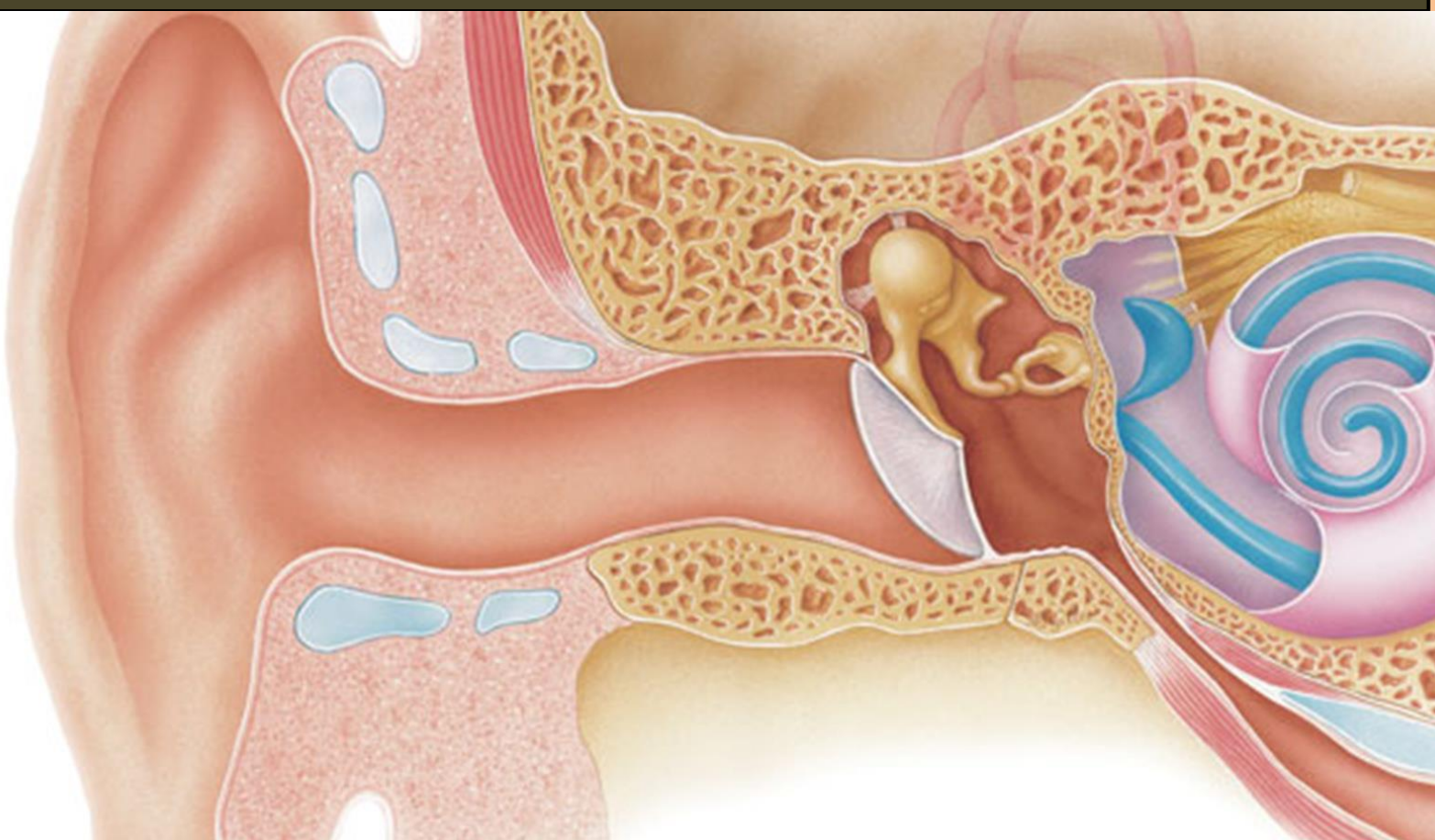


2019

# Clinical Guidelines

## Primary Ear Disease and Hearing Care in Fiji





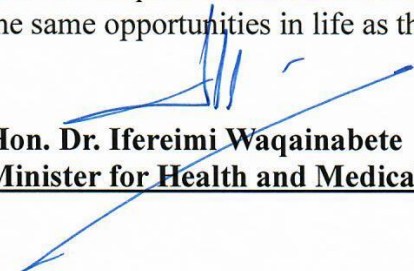
## **Preface**

Ear disease and Hearing loss can profoundly affect our people's lives, from early childhood and into adulthood, impacting on language development and their capacity to learn, gain employment and live rewarding lives. According to hearing and ear disease screening in Fiji, ear disease is 3–5 times greater than other Australasian countries. In children, chronic suppurative otitis media incidence of 6% and Otitis media with effusion of 20% is reported.

Universal health coverage (UHC) is our approach to ensure that all Fijians have access to health care. Progressing towards UHC for Fiji means meeting the health needs of the Fijian population, including the provision of effective and efficient services across the priority areas. Our Government is investing to close the gap for ear and hearing health. These efforts require a willingness to work together and a strong focus on outcomes for patients. At the centre of all of this work is the need to reduce the level of ear disease, as we continue to build on efforts to date. 'The clinical guidelines primary ear and hearing care in Fiji' provides a valuable resource for front line health workers who take care of 90% of ear disease and hearing problem in health centers and district hospitals.

Our decentralized services and outreach programme of the ENT specialists based out of CWMH consisting of Dr. Oh, Dr. Fane Lord and Dr Joji Vadidiwai is an important strategy in ensuring that these guidelines will create an impact in our service delivery.

We hope that every Fijian, in particular children, can access hearing, ear disease screening program quality ear clinic services and every health facility can provide quality primary ear and hearing care. We also hope that every child with a hearing loss will acquire communication skills, access quality education and will receive the same opportunities in life as their peers.

  
**Hon. Dr. Ifereimi Waqainabete**  
**Minister for Health and Medical Services**

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# PRIMARY EAR DISEASE AND HEARING CARE GUIDELINES FOR FIJI

Hearing impairment is 5<sup>th</sup> ranked contributor to global burden of disease and the burden is increasing. Around 360 million people are living with hearing loss which is considered disabling. There are more hearing and ear problems in Fiji compared to other countries. According to Pacific island countries hearing and ear disease prevalence estimation in 2015, around 80,000 Fijians, 9.6% of the population, is living with hearing impairment which is considered disabling and ear disease is 3–5 times greater than other Australasian countries. In children, chronic suppurative otitis media incidence of 6% and Otitis media with effusion of 20% is reported. The WHO considers a prevalence rate of chronic suppurative otitis media of a rate greater than 4% as a significant public health problem requiring urgent attention. The effect of up-to-32 months of hearing loss in childhood has a life-long impact on the child's speech and language development and subsequent educational and vocational outcomes. The current ear disease and hearing impairments rates of many times that in Fiji is a serious indictment of the poor accessibility and quality of primary ear disease and hearing care in primary health care level.

This Guideline is intended to address this urgent need in Fiji. It consists of clinical guideline of common outer ear disease, middle ear disease and hearing impairment managements in primary health care level for medical officers, nursing practitioners, IMCI nurses, MCH nurses and ear screening officers. It is hoped that the guideline will be helpful front-line health workers to manage ear disease and hearing impairments and contribute to primary health care, and hence start to make a substantial reduction in ear disease and hearing care burden in Fiji.

The MoHMS has facilitated primary ear disease and hearing care training in Fiji with "WHO Primary ear and hearing care training resource-intermediate level-"from 2017. Through over the 18 times training, the facilitators and participants have convinced the need of "primary ear disease and hearing care guideline in Fiji" for improving quality of primary ear and hearing care in primary health level. So, the training manual such as the "primary ear and hearing care training resource-intermediate level-"from WHO have become standard reference protocols for ear disease management. Also, this guideline is mainly referred from "Recommendations for Clinical Care Guidelines of the Management of Otitis Media: in Aboriginal and Torres Strait Islander Populations 2010" and "Aboriginal and Torres Strait Islander Ear Health Manual 2012". We are grateful to all authors of reference publications.

Hearing & Ear related problem is a big burden on a small islands. In particular, Fiji has a big burden of hearing loss and ear disease. But now, technology is available to detect hearing and ear problem and intervention is available. We hope that every Fijian, in particular children, can access hearing screening program and quality ear clinic services and every health facility can provide quality primary ear and hearing care. We also hope that every child with a hearing loss will acquire communication skills, access quality education and will receive the same opportunities in life as their peers.

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## Acknowledgement

This guideline was initiated by facilitators and participants of “Fiji primary ear and hearing care training for primary clinical health workers” that funded by MoHMS in Fiji. The guideline had developed by two times Fiji primary ear disease and hearing care guideline workshop with committee members of Fiji primary ear and hearing care guideline development in March & May in 2019. We really appreciate contributions from Dr. Kitone Rawalai, Dr. Erum Samreen, Dr. Sikiliti Poulasi, Ms. Akanisi Wati, Mr. Gauna Ramocemoce, Mrs. Makereta. Vuniwaqa Sr. Asha Lata Naidu, Sr. Pelesi Tealei and Mr. Sevanaia Ratumaitavuki. Through both workshops, internal reviewers had suggested valuable ideas for contents and essential comments about what is the need and gap in the primary care level. We are also especially thanks to international reviewers, Dr. Peter Thorn, Dr. Murali Mahadevan and Dr. Donna Carkeet. They had provided professional evidence, edited mistakes and supervised the guideline. The preparation of the guideline was made possible by a support by Dir Kim, Jeehee, Korea International Cooperation Agency (KOICA) office in Fiji and the funding for guideline development was made possible by a grant from Australia’s Support to Fiji Health Sector is managed by Coffey. We are also thanks to Dr. Nigel McCarley and Ms. Ana vododuadua who administrate the development of the guideline

The guidelines aim to improve ear disease and hearing impairment patient outcomes by optimising clinical assessment, diagnosis, management, and referral in primary health care facility. Recommendations are based on current scientific evidence and access to clinical and audiologic services in Fiji.

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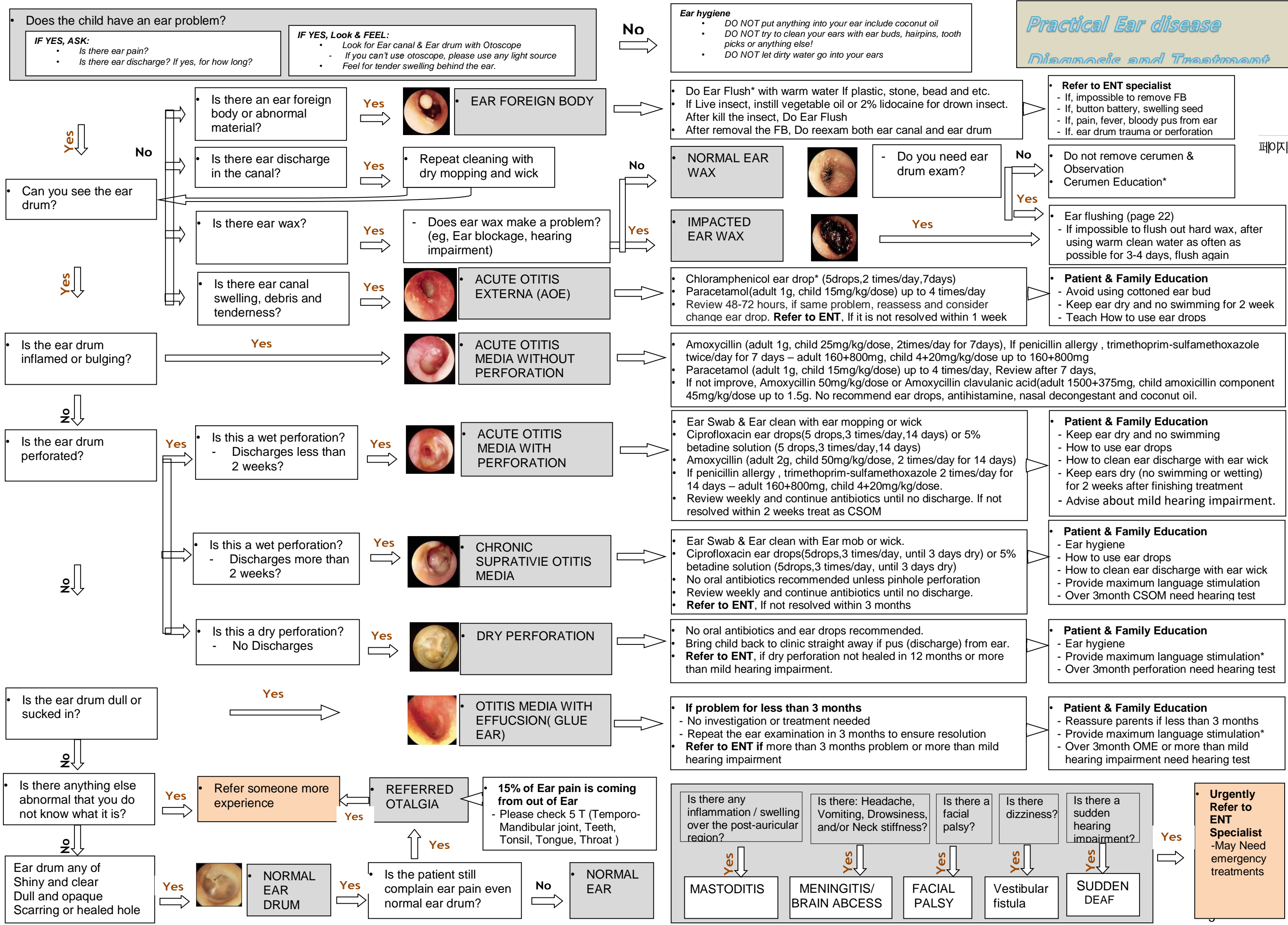
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Dr. Donna Carkeet, Audiologist, EARS Inc.

