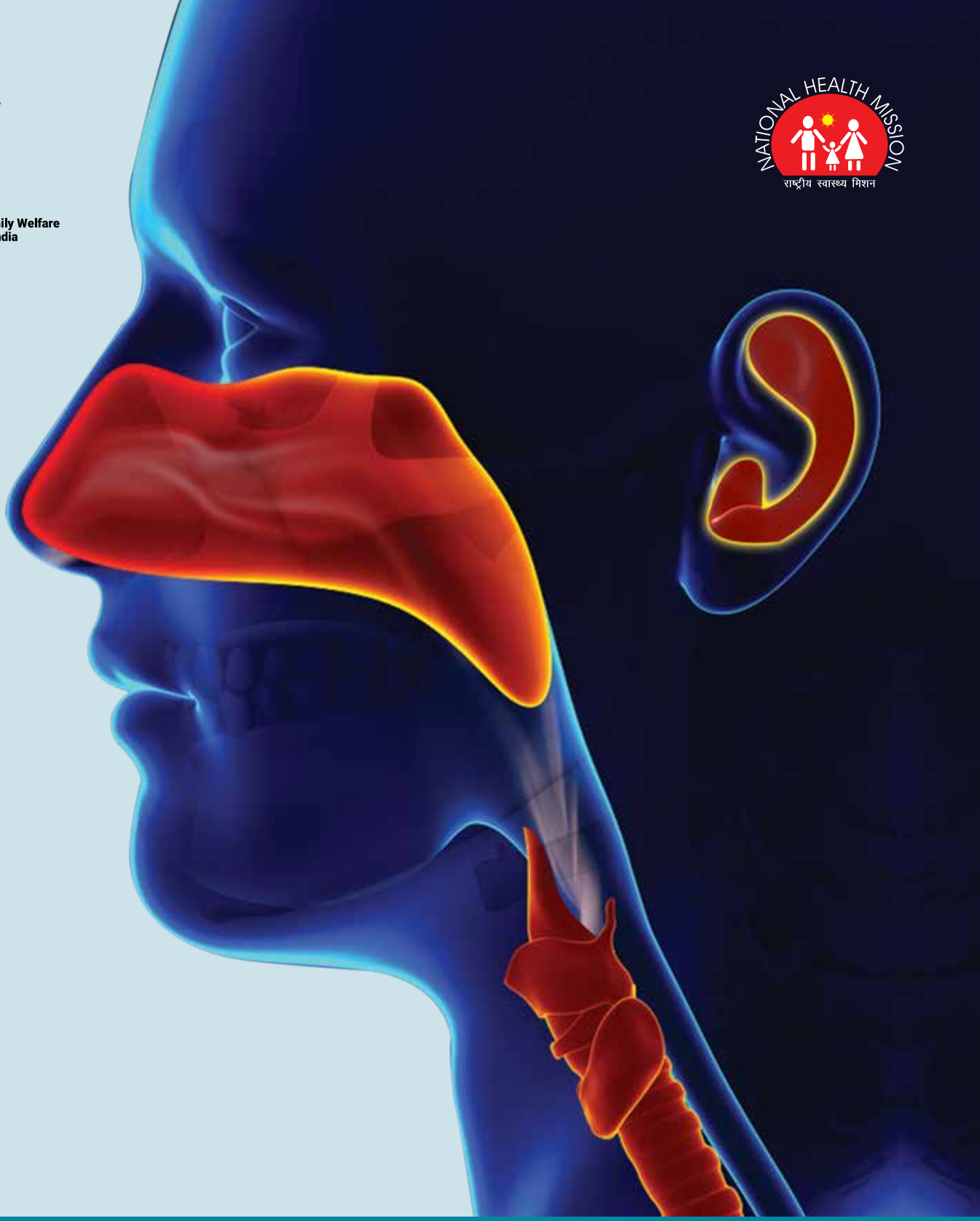
सत्यमेव जयते

Ministry of Health & Family Welfare
Government of India

NATIONAL HEALTH MISSION
राष्ट्रीय स्वास्थ्य मिशन



Training Manual on Ear, Nose and Throat (ENT) Care for Medical Officer

at Ayushman Bharat – Health and Wellness Centres

TRAINING MANUAL ON
EAR, NOSE AND THROAT (ENT) CARE FOR MEDICAL OFFICER
AT AYUSHMAN BHARAT – HEALTH AND WELLNESS CENTRES

2021

Purpose of this Module

Health and Wellness Centres (HWCs) are envisaged to deliver Comprehensive Primary Health Care that is universal and free to users, with a focus on wellness and the delivery of an expanded range of services close to the community. The HWC will enable the expansion of the services that go beyond maternal, child health, and communicable diseases to include care for non-communicable diseases, palliative, and elderly care, oral, eye and ENT care, mental health and first level care for emergencies and trauma.

With the upgradation of Sub Health Centres (SHCs) and Primary Health Centres (PHCs) as Health and Wellness Centres (HCWs), all the primary health care teams – from medical officer to ASHA should be trained to deliver these health packages effectively. These training modules thus have been designed as a tool to support the primary team in providing expanded range of services to the community.

It is not unknown that majority of OPD footfall at a primary setup constitute of ailments related to ENT which are usually referred to higher centres – district hospital, to seek the specialist consultations. Many patients are reluctant to visit the referral health facility due to reasons like distance, long waiting hours, other priority work, loss of wage, second encounter at health care facility, and therefore, the burden of morbidity keeps on increasing.

This module has been designed for medical officers posted at Health and Wellness Centres (PHC/UPHC-HWC) and contains a brief discussion on common Ear, Nose and Throat diseases, their identification and management at primary health centre, indications for referral to higher centre, referral pathway including continuum of care for such diseases, and preventive ENT services that can be done at the HWC level to spread the awareness for the same.

