

## **SOLOMON ISLANDS SCHOOL EAR AND HEARING PROGRAM: PROCEDURES AND PROTOCOL MANUAL**

### **INTRODUCTION**

The World Health Organization recommends that School Hearing Screening Programs should be implemented in all member states (WHO, 2016, 2017). Early identification and intervention for children with hearing loss should reduce the well-known adverse effects of hearing loss on childhood development and social well-being. The Sustainable Development Goal Project offers an opportunity for the implementation of School Ear and Hearing Programs in the Pacific Islands.

In 2016-2017, the National Referral Hospital (NRH) Ear Nose and Throat (ENT) Clinic of the Solomon Islands collaborated with the University of Queensland Audiology Division in Australia in a research project to investigate community-based outreach programs for children with ear disease and hearing loss (Kaspar, Kei, Driscoll, Swanepoel, & Goulios, 2016). The first study examined parental knowledge and attitudes to childhood hearing loss and hearing services: the results showed that 94% of parents were aware of ear disease as a major cause of hearing loss in children, and that 99.3% of parents would support school-based ear and hearing programs (Kaspar et al., 2017). A second study was therefore conducted to investigate the possibility of a School Ear and Hearing Program for primary schools in Honiara. The NRH ENT Clinic team visited two primary schools in Honiara over March-July 2017, and assessed 621 primary school students. Results showed that 56.6% of students did not pass their ear examination, and that 81.14% of these students attended the NRH ENT Clinic for review and treatment of their condition (Kaspar et al., In Press).

Based on the evidence of the two studies described above, it is recommended that the NRH ENT Clinic implement a School Ear and Hearing Program in Honiara. Ear disease is significant among primary school students, and there is excellent support and engagement with the NRH ENT Clinic service to treat and manage identified ear disease. The program requires at least one staff member of the ENT Clinic to assume the role of Program Manager, and perform regular outreach visits to primary schools in Honiara. The present protocol was written as a preliminary School Ear and Hearing Program for the NRH ENT Clinic, and should be considered a first step towards School Hearing Screening programs as described by the World Health Organization. The present protocol should provide a good foundation for future program developments as resources permit.

### **AIMS/OBJECTIVES**

The aim of the present document is to provide a guide to the implementation of a School Ear and Hearing Program for the NRH ENT Clinic of the Solomon Islands. It is divided into three sections:

- Section 1: Planning and preparation for ENT Clinic outreach visits to primary schools in Honiara
- Section 2: Work Flow and Assessment Procedures for ENT Clinic outreach visits to primary schools in Honiara
- Section 3: Recording and reporting of ENT Clinic outreach visits to primary schools in Honiara

The present document may also be adapted by other healthcare services in developing countries wishing to reduce the burden of ear disease and associated hearing loss among children in their communities. It is suitable for settings where (1) there is existing infrastructure and support for school-based health checks, and (2) formal/sophisticated audiology services are non-existent, limited, or evolving.

## **SECTION 1: PLANNING AND PREPARATION FOR ENT CLINIC OUTREACH VISITS TO PRIMARY SCHOOLS IN HONIARA**

### **Approval for the School Ear and Hearing Program**

The Head of the ENT Clinic will approach the NRH Management Committee for approval to implement the School Ear and Hearing Program as part of the routine ENT Clinic outreach service. Further approval for the program may be formally required from the Solomon Islands Ministry of Health and Medical Services, and the Solomon Islands Ministry of Education and Human Resource Development.

### **Personnel**

#### **(1) School Ear and Hearing Program Manager**

It is recommended that one of the senior ENT Clinic Registered Nurses be promoted to the role of School Ear and Hearing Program Manager. Their suitability for the role is based on their excellent clinical skills and management experience. Duties will include:

- Responsibility for overall logistics, administration, and management of the School Ear and Hearing Program,
- Liaison with the primary schools to arrange ENT Clinic visits,
- Perform clinical assessment of students during ENT Clinic visits to primary schools, and
- Training other NRH ENT Clinic Registered Nurses for participation in the School Ear and Hearing Program.

