID FIT Concept in Hearing Aid Fitting — Anup Narang (India)**

Today Hearing Aids have already transitioned into Digital technology, and that has brought the need for programming hearing aids using computers, hipros and a fair amount of time required for this fitting procedures.

While this fitting procedure brought a huge number of advantages, it also brought about a lot of new issues with relation to fitting. Some were with relation to non availability of computers in certain developing countries and also some were with requirement of large number of hearing aids to be fitting in camp situations especially in developing countries

Also there were issues of Senior Citizens, not able to give consistent replies & not able to maintain a consistent attention span at this long session of programming of hearing aids.

This has made the requirement of the new rapid fit concept even more important. The things which have to be taken into account are that the adaptive automatic features available from digital technology need to be incorporated into these new RAPID FIT Hearing aids which will give a solution like NEVER BEFORE and still make hearing aid fitting 'SIMPLER' & 'Less Tedious'.

Alps in India has developed this technology which has been tested over thousands of patients and with encouraging results.

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## **A Pilot Study Into the Prevalence of Ear Disease and Hearing Loss in HIV Positive Children in the Paediatric Clinics of Queen Elizabeth Central Hospital, Blantyre, Malawi**

**— Isobel Fitzgerald O'Connor, Rhyddian Harris, Bernadette O'Hare & Wakisa Mulwafu (UK)**

**Introduction:** Since widespread availability of HAART, 30% of children who acquire HIV perinatally can expect to live until they are 16 years. This has led to an awareness of chronic conditions such as hearing impairment.

**Objective:** The object of this pilot study was to identify if there is evidence of chronic ear disease in HIV seropositive children in Malawi and document demographic, aetiological and audiological information to help us understand the burden of this aspect of HIV disease in Malawi.

**Method:** The cross-sectional study included HIV-infected children aged 4 -16 yrs who attended the Queen Elizabeth Central Hospital HIV clinic over a 2 week period. A focused history was obtained with an interpreter and review of medical notes. Pure tone audiogram and tympanometry were performed. Ethics approval was obtained from the University of Malawi and written consent was given by the guardian of each child.

**Results:** 104 seropositive children were included in the study. 45% had active ear disease and HIV carries a relative risk of 1.72 for causing developmental delay. 51% of children reported an improvement in symptoms after ARTs were commenced.

**Conclusion:** There is a high prevalence of ear discharge and conductive deafness in this group of children. HAART has considerably extended the lives of those with HIV in Malawi and we must now address the behavioral, educational and socio-economic issues that present in patients with long-term survival.

## **Early Detection, Early Intervention- A Case for Audiology Training Program in Nigeria**

**— Wahab 'Dele Owolawi (Saudi Arabia)**

The prevalence and incidence of hearing loss have continued to rise due to enhanced life expectancy in the developed countries of the world where resources, technology and professionals abound.

Across the globe, more than 278 million people are said to have moderate to profound hearing loss in both ears (Tucci et al, 2012). Globally, over 360 million are said to suffer from hearing impairment and 2/3rd of those afflicted live in the developing world. Adrian Davis (2011) revealed a staggering figure of >700 million people suffering from hearing loss of more than 25dB by the year 2015 globally.

In developing countries, with special reference to Africa, nay Nigeria, children are the most vulnerable of this impending scourge due to lack of any national early detection- early intervention (ED-EI) policy or mechanism. In Nigeria alone, 14% of all school children are said to have some kind of hearing loss (South Africa Hearing Institute, 2011)

Nigeria, with a population of over 160 million people unfortunately has no single full-fledge audiology program in any of its 26 fully accredited and 3 partially accredited Medical/Health Schools. Well-trained and clinically certified audiologists are few and far between in Nigeria.

Wilson, J (1985); Oyiborhoro, J (1988); Eleweke JC (1997) in their respective studies highlighted the acute shortage of trained personnel in audiology in a developing



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country as Nigeria.

This paper traces the history of care of the hearing impaired in Nigeria and advocates among others, a training program focused on a concerted effort with global professional bodies, to institute a regional group that will serve as an advocate of training of audiologists in grossly under served populations where governments and institutions are prone to giving automated response of lack of funds for anything unrelated to mainstream medical/surgical training.

## **Public Health Planning for Hearing Impairment – Training clinicians to consider the ear and hearing health needs of a population**

**—Daksha Patel, Joanna Anderson & Andrew Smith (UK)**

Clinical training is often limited to evaluate and manage the health needs of a person in front of them. The London School of Hygiene and Tropical Medicine has developed and implemented, in collaboration with medical Institutions in low and middle income countries, a short training course to equip clinicians to begin considering the ear health needs of a population and to enable them plan appropriate prevention and rehabilitation services for hearing loss at a district, national and regional level.

In low and middle-income countries, where the burden of hearing loss is greatest, the lack of human resources and weak infrastructure pose extensive challenges. Ear and hearing health services need to be planned for equity and accessibility. This training is a practical approach, advocating for change in strategy but also bringing into consideration the realistic priorities specific to each setting and health system. Most of the otolaryngologists, audiologists, speech pathologists, nurses, health planners and other professionals who attend the course are not aware that public health methods can be used to intervene against hearing loss, or felt in control of the team approach required to address the needs.

To date 328 professionals have engaged in this training from 39 countries. As the course increase in number in different continents, it is intended that the output from participants will have measurable effect on the coverage of service provision and in reducing the burden of hearing loss at a local and global level.

This poster will set out progress during the 5 years that the training has been operating, the achievements so far, and the planned strategy, with intended outputs and outcomes, for the future.