This guideline should be reviewed every 5 years, or earlier if there are significant changes in the availability of audiologic tests or access to ear health care.





# I. Outer Ear Diseases

## 1. Pinna problems

### Pinna Problems

#### Ear Keloids

- Keloids are overgrowths of scar tissue caused by trauma to your skin. They're common after ear piercings and can form on both the lobe and cartilage.
- If the size less than 1cm, you can try triamcinolone 40mg/ml injection at the mass, every month for 6 months.
- PLEASE NOTE: Refer serious deformities, size more than 1cm or severe deformities to ENT clinic



#### Deep infection with swelling of the pinna

- When the pinna itself – not just the skin but also the cartilage underneath the skin – is infected the whole pinna becomes inflamed and swollen. This is a serious infection especially in a person with diabetes.
- **These patients should be referred urgently.**
- If there will be a delay, then start an antibiotic, Ciprofloxacin 500mg/two times a day



#### Pre-auricular sinus (hole in front of pinna)

- They can become infected and cause an abscess.
- **If not infected, then no treatment is needed.**
- If infected then: Start an antibiotic, amoxicillin, and
  - Incise and drain if there is an abscess
- Ask patient to return for a daily check-up.
- PLEASE NOTE: Refer to ENT clinic for pre-auricular sinus excision when the infection has healed or if the infection would not heal.
- Without excision, abscess may be recur



#### Injury to the pinna / Otohematoma

- Injury can damage the pinna and cause deformity.
- If minor, then treat injury with appropriate cleaning and dressings.
- **If the pinna swelling and bruising with tenderness & fluctuation, refer to ENT clinic for otohematoma drain.**
- If the reference would be delayed, please drain out otohematoma at dependent portion
- PLEASE NOTE: Refer serious injuries, cuts right through the cartilage, cuts into the ear canal, and severe burns, to ENT clinic for treatment

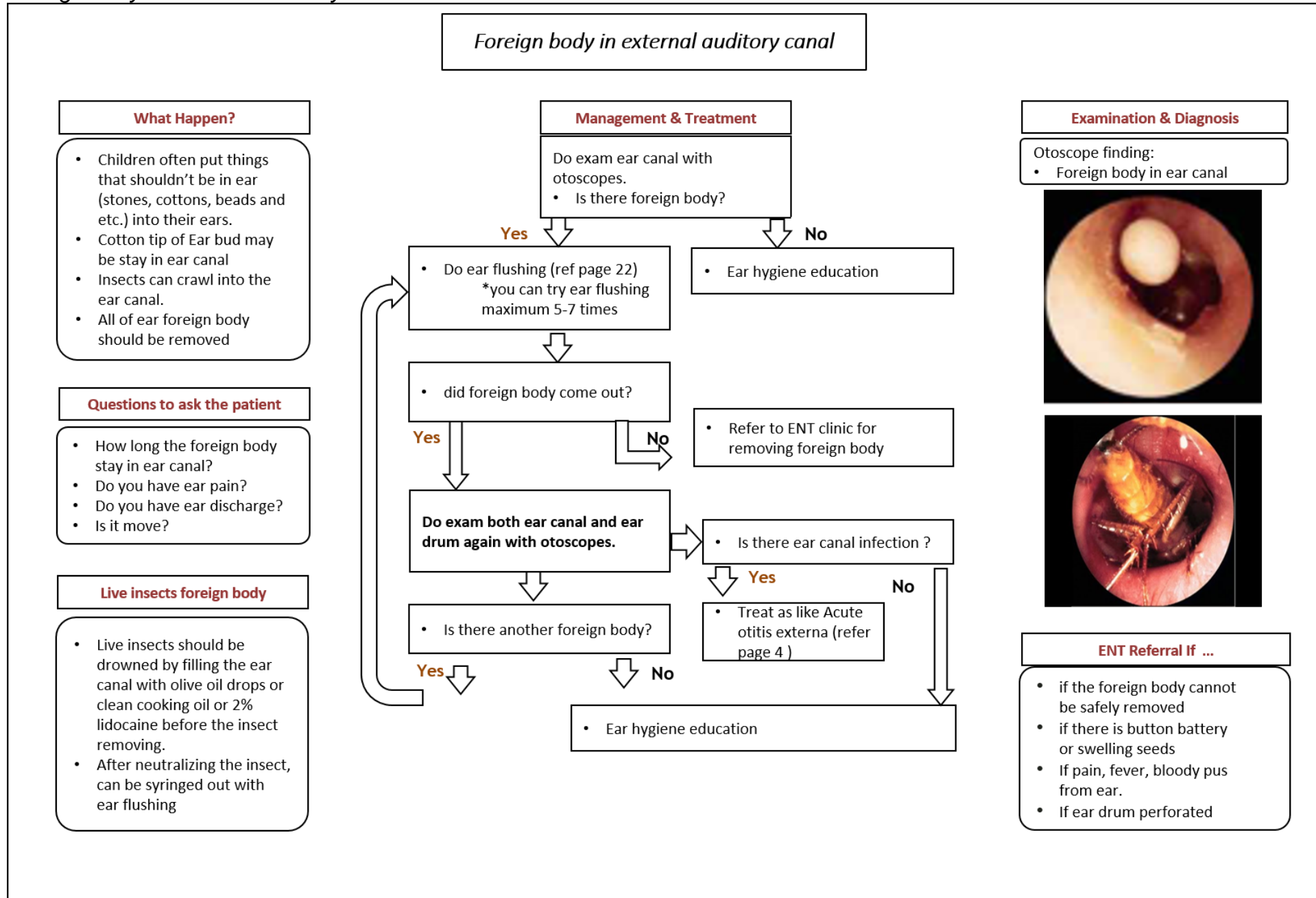


#### Deformities of the pinna

- Deformities are not common but there may be hearing impairment especially if there is no opening into the ear canal.
- **Patients with a deformity should have their hearing assessed for language development**
- Deformities can happen later from injury or infection – acquired deformities.
- **PLEASE NOTE: Refer to ENT clinic for hearing and inner ear evaluation**

