

COMMUNITY EAR AND HEARING HEALTH

2005; 2:1-16

Issue No. 2

EDITORIAL

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Welcome to the second Issue of *Community Ear and Hearing Health*. Feedback has been very positive following the first Issue. The circulation has been increasing rapidly and we are printing 3,500 copies of the second Issue. The Journal is also accessible on www.icttheworldcare.com

WHO Training Resource on Primary Ear and Hearing Care

This present Issue focuses on various aspects of ear and hearing care and rehabilitation. Sally Harvest introduces the new WHO Training Resource on Primary Ear and Hearing Care at basic, intermediate and advanced levels. The Resource is intended to address the needs

in developing countries and especially where there is lack of ENT services or specialists. Primary Ear and Hearing Care is one of the pillars of Prevention of Hearing Impairment and can be provided by specially trained Primary Health Care cadres.

Ear Syringing

Removing ear wax and foreign bodies by syringing looks simple and straightforward, but complications like perforating the eardrum do happen occasionally. A O A Ogunleye reviews the literature, the methods, the instruments, the pitfalls and how to avoid complications. In the simplest and cheapest way ear syringing can be done with a disposable 20 ml syringe and a cut-off 14 G plastic intravenous cannula. It will be very difficult to exert so much pressure that the eardrum perforates unless it is atrophic. In busy clinics an



Otoscopy in Pursat, Cambodia

Photo: All Ears Cambodia

electrical ear syringe is very efficient and saves time, but the equipment is expensive.

Hearing Aid Fitting

Professor Russo describes a holistic approach to hearing aid fitting and aural rehabilitation for elders. Older people are the group that experience most difficulties in adapting to a hearing aid and many of the hearing aids end up unused in a drawer. The holistic approach will augment a satisfactory use of the hearing aid and communication, contrary to just dispensing the hearing aid, which is an unfortunate practice.

Audiology in Cambodia

In every Issue we will include a report from 'the field'. Glyn Vaughan illustrates the current situation, the needs and a new programme he started in Cambodia. Readers from other countries may recognise much of what he describes. All of us will learn from these reports and they will help to find solutions to our own particular needs in our own countries.

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DEVELOPMENT OF THE PRIMARY EAR AND HEARING CARE TRAINING RESOURCE

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Report of the INTERNATIONAL
WORKSHOP ON PRIMARY EAR AND
HEARING CARE – Cape Town, South
Africa, 12-14 March 1998.

Download from: http://www.who.int/pbd/deafness/activities/en/capetown_final_report.pdf

This workshop was convened to address this situation and to develop strategies, applicable in the Primary Care field of practice, to teach core knowledge, simple skills, affordable treatment protocols and guidelines for referral to basic health care workers. By involvement in the workshop of key personnel from both Primary Care and Specialist areas – including Health Management, Disability, ENT and Audiology – it was hoped to develop recommendations for training in a system of Primary Ear and Hearing Care that is not only simple enough to understand but practical enough to be uniformly applied throughout Sub-Saharan Africa.

International Workshop

In March, 1998, an International Workshop on Primary Ear and Hearing Care was held in Cape Town, South Africa. Participants from 19 countries attended, the majority from Southern and Sub-Saharan Africa.

The beginning of the report on the proceedings explained the need for the Workshop:

The main recommendations addressed were prevalence of ear disease, impact of the disability, prevention and treatment, early identification, development of a training module for Primary Ear and Hearing Care, essential facilities at primary level and support for a referral system.

Requests to the World Health Organization

The Workshop requested WHO to:

- Extend primary ear and hearing care into all regions that need it
- Devise global level guidelines with training packages and materials that can be adapted to regional and national needs, linking primary ear and hearing care with strategies for prevention
- Encourage guidelines to be a component of each national plan for prevention.

Training Resource for Primary Ear and Hearing Care

In 2001, using many of the Workshop recommendations, WHO began developing an outcomes based Training Resource for Primary Ear and Hearing Care in developing countries. The Resource was planned as a generic training programme for use by any country that needed it. The Resource initially consisted of a Student's Workbook and Trainer's Manual with accompanying teaching aids in the form of posters.

An education consultant was appointed to develop the Resource together with a small advisory committee of experts from various countries worldwide and included ENT specialists, an audiologist and an education advisor.

The Delphi technique was used to reach consensus on content and receive information and suggestions to facilitate planning and development of the Resource. In the technique, contributors

Primary Ear and Hearing Care Training Resource

STUDENT'S WORKBOOK

Intermediate Level



Photos: Ron Brouillette, Andrew Smith
& Piet van Hasselt

with relevant knowledge and skills exchange information and comments via email, but without knowing what others said. The content is refined through several rounds. Thus, group problem solving occurs whilst avoiding the costs of organising a meeting. The education consultant acted as the co-ordinator of this process.

At each stage of development, three rounds of questionnaires were sent out to the advisory committee as well as 44 experts from 22 countries involved in Primary Ear and Hearing Care issues in both the developing and developed world. The input from these contributors showed the need for more than one level of training, in order to provide adequate Primary Ear and Hearing Care from the most remote rural areas to urban situations.

The advisory committee decided on the development of a 3-tiered training programme that would consist of:

Basic	Level 1
Intermediate	Level 2
Advanced	Level 3

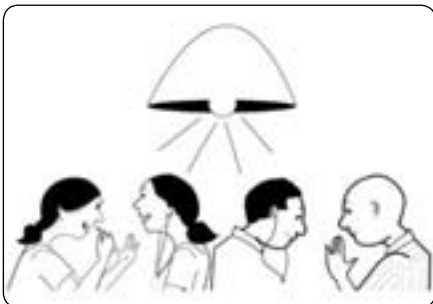
Primary Ear and Hearing Care Training Resource:

Once the Intermediate level was completed (1st Draft) it was field tested in both Southern India and in Nigeria. Based on the input from these workshops the Training Resource was adapted and finalised.

Level 1: PRIMARY EAR AND HEARING CARE TRAINING RESOURCE: BASIC LEVEL

This level of training resource:

- Contains the relevant knowledge and skills content
- Explains the need for ear hygiene
- Explains how to prevent common ear and hearing disorders
- Explains when to refer patients to the clinic or hospital
- Explains reasons for hearing impairment
- Explains how to encourage communication with the hard of hearing and deaf people
- Explains the management and possible solutions available for the deaf and hard of hearing.



Drawing: Nancy Raj

This Resource can be used for interactive and culturally appropriate training of village health workers, teachers, parents and other members of the community.

The level of Training Resource focuses on community involvement and raising awareness, and covers basic measures for prevention and management. Some of the most effective ways of reducing the number of ear and hearing disorders are begun at the primary level by trained workers, such as village health workers or community-based rehabilitation (CBR)

workers. The village health care worker could explain the issues discussed in this Resource to the people in their community. The Resource could also be discussed and used in clinics, schools and local societies. Simple drawings are used to explain issues such as provision of antenatal care for pregnant women.