#### **(2) NRH ENT Clinic Registered Nurses**

At the discretion of the Head of the ENT Clinic, other ENT Clinic staff members may be trained to participate in the outreach visits to the primary schools. Ideally, all ENT Clinic Registered Nurses should be skilled to performed these outreach visits. To ensure feasibility and sustainability of the School Ear and Hearing Program, staff participation in the program should

cause minimum disruption to the staffing requirements of the daily operation of the ENT Clinic Outpatient service.

### (3) NRH Health Promotion Officer

Collaboration with the NRH Health Promotion Officer is highly encouraged. Ideally, the NRH Health Promotion Officer will accompany the School Ear and Hearing Program Manager on outreach visits, and provide ear and hearing health education to classrooms before/after their ear health check as suitable. Alternatively, the NRH Health Promotion Officer may organize a separate visit to give an ear and hearing health education talk during a school assembly. The NRH Health Promotion Officer may also be involved in developing appropriate ear and hearing health promotion materials (i.e., school posters).

### **Written Protocol and Procedures Manual**

A written protocol and procedures manual for the School Ear and Hearing Program should be included among the documents submitted to the NRH Management Committee for approval for the program. The present document was written to satisfy this requirement.

### **Logistics and Administration**

The School Ear and Hearing Program Manager is responsible for the overall logistics and administration of the program. The present document states the duties required.

### **Training of personnel**

For the School Ear and Hearing Program Manager, additional training may be required on program management skills such as data management, analysis, and reporting. The training may be provided by the Solomon Islander ENT Registered Nurse who participated in the School Ear and Hearing Program research study, and/or the Australian audiologist who facilitated the research study.

Should resources permit other ENT Clinic staff members to participate in the outreach visits, the Program Manager will provide training to ensure competence in the required clinical

assessments and administrative procedures. Ideally, a certificate to recognize additional skills should be awarded to staff members who successfully complete training.

The NRH Health Promotion Officer has previously collaborated with the NRH ENT Clinic for World Hearing Day health education activities. Training may be provided by the Program Manager to the Health Promotion Officer on the key ear and hearing health messages that are specific to primary school-age students and adolescents.

### **Equipment and consumables**

The Program Manager will require use of the NRH Outpatient (OPD) ENT Clinic staff computer for the planning, preparation, record-keeping and reporting stages of the program. Suitable arrangements should be negotiated with the Head of the ENT Clinic.

Consumables that are required prior to the day of outreach visits to primary schools are Parent Information and Consent Forms. An envelope for each form is desirable, as experience shows it keeps forms neat and tidy, and the same envelope can then be used to send the ear examination results safely back to parents.

Equipment and consumables that are required on the day of outreach visits to primary schools are:

- Vorotek. All ear examinations are to be performed using Vorotek equipment, as it is non-invasive and well-accepted by primary school students. The NRH ENT Clinic currently allocates one Vorotek to each ENT Registered Nurse, and the Program Manager and/or other staff member would use their allocated Vorotek equipment for primary school outreach visits. The use of Vorotek equipment for outreach visits should not impact the daily NRH ENT Clinic service, as sufficient numbers of Vorotek equipment remain at the NRH ENT Clinic for use by staff members.
- ENT Clinic Kit. This should include a tuning fork for Rinne and Weber tests, tool(s) for simple cerumen removal, a clean toilet paper for dry mopping of otorrhoea.
- Attendance Record Book. A dedicated Attendance Record Book for primary school visits is required. Each visit should record the location (primary school name) and the date.

Record-keeping should follow current NRH ENT clinic protocol: patient name, age, sex, diagnosis, and management plan. N.B. 'address' and 'caregiver contact details' may be omitted as ENT Clinic may contact the school if required.

- Laminated Work-flow Chart
- Folder with sufficient copies of "School Ear and Hearing Program Results Form" for parents
- Extra Parent Information and Consent Forms
- Pens

Please note that the Parent Information and Consent Form is one back-to-back A4 page to minimize the cost of consumables. Regular care and maintenance of Vorotek equipment is already included in the ENT Clinic budget.

### **Quality Control**

The School Ear and Hearing Program Manager is responsible for quality control of the program.