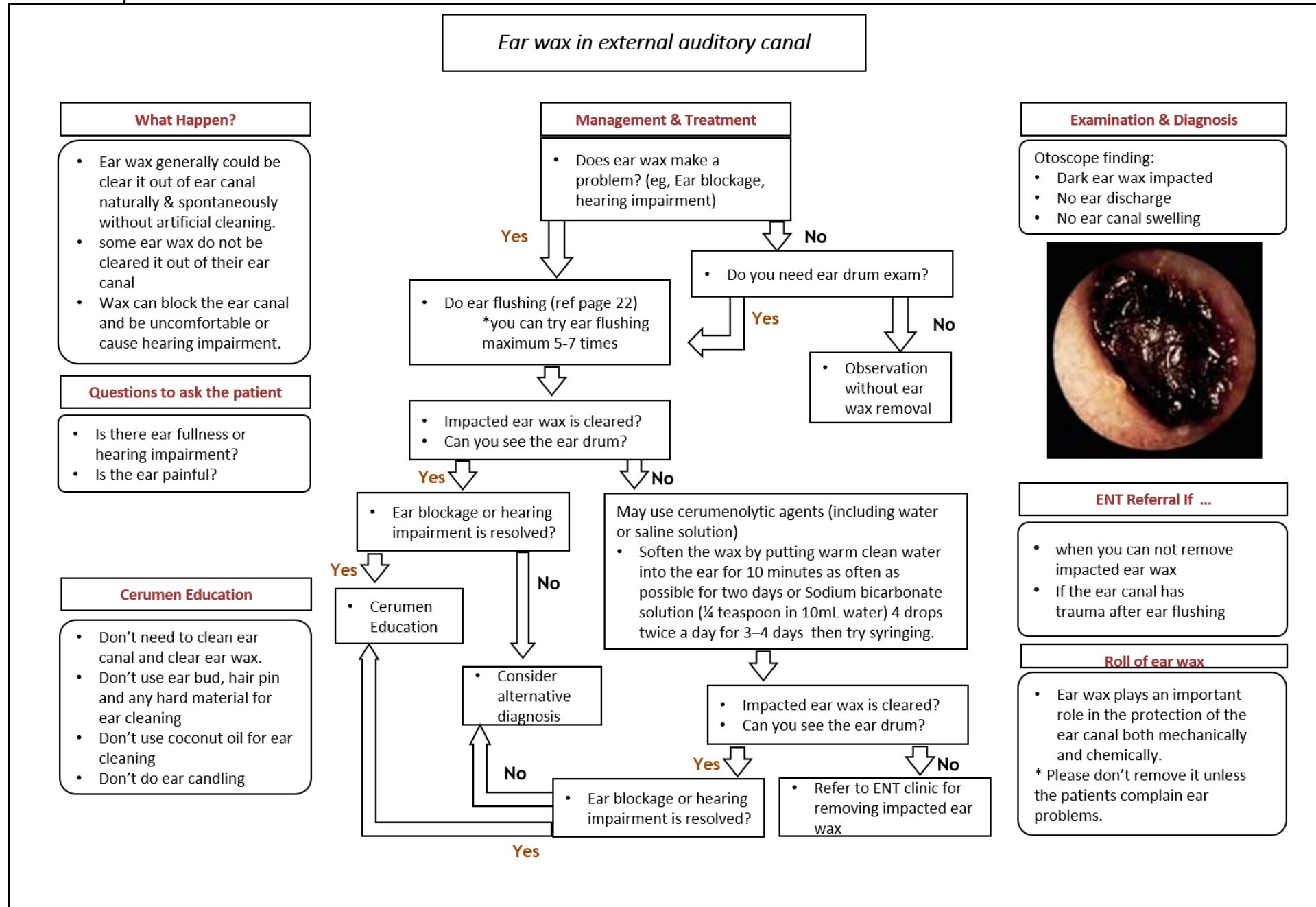


## 2. Foreign body in external auditory canal

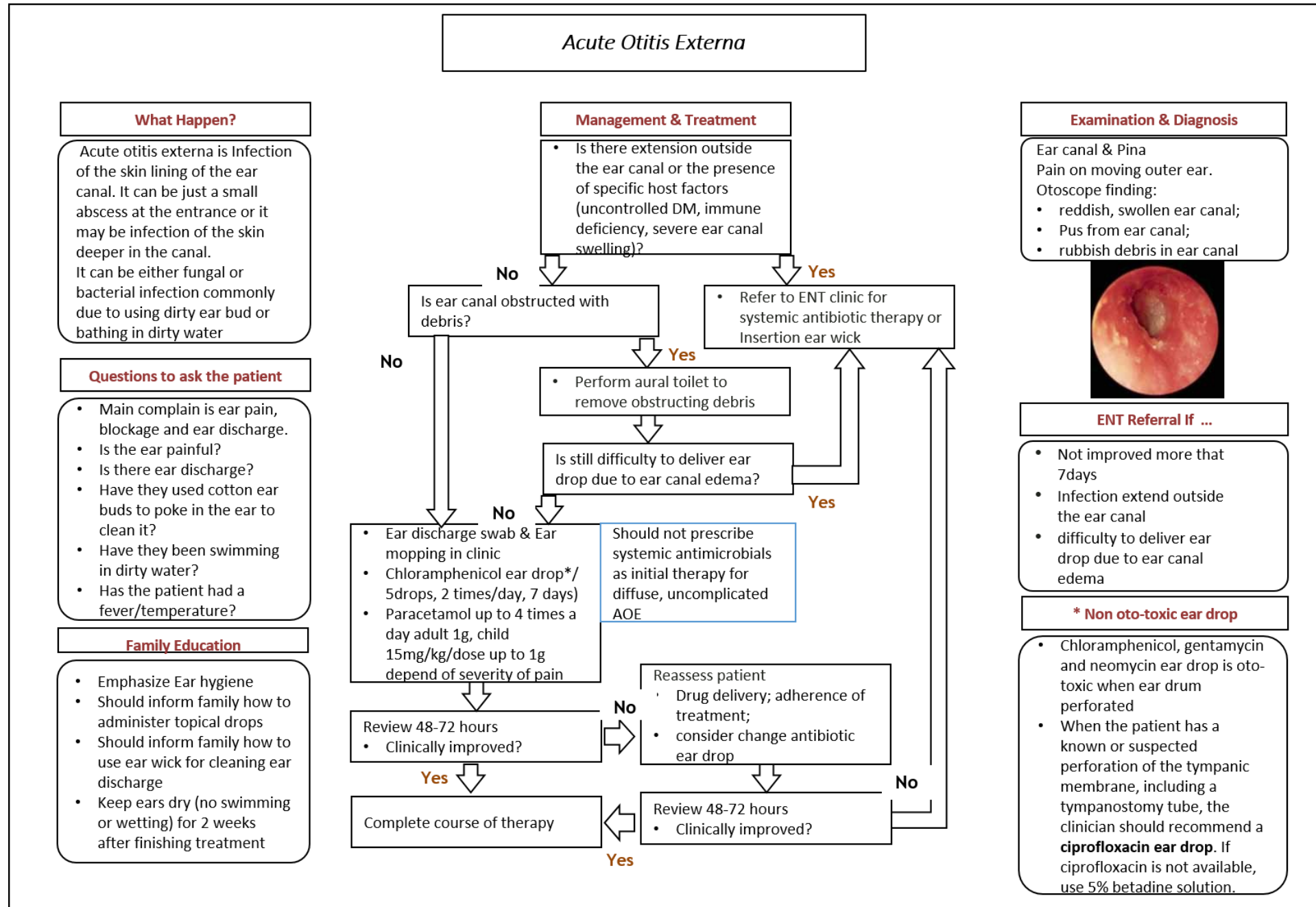




### 3. Ear Wax impacted

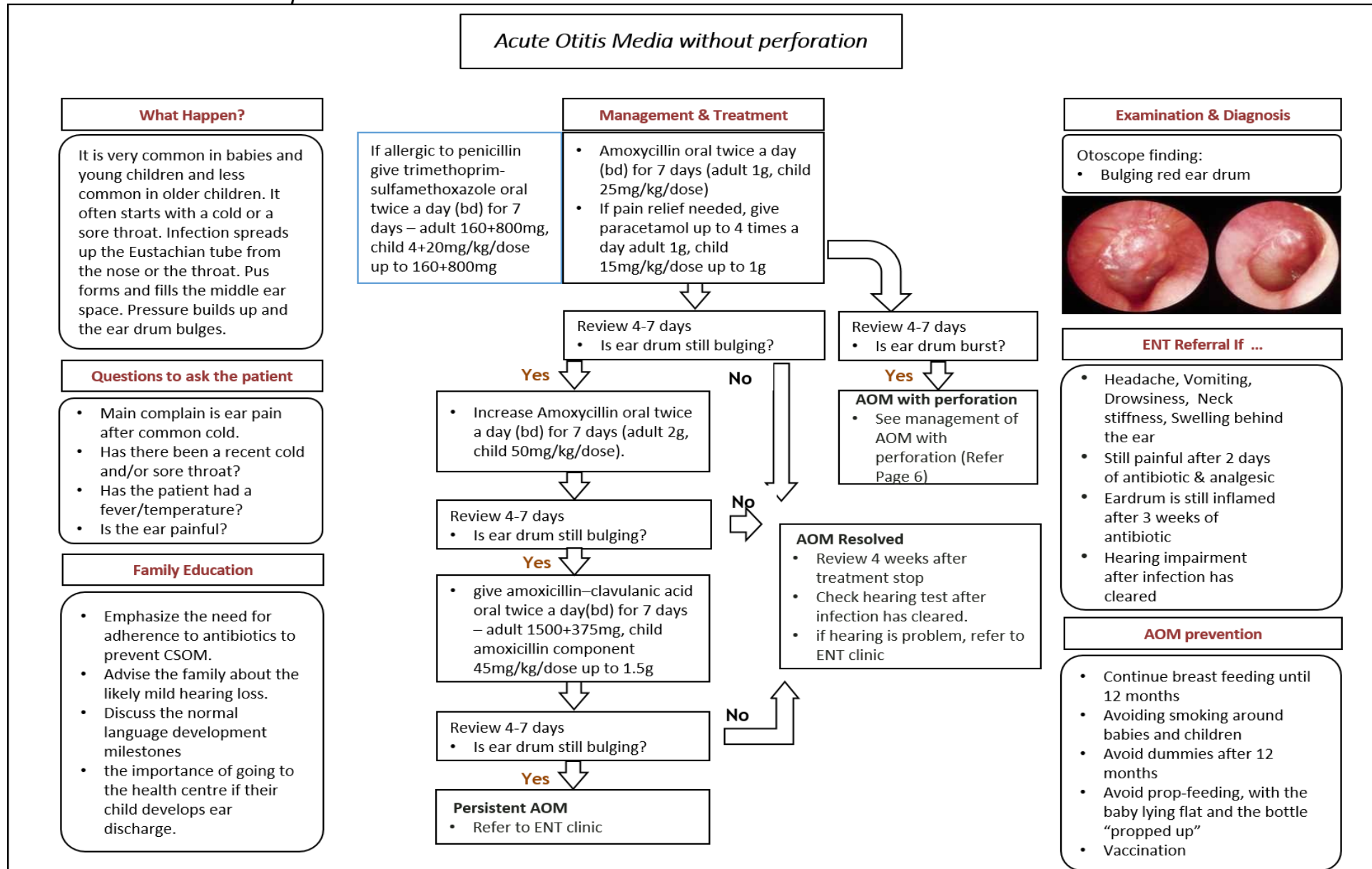


#### 4. Acute Otitis Externa



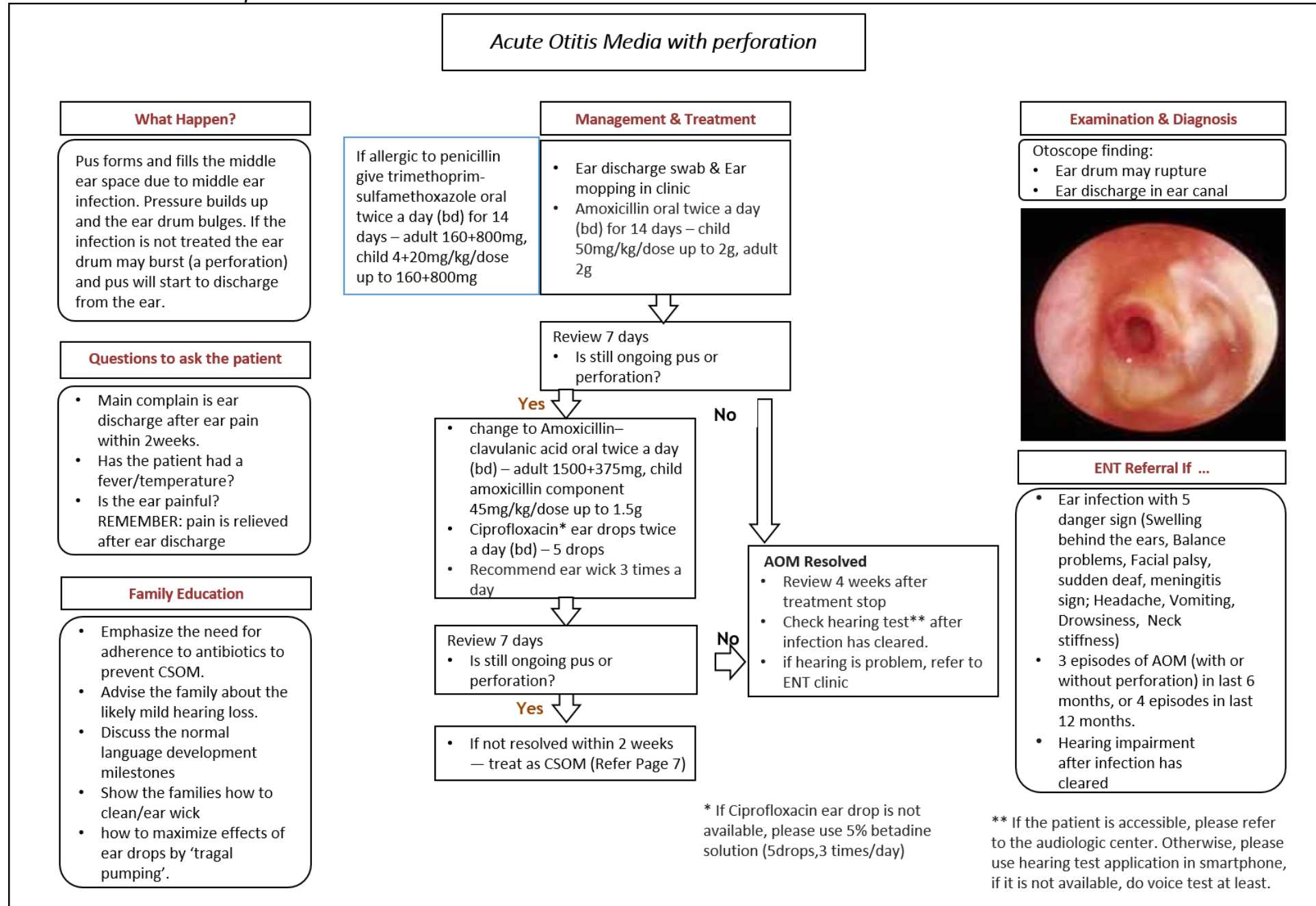
## II. Middle ear disease

### 1. Acute Otitis Media without perforation





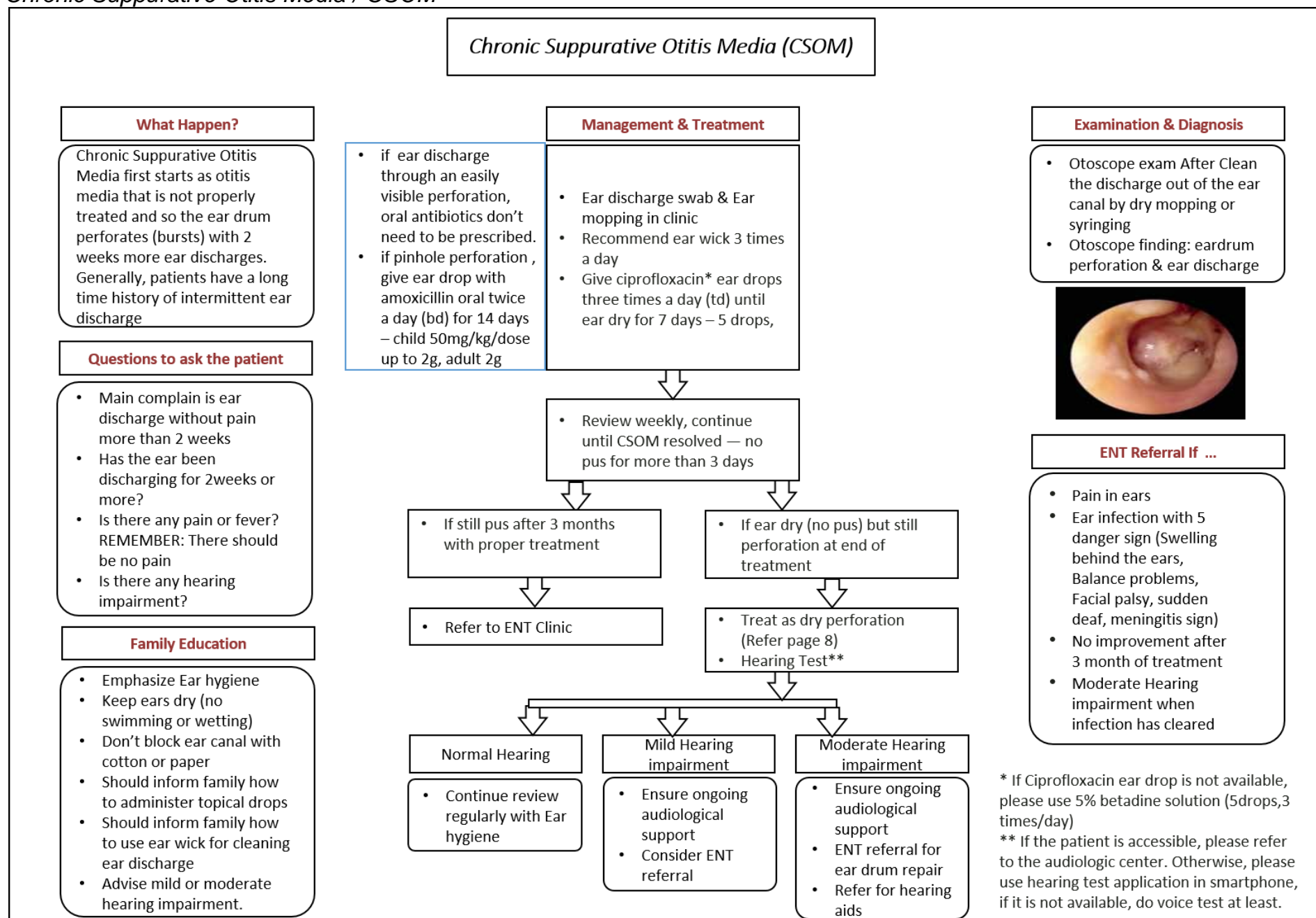
## 2. Acute Otitis Media with perforation