Level 2: PRIMARY EAR AND HEARING CARE TRAINING RESOURCE: INTERMEDIATE LEVEL

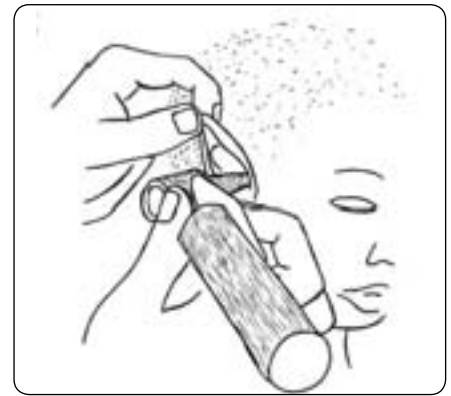
- **Module 1:** Structure and function of the ear
- **Module 2:** Hearing impairment and deafness: causes and prevention
- **Module 3:** The outer ear: examine, treat, refer
- **Module 4:** The ear canal: examine, diagnose and clean
- **Module 5:** The middle ear: examine, diagnose and treat
- **Module 6:** Assessing hearing and counselling
- **Module 7:** Hearing aids

This level of the Training Resource focuses on prevention, diagnosis and treatment of common ear diseases and hearing impairment. The Training Resource emphasises information that will enable primary ear and hearing workers to help parents, care givers, teachers, employers and community members to relate to a person who is hard of hearing.

Diagrams and photographs are used to clarify the structure, abnormalities and common disorders of the ear and hearing and to explain the equipment needed for treatment and management of hearing loss.

The Trainer's Manual contains the necessary knowledge and skills needed by the primary ear and hearing care worker. It also recommends interactive training and shows the trainer when to use the teaching aids provided.

The Student's Workbook contains the necessary knowledge and skills the student needs to understand and apply as a primary ear and hearing care worker.



Drawing: Piet van Hasselt

Each student is required to complete the interactive exercises throughout his or her training – see Activity 1. By doing so each will show their understanding of primary ear and hearing care.

Level 3: PRIMARY EAR AND HEARING CARE TRAINING RESOURCE: ADVANCED LEVEL

- **Module 1:** Epidemiology – causes – types of hearing impairment – prevention
- **Module 2:** Examination of the ear
- **Module 3:** Hearing
- **Module 4:** Ear conditions – diagnosis and treatment
- **Module 5:** Ear operations
- **Module 6:** Noise-induced hearing impairment and hearing conservation
- **Module 7:** Aural rehabilitation and education
- **Module 8:** Hearing Aids

Activity 1:

Write down some of the things you may notice or that you should look for if you think a child cannot hear properly.

Discuss them with your group

This level of training is aimed at the health care worker who has some training and experience in ear disease and hearing impairment. Prevalence, causes and prevention of deafness are discussed as well as medical and surgical treatment.

Information for the patient has been included.

The causes, effects and prevention of noise-induced hearing loss are addressed.

A module on aural rehabilitation includes education of deaf/hard of hearing and the disability of deaf blindness.

The module on hearing aids includes the need for hearings aids, care and maintenance and a section on hearing aid fault-finding.

Launch of Primary Ear and Hearing Care Training Resource

In order to publicise the Resource and to identify ways that it can be implemented in different countries, a virtual global launch through the WHO-HQ internet is planned with associated media events. The global virtual launch will be followed by strategy implementation workshops in appropriate venues in Asia and Africa, either for single, large countries or groups of small or medium-sized countries.

Objectives of the Global Launch

- To highlight the global and regional burdens of ear and hearing disorders
- Demonstrate that interventions at the primary level are likely to be the most cost-effective way of preventing the largest burden of hearing loss

- Explain the need to provide primary ear and hearing care training in order to increase the capacity of countries to provide PEHC
- Explain how the PEHC Training Resource can provide developing countries with appropriate resources for training PEHC and PHC workers for the prevention, treatment and rehabilitation of common ear diseases and hearing impairment.

Outputs of the Global Launch

- Increased awareness of the burden of ear and hearing disorders, the possibility of cost-effective interventions at primary level of health care, and the need for expanded training of primary health workers in this field
- Demonstration that the WHO Primary Ear and Hearing Care Training Resource can be adapted and provide appropriate training in PEHC in any developing country where it would be needed.

Objectives of the Country Workshops

- Familiarise the participants with the Training Resource
- Determine how the Resource should be adapted and implemented in their country.

Outputs of the Workshops

1. A plan for adaptation and implementation of the WHO Primary

Ear and Hearing Care Training Resource and inclusion in current country training programmes, including identification of needs.

2. A strategy for encouraging and enabling government and health authorities to implement the Resource.
3. A mechanism for feedback and evaluation of the implementation of the Resource.
4. Identification of contacts for feedback and evaluation purposes.

Outcomes of the Workshops

1. Implementation of the WHO Training Resources in current training programmes of the participating country.
2. Primary health workers successfully trained in PEHC using the Resource.
3. Evaluation of the implementation of the launch in participating countries.

It is intended that the Resource will stimulate awareness and enable developing countries to give greater priority to ear and hearing disorders, and thereby make a major contribution to reducing their burden in the developing world.

Further information is available from the following website:

www.who.int/pbd/deafness/en



www.ichesworldcare.com

Journals available FREE to Developing Countries

- *Community Ear and Hearing Health*
- *Developing Mental Health*
- *Community Dermatology*
- *Repair and Reconstruction*

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CURRENT PRACTICE OF EAR SYRINGING: AN OVERVIEW

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Introduction

Ear syringing is the simplest and least traumatic way to clean out the ear canal. It is a procedure which every health care worker should learn and perform proficiently in a primary health care setting. Other methods of ear cleaning make use of suction, ear hooks and ear micro-forceps. These methods require advanced training in ear care.

Abstract

Ear syringing is a procedure by which the external auditory canal is irrigated with clean water at body temperature. It is a procedure which every doctor or nurse should be able to perform proficiently.

The main indications for ear syringing are ear wax, ear debris and pus, foreign body and otomycosis. The contra-indications are perforated eardrum, scarred and thin eardrum, organic foreign objects, middle ear ventilation tube in-situ, cerebro spinal fluid-otorrhoea and uncooperative children.

Ear syringing has a low incidence of complications and is a safe procedure in trained hands.

Indications

The usual indications for ear syringing include wax removal, debris (especially from otomycosis) and foreign bodies.