This includes, but is not limited to:

- Regular review of the present protocol and procedures manual, and implementing modifications as required,
- Regular performance review of other ENT Clinic staff members participating in primary school outreach visits, to ensure on-going skill and competence of all tasks, and to provide additional training and support if required,
- Meetings with primary school headmaster/headmistress to address any issues arising from the School Ear and Hearing Program, and to discuss areas for improvement, and
- Regular meetings with NRH Management Committee, to provide updates on the progress of the program.

### **Budget**

Staff salaries should reflect additional responsibility and skills of ENT Clinic Registered Nurses. Travel allowance should be included as part of the outreach service. For ENT Clinic staff members with own transport, an appropriate travel allowance may be negotiated.

The Parent Information and Consent Forms (+/- envelopes) are the only significant additional consumable cost beyond the routine NRH ENT Clinic service.

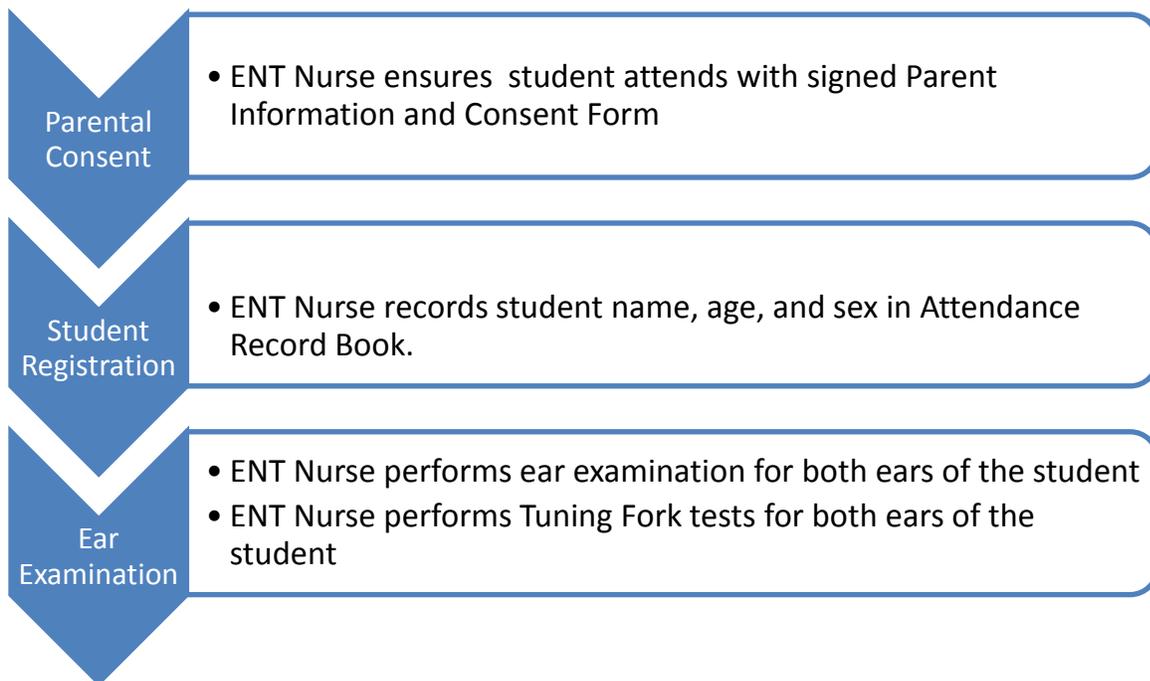
## SECTION 2: WORK FLOW AND ASSESSMENT PROCEDURES FOR ENT CLINIC OUTREACH VISITS TO PRIMARY SCHOOLS IN HONIARA