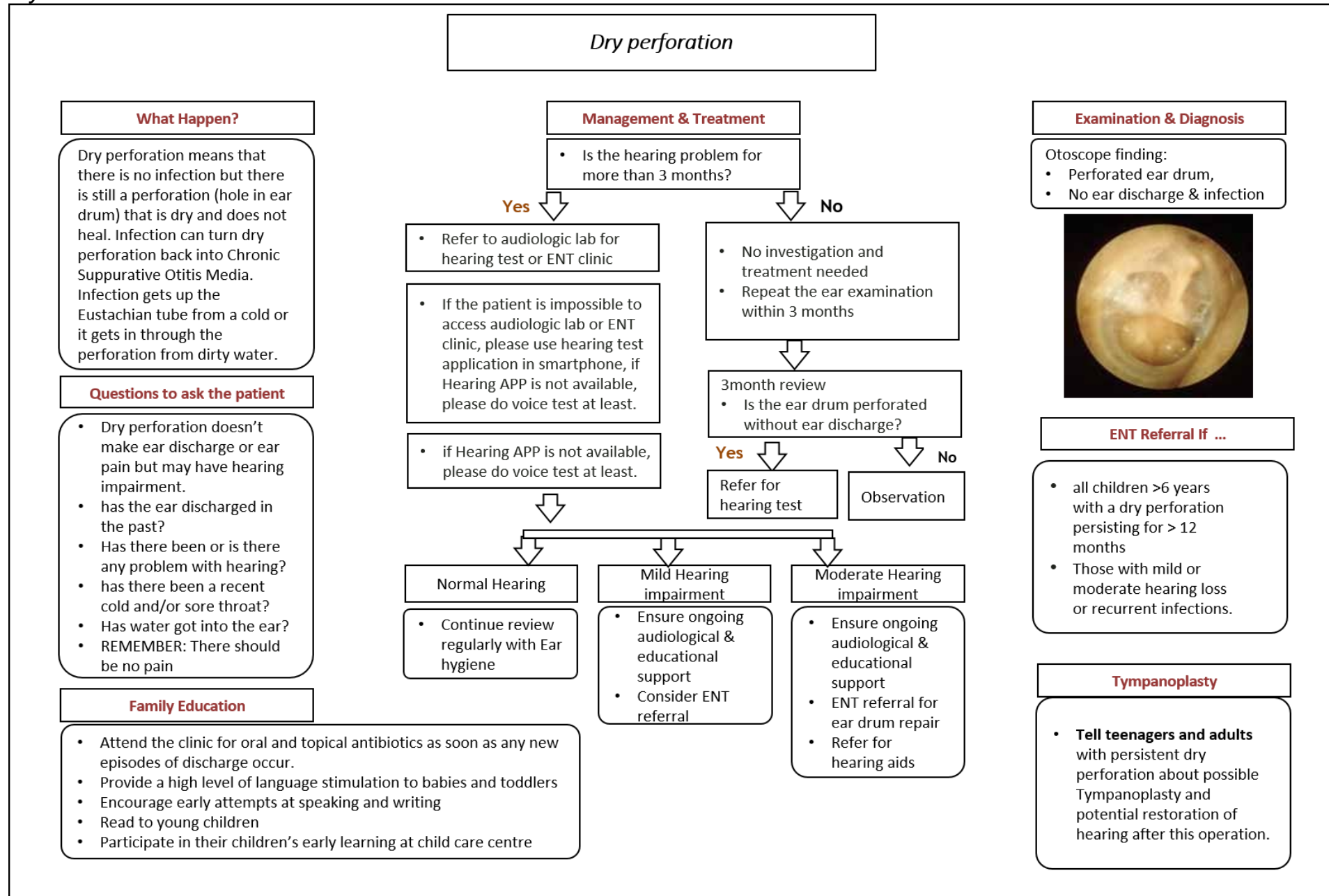
\* If Ciprofloxacin ear drop is not available, please use 5% betadine solution (5drops,3 times/day)

\*\* If the patient is accessible, please refer to the audiologic center. Otherwise, please use hearing test application in smartphone, if it is not available, do voice test at least.

### 3. Chronic Suppurative Otitis Media / CSOM

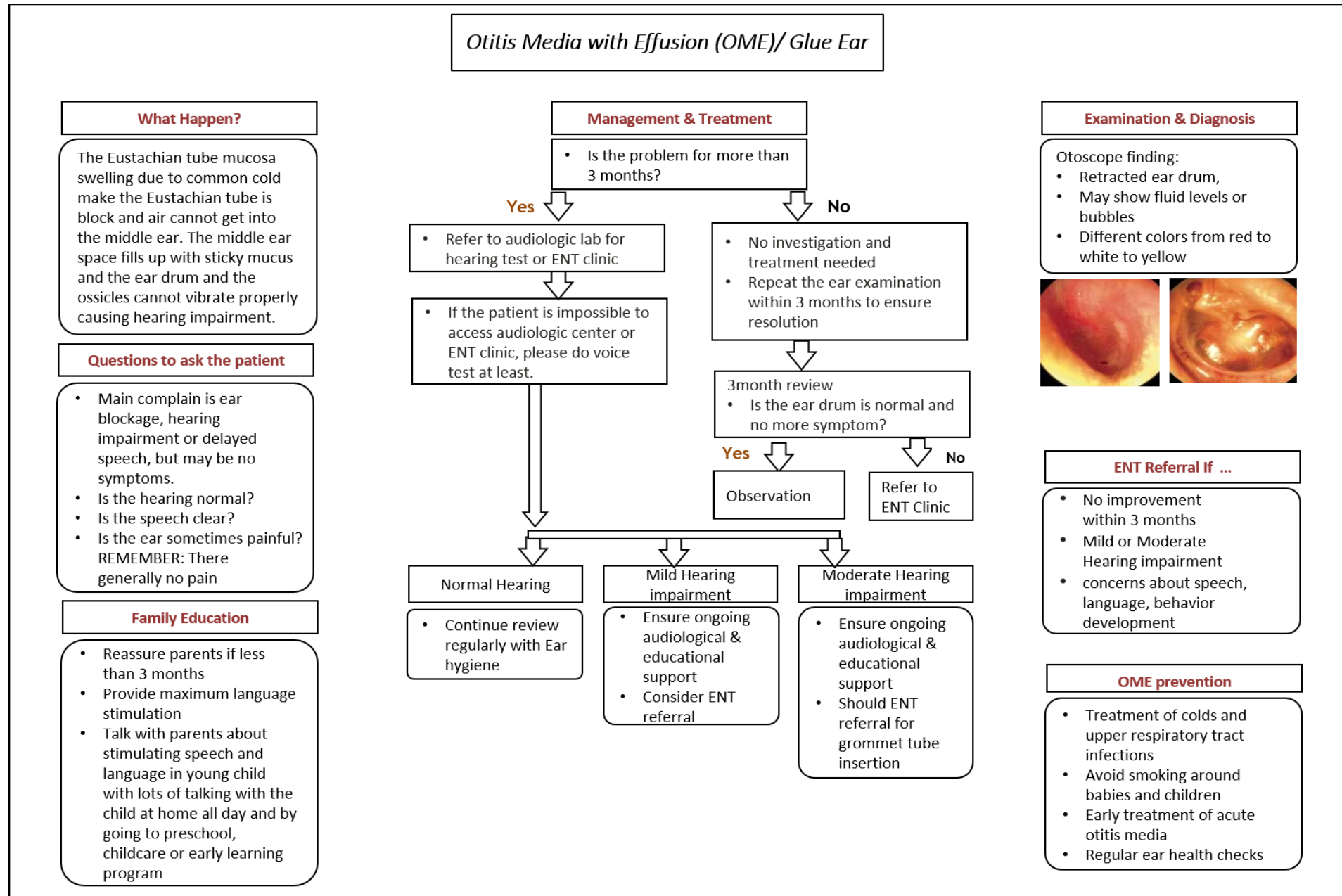


## 4. Dry Perforation





## 5. Glue ear (Otitis media with effusion – OME)



## 6. Complication of middle ear infection

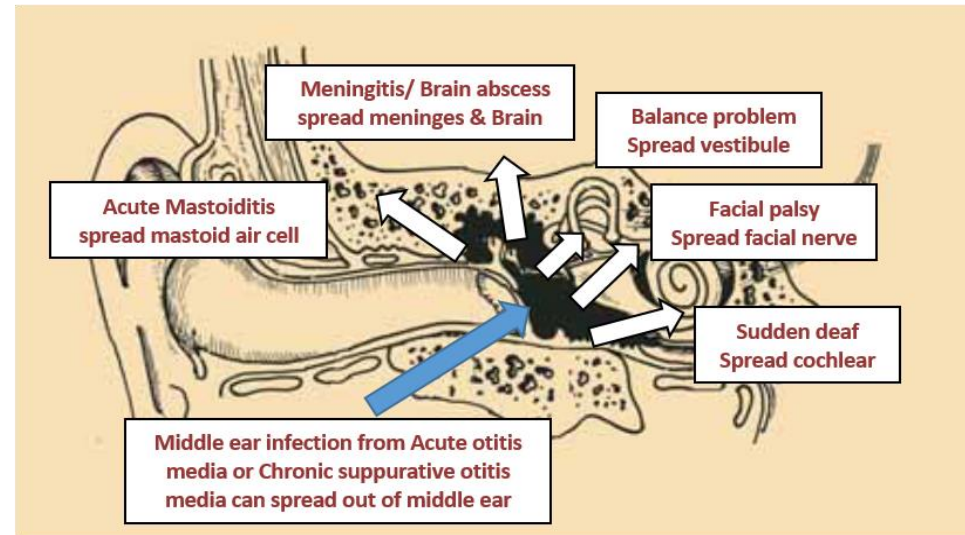
### Complication of middle ear infection - Five danger signs -

#### Acute Mastoiditis

- **Tender & swelling behind the ear** with ear discharge



- Refer urgently ENT clinic
- If delay
- Start an IV antibiotic if possible.
- Incise and drain any abscess



#### Facial palsy

- Asymmetric facial movement with ear discharge



- Refer urgently ENT clinic

#### Sudden Deaf

- **unexplained, rapid loss of hearing** either all at once or over a few days with otitis media
- Refer urgently ENT clinic

#### Balance problem

- Sudden dizziness and vertigo with ear discharge
- Refer urgently ENT clinic

#### Meningitis / Brain abscess

- Headache, Vomiting, Drowsiness, high fever and/or Neck stiffness with ear discharge
- Refer urgently ENT clinic

If you find five danger signs with middle ear infections, acute otitis media or chronic suppurative otitis media, Please refer the patient as soon as possible.  
Patients may need emergency operation or IV antibiotics or systemic steroid administration.

### III. Hearing impairment

#### 1. Hearing assessment

The World Health Organisation chart below shows levels of hearing impairment measured in two ways:

- With an audiometer which is a machine for measuring hearing threshold
- With a "voice test" which is a less accurate way of hearing screening

##### A. The Audiometer

Some of you may work in clinics or hospitals where hearing tests are done with a machine called an audiometer. This machine measures the sound levels that people can hear in units called decibels in hearing level (dB HL). For example people with normal hearing may be able to hear a sound at a level of 0 decibel (0 dB HL). A person with hearing loss may only be able to hear a sound at a level of 50 decibels which is in the range for moderate hearing impairment.

##### B. The "Voice Test"

Most Primary Care clinics do not have equipment for testing hearing. At these clinics hearing can be screened using the voice. The voice is used at the different levels in the chart to say words that the patient repeats back if they have heard them clearly. **The voice test is a Screening test that means it is a way of finding out whether people have normal hearing or not.** When people do not have normal hearing, the voice test can also be used to screen for different possible level of hearing impairment they may have by using other loudness levels of voice – conversational voice(40-50 dB HL), loud voice(70 dB HL) or shouted voice (80-90 dB HL).