## **Efficacy of Frequency Transposition Hearing Aid in Dead Region Subjects**

**—Swapnaraj and Rajalakshmi K (India)**

A hearing aid is an electro-acoustic device, which enables a hearing impaired individual to make maximum use of his residual hearing. Decreased audibility, reduced dynamic range, decreased frequency resolution and temporal resolution are common problems in individuals with sensory-neural hearing loss. Sensory-neural hearing loss is also commonly called cochlear loss, inner ear loss and nerve loss. The sensory mechanism comprises of the Outer hair cells (OHC's) and the inner hair cells (IHC's). Damage to (OHC's) will lead to a reduction in the compressive mechanism of the cochlea. Damage to (IHC's) leads to a reduction in sound transduction process. For this reason, such regions are referred to as

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“Dead regions” Steeply sloping hearing loss is often associated with cochlear dead regions and also high frequency part of speech contributes no information in such individuals. Thus, it is essential to transpose high frequency information to the useful hearing at low frequencies in order to make high frequency information accessible. Hence, the present study aimed at evaluating 10 subjects (15 ears) with Dead regions. Individuals were diagnosed for the presence of dead regions using Modified Threshold Equalizing Noise (TEN) test. These individuals served as subjects for the present study. Frequency transposition hearing aid was fitted for individuals who had dead region. Speech identification performance was evaluated with High frequency sentence and word list in Transposition and No Transposition conditions. The results revealed that with frequency transposition there is statistically significant amount of benefit than non transposed condition for individuals with steeply sloping hearing loss with dead regions.

## **Accuracy of the KUDUwave in Noisy Environments**

**— Karyn Storey, Karen Munoz, Lauri Nelson & Karl White (USA)**

**Objective:** The aim of this study was to determine the effect that ambient noise had on the accuracy of thresholds obtained using the KUDUwave portable clinical audiometer as compared to those obtained using a GSI-61 clinical audiometer in a quiet sound booth.

**Design:** Pure tone air conduction thresholds were obtained in 3 conditions: (a) with a clinical audiometer in a quiet sound booth, (b) with the KUDUwave in a quiet sound booth, and (c) with the KUDUwave in a soundbooth with 40 dBA of background noise.

**Study Sample:** A total of 31 individuals ranging in age from 15 to 80 participated in the study, twenty-one with normal hearing and ten with hearing loss.

**Results:** Eighty-nine percent of thresholds obtained with the KUDUwave in quiet were within 5 dB of those obtained with the clinical audiometer. Ninety-two percent of thresholds obtained with the KUDUwave with background noise present were within 5 dB of those obtained with the clinical audiometer. Accuracy was poorer at 250 Hz and 8000 Hz.

**Conclusion:** Ambient noise typical of that found in an enclosed, non-sound treated room, did not affect the accuracy of air conduction hearing thresholds obtained with the KUDUwave. The KUDUwave may be a viable method of testing when a clinical audiometer and sound booth are not available.

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## Keynote Presentation: Kathryn Bouton

Katherine Bouton is the author of "Shouting Won't Help: Why I - and 50 Million Other Americans -- Can't Hear You," along with others.

She is at work on a second book called "How To Hear Better With Hearing Loss," a practical guide to everything from hearing tests and hearing aids to navigating airports, finessing job interviews, figuring out what to say about your hearing on a first date, traveling safely and enjoyably, and many other aspects of daily life with hearing loss.

She is a frequent speaker at hearing loss conventions as well as academic and issue-oriented symposiums. She also writes about hearing loss issues on her blogs "What I Hear" (<http://www.psychologytoday.com/blog/what-i-hear>) and "Hear Better With Hearing Loss" (<http://www.katherinebouton.com/>).

An editor and writer at The New York Times for 22 years, happily married and the mother two, she seemed to lead an enviable life. But a secret undermined every aspect of every day. At age 30, she suddenly went almost deaf in one ear. Progressive loss in that ear and later in her "good" ear eventually left her functionally deaf. Even with a cochlear implant and a hearing aid, she could barely follow conversations.

In "Shouting Won't Help" she describes the onset of her hearing loss at age 30, the emotional toll it took over the years, the deep-seated stigma against hearing loss that caused her to keep it a secret for more than three decades. She profiles others with similar losses -- an opera singer, a pastry chef, a psychoanalyst. Their stories illuminate hers.

A former reporter, she discusses the causes and treatments for hearing loss. She talks to psychotherapists about the psychological reaction to sudden hearing loss. She reports on the technology and high cost of hearing aids, which are rarely covered by health insurance. She writes about cochlear implants, a miracle cure that nevertheless falls short of restoring hearing to what it had been.

She writes about how employers unwittingly sabotage employees with hearing loss, about the obstacles those with hearing loss face every day, and how those with hearing loss can be the cause of some of their most unhappy moments.

She has reported on research into gene therapy and stem cell therapy as a potential cure for hearing loss.

Forty-eight million Americans suffer some degree of hearing loss. Ms Bouton is not only for those with hearing loss, but also for those who live with someone with hearing loss, or work with them, who teach or minister to them, for health care professionals who may not recognize hearing loss in their patients, for the children of elderly parents who are losing their hearing.