(a) Wax

Wax in the ear is secreted by glands situated in the skin of the ear canal and is nature's provision for the removal of dust and other foreign materials from the ear canal. The quantity of wax produced varies greatly from one individual to another. Its composition varies in different racial groups. Excess wax may reflect local systemic disease.¹ Wax is usually expelled by migration, a process that is aided by jaw movement.² Sometimes excessive wax may be formed or may be of abnormal consistency that blocks the ear canal. Impacted wax is also caused by the use of cotton wool buds in a misguided attempt to clean the ears. Wax needs to be removed when it blocks the ear canal causing hearing impairment or when it blocks the view for otoscopy.

In a recent study by Ogunleye and Awobem, of 622 patients requiring ear syringing, cerumen (99%) remained the commonest indication for ear syringing.³ The procedure is easy when the wax is soft and flaky, but when the wax is hard and impacted it might require softening. The following cerumenolytic agents can be used to soften the wax:

1. Vegetable oil and 5% sodium bicarbonate drops, usually applied two times a day for about 5-7 days before syringing.⁴
2. A recipe of 5% sodium carbonate with 30% glycerine in purified water.
3. A 3% hydrogen peroxide solution can be instilled and allowed to remain for a few minutes.⁴

Proprietary cerumenolytic preparations are better not used as they may cause irritation and even an allergic skin reaction.

(b) Debris

Epithelial desquamation of the canal skin resulting in debris formation in the ear canal can be removed by ear syringing.

(c) Foreign body

Foreign bodies in the external auditory meatus are common. They are usually seen in children and a large variety of objects may be encountered in the ear canal, most often seeds and beads.⁵⁻⁷ These can be removed by syringing, however, organic foreign bodies such as seeds should not be syringed out because, if unsuccessful, the seeds imbibe water, 'swell up' and become impacted and difficult to remove afterwards.

(d) Otomycosis

Fungal infection is found in the external meatus as primary disease or complicating otitis externa. The usual organisms are *Aspergillus* and *Candida albicans*. The presence of masses of material, like wet blotting paper, in the meatus upon which the mycelia can be seen is characteristic. The colour of the mass may be white, through yellow, brown to black. *Candida* has a less specific appearance. The mainstay of treatment is meticulous cleaning out of the ear canal followed by instillation or application of a topical antiseptic or antimycotic solution, cream or gel.

(e) Mucopurulent ear discharge

Chronic discharging ears are still common problems in the community in the developing world and are main features of chronic suppurative otitis media. An important part of the treatment of this condition is cleansing of the ear (aural toileting), either by ear syringing or mopping with cotton wool swabs, followed by aural wick dressing with antibiotic ear drops. Antibiotic or antiseptic applications into the ear canal have no chance of getting where they are required if the meatus is still full of pus. This is a frequent cause of failure of treatment if the aural toileting is not done prior to commencement of treatment.



Fig. 1: Disposable syringes

Photo: A Ogunleye

Ear Syringing

Contraindications

Contraindications to ear syringing include perforated ear drum because of the risk of reactivation of infection; a scarred, thin eardrum since this may rupture; organic objects as they swell up from imbibed water and thus become impacted and difficult to remove afterwards; presence of a grommet; prior to ear surgery; cerebrospinal fluid otorrhoea; and young un-cooperative children.

Materials

The following materials would be needed for an ear syringing procedure:

- (a) **Syringe:** A 20 ml or 50 ml disposable syringe (Figures 1, 2) with an attached intravenous plastic cannula with the tip cut short to a few centimetres.³

A more sophisticated instrument is an electrically driven water pump with a set of nozzles to fit all ages and a foot-operated control named PROPULSE II (Figure 3). This instrument regulates the force by which water is driven into the ear canal, thereby reducing complications that may be associated with ear syringing.

- (b) **Light source to inspect the ear:**

For example, a head-mirror to reflect light, electric otoscope, or headlight.

- (c) **Solution in litre measure:** Normal saline or sodium bicarbonate, 4-5 gm to 500 ml of water is ideal. However, clean tap water is also satisfactory. The temperature of the solution should be between 37°C (99°F) and 38°C (100°F). Any departure of more than a few degrees could cause severe vertigo.



Fig. 2: Using a disposable cannula

Photo: A Ogunleye

- (d) **Aural forceps.**

- (e) **Gallipot containing cotton wool swabs.**

- (f) **Receiver for the solution:** e.g., kidney dish

- (g) **Towels and Mackintosh cape** for draping during the procedure to prevent the patient's dress / covering becoming soaked.

- (h) **Dust bin to receive used swabs.**

Technique of Ear Syringing

1. The procedure is first explained to the patient who is also advised that as fluid passes into the ear, he/she may feel more deaf and feel uncomfortable.
2. The patient sits with the ear to be syringed towards the operator, after being draped.
3. Then, the patient holds the receiver close against the cheek, under the ear (Figure 2).
4. The operator then uses a head-mirror or headlamp, or the electric otoscope, to examine the ear.
5. The operator washes and dries his/her hands, takes a syringe, fills it with appropriate solution and expels air.
6. With one hand the operator straightens the ear canal by drawing the pinna upwards and slightly backwards. In young children, the pinna has to be pulled downwards and backwards.
7. With the other hand, the operator holds the syringe and directs the nozzle and the stream of solution towards and along the roof or posterior wall of the external auditory canal (to prevent rupture of the tympanic membrane from direct impingement of the jet of fluids).
8. After completion of the procedure, the external auditory canal should



Fig. 3: Using an electric ear syringe

Photo: Theodore Randrianarisoa

be inspected and excess solution mopped from the canal, as stagnation of fluids predisposes to otitis externa.

Among children, taking them into the confidence of the operator makes the procedure easier. A co-operative child can be syringed without difficulty. However, if the child is scared, he can be made to sit on the lap of the mother, with the legs of the child held firmly between those of the mother. One hand of the mother holds the hands of the child in front of his/her chest, while her other hand fixes the head by holding the forehead of the child.

Complications

This procedure, though simple, may be fraught with various complications. These include tympanic membrane perforation, canal laceration, canal scalding, vertigo and even, rarely, death. Estimation of complications has been put at 0.1% of ears syringed.⁸ Syringing claims account for about 25% of the total claims received by the Accident Compensation Corporation (ACC) ENT Medical Misadventure Committee over a one and half year period in New Zealand.⁹ In the study of 622 patients needing ear syringing, by Ogunleye and Awobem, the complications recorded were mainly vertigo (0.2%) and tympanic membrane perforation (0.2%).³

The low incidence of complications observed in this aforementioned recent study and the study of Sharp et al shows that ear syringing is a very safe procedure in trained hands.^{3, 8}

Lately, 'malignant' external otitis has been reported as a potential complication that can follow ear syringing. Rubin and Yu reported that the forceful syringing of an ear canal with non-sterile tap water, which may contain *Pseudomonas aeruginosa*, might precipitate malignant external otitis - concluding that aural irrigation may play a predisposing role in the onset of malignant external otitis in high-risk populations.¹⁰

Similarly, Ford and Courtney-Harris reported a case of malignant external otitis, which occurred in a healthy 72-year-old non-diabetic, non-immuno-compromised man after ear syringing.¹¹ The infection was treated with oral ciprofloxacin for eight weeks with complete resolution.