The main aim of the medical officer at HWC is to reduce the burden of out-of-pocket expenditure or catastrophic health expenditure on patients seeking health care services at HWCs, decongestion of secondary and tertiary health facilities for minor conditions, maintain continuum of care and eventually improve the population coverage for utilisation of health care services.

CONTENTS

ABBREVIATIONS

PHC	Primary Health Centre
HWC	Health and Wellness Centre
SC	Subcentre
HWC-SC	Health and Wellness Centre-Subcentre
PHC-HWC	Primary Health Centre-Health and Wellness Centre
CPHC	Comprehensive Primary Health Care
C/0	Complain of
ENT	Ear, Nose & Throat
NPPCD	National Programme for Prevention and Control of Deafness
DH	District Hospital
EAC	External Auditory Canal
ASOM	Acute Suppurative Otitis Media
CSOM	Chronic Suppurative Otitis Media
PTA	Pure Tone Audiometry
BPPV	Benign paroxysmal positional vertigo
ANM	Auxiliary Nurse Midwife
ASHA	Accredited Social Health Activis
VHSND	Village Health Sanitation and Nutrition Day
RBSK	Rashtriya Bal Suraksha Karyakram
NPHCE	National Programme for Health Care of the Elderly
H/o	History of
F/u	Follow up
NARES	Non Allergic Rhinitis with Eosinophillia Syndrome

01
INTRODUCTION

The most common problems warranting a visit to a doctor or a health care provider in developing countries are related to ear, nose, and throat (ENT). The ENT problems are the most common problems for which treatment ranging from basic home remedies to medical treatments are available, and most individuals manage their problem in the community without seeking professional help. The inadequate provision of good primary ENT care at Primary Health Centre throughout India not only exposes the patients to potentially life-threatening complications but also leads to hearing disabilities which are nearly 6% in India. In addition, due to lack of specialist professionals in this field, these problems are treated by community practices which many times turn into complications.

From the data available from various community-level surveys in India, the burden of ENT related illnesses is ranging from 4.3% to 11% in certain districts. Out of these, ear, nose and throat related disorders contribute 60%, 27% and 13% to the burden respectively, thus making disorders leading to hearing loss a major public health concern. The common ear problems include ear wax (18.7%), Chronic Suppurative Otitis media (5.4%), dry perforation of Tympanic Membrane (0.6%), Congenital deafness (0.2%) and age-related hearing loss i.e., presbycusis (10.5%).