19:15

## Dinner: Dining Hall

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7:00-8:00

## Committee Meetings

Advocacy; Training/Education; Technology; Best Practices; Community Empowerment/Engagement

8:00-9:00

## Breakfast: Dining Hall

9:00-10:00

## Plenary VI: Empowering Families

12 minute presentations

### **Early Education is Parent Empowerment — Anne McNally & Jill Muhs (USA)**

John Tracy Clinic's (JTC) international services build family empowerment through specially designed education programs for parents of children with hearing loss ages birth to five years. This podium presentation or poster will examine the post program evaluations of parents to identify significant changes they reported in their children and themselves after families were involved in adult education. The families were guided to explore childhood hearing loss, parent activism, listening skills, language learning and speech development. Although children participated in aspects of some programs, the parents were viewed as the primary students because they were the child's initial communication partners and ongoing educational advocates. After participating in distance courses or multi-week trainings families described how these experiences empowered them. Parents stated high levels of increased confidence in their skills for helping their children. "JTC changed our lives" was a phrase used by many.

From the typewriter seventy years ago to tele-practice now, JTC uses accessible technology to reach out worldwide to families. Learning opportunities are designed to offer parents choices for the modality that they prefer to use to study childhood hearing loss. Options range from written materials, web links, video clips, support groups, onsite instruction, online classes and individual tele-practice. Families across the globe relate how this early learning for parents was a key factor in securing services, garnering support and achieving success for their children. How these early childhood programs implemented parent education as a guiding principle will be discussed with conference attendees. Effective strategies will be outlined that resulted in respecting caregivers as learners, promoting parents as partners in practice and recognizing families as leaders in hearing loss innovation.

### **Hands & Voices Model of Parent-to-Parent Support — Lisa Kovacs, Cheryl Johnson & Janet DesGeorges (USA)**

Research acknowledges the role of parent – to –parent connections, and exposure to adult role models who are deaf or hard of hearing to increase overall parent involvement which has been shown to lead to positive child outcomes. (Eleweke & Rodda, 2000; Jackson, Becker, & Schmitendorf, 2002; Hintermair, 2000; Bodner-Johnson, 2001).



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There is a comfort level that happens very naturally between parents who can relate to the experience of raising a child who is deaf or hard of hearing. Facing the challenges of navigating and unfamiliar service system can be confusing to the uninitiated, and the benefit of having someone who has previously experienced it is inestimable.

This presentation is intended for professionals and will cover the values and principles from Hands & Voices (H&V) for direct parent – to –parent, and/or Deaf/Hard of Hearing (D/HH) role model support to parents.

These principles include: parent leadership/parent driven support; collaboration with professionals and early intervention/education systems; cultural representation and sensitivity; uncompromised commitment to supporting families according to their unique needs, priorities and values; creating parent – to – parent models via paid positions and on-going training to increase availability and quality of support.

Hands & Voices is an international organization whose mission is to provide unbiased support for families with children who are deaf or hard of hearing. Guide by Your Side (GBYS) is a program from H&V that provides emotional support, technical assistance, networking, and unbiased information from trained Parent Guides, as well as D/HH Guides to other families and to the systems that serve them.

## **Targeted Paediatric Screening for Hearing Loss in Northern Sierra Leone — Lucy Carter & Emily Bell (UK)**

Children and young people in Africa are particularly at risk of hearing loss, because there is greater exposure to childhood diseases that cause hearing loss, less chance that affordable treatment will be available, and more likelihood that ototoxic drugs will be given if a choice has to be made.

Sound Seekers is working with a Sierra Leonean hospital and a school for deaf children to set up a targeted paediatric screening programme. This will identify children who have suffered conditions that are risk factors for hearing loss, screen them and provide appropriate treatment and support if hearing loss is identified. This will enable children to be helped as early as possible, and will also enable the collection of valuable data on this topic which does not currently exist.

We will share the challenges and successes of launching this project with delegates, and also discuss our early findings.

## **Empowerment of Sign Language Leads to Human Rights — Terry Riley (UK)**

Health is important in our everyday life, and we know from numerous research, that in many underdeveloped countries, health and hearing, is very low on the priorities of not only the population, but the decision makers.

But looking after ones self, being aware of the importance of having good hygiene and a healthy diet, depends often on knowing these thing. The World Federation of the Deaf (WFD) are aware that over 70 million deaf live in developing countries often denied their basic right to information, only 3% out of 20% receive any form

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of Bilingual Education, so how can they make an informed decision.

Deaf children, youth and adults are often neglected, disenfranchised from the decision making process. Left to their own devices, they struggle to be a part of society. They are seen as not just deaf, but dumb, unable to make decisions.

The WFD is making a strong representation to the United Nations, and other agencies to ensure the UN Convention on the Rights of Persons with Disabilities (UNCRPD) is fully accepted and implemented. Sign Language is a basic human right, deaf people shall be involved in the process.

## **Bridging the Gap of Inclusive Education**

— **Kalyani Mandke (India)**

Educational habilitation/ rehabilitation is the ultimate goal in the intervention program for children with hearing impairment. The key area has been early identification and intervention. However this has been dream of professionals in many developing countries. India is no exception.

The Right to Education Act 2009, or UNCRPD promote inclusive education, still children with hearing impairment have often felt misfit in inclusive settings. Special schools offer probable better solutions to the families and the children with hearing impairment to bridge the gap of inclusive education .

The special schools can work with the pace of children. and can provide optimum educational environment to these children, where regular schools often fail to provide reasonable accommodations.

The paper will discuss the various options of educational methods, adaptation of curricula, and adaptation of formal text books , how Suhrud Mandal has adapted to the needs of children.

The modification, and adaptation began with changing the mind set of the teachers, getting the participatory support from the families. One of the schools of Suhrud Mandal is a residential school, the school has to come up with some innovative activities to provide experience to interact, to mix in the society.