The incidence of complications could be reduced by greater awareness of the potential hazards, and increased numbers of personnel receiving instruction and training.

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Audiological Rehabilitation in Brazil

AN AUDIOLOGICAL REHABILITATION PROGRAMME FOR THE ELDERLY IN BRAZIL

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Introduction

Of all the disabilities that affect the aged, the inability to communicate with others due to hearing impairment can be one of the most frustrating and can result in other psychosocial problems. The sensorineural hearing loss experienced by older adults is the third major cause of disability among the elderly population in Brazil, and has dramatic effects on communication, often being associated with hearing disability, which restricts the quality of life.¹

Hearing aids alone are not the total solution to the communication problems caused by hearing loss. According to the American Speech-Language-Hearing

Association (ASHA), it is very important to assist elderly individuals with auditory disabilities to realise their optimal potential in communication, which is possible through an audiological rehabilitation (AR) programme.²

Audiological Rehabilitation Programme

The AR programme consists of five items including:

1. Holistic evaluation.
2. Hearing aid and assistive listening devices fitting and orientation.
3. A detailed explanation of the hearing process, the audiogram and a review of the auditory and visual nature of speech.
4. Counselling.
5. Teaching communication strategies.

Holistic Evaluation

The AR process begins at the diagnostic evaluation. As hearing impairment in the elderly is not a single disorder, Kricos and Lerner, have developed an holistic assessment mode, including the following aspects:³





Explaining the function of the ear

Photo: Ieda Russo

1. **Physical:** visual status; dexterity, fine motor skills and general health.
2. **Psychosocial:** mental, motivation, attitude and depression, lifestyle and habits; hearing disability, using the Hearing Handicap Inventory for the Elderly (HHIE – S), developed by Ventry and Weinstein.⁴
3. **Audiological evaluation:** pure tone audiometry; speech audiometry; immitance audiometry and *in situ* measurements.
4. **Communication:** auditory/visual speech reception and conversational fluency.

Hearing Aid Fitting and Orientation

'In-The-Ear' is commonly the easiest hearing aid model to turn on and off and to insert and remove. Directional microphones and binaural hearing aids are used in order to improve speech recognition in noise. We also consider the use of telephone amplifiers and assistive listening devices (ALDs). Instruction in the use and care of hearing instruments – to instil realistic expectations about the limitations and benefits should be provided. A hearing aid trial period must be offered to the patient, before the decision to buy the instruments. This should begin with a review of the client's device management skills, practising insertion, removal and manipulation of the hearing aid.⁴

Counselling

Counselling is the gathering of data through careful listening, the conveying of information, and the making of adjustments in one's strategies based on that

knowledge. It promotes independence, improves the performance in daily life activities, making easier the acceptance of a hearing loss and encourages effective hearing aid use, based on trust. Counselling is based on a short-term well-being model, without a need for reorganisation or

reinterpretation of personality. It aims to increase the well-being of individuals - to help them in solving problems; stimulate and motivate them to succeed well in rehabilitation; improve self-image and increase social interaction. Further, it helps patients and their families make practical changes in their lives, helping them to develop a more positive approach to their own disabilities, and providing information about technological assistance available to help them with the residual communication difficulties they may still experience. The main advantage of counselling is to develop a structure for continuing education related to new technologies and products as well as to preparing patients to be responsible for their own hearing care.^{5,6}

Auditory and Visual Nature of Speech

The content should address the following topics:

1. The human ear and the hearing process.
2. Nature and the consequences of a hearing loss.
3. Audiogram explanation, especially in terms of familiar sounds and speech perception.
4. Variables influencing speech perception: the speaker, the environment and the listener.
5. Active listening training to recognise the meaning of the message itself, rather than individual sounds.
6. Teaching communication strategies.

In order to improve communication strategies, it is essential to have family members, friends and significant others. The communication model must include repair strategies such as, repeat, rephrase, summarise or simplify, gesture, confirmation, and listening strategies.

Conclusion

I started working with the AR programme in 1990, which increased my patient's satisfaction, and I would like to emphasise the main qualities the audiologist must have in order to succeed well with the elderly patient. The first one is to have a genuine respect for older people, as well as a deep sense of care for the elderly. The second is to know how to listen and how to accept the feelings that they may express. Another is the ability to encourage older people to challenge many myths about old age. A combination of art and science is needed to provide the older person with the best quality of life and communication. Realise that old people are just little boys and girls who have lived a little bit more!

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AUDIOLOGY SERVICES IN CAMBODIA

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Cambodia still lacks adequate medical services to cope with the needs of its people and remains one of the poorest, most disease-troubled nations on earth. Government infrastructure is deficient, unable to provide high quality, high volume health care services in view of the magnitude of health problems. Auditory rehabilitation in Cambodia receives little or no attention within Government departments. Lack of political support, together with a scarcity of resources (skills, training, services and finances) at almost every level within Cambodia has thus resulted in the population with

hearing impairment (HI) and ear disease being very much neglected.

Common Ear Problems

Ear problems are certainly not unusual within the Khmer population. Common disorders include diffuse otitis externa, fungal infections, chronic middle ear disease, prelingual and presbycusis hearing losses, and a noticeably high degree of inner ear damage through communicable disease and ototoxic agents, often from drugs used to fight TB and malaria.

Noise and Hearing Impairment

Workplace and recreational noise are also increasing risk factors for HI in Cambodia.

Legislation and programmes to prevent critical exposure to occupational noise are barely in existence, and if so are usually poorly enforced and implemented, many workers remaining ignorant of the problem. Typical non-occupational sources of noise include chain saw and other power tools, firearms, amplified music, and motorcycles. Indeed, without adequate hearing protection, noise induced hearing loss can be expected to add significantly to the burden of disability, and accordingly should demand higher public health priority.

Hearing Aids

The present cost of appropriate hearing aids is prohibitive for the majority of the Khmer people. In addition to the shortages and high prices, there is a huge lack of services to fit hearing aids and ear moulds correctly and very few trained personnel. In Cambodia, as in many parts of the developing world, strategies for the procurement and



History taking in Kampong Chhnang

Photo: All Ears Cambodia

distribution of hearing aids are required and should be formulated as national policy.

Preah Ang Duong Hospital and Specialist Health Care

The only Hospital in the country with specialist services for diseases of the ear is Preah Ang Duong Hospital in the capital, Phnom Penh. For now, and as part of the drive to improve the accessibility and quality of service for those suffering from HI, Preah Ang Duong Hospital has, through external donations, been equipped with the necessary technology to detect and treat hearing loss. As well as hearing aids, batteries and diagnostic instruments, other key additions to the audiology unit there, include a sound-treated booth and a basic ear mould laboratory. It is proving an invaluable service, and provides a level of health care otherwise unaffordable to local communities.