**It is important to try to refer the patient who you think may have hearing impairment to an ENT clinic or Audiologic centre where the hearing can be tested with special testing equipment.**

Grade of Impairment	Audiometer Level	Level screened with voice test	Recommendation
Normal hearing	25dB or better	Able to hear whispers.	-
Mild hearing loss	26-40 dB	Able to hear and repeat words spoken in normal voice at 1 metre	Counselling. Hearing aid may be needed
Moderate hearing loss	41-60 dB	Able to hear and repeat words spoken in loud voice at 1 metre	Hearing aids usually recommended
Severe hearing loss	61-80 dB	Able to hear some words when shouted into the ear	Hearing aids needed. If no hearing aids available, lip-reading and signing should be taught.
Profound hearing loss ( or deaf)	81 dB or greater	Unable to hear and understand even a shouted voice	Hearing aids may help understanding words. Additional rehabilitation needed. Lip-reading and sometimes sign essential



### C. Questionnaire for assessing hearing in babies and early childhood

The best person to know whether a baby can hear or not, is his/her mother or care giver. We can find out whether the baby has maybe heard properly or not, while asking several questions about the baby's hearing and about the baby's speech development.

There are the questions which are useful for screening hearing condition in babies

Age	Questions	Yes	No
A few weeks old	Does your baby open his/her eyes or blink when there is a noise?		
	Does your baby appear to be listening to you when you talk or sing?		
About 6 months	Does your baby try to see where the noise is coming from by turning his/her eyes or head towards the sound?		
	Does your baby enjoy you talking to him/her?		
About 9 months	Does your baby appear to respond to even very soft sounds?		
	Does your baby enjoy babbling and making other sounds?		
About 1 year	Does your baby respond when you say his/her name and the name of things he/she play with?		
	Is your baby starting to say baby words?		
About 18 months	Does your baby pick up or point to things around the house when you ask them to do this?		
	Is your baby starting to use simple words?		
2 years old more	Do you think your baby can hear normally even when you speak to him/her in a very soft voice?		
	Is your baby putting words together and trying to talk to you?		
	Does he/she dance or sing I time to music?		

If the answer to any of the questions is 'No' then you should begin to suspect that the baby/child may have hearing impairment. If they are not responding properly to sounds, a full developmental assessment needs to be done if this seems to be the reason. **It is important to try to refer babies who you think may have hearing impairment to a clinic or hospital where the hearing can be tested with special testing equipment.**

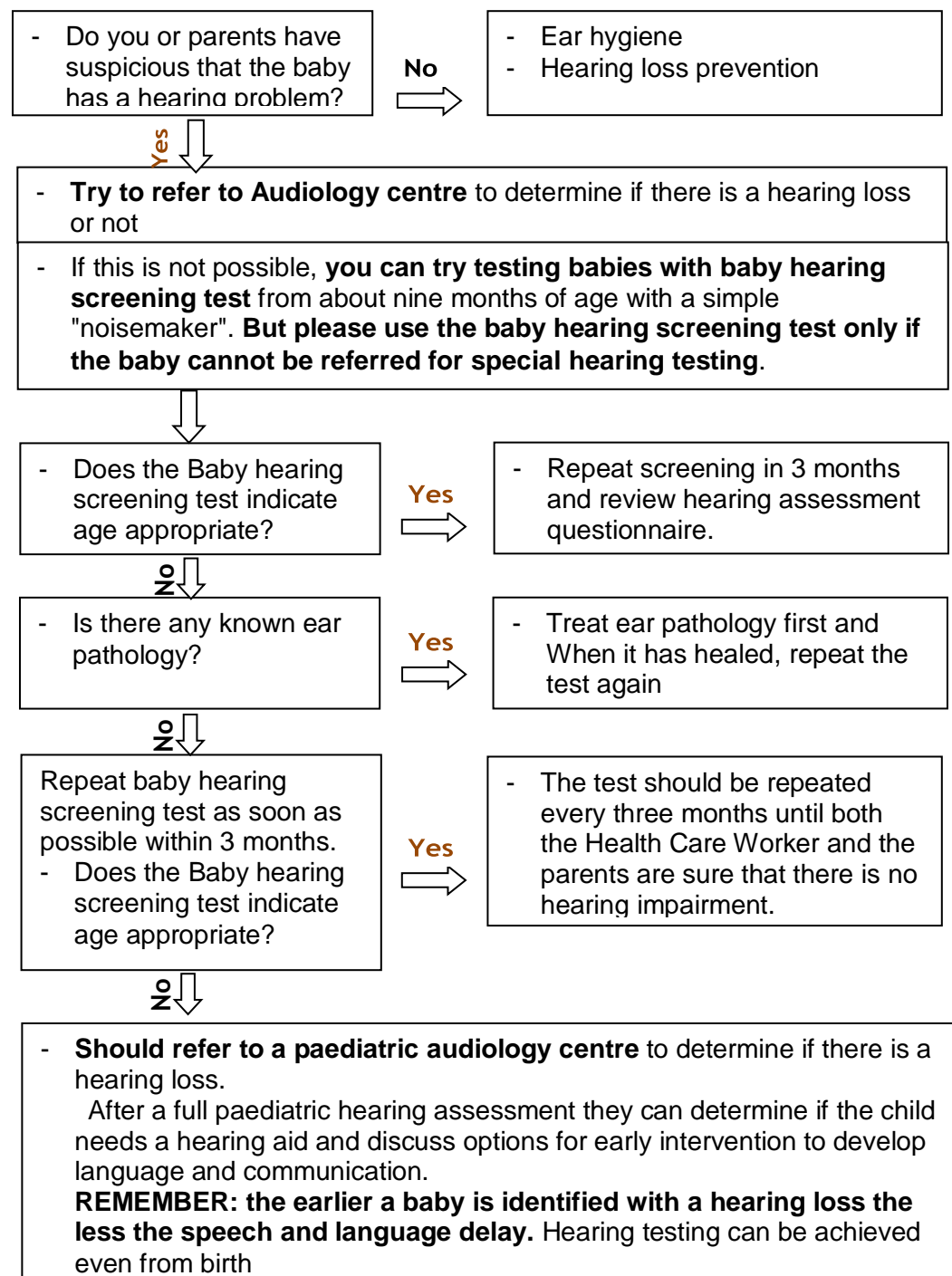
### D. Noise maker test for assessing hearing in babies and early childhood

What can be done if the baby cannot be referred for special testing? If this is not possible, you can try testing babies from about nine months of age with a simple "noisemaker". Please stand behind the baby to hide any possible movement of the noisemaker. The noisemaker should make a sound about as loud as a whispered voice. A few grains of salt, sand or sugar moved around (NOT shaken) on a plastic container is a good high frequency sound. If you do not have a noisemaker, try rubbing your fingers behind the babies' ear. The baby should respond by turning in the direction of the sound. (Refer page 24 Practice 6)

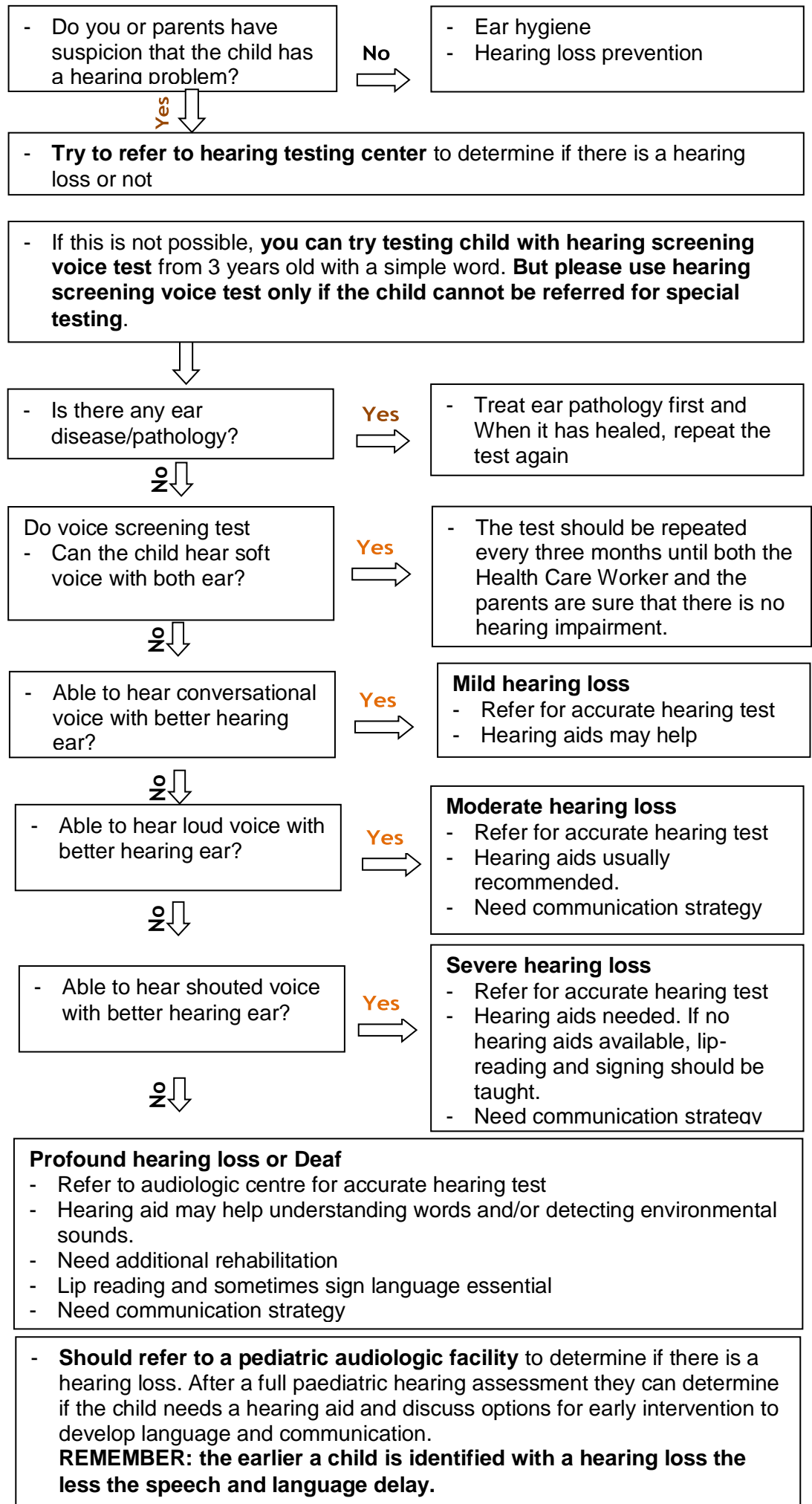
## 2. What can be done if the patient cannot be referred for hearing testing?

- **You should ALWAYS refer infants, children and adults with suspected hearing loss for a full assessment as soon as possible**, earlier diagnosis and treatment of ear conditions and early identification of hearing impairment leads to better long-term outcomes.
- Diagnostic hearing assessment for people of all ages from birth are available at hearing clinics in Fiji. (Refer Page 29, Audiology centre in Fiji)
- The following procedures should be used to screen infants and children for hearing impairment if other assessments are not available. **Remember these procedures are screening tools.** These tests should not be used to diagnose hearing impairment, but as a tool to gain more information and refer on.