This paper will discuss the success, and hurdles to modify the educational approach in special schools.

10:00-10:30

## **Discussion/Break**

10:30-11:30

## **Plenary VII: Risk Factors/Special Populations**

12 minute presentations

### **Chronic Suppurative Otitis Media**

— **Chloe Jean Wilson & Andrew Smith (UK)**

"Acute otitis media--- chronic otitis media--- chronic suppurative otitis media this progression is estimated by WHO to result in hearing loss to as many as 164 million people, about 90% of them living in developing countries and most of whom are young children whose language and cognitive development may be inhibited

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Preventative means are increasing community awareness, introducing primary ear care into primary health care, controlling environmental risk factors

Early Detection is now successful in many developing countries by pre and school monitoring programmes

Available, Appropriate Antibiotics are essential for early treatment.

Accessible Surgery is essential for advanced cases to prevent complications. In 9090 deaths, most of them in developing countries, were attributed to otitis media

## **What's Nutrition Got To Do With It? Early Childhood Malnutrition and Later-Life Hearing Loss in Rural Nepal**

**— Susan D. Emmett, Jane Schmitz, Subarna K. Khatry, Lee Wu, Steven C. LeClerq, Rakesh Prasad, Sureswor L. Karna, Joseph Pillion & Keith P. West, Jr. (USA)**

Objective: To evaluate the influence of childhood undernutrition on hearing loss in young adulthood in rural Nepal.

Design: Ear health was assessed in 2378 Nepalese young adults (14-23 years) who as preschool children participated in a placebo-controlled, cluster-randomized vitamin A supplementation trial (1989-1991) in Sarlahi, Nepal. Every four months during the 16-month trial, participants received vitamin A (200,000 IU) or placebo, underwent anthropometric measurements, and validated parental 7-day history of morbidity, including ear discharge, was recorded. Sixteen years later, air conduction thresholds were obtained using digital audiometry. Hearing loss was defined as pure tone average (PTA) >30dB in the worse ear (0.5, 1, 2, 4kHz). Abnormal tympanometry was defined by peak height (<0.3 or >1.4mmho) or width (<50 or >110daPa). Childhood nutritional status was described by stunting ( $z < -2$  height-for-age, HAZ) or wasting ( $z < -2$  mid-upper arm circumference [MUACAZ] and body mass index [BMIAZ]-for-age).

Results: Hearing loss was present in 5.9% (95% CI: 5.0-7.0) of young adult subjects, with 16.6% (95% CI: 15.1-18.2) exhibiting abnormal tympanometry. Wasting was associated with increased risk of adult hearing loss (BMIAZ OR 1.88; 95% CI: 1.19-2.97; MUACAZ OR 2.14; 95% CI: 1.47-3.12) and abnormal tympanometry (BMIAZ OR 1.80; 95% CI: 1.32-2.46; MUACAZ OR 1.42; 95% CI: 1.10-1.84). Stunting was associated with increased risk of hearing loss (HAZ OR = 1.64; 95% CI: 1.10-2.45) unrelated to abnormal tympanometry (HAZ OR = 1.18; 95% CI: 0.93-1.49). Among participants with history of childhood ear discharge, vitamin A supplementation was associated with decreased risk of later-life hearing loss (OR = 0.58; 95% CI: 0.37-0.92) compared to controls.

Conclusion: Childhood nutritional status is a modifiable risk factor for later-life hearing loss. Periodic vitamin A supplementation may reduce risk of hearing loss associated with middle ear infections. Undernourished children may face increased lifelong risk of hearing loss and could benefit from ear examinations early in life.

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## **Hearing Impairment and Deafness Among HIV Infected Children and Adolescents in Harare, Zimbabwe**

— **Clemence Chidziva, John Matsekete, Tsitsi Bandason, Titus Dzongodza, Naboth Matinhira, Angela. H. Mujuru, Cordelia Kunzekwenyika, Rashida A. Ferrand, Maureen Wellington, Reudy Luthy & Chris Prescott (Zimbabwe)**

Background: Ear infections are among the most common infections that occur in children. Among HIV-infected children ear infections are recurrent and chronic, which may lead to hearing loss. We investigated the prevalence, cause and severity of hearing impairment among HIV-infected children aged 5-17 years attending for HIV care in Harare.

Materials and Methods: Participants underwent a standardised otoscopic examination of the external and middle ear and pure tone audiometry (PTA). The CD4 count at diagnosis, the most recent CD4 count and WHO Stage were obtained from the clinic database. The association between HIV disease WHO stage and hearing impairment was investigated using multivariate logistic regression.

Results and Conclusions: Three hundred and eighty participants (55% female) and mean age 11 years (SD: 3.3 years) were consecutively recruited. The prevalence of hearing impairment was 32.3% based on a PTA threshold  $\geq 26$ dB; 19.7% had mild impairment 7.9% had moderate impairment; and 2.8% had severe impairment. Hearing impairment was associated with a recent CD4 count, and being aged 8-10 years compared to younger age. These associations remained significant after controlling for gender, baseline disease stage and ART status. There is a high prevalence of hearing impairment among HIV-infected children and adolescents. Low CD4 count remains a risk factor even among those who are on ART. Hearing impairment has a significant impact on educational performance and we recommend that HIV infected children and adolescents, particularly those with low CD4 counts, should have routine evaluation of hearing as part of HIV care to ensure timely management of hearing problems.