Unfortunately, population demographics in Cambodia are such that accessibility to most specialist health services remain a critical problem. Predominantly rural with one of the lowest population densities in Asia, only a minority of the Khmer population is urbanised (~18% of a total population of 13.8 million), the majority



Ear examination in Kampong Chhnang

Photo: All Ears Cambodia



Aural cleaning in Kampong Chhnang

Photo: All Ears Cambodia

living in scattered villages. Infrastructure is poor and transportation for many inadequate, impractical or unaffordable. Clearly, methods are required to target those with HI at provincial and sub-provincial levels.

All Ears Cambodia

All Ears Cambodia is a relatively new, non-profit, local NGO operating out of Phnom Penh. It investigates and makes known the causes, extent and consequences of HI in Cambodia, to promote, support and engage in measures designed to prevent, reduce or remedy the diseases, conditions and causes which produce HI, and to conserve hearing. It also promotes and supports the activities of other organisations concerned with HI, supporting such projects in the achievement of its objectives. Moreover, it endeavours to advance scientific and professional disciplines concerned with the prevention/treatment of HI, promotes research and encourages multidisciplinary cooperation.

Since its inception in 2003, it has established an audiology clinic at the All Ears Cambodia office in Phnom Penh, to provide full diagnostic audiological services, including oto-acoustic emissions (OAE) and brain stem evoked response (BSER) audiometry on Khmer infants. The unit also has all the necessary equipment for a comprehensive rehabilitation service including an on-site ear mould laboratory. It also provides expertise and training within the audiology unit at Preah Ang Duong Hospital, during the daily clinics run in conjunction with the ENT Outpatients' Department.

Outreach services are integral to the work. Presently, the NGO provides primary ear and hearing care (PEHC) and audiological rehabilitative services for target groups in the provinces of Kampong Chhnang and Pursat. This is a project implemented in collaboration with three local NGOs as implementing partners: Landmine Disability Support (LMDS), the Cambodia Trust, and

Disability Development Services Pursat (DDSP).

The programme was established not only to provide audiological services but also to develop a sustainable service delivery model. Objectives set, not only relate to direct service provision, training and empowerment of families and other community role-players, but also the development of broader public awareness and promotion of referrals and networking in the field of HI and deafness.

Preventive Education and Training

Preventive educational measures at the community level are being established in order to promote a reduction in ear and hearing disorders. Basic training in PEHC is providing a service that offers people the opportunity of receiving care for their ears. Prevention of ear problems begins with knowledge. It enables people to become more aware of how their ears

work, how to prevent problems and how to recognise initial signs of recurrence. The work is being used to train health and educational personnel to understand and identify ear and hearing problems, and also give advice on how to prevent these problems. PEHC is a service which is relatively easy to provide, enabling people to be treated locally which ultimately reduces referrals to hospital-based medical workers.

Equally, knowledge of HI is important, with understanding of the effects the impairment (psychological, social and educational) and the possible non-medical means of alleviating these problems. For example, there are a considerable number of people identified as having only slight hearing loss. These cases may not require hearing aids, as they often do not benefit from them. Nevertheless, these people may still suffer from the social and psychological effects of poor hearing and in cases of children, may still be at risk both in terms of language development and educational progress. In these cases, teachers and parents who have this knowledge form some appreciation of the nature of the child's problems and this may help to reduce these risks.

Education and Human Resources

Emphasis is placed on appropriate education and human resource development at the community level. PEHC programmes should be focused on local action and self-reliance for the prevention of ear disease. They are highly cost-effective ways of reducing or eliminating

long-term morbidity and mortality caused by ear disease. The use of PEHC skills benefits the general health care system, improves the quality of treatment, and ultimately the quality of life of those people with ear disease and HI.

This provision of human and material resources to current hearing outreach programmes includes the quarterly



Hearing aid fitting in Kampong Chhnang

Photo: All Ears Cambodia

ear surgery camps in Battambang province, run by a local/international NGO consortium. Middle ear ablative and reconstructive surgery on Khmer children is conducted, and an ear outpatient clinic and rehabilitative service are run in conjunction with the theatre-based procedures.

Opportunities for income generation to sustain these operations outside of Phnom Penh have been sought. For example, the provision of screening of hearing for primary school children at private schools within Phnom Penh. A multi-tiered cost recovery system has also been implemented through its hearing aid delivery service conducted at Preah Ang Duong Hospital.

Clearly, the development of human resources is a fundamental pre-requisite for the development of these services. Accordingly, appropriate training has been given to two Khmer nationals, by resident and visiting specialist consultants. All Ears Cambodia has also provided training for PEHC staff working for other NGOs. There has been the development of training and teaching materials towards the provision of PEHC education and secondary/tertiary lines of treatment of HI and ear disease. This health-orientated education project is conducted at outreach level and aimed at health field staff, teachers, parents of hearing impaired children, and local communities.



Mastoid surgery in Preah Ang Duong Hospital, Phnom Penh

Photo: All Ears Cambodia

The Immediate Future: Services, Database and Research

Objectives for the immediate future include the continuance and development of audiological services for children and adults with HI in areas with inadequate resources. The creation of a database will provide information regarding prevalence and incidence of hearing loss and ear disease in Cambodia for the purpose of epidemiological research. There is an urgent need to develop the early intervention programme whereby infants/neonates with HI can be identified as soon as possible and appropriate steps taken. Advocacy for the support and training of audiology students at All Ears Cambodia - to address the problems of the lack of skilled personnel will continue, as will the provision of services at the All Ears Cambodia clinic and at Preah Ang Duong Hospital.

The Long-term Future: Provincial Services, Education, Public Awareness and Evaluation

More long-term objectives are concerned with the expansion and development of services outside of Phnom Penh by duplicating a sustainable model in service delivery in the remaining provinces. The drive towards the empowerment of those with hearing loss, families of hearing impaired persons, education of other professionals regarding hearing loss, and increased public awareness regarding HI and deafness should continue. The epidemiological database, will contribute significantly to the development and critical evaluation of programmes undertaken. Moreover, the need to conduct formal evaluations is considered imperative to the planning, organisation and implementation of future rehabilitation programmes.