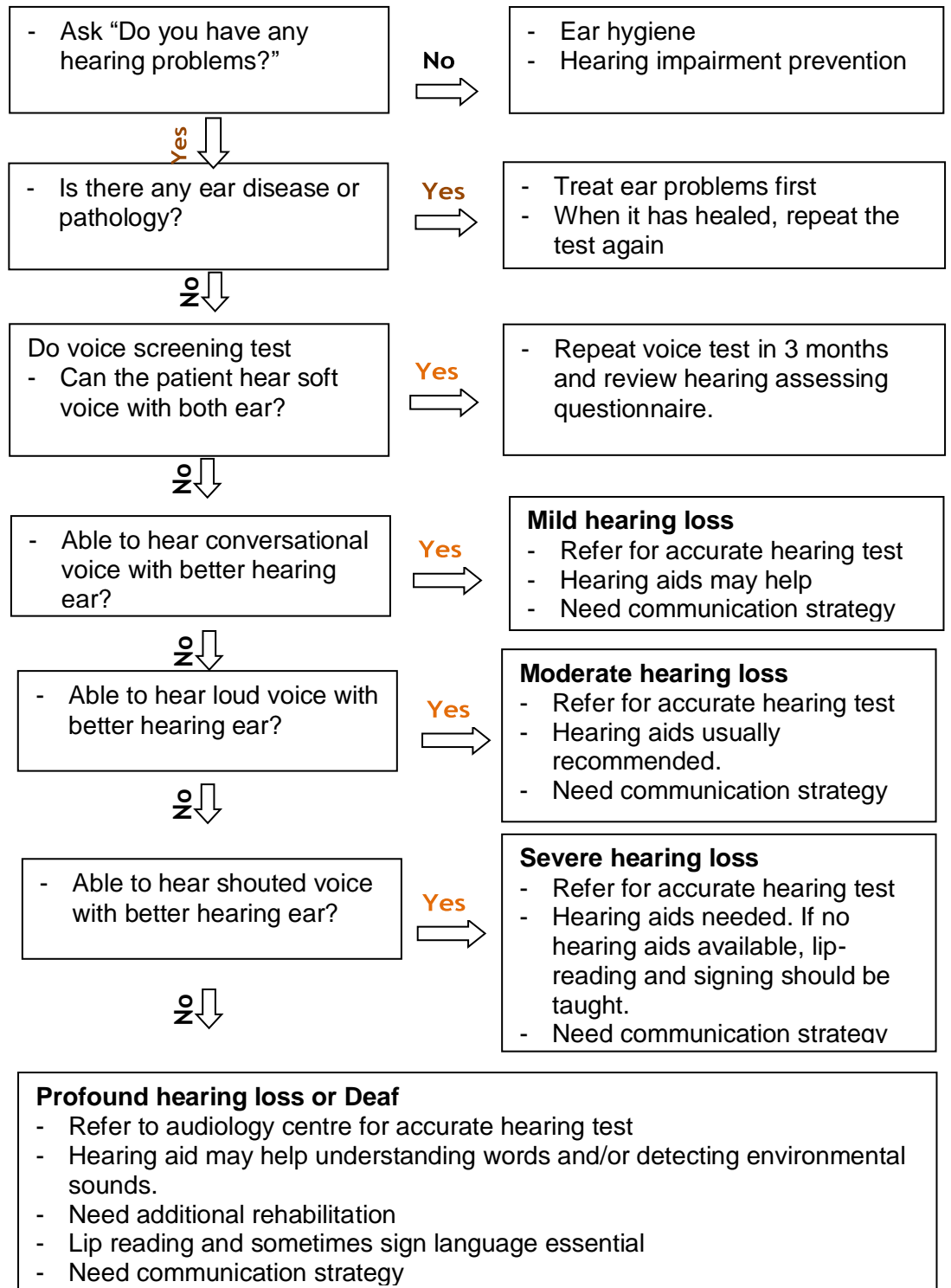
### A. Babies (0 to 2 years old)



## B. Children (3 to 18 years old)







### 3. *Management of hearing impairment*

#### A. Child with hearing impairment

- Children with hearing loss will require assistance to develop speech and communication skills. The hearing testing centre will help advice the family with this.
- Children with mild or moderate hearing loss may not speak clearly. They may need to use signs as well as words to assist them in learning. Children with severe or profound loss may need to attend a special school and learn sign language. The family should be encouraged to learn with them.
- If the child is deaf and a "Deaf School" is not available, encourage the parents to start non-verbal communication. They will have to make up signs for food, members of the family and important objects and activities.
- If the child has some hearing then using signs as well as words helps the child to learn lip-reading. Often these children can hear low frequency sounds but not high frequency sounds and this means that many words will not be heard properly and using signs and lip reading helps them to understand what has been said.

#### B. Advice to Family

- Parents and family members play an important role in the life of a person with hearing impairment or deafness.
- Family members can develop a simple sign language to support their speech when talking to a hearing impaired or deaf person.
- They should include the hearing impaired or deaf person in all activities in and around the home.
- Parents and family members should educate themselves and learn how to communicate with the hearing impaired or deaf person.
- With support, people with hearing impairment can be educated and enter into the job market. Parents should ensure that their children receive the best possible education and training so that they may become self-sufficient.
- Parents could join, or form, support groups in their own community and so offer support to each other.

- Provide a high level of language stimulation to babies and toddlers
- encourage early attempts at speaking and writing
- tell stories and read to young children
- Participate in their children's early learning at child care centre and pre-school. Children with hearing loss often benefit from a quiet environment and additional language stimulation.
- Let the child see your face when you speak to them
- Make sure there is good light for the child to see your face
- Get the child's attention before you speak to them
- Decrease other distractions – especially loud noises
- Encourage hard of hearing children to listen and discriminate different sounds especially if they are using a hearing aid.
- Stand close to the child when you speak
- Speak clearly and more slowly
- Don't shout and exaggerate movements
- Repeat words and instructions many times
- Use gestures, drawings, paintings – point at things
- Encourage lip-reading
- Don't eat or chew while talking to the child
- Do not over protect the child
- If the child has a hearing aid he/she must use it
- Be patient – it takes time to learn to communicate

## IV. Prevention of Ear disease and Hearing impairment

Ear infections in children can become chronic, causing hearing impairment and long-term learning and social problems. Important to treat ear problems AND manage disability related to hearing loss.

### 1. *To reduce ear infections*

#### A. . Anticipatory Guidance

- Tell all expectant mothers about the importance of prevention, early detection and treatment of Otitis Media (OM) for prevention of OM associated hearing loss. The potential effects on language and education should be emphasized.

#### B. Ear Hygiene

- Important points to remember:
  - Do not try to clean the ear canal – it will clean itself, No ear bud, hair pin, ear candle
  - Do not remove ear wax if it is causing no problems it will actually help protect the ear
  - Do not put things in the ear canal – you may harm it, No coconut or olive oil
  - If you feel or see something in the ear canal – get it checked at your clinic

#### C. Encourage early intervention

- Onset of OM in infants may occur within the first months of life. The early onset of OM is associated with high risk of: Persistent OME, CSOM and Hearing loss.
- To attend the health center as soon as possible whenever a child develops ear pain or discharge, particularly if the child is young.
- Some features of OM (such as ear pain) may be absent, and that regular health center attendance for ear examinations is recommended.
- (If applicable) certain babies are at high risk for development of OM and its consequences (e.g. those with cleft palate and other craniofacial abnormalities, fetal alcohol syndrome, fragile X syndrome, Down syndrome).

#### D. Breastfeed

- Encourage mothers to continue breast feeding for at least 6 months to reduce the risk of OM.
- Tell the families/caregivers that if the child is bottle-fed, the upright position is recommended.

#### E. Personal hygiene

- The health practitioner should tell families or caregivers that nasal discharge carries germs (viruses and bacteria) which are responsible for OM.
- Children should wash and dry their hands after blowing their noses or coughing. Children's faces and hands should be kept clean of nasal discharge.
- Frequent hand washing is also recommended.

#### F. Vaccination

- Vaccination according to immunization schedule.
- Recommend influenza vaccination just before flu season and pneumococcal conjugate vaccination during infancy.

#### G. Swimming

- Swimming should not be discouraged routinely.
- If swimming is known to be associated with new or persistent ear infections in an individual, it is reasonable to recommend keeping the ear dry.

#### H. Smoking

- Strongly discourage people from smoking around children.

## 2. To reduce hearing impairments

### A. Proper management of ear infection

- All forms of OM are associated with some degree of hearing loss.

### B. Protection of ears from noise

- Advice people exposed to loud noise to decrease the volume levels.
- Advice all workers exposed to loud noise to wear hearing protectors and Screen workers working in a noisy environment for hearing impairment.
- According to *Fiji Health and Safety at Work General Workplace Conditions Regulations 2003*, The employer shall provide and maintain a workplace, plant and systems of work to ensure that a worker is not, while at work, exposed to a noise level that exceeds the exposure standard.

(a) an eight-hour equivalent continuous A-weighted sound pressure level,  $L_{\text{aeq 8hr}}$  of 85dB(A) referenced to 20 micropascals ; and

(b) a linear (unweighted) peak sound pressure level,  $L_{\text{peak}}$  of 140 dB (lin) referenced to 20 micropascals.

### C. Hearing Loss, Speech and Language Surveillance

- Refer for hearing tests if there are parental or teacher concerns about hearing or behavior or learning. Hearing assessment can be conducted from birth, so as soon as there is a strong suspicion of hearing loss the child should be referred for assessment.
- The following milestones are an appropriate indication for immediate referral to a paediatrician and an audiologist:
  - 3-6 month: not communicating by vocalizing or eye gaze
  - 9 months: poor feeding or oral co- ordination
  - 12 months: not babbling
  - 20 months: only pointing or using gestures (i.e. not speaking)
  - 24 months: using <20 words, not following simple requests
  - 30 months: no two-word combinations.

### D. Observe the child and ask questions about hearing behaviours:

- Babies and toddlers with hearing loss might not respond to quiet voices, might not startle in response to loud sounds and might speak later or less clearly than their peers.
- A child or adult with a mild or moderate hearing loss might appear to 'hear when they want to' or intermittently.
- Hearing loss in cross cultural settings can lead to inappropriate assumptions. People might judge a person with hearing loss to be 'inattentive', 'uninterested', and 'rude' or 'stupid'.

### E. Enhancing Language Acquisition

- Encourage families/caregivers to: Provide a high level of language stimulation to babies and toddlers, Encourage early attempts at speaking, Encourage early attempts at writing, Tell stories and read to young children, Talk with their children, Sing songs and nursery rhymes
- Participate in their children's early learning at child care centre or pre- school.
- Children with hearing loss often benefit from a quiet environment and additional language stimulation.

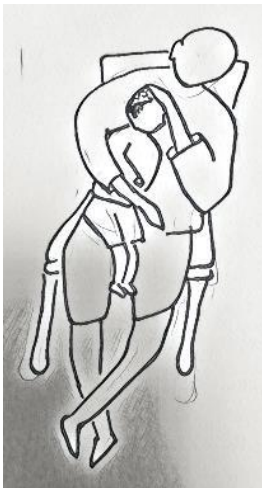
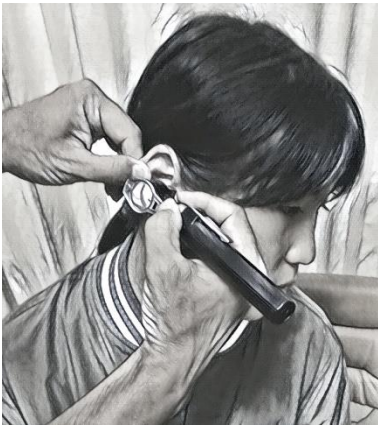
### F. Refer to specialist

- Any child with either bilateral OM (all types) persisting longer than 3 months or suspected hearing loss should be referred to an audiologist for a full hearing assessment as soon as possible testing is available any age from birth onwards.
- Any child with OME and hearing loss persisting longer than 3 months should be referred to an ENT specialist.



## Essential practice Primary Ear disease and Hearing care

### Practice 1. How to use an otoscope

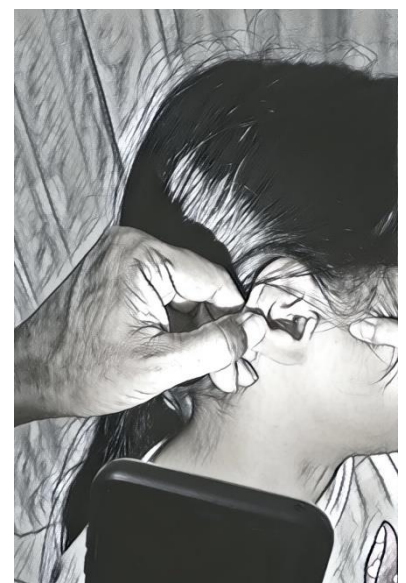


- Hold the otoscope like a pencil in your hand—then rest your hand against the patient's head to avoid hurting the patient if they make a sudden movement.
- With the other hand gently pull the pinna away from the head to straighten the ear canal: Adults – pull pinna back and up. Children – pull pinna back and down
- First shine the light in to the opening to inspect the entrance to the ear canal.
- Then look through the otoscope and gently put the speculum into the ear canal—DONOT go into the deep part of the ear canal as it is very sensitive to touch and you may scratch the skin lining.
- Small children and babies should be held firmly by an adult to prevent them from moving – see diagram. Older children can stand on their own as being held may make them more wary.
- ALWAYS ... change or wash the speculum after examining the ear. This prevents the spread of infection from one ear to the other.
- Try to examine the good ear first.