## **Determining the Prevalence and Severity of Hearing Impairment in HIV-Infected Children in Lilongwe, Malawi**

— **Rebecca Bartlett & Peter Bartlett (Malawi)**

Background: With improved access to ART, HIV infection has become a chronic illness. HIV-infected children have a higher risk of hearing impairment when compared with HIV-uninfected children. This can cause a wide range of difficulties, including poorer school performance and quality of life.

Main Objective: To determine the prevalence of hearing impairment in HIV-infected children age 4-14 years in Lilongwe, Malawi.

Specific Objectives:

- 1) To identify clinical and socio-demographic factors that may be related to hearing loss in children infected with HIV.
- 2) To examine the association of hearing impairments on quality of life and social and school functioning in this population

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3) To assess the use of a questionnaire based tool to screen for hearing impairments in children

Methodology: This will be a cross-sectional survey of HIV-infected patients attending the Baylor Centre Of Excellence for care. Data will be collected through socio-demographic questionnaires, review of the electronic medical record, and audiological testing at the African Bible College Hearing Clinic and Training Centre. Multiple regression analysis will be done to determine relationships between clinical and socio-demographic variables and presence of hearing impairment.

## **A Seafaring Endeavor: Meeting the Hearing Healthcare Needs of Maine Islanders — Amy Engler Booth (USA)**

Large or small, rich or poor, all nations have isolated populations that lack access to basic medical care. The Maine coast measures 228 miles; however, when accounting for nearly 3000 islands off the coast of Maine, there are 3, 478 miles of shoreline. Forty-one of these islands are inhabited by year round residents. Travel to and from these remote communities occurs only by ferryboat, mail boat, or by private vessel.

The lobstering industry is the mainstay of most island residents, a generational occupation that often involves all family members. Noise levels on lobster boats reach dangerous levels with long days under the harshest of conditions. In order for an individual from the islands to receive hearing health care services, one must travel to the mainland and miss a minimum of two workdays.

The Maine Sea Coast Mission provides health programs along with youth development programs in coastal and island communities via a 75-foot diesel powered boat operated by the Mission. This vessel is equipped with state of the art telemedicine equipment, which allows the provision of medical attention and remote physicians' visits. Audiology services along with a noise induced hearing loss prevention program have been provided during the past five years. The objective of this presentation is to highlight the logistics and challenges of delivering hearing health care to the remote islands of Maine, as well as to share achievements in this seafaring endeavor.

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## **Discussion**



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11:45-12:45

## Plenary Session VIII: Training/Education

12 minute presentations

### **Human Resources for Ear & Hearing Health: From Averages to Equity** — Ned Carter (Cambodia)

All Ears International is a British-registered charity that supports federated programmes in Asia. Ear and hearing healthcare plays out in an arena where political and economic interests, funding and overseas assistance may be misaligned with epidemiological research, WHO recommendations, ministry of health plans, community needs and demands, and the reduction of socioeconomic disparities. As national incomes and populations grow, how concerned should we be about inequality? Should training institutions be more socially accountable? How does human resource policy influence outcomes in deprived communities? Training for otolaryngologists and audiologists is much needed to alleviate critical shortages, but alone is not enough. The global workforce crisis begs wider questions of health systems and fairness; responsive training, roles and skill mix; rural health, migration and distribution; motivation and retention; quality, monitoring and evaluation; and the true value of human capital. Lessons from Cambodia highlight how recruitment and training policy, task shifting, and other non-clinical interventions can contribute towards more cost-effective, appropriate care and rebalance outcomes across different strata of society. From humble beginnings in London, to an operational Cambodian organization and beyond, All Ears International continues to regard health equity and strong human resources as top priorities.

### **Towards Listening and Spoken Language for Children with Hearing Loss: Remote Models of Parent and Professional Education** — Dimity Dornan (Australia)

Hear and Say has been teaching listening and spoken language to children with hearing loss using an Auditory-Verbal Therapy approach since 1992. Currently Hear and Say provides services for over 600 children and families in Australia.

Since 2002, Hear and Say has also been teaching professionals about the Auditory-Verbal Therapy approach in Australia and overseas, and this program was officially re-launched as Hear and Say WorldWide in 2007, when it was decided to focus on training hearing healthcare teams rather than just individuals. Since then, over 300 professionals and many hundreds of parents have received training.

This paper will present a blueprint for developing courses of professional training for use in various countries including low-resource areas. Topics such as development of curriculum, practical clinical application, collaboration with other partners and university accreditation will be included. Discussion on the work of groups such as the Ling Consortium, an international consortium of professionals developing and delivering globally recognized university based courses on teaching listening and spoken language to children with hearing loss will illustrate the collaborative nature of Hear and Say WorldWide.

The experience of Hear and Say WorldWide in various types of professional

# AGENDA

Saturday — July 26, 2014

- 7:00 - Committee Meetings
- 8:00 - Breakfast
- 9:00 - Plenary: Empowering Families
- 10:00 - Discussion/Break
- 10:30 - Plenary: Risk Factors/ Special Populations
- 11:30 - Discussion
- 11:40 - Plenary: Training/Education
- 12:45 - Discussion
- 13:00 - Lunch
- 14:00 - Committee BRIEF
- 15:00 - Wrap-Up; Way Forward
- 16:00 - Adjourn (Dinner On Your Own)
- 18:30 - Post Conference Workshop



environments will also be described, as well as use of technology and partnership to achieve maximum coverage will also be detailed, and an invitation will be issued to similar groups to join the Hear and Say WorldWide network as partners.