Girl with polio undergoes pure tone audiometry (PTA) in Kandal

Photo: All Ears Cambodia

Ministry of Health: Referrals, Networking and National Committee

It is also imperative to develop and promote referrals and networking in this field. There is need for collaboration with key Government sectors and NGOs currently operating within the field of general disability, in particular close liaison with the Ministry of Health at all levels. This will prove critical in the implementation and acceptance of a national programme. Implementation could occur within the existing infrastructure, with services delivered at established primary/secondary health care sites and within referral channels determined by the relevant local partners and authorities. The aim would be to ensure that the project has a broader long-term impact in the delivery of aural rehabilitation - to ensure maximum community participation as well as the appropriate use of technologies. There shall also be a measured advocacy for collaboration between these governmental and non-governmental bodies to establish a National Committee, with consequent appropriate initiatives. □

INTERNET RESOURCES

<http://www.medbioworld.com/med/med-shortcuts.html>

Lists websites of medical journals sorted by specialty. The list of ENT/Otolaryngology contains 61 Journals.

www.pubmed.com

PubMed, a service of the National Library of Medicine, includes over 15 million citations for biomedical articles back to the 1950s. These citations are from MEDLINE and additional life science journals. PubMed includes links to many sites providing full text articles and other related resources.

<http://www.entlink.net/education/cool/>

Clinical Otolaryngology OnLine. COOL modules are interactive case studies in which the learner is presented with a medical scenario and guided through the evaluation and treatment options based on established medical practice. The target audience for these continuing education modules are the non-otolaryngologist physician and other health professionals seeking an understanding of commonly seen ENT complaints. Increasingly, COOL has been used by residents and medical students. One of the modules is on: Management of Recurrent Acute Otitis Media.

www.deafnessatbirth.org.uk

Deafness@birth is a training and information resource for professionals who work with deaf babies and families. The website was developed in response to the introduction in the UK of the Newborn Hearing Screening Programme (NHSP), which is expected to identify deafness at a much younger age than was previously possible. NHSP will lower

the median age of identification of congenital deafness from 20 months to three months. This website is designed to help professionals to work effectively with babies and toddlers under two – and with their families. Currently there is little training available in this area, as practice with very young babies and their families is still developing. Early diagnosis gives families the opportunity to take positive action on behalf of their child before language and communication deficit builds up. It enables families and professionals to work together to support the child's development and to plan for his or her future.

<http://www.aud.org.uk/>

The website contains many audiology resources including: news, events, fun-stuff, educational information, links, and an online Audiology Discussions forum. The website is non commercial / not-for-profit. It is intended for professionals working in audiology and associated fields. Through the forum, the website hopes to become a useful online international audiology community. Other content includes: audiology news, educational resources, lists of audiology degree courses, information on audiology events, meetings, organisations, and details of specialist institutions / centres, as well as other matters related to deafness, hearing and balance.

www.cochlea.org

This excellent website for teaching purposes is produced by Professor Reme Pujol from Montpellier. The aim of this regularly updated site is to assist in the teaching of the anatomy, physiology and pathophysiology of the auditory system.

Abstract

Management of an 'Ear Camp' for children in Namibia

Lehnerdt G, van Delden A, Lautermann J

Objective: In this publication, we present our experiences with managing an 'Ear Camp' in northern Namibia, where the population is predominantly black. Medical coverage for ear problems is poor in this part of the country.

Methods: Within 10 days, 38 children (median age 12 years) were operated mainly for (sub) total defects of the tympanic membrane. In two cases, an open cavity had to be created because of a cholesteatoma. We performed a tympanoplasty type I in 18 cases and a tympanoplasty type III in 20 cases. Additionally, in 8 cases an antrotomy and in another

8 cases a mastoidectomy was performed. The ossicular chain was reconstructed with a titanium-PORP (14 cases), a titanium-TORP, interposition of the head of the malleus or a cartilage columella (one case each) or by placing the reconstructed tympanic membrane directly onto the head of the stapes (three cases). The tympanic membrane was reconstructed by the use of tragal cartilage with overlapping perichondrium in underlay-technique.

Results: Thirty-one children could be followed up. A defect of the tympanic membrane was found in five cases because of continuous purulent discharge. The average improvement of air conduction

thresholds in the frequencies between 250 and 4000Hz was 15dB.

Conclusions: Surgical techniques, antibiotic treatment and perioperative management have to be adapted to limited possibilities of pre-treatment and after-care. As development aid should support people to look after themselves, we started to instruct local doctors with regard to pre- and postoperative care in ear surgery. Training of the local doctors will be continued in our next 'Ear Camp' in 2004.

Published courtesy of:

Int J Pediatr Otorhinolaryngol. 2005; **69**(5): 663-668

Chronic suppurative otitis media in school pupils in Nigeria

Ologe FE, Nwawolo CC

Objective: To compare the prevalence of chronic suppurative otitis media (CSOM) among two populations of school children.

Design: A survey-demographic data collection and otoscopy was carried out among the two populations of school children.

Setting: A rural government primary school and an urban private primary school.

Subjects: Six hundred and ninety-nine school pupils in the rural school and two hundred and seventy pupils in the urban school.

Results: Six per cent of the pupils in the

rural schools had CSOM as evidenced by persistent perforation of tympanic membrane of more than three months duration. No tympanic membrane perforations were observed in the children in the urban school at the time of this study. The difference in the prevalence of CSOM between the two populations is statistically significant ($P < 0.001$). The difference in socio-economic status between the two populations is statistically significant in relation to the prevalence of CSOM in the two populations. The poorer rural population had a significantly higher prevalence of CSOM ($P < 0.001$).

Conclusion: The two study populations are just seven kilometres apart geograph-

ically but there is a world of difference in their socio-economic status, availability of social infrastructure and health facilities. This presumably had reflected in the marked difference in the prevalence of CSOM between the two study populations. A collective effort of government and well meaning indigenes of rural communities in Nigeria can help promote the socio-economic status and enhance the availability of social infrastructure and health facilities of rural areas. This we hope will lead to a decline in the prevalence of CSOM in the rural areas.

Published courtesy of:

East Afr Med J. 2003; **80**(3): 130-134

Bacteriology of chronic suppurative otitis media in Congolese children

Nyembue DT, Tshiswaka JM, Sabue MJ, Muyunga CK

Aim: The study intended to identify bacteria active in the chronic suppurative otitis media and to determine their sensitivity to current antibiotics.

Methods: After clinical evaluation, middle-ear secretions were taken for bacteriological examination from 78 children meeting the inclusion criteria. All children with cholesteatoma and those with tumors occluding the ear canal were excluded.

Results: The most frequent isolated germs, in descending order of frequency, were as follows: *Proteus mirabilis* (23%), *Pseudomonas aeruginosa* (22%), *Citrobacter* (20%) and *Salmonella* (5%). There were no cases of mixed flora. Ofloxacin was susceptible on all isolates. Neomycin, gentamicin and polymyxin B were susceptible on 96%, 83% and 67% of the isolates respectively. All isolates were resistant to amoxycillin.

Conclusion: *Pseudomonas*, *Proteus* and *Citrobacter* are the most common causes

of chronic otitis media among children in our community of Congolese children. Ofloxacin and neomycin are the most highly effective against most of the isolated germs, and are therefore recommended as the first line local treatment. Amoxycillin and chloramphenicol should be avoided.