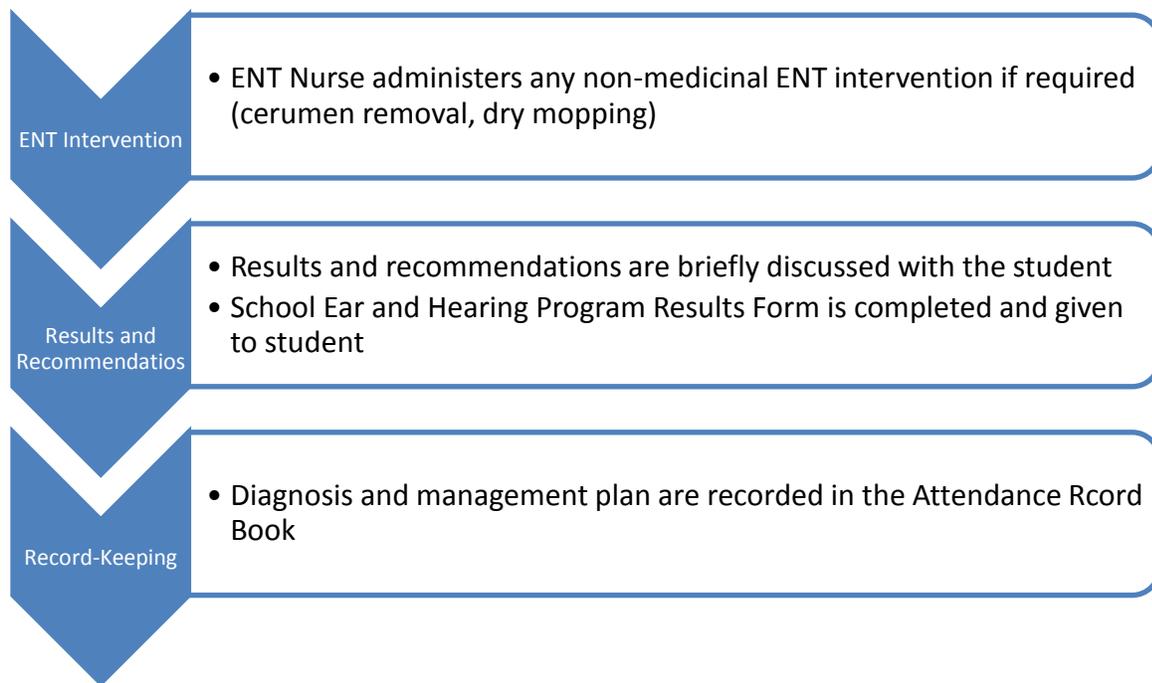
### Arrangements to be made prior to outreach visit

The School Ear and Hearing Program Manager will contact the Headmaster/Headmistress of the primary school that is scheduled for an outreach visit. A face-to-face meeting is required prior to the first outreach visit, in order to deliver Parent Information and Consent Forms, and to discuss optimal arrangements for the visit (ie., table/space allocation, order of class/students to be seen, etc...). A date will be confirmed with the Headmaster/Headmistress for the ENT Clinic outreach visit.

### Work Flow Chart

The following Work Flow Chart describes the procedures to be performed by the ENT Clinic staff member on the day of the outreach visit. The staff member is an ENT Clinic Registered Nurse, and may also be the School Ear and Hearing Program Manager in the initial stages of the program.





## **Assessment Procedure**

### ***Parental Consent***

The ENT Clinic Nurse will obtain the signed Parent Information and Consent Form from the student. ASSESSMENT CANNOT PROCEED IF PARENTAL CONSENT HAS NOT BEEN PROVIDED.

### ***Student Registration***

After calling the student and welcoming them for the ear/hearing assessment, the ENT Clinic Nurse will record the student name, age, and sex in the Attendance Record Book.

### ***Ear Examination***

The ENT Registered Nurse will perform an ear examination of both ears of the student, including inspection of the auricle, external ear canal, and tympanic membrane.

An overall diagnosis for each ear is made as per routine ENT Clinic protocols:

- No abnormalities detected: NAD

- Acute Otitis Media: AOM
- Chronic Suppurative Otitis Media: CSOM
- Dry Tympanic Membrane Perforation: Dry TM Perf
- Otitis Media with Effusion: OME
- Eustachian Tube Dysfunction: ETD
- Impacted Cerumen
- Foreign Body
- Fungal Otitis Externa
- Could not assess

The Rinne and Weber tuning fork tests will also be performed, and an overall diagnosis provided as per the routine ENT Clinic protocols.

### ***Non-medical ENT Intervention***

For students requiring non-medical ENT intervention, the ENT Clinic Nurse will perform the procedure (cerumen removal, dry mopping of otorrhoea) with the student's consent.