## **CBM Audiology Policy Paper**

— **Patricia Castellanos de Munoz (Guatemala)**

CBM Position Papers guide and orient CBM and its partners to achieve the goals outlined in their field of work. The audiology Policy paper provides a reference to help develop strategies and programmes to ensure access to affordable quality services in respect of diagnosis, hearing aid provision and rehabilitation services.

Other professionals and international organizations involved in disability and care have been invited to comment the document in order to strengthen its content.

CBM has been supporting both, audiological examinations, including screening and diagnostic procedures, and training courses for skill development in different Audiological areas such as: diagnosis, hearing aid selection and fitting, hearing aid repair, ear moulds, etc. Alongside, equipment and hearing aids have been provided.

With the intent of providing equipment and hearing aids that fit different geographical environments and different levels of training, CBM has led to field test them, and collect end-user feedback to select those that meet the desired requirements and are cost effective.

## **Three Strategies for Increasing Access to Hearing Care Globally**

— **James Hall, Jackie Clark, Richard Gans & De Wet Swanepoel (USA)**

Over 90% of the world population has little or no access to hearing health care. In most populous countries, the number of formally educated and trained audiologists is woefully inadequate to serve the needs of persons with hearing impairment. We describe three strategies for increasing access to hearing care globally.

One strategy is the audiology application of tele-health techniques and technology, often referred to as tele-audiology. Tele-audiology has been validated for most diagnostic and rehabilitative processes in audiology. With tele-audiology, audiology experts can contribute to the delivery of high quality hearing screening, diagnostic, and rehabilitation services for remote patients anywhere in the world with inter-net connectivity.

Another approach is the use of automated technology to identify hearing loss and to facilitate diagnosis of hearing loss in children and adults. Clinical devices now are available for automated objective test procedures, such as otoacoustic emissions and auditory brainstem response, and also for pure tone audiometry via air and bone conduction stimulation. Automation permits reliable hearing testing by non-audiologists with statistical analysis of findings outside the confines of a sound-treated room. Widespread application of automated technology for hearing assessment would go a long way to identification and diagnosis of hearing loss in developing countries.

A final strategy is growth of a global work force of systematically educated and

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trained hearing care technicians who work with audiologists and physicians. Technicians will contribute importantly to efficient and cost-effective expansion of needed services in countries lacking adequate professional person power. We'll describe a recently developed 20-course sequence for an entirely online educational program called the International Hearing Care Technician (IHCT) Certificate.

## **The International Hearing Care Technician Certificate: A Global Web and Cellular Based Education Platform**

**—Richard E. Gans, James W. Hall III, & Jackie Clark (USA)**

Implementing and sustaining successful global hearing healthcare programs requires educating and training extenders and technical support personnel to work in collaboration with supervising audiologists, physicians and providers. This education is now available through a web-based and cellular platform that provides evidence-based education for support personnel 24-7 in the form of enduring materials which may be permanently archived and available for the student without the need to purchase costly textbooks or educational supplies.

The international Hearing Care Technician Certificate (IHCT) is a 20 hour curricula that provides students with the background science information as well as real-world instruction on performing otoscopic inspections, audiological tests, infection control, etc. Presently courses are offered in English and Spanish. Courses are taught by a well-known international academic faculty. The IHCT has had wide-reaching appeal from extenders in the Veterans Hospital System in the U.S. to nurses in Tanzania.

The presentation will provide attendees with a look at the curricula, coursework, and open a dialogue as to what the audience would recommend for new or specifically needed offerings. Future plans include specialty certifications in : pediatrics, electrophysiology, vestibular and amplification.