Published courtesy of:

Acta Otorhinolaryngol Belg. 2003; **57**(3): 205-208

Congenital rubella syndrome burden in Morocco: a rapid retrospective assessment

Bloom S, Rguig A, Berraho A, Zniber L, Bouazzaoui N, Zaghloul Z, Reef S, Zidouh A, Papania M, Seward J.

Background: WHO recommends that countries considering introduction of rubella vaccine into their immunisation programme assess their burden of congenital rubella syndrome, to determine whether vaccination is warranted. However, few guidelines exist for such assessments in developing countries. We retrospectively estimated the burden of congenital rubella syndrome in Morocco, and assessed our methods of rapid case finding.

Methods: We undertook case finding in

the two cities with Morocco's main tertiary care referral centres, using medical records from births between Jan 1, 1990, and May 31, 2002, disability records from 1965 to 1997, and retinal examinations from deaf students born between 1985 and 1994, applying the WHO definition for a clinically confirmed case of congenital rubella syndrome. We also reviewed disability data for evidence of epidemic periodicity and estimated yearly incidence of the syndrome from congenital cataract data for births between 1990 and 2001.

Findings: We identified 62 clinically confirmed cases of congenital rubella syndrome from medical records, 148 from disability records, and 15 in deaf stu-

dents. We noted no epidemic periodicity in disability data, and estimated a yearly incidence of the syndrome in Morocco of 8.1-12.7 cases per 100,000 livebirths.

Interpretation: We show evidence of congenital rubella syndrome in Morocco and support the addition of rubella vaccination to the national programme. Various data sources can be explored to rapidly assess burden of the syndrome; ophthalmology departments and outpatient cardiology clinics could offer the most potential for such case finding, dependent on documentation practices.

Published courtesy of:

Lancet. 2005; **365**(9454):135-141

Clinical trial of a low-cost, solar-powered hearing aid

Parving A, Christensen B

Objective: In July 2001 the World Health Organization (WHO) launched their 'Guidelines for hearing aids and services for developing countries'. The objective of this study was to evaluate the clinical outcome of an analogue, low-cost, behind-the-ear hearing aid (BTE-HA) that met the minimum technical requirements outlined by the WHO.

Material and Methods: A total of 25 subjects (17 males, 8 females; median age 74 years; range 50-86 years) were recruited among patients referred for audiological evaluation who consented to participate in the trial. All subjects had a hearing loss of ≤ 60 dB HL at 2 kHz, were mobile and mentally unimpaired; 13 were experienced users of HAs, 3 suffered from mixed conductive/sensorineural hearing impairment (HI) and the remainder had pure sensorineural HI. Based on pure-

tone, speech and impedance audiometry the BTE-HAs were fitted, using the National Acoustic Laboratories-R (NAL-R) prescription rule, 21 binaurally and 4 monaurally. All fittings were validated by insertion gain measurements, and the immediate benefit was measured by means of the speech recognition score in background noise (SRSN; signal:noise ratio = 10 dB) without and with the HA. After a 6-week trial period a structured interview based on the International Outcome Inventory for Hearing Aids (IOI-HAs) was performed.

Results: The results showed that the amplification of the HA deviated significantly from the NAL-R target at all frequencies, giving significantly more amplification at 500 and 1000 Hz despite maximum bass-cut, whenever relevant, and significantly less amplification as required at 2, 3 and 4 kHz. The median

SRSN without HA was 48% (range 0-96%), which improved significantly to 80% (range 24-100%) with HA. The median individual difference in SRSN without and with HA was 20% (range 0-72%). The total IOI-HA score with the test HA was 4.1 (range 2.6-4.6), showing that it offered subjectively high satisfaction and reduction in limitations of activity.

Conclusions: The low-cost HA: (i) provides benefit to the hearing-impaired person; (ii) offers poor amplification in the high frequencies; and (iii) gives subjective satisfaction similar to that for modern available HAs.

Published courtesy of:

Acta Otolaryngol. 2004; **124**(4): 416-420

Is there any association between consanguinity and hearing loss

Bener A, Eihakeem AA, Abdulhadi K

Background: Hearing loss (HL) and its complications appear to be increasingly common in developing countries. Previous studies have supported the association between hearing loss and consanguinity.

Objective: The aim of the present study was to determine the frequency of hearing loss and its association with consanguinity among a Qatari population. In addition, correlation between hearing loss and Rhesus (Rh) blood groups has been investigated.

Design: This is a cross-sectional study.

Setting: The study was conducted at the Hamad General Hospital, Hamad Medical Corporation.

Subjects: Total sample of 2800 infants screened and 2277 subjects were eligible to be included in the study.

Methods: The neonatal screening for hearing loss was conducted from January 2003 to November 2003 among all the 2800 infants born during that period.

Some of them were admitted to a neonatal intensive care unit (NICU). The hearing loss was screened using otoacoustic emission (Garson Stadler Incorporation, GSI-70), auditory brain stem responses (ABR) and tympanogram.

Results: Out of 2277 infants screened, the prevalence of hearing loss was (119/2277) 5.2%. The prevalence of HL was more common in boys (2.7%) than in girls (2.5%). We did not find any statistical significant differences between genders with the respect of HL. Parental consanguinity was more common among HL cases compared with non-HL 60.5% versus 25.3% ($p < 0.0001$). Family history of hearing loss did not show any differences between the two groups. 4.2% versus 4.3%. Risk factors like caesarean section, prenatal smoking and prenatal high blood pressure did not show any significant differences between the two groups. However, admission to NICU is associated with increase prevalence of HL, 8.4% versus 4.4% ($p = 0.043$). The present study revealed that strong correlation

between hearing loss, consanguineous ($r = 0.217$, $p < 0.01$), father education level illiterate ($r = 0.293$, $p < 0.01$), mothers consanguineous ($r = 0.206$, $p < 0.01$), mothers educational level illiterate ($r = 0.228$, $p < 0.01$), mother blood group positive ($r = 0.476$, $p < 0.01$), family history of HL among first or second degree of relatives ($r = 0.620$, $p < 0.01$) and father hypertension ($r = 0.570$, $p < 0.01$). Furthermore, a significant correlation between hearing loss and Rh blood groups has been discovered.

Conclusion: The present study was directed at determining the prevalence and risk factors of HL in the infant population of Qatar. The data revealed that parental consanguinity was more common among hearing loss cases. There is a strong correlation between hearing loss and the baby's age.