### ***Practice 1-1. When you can't use an otoscope, how can we examine the ear?***

#### **Don't give up trying to examine the ear canal and ear drum**

- Ask the patient gently pull the tragus anteriorly with finger to open the ear canal.
- With one hand gently pull the pinna away from the head to straighten the ear canal: Adults – pull pinna back and up. Children – pull pinna back and down
- With the other hand, use lantern, pen light, cellular phone light or sunlight to see ear canal and ear drum.
  - To see what the patient is complaining about
  - To see if there is any wax in the ear canal
  - To see if there is any infection in the ear canal
  - To see if there is anything in the ear canal
  - To see if the eardrum can be seen



## Practice 2. How to make and use ear mop

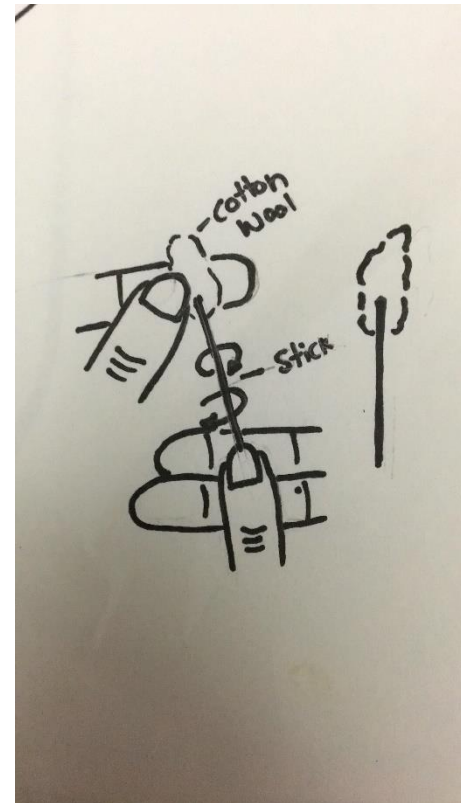
### ➤ How to make Ear mop

Materials: thin wooden stick applicator and cotton wool

- Wash your hands with soap and water – air dry.
- Pull off a small piece of cotton wool.
- Gently pull it out in to an oval shape.
- Put the tip of the stick into the centre of the cotton wool.
- Twist the stick round and round with one hand whilst holding half of the cotton wool tightly against the stick with the thumb and index of your other hand.
- Half of the cotton wool should extend from the end of the stick and form a fluffy, soft tip.
- The rolled-up piece of cotton wool should be long enough so that when the soft tip is deep in the ear canal and next to the ear drum there is still some cotton wool sticking out of the ear canal. This is so that you can hold on to the cotton wool and ensure that the cotton wool comes out of the ear canal.
- After completing dry mopping, wash your hands again.

### ➤ How to use Ear mop

- An adult can sit sideways in front of you pointing the ear to the source of light.
- Hold the mop between the thumb and first finger of your better hand
- DO NOT HOLD IT TIGHTLY.
- With your other hand gently pull the pinna away from the head
  - Adults – pull the pinna back and up
  - Children – pull the pinna back and down this helps straighten the ear canal
- Gently push the soft tip into the ear canal and turn the mop slowly round and round while you do this
- The soft tip will absorb any discharge or blood in the ear canal
- Take the mop out of the ear canal and inspect the tip
- Is there pus on the mop? Sometimes the pus will be blood stained
- Use a clean mop each time
- DO NOT carry on cleaning if the patient is in any pain
- TAKE THE MOP OUT of the ear canal if the patient moves or jerks
- When clean, examine the ear canal with an otoscope
- Check both ears!



### Practice 3. How to make and use ear wick

#### ➤ How to make Ear wick

- Materials: – A small piece of absorbent cotton cloth or  
– A piece of soft strong tissue paper  
– NOT flimsy toilet paper that can fall apart in the ear.
- Wash your hands with soap and water – air dry
  - Make a wick (tissue spear) by rolling the cloth or the tissue paper into a pointed shape.



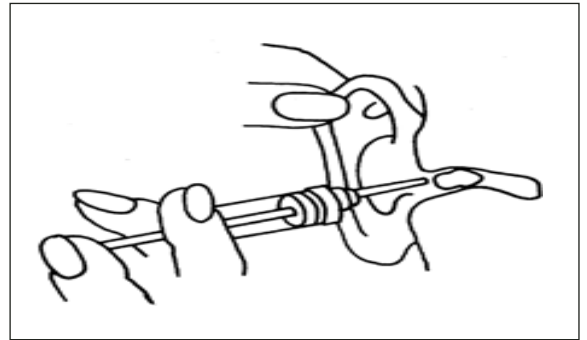
#### ➤ How to use Ear wick

- Gently pull the pinna away from the head. This helps straighten the ear canal.
- Place the wick into the ear canal. It will absorb any discharge or blood in the ear canal.
- Leave it in place until it is wet.
- Remove the wet wick and inspect it. Is there pus on the wick?
- Replace with a clean wick.
- Repeat until the wick stays dry.
- After completing wicking, wash your hands again.

## Practice 4. How to do ear flushing

### ➤ Method:

- The patient must sit with the ear facing the light and you must be able to see the entrance to the ear canal clearly.
- Fill the syringe with warm water and squirt it hard a few times back into the water container to check that it works well and the tip does not come off.
- Gently pull the pinna backward away from the head.
- Place the tip of the syringe just inside the canal and squirt the water into the ear canal.
- Water should be directed around the foreign body. The water will then be behind the foreign body and should push it out.
- Catch the water that comes out in a bowl. Check to see what has come out of the ear canal.
- Examine the ear canal with an otoscope after every five syringes.
- Once the foreign body has come out of the ear canal you should be able to see the ear drum.
- Check both ears!



### ➤ NOTE:

- Remember: the water used to syringe the ear MUST be the same as body temperature – 37°C, Warm but comfortable on the hand
  - If you use cold or hot water for ear flushing, the patient may feel dizzy, nausea or vomiting.
  - If the patient complain dizzy, please stop syringing and make the patient comfortable with support.
- Do NOT direct the water straight onto the foreign body! If you do the water will push the foreign body further into the ear canal.
- DO NOT SYRINGE IF THE EAR IS DRY AND IF YOU KNOW OR SUSPECT THERE IS A PERFORATION IN THE EAR DRUM, Refer these patients
  - If you do ear flushing to dry perforation patient, there may happen to make suppurative otitis media
- If you see any trauma to the ear canal after you have removed the foreign body fill the ear canal with eardrops, give the patient eardrops to take home and use four times each day. Check the ear again after two days.

### ➤ Attention

- Do not syringe ear if pain in ear or recent trauma
- Always look in ear before syringing. If any pain — stop and look again
- If CSOM — syringe with diluted povidone-iodine 10%



## Practice 5. How to use ear drops.

- ① Wash your hands
- ② Lie the patient on their side or tilt their head so that their ear is pointing upwards. There should be enough light to see the entrance to the ear canal



- ③ Gently pull the pinna back and up to straighten the ear canal
- ④ Drop 2 or 3 eardrops into the ear canal



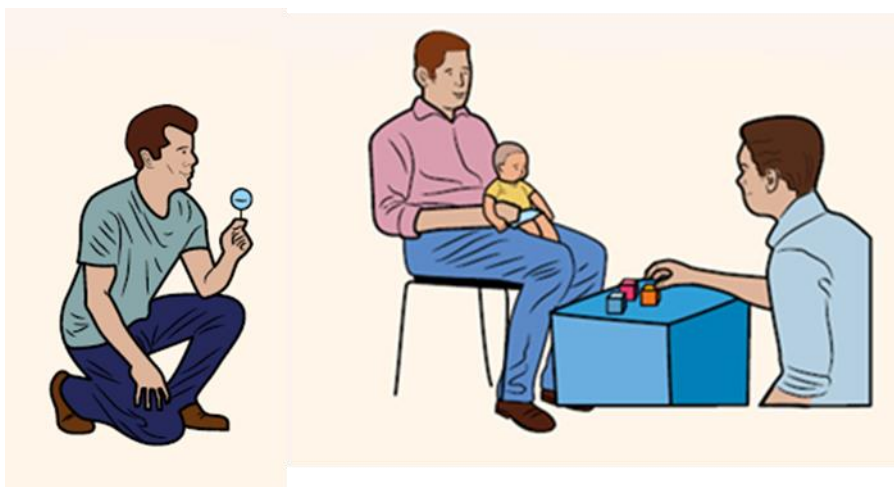
- ⑤ Pump" the tragus (repeatedly push it in and out) to spread the eardrops around inside the ear and through a perforation
- ⑥ Keep the patient on their side for 5 minutes
- ⑦ Wipe away any eardrops that run out of the ear when the patient sits up.
- ⑧ Do not block ear canal with cotton wool



## Practice 6. Noise maker test for assessing hearing in babies

- Find a quiet room and someone to help you.
- It needs two people to test the hearing – one to stand 1 meter behind and to one side of the baby(out of baby's vision) and make a noise with the noise maker and the other sit in front of the baby and watch to see whether the baby reacts to the sounds.
  - This reaction will depend on the age of the baby. If a baby is 6 months it may look for the sound, if a baby is 3 months old it may still of widen its eyes when sound presented.
- The noise from the noise maker should be soft to start, then getting louder enough.
- A variety of noisemakers can be used to get babies interest-eg. rice in a specimen jar, keys, crinkling plastic/cellophane, soft clicking of fingers, soft voice calling.
- The tester should ensure that their movement does not make the baby react this can be done by shaking an empty jar in the same way as the noisemaker and seeing if the baby reacts.
- Ask the parent to hold her baby or you can have them in a pram/carrier with the face clearly visible during the test.
- Ask parents/carers to ignore the sounds and not to react or move when the sound comes.
- The person in front gets the baby's attention, for example by showing a toy, a book or wiggling their fingers. The baby should be distracted but not overly interested.
- The person in front continues to distract the baby while the person testing makes a noise with the noisemaker.
- The person observing and distracting the child should determine if they see a clear response and to what level and kind of sound. This should be noted down by the tester.
- If the baby responds then the person standing behind moves to the other side and the test is repeated.
- At the end of the test a loud sound should be given to see if the baby gives a startle reaction indicating that they hear it as a loud sound.

If a baby or infants is 3 months- 6 months they should respond clearly to soft sounds (40-60dB) and startle to loud sounds. This would be an age appropriate response.



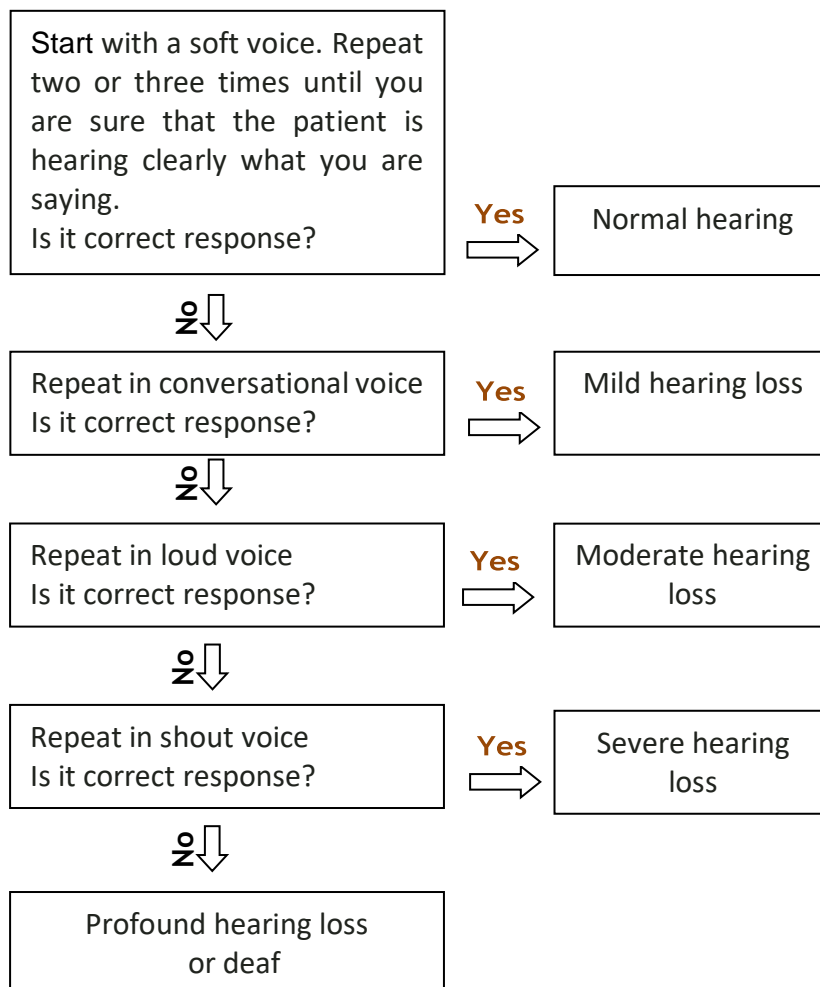
## Practice 7. Voice test for hearing screening

The voice test can be used to assess hearing not only adults but also younger children, but children at this age are often too shy to repeat words. Instead ask them to do things such as: 'Touch your nose', 'Point to your mouth', 'Put your hand on your tummy'

Adults and older children can be assessed using the voice test. Each ear needs to be tested separately. Practice is needed to get the voice levels right for the test.