12:45-14:00

**Discussion/Lunch**

14:00-15:00

**Committee BRIEF Reports/Summaries**  
10 minutes for each group

15:00-16:00

**Wrap-Up; WAY FORWARD**

16:00 -

**Meeting Adjourns**  
Dinner On Your Own

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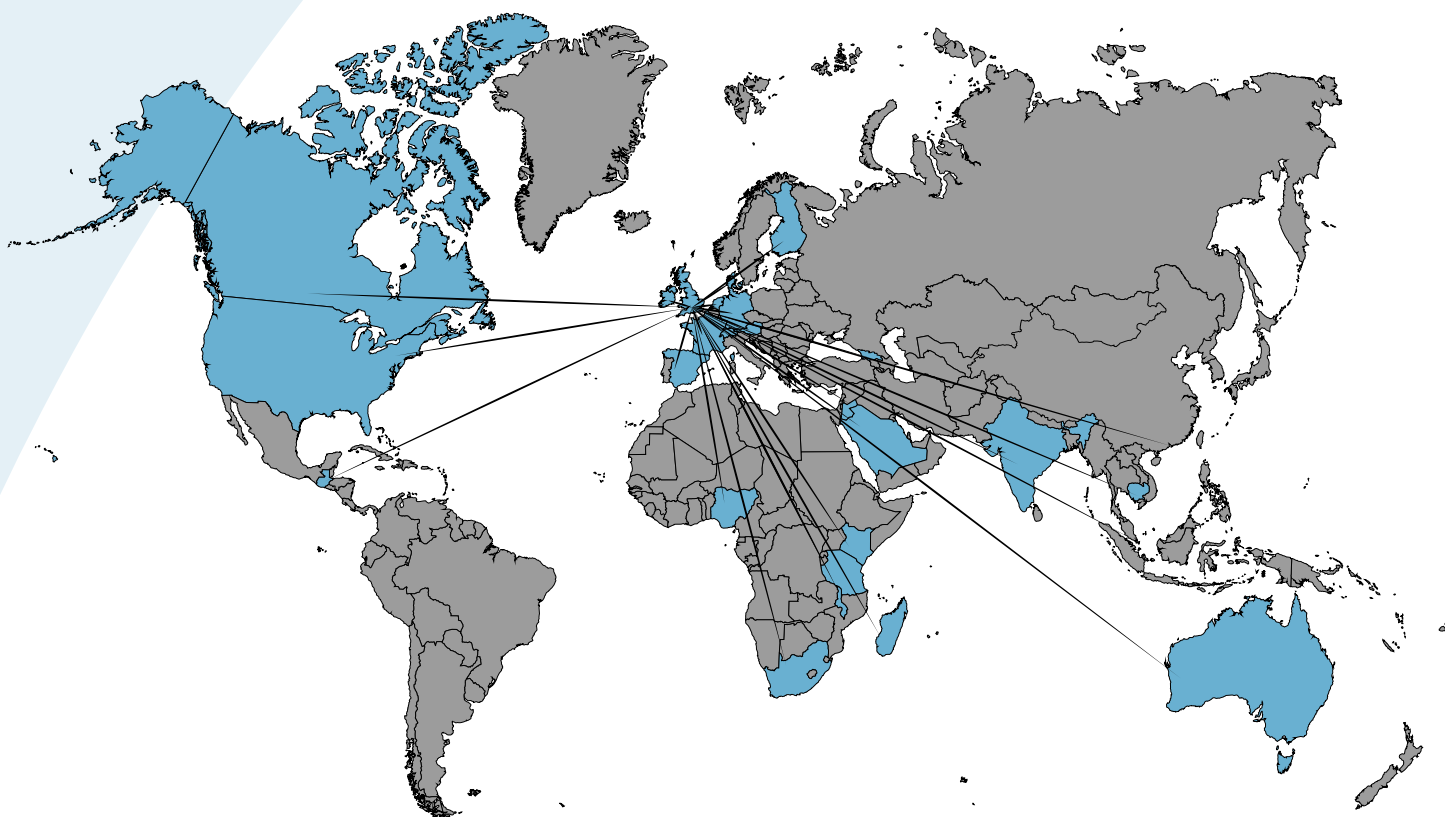
18:30 - 20:30

## Post Conference Workshop

### **Accurate Objective Assessment of Infant Hearing** —James W. Hall, III

Accurate information on auditory function is essential for effective intervention of hearing loss in infants. The diagnostic test battery for infant hearing assessment consists of objective procedures including acoustic immittance measures, otoacoustic emissions, and auditory evoked responses, including frequency-specific auditory brainstem response (ABR) and auditory steady state response (ASSR). This lecture reviews evidence-based objective test protocols for application of the “cross-check principle” in the accurate diagnosis of infant hearing loss.

## Which Countries Are Represented at the Conference?



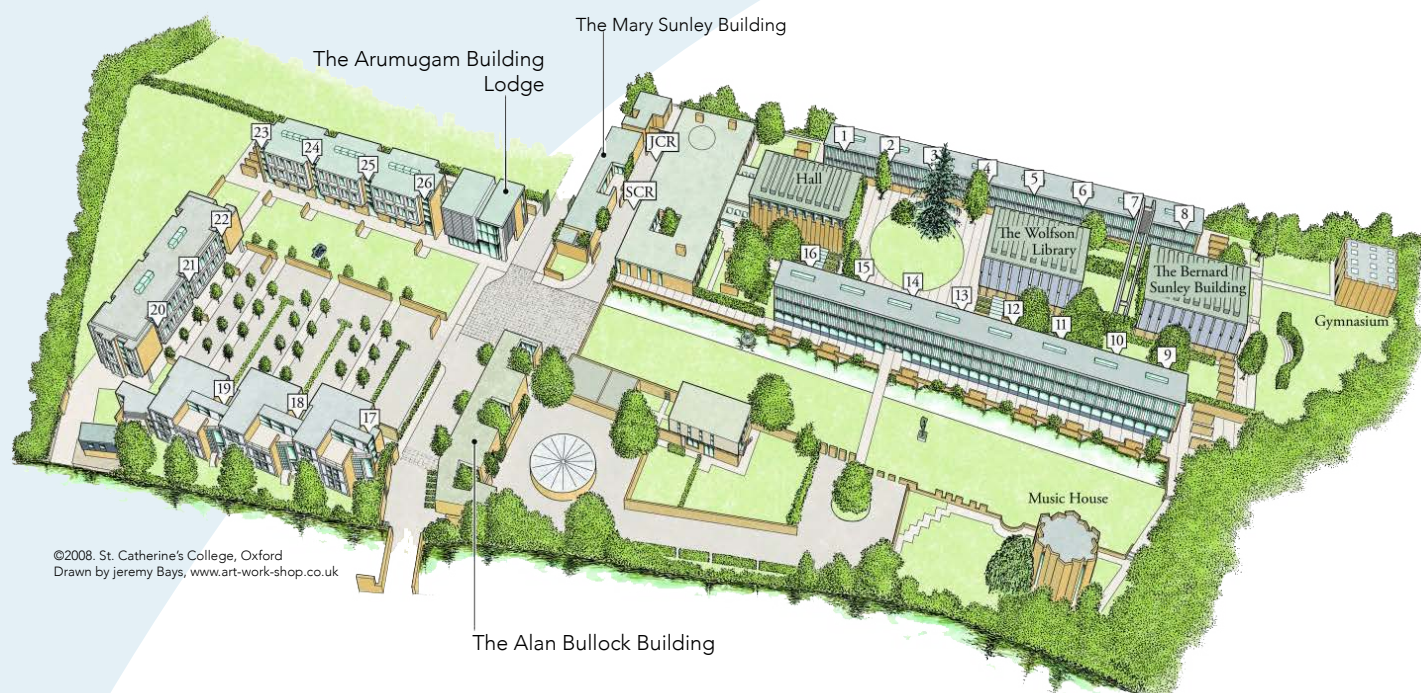
125 Participants have come from 26 Countries around the globe: Australia, Austria, Cambodia, Canada, Denmark, Finland, France, Georgia, Germany, Guatemala, Hashemite Kingdom of Jordan, Hong Kong S.A.R. (China), India, Ireland, Kenya, Madagascar, Netherlands, Nigeria, Saudi Arabia, Singapore, South Africa, Spain, Switzerland, Tanzania, United Kingdom, and the United States of America.