Published courtesy of:

Int J Pediatr Otorhinolaryngol. 2005; **69**(3): 327-333

Self-reported outcomes of aural rehabilitation in a developing country

Olusanya B

The aim of this study was to evaluate self-reported outcomes among hearing aid users (age 16-89 years; mean 45.8 years) to determine the effectiveness of aural rehabilitation in Nigeria based on the International Outcome Inventory for Hearing Aids (IOI-HA). The responses were evaluated with descriptive statistics, factor analysis of the principal components and multiple regressions. Most respondents reported favorable out-

comes in all domains of the inventory, comprising: daily use (mean 4.1; SD 1.2), benefits (mean 3.5; SD 1.1), residual activity limitation (mean 3.4; SD 1.2), satisfaction (mean 3.7; SD 1.2), residual participation restriction (mean 3.5; SD 1.3), impact on others (mean 3.4; SD 1.3) and changes in quality of life (mean 3.8; SD 1.0). The mean score distribution compared favorably with those reported in the developed world. There were significant intercorrelations among all items, and two factors (eigenvalue>1)

accounted for 68% of the underlying variance. Impact on others was the only domain associated with demographic/audiologic variables. The study showed that aural rehabilitation is feasible and effective in enhancing activity and participation for the hearing impaired in a developing country.

Published courtesy of:

Int J Audiol. 2004; **43**(10): 563-571

Type I tympanoplasty in Benin: a 10-Year review

Ogisi FO, Adobamen P

A review of type 1 tympanoplasty operations (myringoplasty) done on thirty (30) ears in the University of Benin Teaching Hospital, Benin City, (UBTH) during a ten - year period was carried out. The patients were aged 21 to 69 years, and consisted of 21 males and 9 females. 15 (50%) of the ears had medium to large sized central perforations whilst 13 (43.3 %) were subtotal perforations. Two cases (6.6%) had marginal perforations. The

overall success rate in terms of full graft take was 66.6%, whilst 32.3 % had partial take of the graft. Post operative audiograms showed improvement in hearing in 77% of those cases for which records were available. However, long term outcome both for graft take and hearing improvement was impossible to establish due to poor follow-up compliance in the majority of patients. Although there are many cases of chronic suppurative otitis media (CSOM) with resultant persistent tympanic (TM) perforation and

concomitant hearing defect in the community, the reluctance or inability of patients to have reconstructive ear surgery, relative lack of the facilities for the operation in our hospitals and poor follow-up compliance amongst our patients are some of the identifiable problems related to this otherwise worthwhile procedure.

Published courtesy of:

Niger Postgrad Med J. 2004; **11**(2): 84-87

Predictors of hearing loss in school entrants in a developing country

Olusanya BO, Okolo AA, Aderemi AA

Background: Hearing loss is a prevalent and significant disability that impairs functional development and educational attainment of school children in developing countries. Lack of a simple and practical screening protocol often deters routine and systematic hearing screening at school entry.

Aim: To identify predictors of hearing loss for a practical screening model in school-aged children.

Settings and Design: Community-based, retrospective case-control study of school entrants in an inner city.

Methods: Results from the audiologic and non-audiologic examination of 50 hearing impaired children in randomly selected mainstream schools were com-

pared with those of a control group of 150 normal hearing children, matched for age and sex from the same population. The non-audiologic evaluation consisted of medical history, general physical examination, anthropometry, motor skills, intelligence and visual acuity while the audiologic assessment consisted of otoscopy, audiometry and tympanometry.

Statistical Analysis: Multiple logistic regression analysis of significant variables derived from univariate analysis incorporating student t-test and chi-square.

Results: Besides parental literacy (OR:0.3; 95% CI:0.16-0.68), non-audiologic variables showed no association with hearing loss. In contrast, most audiologic indicators, enlarged nasal turbinate (OR:3.3; 95% CI:0.98-11.31), debris or

foreign bodies in the ear canal (OR:5.4; 95% CI:1.0-36.03), impacted cerumen (OR:6.2; 95% CI:2.12-14.33), dull tympanic membrane (OR:2.2; 95% CI:1.10-4.46), perforated ear drum (OR:24.3; 95% CI:2.93-1100.17) and otitis media with effusion OME (OR:14.2; 95% CI:6.22-33.09), were associated with hearing loss. However, only parental literacy (OR:0.3; 95% CI:0.16-0.69), impacted cerumen (OR:4.0; 95% CI:1.66-9.43) and OME (OR:11.0; 95% CI:4.74-25.62) emerged as predictors.

Conclusion: Selective screening based on the identification of impacted cerumen and OME will facilitate the detection of a significant proportion of hearing impaired school entrants.

Published courtesy of:

J Postgrad Med. 2004; **50**(3): 173-178

COMMUNITY EAR AND HEARING HEALTH

2005; 2:1-16 Issue No. 2

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Printed by

The Heyford Press Ltd
ISSN 1743-9914

Childhood deafness poses problems in developing countries

Olusanya BO, Luxon LM, Wirz SL

Childhood deafness is an important disorder globally affecting more than 62 million children younger than 15 years. Two thirds reside in developing countries. Although many studies have been reported on the aetiology of deafness, the age/mode of detection and intervention in many developing countries is unknown.

Our questionnaire based study of 363 parents of children attending the only public schools for the deaf in Lagos, Nigeria, with a total enrolment of 429, showed that parents were predominantly (81%) the first to suspect or detect hearing difficulty in their children. Parental suspicion occurred mostly at 12-24 months, compared with 8-14 months in developed countries. Only 12% suspected hearing difficulty by age 6 months. The commonest mode of detection was a child's failure to respond to sound (49%). Speech/language defects or unintelligible speech were least associated with hearing difficulty (1%). As in developed countries, doctors were most commonly consulted for help (77%). However, most children (80%) were not provided with hearing aids even

where appropriate, granted that cochlear implantation was improbable. Parents were often told that their children were 'slow starters' and would outgrow the speech delays, only to be enrolled in schools for the deaf when this optimism failed. Ironically, only 6% were so enrolled by age 6 years (mean age of enrolment 10.3 years). This protracted delay especially for the 363 hearing parents may be indicative of their preference for spoken rather than sign language after initial denial and grief.

Screening the hearing of newborn babies allows prompt detection of congenital and early onset deafness, for optimal development of speech and language development. Until such a programme becomes available, doctors should follow the lead from parental suspicion especially as part of ongoing surveillance to detect children with late onset deafness. The World Health Organization's current initiatives for affordable hearing aids and support services in developing countries should encourage the development of auditory-verbal intervention services.

Published courtesy of:

BMJ 2005; 330:480-481



Visually impaired orphan with severe sensorineural hearing loss at the 'All Ears Cambodia' Clinic in Phnom Penh

Photo: All Ears Cambodia

COMMUNITY EAR AND HEARING HEALTH

Aim

- To promote ear and hearing health in developing countries

Objectives

- To facilitate continuing education for all levels of health worker, particularly in developing countries
- To provide a forum for the exchange of ideas, experience and information in order to encourage improvements in the delivery of ear and hearing health care and rehabilitation.

Guidelines for Authors

Please see Issue No. 1 (2004).

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