- For soft voice is breathe out and then say the words softly. Do not whisper.
- Conversational voice is the quiet conversational voice you would use if speaking to someone sitting next to you.
- Loud voice is the level you would use to speak to someone across the other side of the room when there are other conversations in the room.
- Shouted voice is the level you would use to speak to someone on the other side of the road when there is outside. (eg. traffic noise)

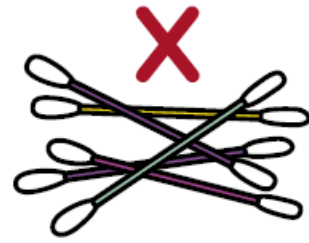
- ① Stand about an arm's length away behind and to one side of the patient
- ② Close off the other ear by pressing on the tragus



- ③ Change sides and test the other ear

## Annex 1. Ear Hygiene FOR all.

- DON'T remove ear wax
- DON'T put anything in the ear. No cotton buds, clips, toothpicks, sticks or Hopi candles.
- DON'T ignore an ear that has any pus or fluid coming out of it.
- DON'T treat any ear conditions with hot or cold oil, herba or home remedies.
- DON'T swim or wash in dirty water.
- DON'T listen to very loud noises or music for long periods as this can cause hearing loss.



*Remember that wax is produced by the ear to protect the ear and keep it clean. Cotton buds should never be used (not even for regular cleaning), as they may push wax further into the ear and damage the ear-drum. Sometimes the cotton may remain behind as a foreign body!*



## Annex 2. KEY MESSAGES FOR PRIMARY HEALTH CARE PROVIDERS

- 1 Families should be told that children are at increased risk of ear disease and hearing impairment.
- 2 Families should be told that ear disease can be reduced and hearing loss can be prevented with improved living standards, maternal education, breast feeding, provision of a smoke free environment and vaccination.
- 3 Families should be encouraged to attend the local health clinic as soon as possible whenever a child develops ear pain or discharge.
- 4 Frequent ear examinations are recommended for all children, even when the child is well.
- 5 Antibiotics (amoxicillin) are recommended for children with acute otitis media (identified by bulging eardrum or recent perforation). Antibiotics should be continued until the bulging and discharge have resolved.
- 6 Chronic suppurative otitis media (CSOM) should only be diagnosed in children who have persistent discharge through a perforation despite appropriate treatment for acute otitis media with perforation. Effective treatment of CSOM requires a long-term approach with regular dry mopping or syringing of ear discharge followed by the application of topical antibiotics.
- 7 All children with persistent bilateral OM (all types) for greater than 3 months should be referred to have their hearing assessed. Children can be assessed accurately even from birth.
- 8 Families of children with significant hearing loss (>20dB) should be told to get a full hearing assessment as soon as possible and be informed of the benefits of improved communication strategies and hearing aids.
- 9 Explain to families/caregivers that a child needs to hear people talking in order to learn to talk themselves. Children with OM do not hear well. They will benefit from lots of focused verbal communication.
- 10 Aim to provide patients or families/caregivers with the knowledge to manage their own health needs. Use communication techniques and resources that facilitate true understanding.

## Annex 3. DEFINITIONS AND ABBREVIATIONS

**Otitis Media (OM):** Refers to all forms of inflammation and infection of the middle ear. Active inflammation or infection is nearly always associated with a middle ear effusion (fluid in the middle ear space).

**Otitis Media with Effusion (OME):** Presence of fluid behind the eardrum without any acute symptoms. Other terms have also been used to describe OME (including 'glue ear', 'serous otitis media' and 'secretory otitis media'). OME may be episodic or persistent. A type B tympanogram or reduced mobility of the eardrum on pneumatic otoscopy are the most reliable indicators of OME.

**Acute Otitis Media (AOM):** General term for both acute otitis media without perforation and acute otitis media with perforation. It is defined as the presence of fluid behind the eardrum plus at least one of the following: bulging eardrum, red ear drum, recent discharge of pus, fever, ear pain or irritability. A bulging ear drum, recent discharge of pus, and ear pain are the most reliable indicators of AOM.

**Acute Otitis Media without Perforation (AOMwOP):** The presence of fluid behind the eardrum plus at least one of the following: bulging eardrum, red eardrum, fever, ear pain or irritability. A bulging eardrum and/or ear pain are the most reliable indicators of AOMwOP.

**Acute Otitis Media with Perforation (AOMwIP):** Discharge of pus through a perforation (hole) in the eardrum within the last 6 weeks. The Perforation is usually very small (a pin hole) when the eardrum first ruptures. The perforation can heal and re-perforate after the initial onset of AOMwIP.

**Recurrent Acute Otitis Media (rAOM):** The occurrence of 3 or more episodes of AOM in a 6 month period, or occurrence of 4 or more episodes in the last 12 months.

**Chronic Suppurative Otitis Media (CSOM):** Persistent ear discharge through a persistent perforation (hole) in the eardrum. Definition of CSOM varies in the duration of persistent ear discharge (from 2 weeks to 12 weeks).

**Dry Perforation:** Presence of a perforation (hole) in the ear drum without any signs of discharge or fluid behind the ear drum. Some people also refer to this as inactive CSOM.

**Ear Dry Mopping:** a procedure used to clear the External auditory meatus of debris, discharge, soft wax or excess fluid following irrigation, using cotton wool. Only clean their ears with a dry mop when the ear is discharging.

**Ear Flushing:** a routine procedure used to remove excess earwax, or foreign materials from the ear

**Ear Wicking:** a way to clean ears that are discharging when the materials needed for dry mopping are not available.

**Otitis Externa:** Infection of the ear canal associated with pain, swelling and discharge. Other terms have also been used to describe otitis externa (including 'tropical ear' and 'swimmers' ear'). This is not a form of OM.

**Screening for Otitis Media:** Any measurement (completed at a single point in time) that aims to identify individuals who could potentially benefit from an intervention for OM. This may include the use of symptoms, signs, laboratory tests, or risk scores for the detection of existing or future middle ear disease.

**Otoscopy:** Looking in the ear with a bright light to identify features associated with outer or middle ear disease. This is sometimes referred to as 'simple otoscopy'

**Grommet (Tympanostomy Tube):** A small tube surgically placed across the eardrum to reestablish ventilation to the middle ear. It is also called a 'ventilation tube', a 'PE tube' (pressure equalization tube), or a 'tympanostomy tube'.

**Mastoiditis:** Infection of the mastoid air cells of the mastoid bone (behind the middle ear).

**Myringotomy:** A surgical incision in the ear drum to drain fluid.

**Myringoplasty:** A surgical operation to repair a damaged ear drum.

**Tympanoplasty:** A surgical operation to correct damage to the middle ear and restore the integrity of the eardrum and bones of the middle ear.

**Mastoidectomy:** A surgical operation to remove infected mastoid air cells in the mastoid bone.

## Audiological Terms:

**Hearing loss:** Any hearing threshold response outside the normal range that is detected by audiometry. It can be at any test frequency (usually 125-8000 Hz) in either ear.

**Conductive Hearing Loss (CHL):** Hearing loss that results from dysfunction of the outer or middle ear that interferes with the efficient transfer of sound to the inner ear. It is characterized by a loss in sound intensity. (up to 45 dB HL)

**Sensorineural Hearing Loss:** Hearing

loss that results from dysfunction in the inner ear (especially the cochlea). This is where sound vibrations are converted into neural signals. This type of hearing loss may also occur secondary to dysfunction of any part of the auditory nerve.

**Screening for Hearing Loss:** Any measurement (completed at a single point in time) that aims to identify individuals who could potentially benefit from an intervention for hearing loss. This may include the use of risk factors, symptoms, signs, electro-acoustic tests or behavioral tests for the detection of existing or future hearing loss.

**Audiometry (Hearing Assessment):** The testing of a person's ability to hear various acoustic stimuli.

**Audiometer:** A specialist device to test air and bone-conducted hearing thresholds and ability to hear speech.

**Pure-tone Audiometry:** The assessment of hearing sensitivity for pure-tone stimuli in each ear. This is done using headphones (air conduction pathway) or via bone oscillators (bone conduction pathway). Testing is possible from around 18 months of age.

**Language Stimulation:** Refers to techniques that parents can use to encourage a child's language development. These include: imitation of the child's sounds, keeping a running commentary of activities, labelling things you and your child are seeing and expanding on the child's words. The main thing is encouraging parents to spend time talking and playing with their child.

## Annex 4. Available Audiologic Centre in Fiji



Name of Clinics	Location	Patient ages	contacts	Email
KOICA-CWM Audiologic center	CWM hospital 1 Waimanu road, Suva	Children from 5 to Adults	3311444	naifzia786@gmail.com
Frank Hilton Audiologic Center	139 Brown street, Suva	Born – 18 years	3384923 3313909	<a href="mailto:audiology@hilton.org.fj">audiology@hilton.org.fj</a> <a href="mailto:receivingoffice@hilton.org.fj">receivingoffice@hilton.org.fj</a>
Project Heaven	Tamavua Hospital, Tamavua, Suva.	Children from 5 to Adults	3320921 3323143	<a href="mailto:proheaven@connect.com.fj">proheaven@connect.com.fj</a> <a href="mailto:drkitione@gmail.com">drkitione@gmail.com</a>
South Pacific Hearing Aids	-Namaka Medical Center -41 Rewa St, Flagstaff, Suva	Children from 6 to Adults	9371383	South Pacific Hearing Aids Facebook Page
Tappoo Clinic	Level 4, Tappoo City, Suva	Children from 5 to Adults	3371133	<a href="mailto:tappoomc@gmail.com">tappoomc@gmail.com</a>
Advance Eye and Ear Care	Ba Town, opposite Ba Post Office	Children from 2 to Adults	8300046 9490255	<a href="mailto:sevaniaiatuks@yahoo.com">sevaniaiatuks@yahoo.com</a>



## **Annex 5. Essential Equipment and medicine for Primary Ear disease and hearing care**

- Otoscopes with spare bulbs and battery
- Tuning fork (512 Hz)
- Ear flushing set
  - 20 ml plastic syringe
  - Plastic needle
  - Warm clean water
- Cotton applicator for Ear Mop / Ear Wick
- Antibiotics
  - Amoxicillin
  - Augmentin
  - Ciprofloxacin
  - Septrin/Bactrim
- Anti-inflammatory
  - Paracetamol
  - Ibuprofen
- Ear drops
  - Ciprofloxacin ear drop
  - Chloramphenicol ear drops
  - 10% betadine solutions
  - 2 % Acetic acid

## Annex 6. Tuning Fork Test

### 1. Weber test

- The Weber test is a test of lateralization and establishes where a tone is perceived.

#### [Procedure]

- Strike the tuning fork and place it on the midline, typically on the patient's forehead, (but it can also go on the vertex, bridge of the nose or incisor teeth).
- Place your other hand gently, but firmly on the back of the patients head to ensure enough counter-pressure is applied.
- Hold the tuning fork in place for up to 4 seconds.

#### [Response]

- After giving the patient listening time ask them where the tone is heard:
  - Is it in both ears / centrally / in the head or towards the left or right?

#### [Interpretation]

- With symmetrical hearing or a symmetrical hearing loss the sound should be central
- With an asymmetrical sensorineural loss the sound should be heard in the better ear
- With an asymmetrical conductive hearing loss the sound should be heard in the poorer ear



### 2. Rinne test

- The Rinne test is a comparison of loudness of perceived air conduction to bone conduction in one ear at a time.

#### [Procedure]

- The practitioner should start with the ear where the Weber has lateralized to (if appropriate).
- Strike the tuning fork and hold the tines of the tuning fork approximately 25mm from the ear canal entrance.
- The orientation of the tuning fork is critical so ensure the acoustic axis is pointing towards the ear canal.
- Hold the tuning fork there for about 2 seconds. Without any interruption and without touching the tines press the footplate firmly against the mastoid (without any hair getting between the footplate and the mastoid).
- Place your other hand gently, but firmly on the opposite side of the patients head to ensure enough counter-pressure is applied.
- Hold the tuning fork in place for another 2 seconds.



#### [Response]

- After giving the patient listening time, ask them whether the tone is louder next to the ear or behind the ear.
- The patient should respond verbally. Children may choose to point to the ear rather than giving a verbal response.

#### [Interpretation]

- If air conduction (next to the ear canal) is louder, indicating either normal hearing or a sensorineural hearing loss
- If bone conduction (held on mastoid) is louder, indicating a significant conductive element to the hearing loss

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