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# Agenda at-a-glance

Friday July 25



Time	Session	Presenters
7:30	Registration and Coffee	
8:00	Welcome	Saunders & Clark
8:30	Plenary I: Best Practices	
	Hearing and Communication Situation of Persons With Intellectual Disability (ID)	Katrin Neumann, et al
	Empirical Evidence Supporting a Multi-phase Approach To Hearing Healthcare	David A. Fabry, et al
	The Power of Communities in Building Systems for Hearing Health	Christine Yoshinaga-Itano
	Ensuring Sustainable Best Practice	Sally Harvest
	Humanitarian Service Delivery Models: Outcomes Analysis	Gail S. Belus, et al
	CBM's Holistic Approach to the Work in the Area of Ear Care, Deafness, Hard of Hearing and Deafblindness.	Sian Tesni, et al
	Establishing a Newborn Hearing Screening Program in Palestine	William Lyman, et al
10:00	Discussion/Break	
10:30	Plenary II: Technology	
	Pioneering Tele-Audiology in Zambia - Taking Africa Beyond the Mobile Clinic	Shannon Kruyt, et al
	Sustainable Hearing Healthcare: iPad point of Care Diagnostic Audiometry in Uganda	Matthew Bromwich, et al
	Challenges Associated With Accessing Hearing Aids and Accessories in Developing Countries	Eneche Audu Danlami
	World Wide Hearing Care or Developing Countries and Deserving Communities	Brother Andrew A.L. de Carpentier
12:00	Plenary III: Advocacy/Community Engagement	
	Status of WHO Programs	Shelly Chadha
	World Wide Hearing - HEARING EXPRESS™, with The Holy Land Institute for Deaf and Deafblind Children, Jordan	Brother Andrew A.L. de Carpentier
	Global Status of Newborn Hearing Screening	Karl R. White, et al
	New Approaches are Needed for Advocacy to Raise Awareness About Hearing Loss	Andrew Smith, et al
13:00	Lunch	
14:00	Plenary IV: Advocacy/Community Engagement	
	Hearing and Communication Across the Lifecourse – a Public Health Perspective	Adrian Davis
	Combining Hearing and Vision Screening at Primary Level in Poor Communities	Peter Ackland
	Psychotherapy for the Deaf Population in South Africa - Current Status and Challenges	Magteld Smith
	Interdisciplinary Collaboration in Field Visit to Burkina Faso	José Barajas de Prat, et al
15:30	Plenary V: Advocacy/Community Engagement	
	Ndlovu Wits Audiology Project: Improving Hearing Health Care in Rural South Africa	Karin Joubert
	Kenya: Infrastructure for Hearing Health Care	Debara L. Tucci, et al
	Mindfulness Based Tinnitus Stress Reduction (MBTSR) Pilot Study: A Symptom Perception-Shift Program	Jennifer J. Gans
	Developing a National Plan on ear and hearing care in Malawi	Wakisa Mulwafu
16:30	Virtual Presentation	
17:45	Cocktail Reception and Poster Session	
18:45	Keynote Presenter	
19:15	Dinner	

# Agenda at-a-glance

Saturday July 26



Time	Session	Presenters
7:00	Committee Meetings:	
8:00	Breakfast	
9:00	Plenary VI: Empowering Families	
	Early Education is Parent Empowerment	Anne McNally, et al
	Hands & Voices Model of Parent - to - Parent Support	Lisa Kovacs, et al
	Targeted Paediatric Screening for Hearing Loss in Northern Sierra Leone	Lucy Carter, et al
	Empowerment of Sign Language leads to Human Rights	Terry Riley
	Bridging the Gap of Inclusive Education	Kalyani Mandke
10:00	Discussion/Break	
10:30	Plenary VII: Risk Factors/ Special Populations	
	Chronic Suppurative Otitis Media	Chloe Jean Wilson, et al
	What's Nutrition Got To Do With It? Early Childhood Malnutrition and Later-Life Hearing Loss in Rural Nepal	Susan D. Emmett, et al
	Hearing Impairment and Deafness Among HIV Infected Children and Adolescents in Harare, Zimbabwe	Clemence Chidziva, et al
	Determining the Prevalence and Severity of Hearing Impairment in HIV-Infected Children in Lilongwe, Malawi	Rebecca Bartlett, et al
	A Seafaring Endeavor: Meeting the Hearing Healthcare Needs of Maine Islanders	Amy Engler Booth
11:45	Plenary VIII: Training/Education	
	Human Resources for Ear & Hearing Health: From Averages to Equity	Ned Carter
	Towards Listening and Spoken Language for Children with Hearing Loss: Remote Models of Parent and Professional Education	Dimity Dornan
	CBM Audiology Policy Paper	Patricia Castellanos de Munoz
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