### ***Results and Recommendations***

The results and recommendations will be communicated to the student, and recorded on the School Ear and Hearing Program Examination Results Form.

- For students with normal ear examination and tuning fork test results for both ears, a "Pass" result is recorded.
- For students where successful cerumen/foreign body removal was performed, and no other abnormalities detected, a "Pass" result is recorded with the comment "earwax/foreign body removed".
- For students with ear pathology and/or reported hearing difficulties, a "Refer" result is recorded, and the student is scheduled for review at the NRH ENT Clinic on the following day. An additional comment should be provided regarding the nature of the ear pathology and reason for review (i.e., hard earwax needs removal, ear infection needs

medicine, etc...). Audiology assessment and/or ENT medical intervention will then be performed as per routine NRH ENT Clinic protocols.

***Record-keeping***

Student final diagnosis and management plan entered into the Attendance Record Book.

Routine abbreviations may be used.

***Health Promotion***

Should the NRH Health Promotion Officer be available to attend during the ENT Clinic outreach visit, ear and hearing health education may be provided to classrooms before/after their assessments as suitable. Alternatively, the NRH Health Promotion Officer may organize a separate visit to provide ear and hearing health education during a school assembly.

### SECTION 3: RECORDING AND REPORTING OF ENT CLINIC OUTREACH VISITS TO PRIMARY SCHOOLS IN HONIARA

#### Data entry

Following the primary school outreach visit, the Program Manager will transcribe information from the Attendance Record Book to an Excel spreadsheet. A separate spreadsheet for each visit is recommended: spreadsheets may then be combined, depending on reporting requirements (i.e., monthly/quarterly/annual, overall primary schools/specific primary school, etc...).

Additional columns are recommended for the Excel spreadsheet to facilitate ease of data analysis for demographic information, ear examination results for each ear, and management plan for each student. A suggested coding strategy is given in Table 1.

**Table 1. Coding Strategy for Infant Ear and Hearing Program**

Description	Code
Sex-Male	1
Sex-Female	2
Age Category – 4-9 years	1
Age Category- 10-15 years	2
Age Category – 15+	3
Ear Examination- NAD	1
Ear Examination – AOM	2
Ear examination – CSOM	3
Ear examination – Dry TM Perforation	4
Ear examination – OME	5
Ear examination – ETD	6
Ear examination – Impacted cerumen removed	7
Ear examination – Impacted cerumen could not be removed	8
Ear examination- Foreign body removed	9
Ear examination – Foreign body could not be removed	10
Ear examination – Fungal Otitis Externa	11
Ear examination – Other pathology	12
Ear examination – could not assess	13
Rhinne positive	1

Rhinne negative	2
Management plan – no further action	1
Management plan- no further action because non-medical procedure successfully performed at school	2
Management plan- referred to NRH ENT Clinic for review	3

## **Reporting**

The School Ear and Hearing Program Manager should discuss reporting requirements with the NRH Management Committee. A possible reporting schedule may include monthly/quarterly/annual reports of overall program.

An individual report for each primary school included in the program is also recommended, and should be sent to both the NRH Management Committee, and the Headmaster/Headmistress of the participating primary school.

The minimum information that should be included in each report is:

- Number of students assessed
- Number of male/female students
- Number of students with normal ear examinations for both ears
- Number of students with ear pathology in at least one ear
- Number of students referred to the NRH ENT Clinic for further review
- Number of students who attended their NRH ENT Clinic review

## **Health Promotion**

The School Ear and Hearing Program Manager should collaborate with the NRH Health Promotion Officer to draft press releases regarding the program. Press releases should highlight key messages regarding prevention, early detection, and early treatment for ear disease among children.

## REFERENCES

- Kaspar, A., Kei, J., Driscoll, C., Swanepoel, D. W., & Goulios, H. (2016). Overview of a public health approach to pediatric hearing impairment in the Pacific Islands. *International Journal of Pediatric Otorhinolaryngology*, *86*, 43-52.
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- WHO. (2016). World Hearing Day 2016 Retrieved 22/01/2016, from <http://www.who.int/pbd/deafness/news/WHD2016/en/>
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