Unfortunately, it seems to be a common misconception with many involved in provision of primary care services that ENT diseases and hearing disorders can only be managed in tertiary health care centres, which are limited in number and hence, largely unaffordable. This issue, along with inadequate number of ENT specialists in our country, creates a huge congestion (patient load) at tertiary care setup.

With the introduction of Comprehensive Primary Health Care and its extended service packages at the level of HWC, the medical officer should be skilled and equipped to provide quality ENT care at the primary centre to mainly focus on management of acute illness, proper referral of cases and timely follow-up on the same.

02

SERVICE DELIVERY FRAMEWORK AND ROLE & RESPONSIBILITY OF MEDICAL OFFICER (MO) IN DELIVERING ENT SERVICES

As a Medical Officer, it is important for you to be well acquainted with the service delivery framework for ENT Care services in your area. This will help you to understand the range of services which would be provided at each level and strengthen the continuum of care and referral linkages.

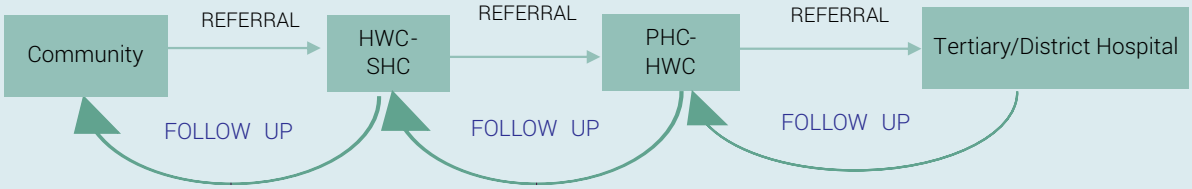
	Service delivery framework for ENT Services		
	Community Level	**HWC**	**Referral Centre**
Care for Common ENT problems	• Care for running nose • Early identification and referral for common ENT problems • Assisting the mobile health teams/RBSK for screening of congenital disorders and referral • First aid for nosebleeds	• Management of Upper Respiratory Tract Infections, epistaxis, otomycosis, otitis externa, etc. • Early detection of hearing impairment and deafness with referral • First aid for injuries/ stabilisation and then referral • Removal of Foreign Body, lodged superficially • Identification and referral of thyroid swelling, discharging ear, blocked nose, hoarseness, and dysphagia	• Management of all Acute and chronic ear, nose and throat problems. • Surgical care for ear, nose, throat • Diagnosis and management of hearing language, voice and speech impairment • Pre-cochlear implant evaluation; Switch-on and cochlear implant mapping • Management including nasal packing for epistaxis, tracheostomy, foreign body removal

Screening and early detection	• Community based newborn screening at home through MPWs for newborns till six weeks of age, during home visits/ immunisation sessions using devices, which are approved for the Public Health interventions. • For children from six weeks to 18 years of age – Anganwadi Centre (AWC)/ school-based screening will be undertaken through the Rashtriya Bal Swasthya Karyakram (RBSK).	• Early detection of common problems related to ENT, including hearing impairment and deafness. • Identification and referral of thyroid swelling, discharge from ear (wet ear), blocked nose, hoarseness and dysphagia. • Undertake Otoscopy for ear discharge after Community Health Officers (CHO) are trained on its use. • Diagnosis and management for common diseases like otomycosis, otitis externa, ear discharge, etc.	• Organising screening camps as an outreach activity for vulnerable and marginalised community. • Management of common ENT problems and of referred cases from Health and Wellness Centres (HWCs-SHC) and communities.
Health promotion activities	• Educating community about healthy ENT habits. • Awareness on protection against excessive noise, safe listening and improving the acoustic environment. • Informing children and adults with ENT problems, family members and the general public about available options for their inclusion and integration in the community.	• Educating community about healthy ENT habits. • Promotion and implementation of immunisation, maternal and perinatal health care and child health care.	• Advocacy for appropriate ENT services, including otological and audiological services, at health care facilities as close to the community as possible.

ROLE AND RESPONSIBILITIES OF MEDICAL OFFICER

As in-charge of HWC, MO is not only responsible for service delivery at PHC level but also plays a role of supervisor to support the health care team in the linked SHC-HWC to provide quality care to the patients seeking treatment for ENT problems and preventive/ screening activities at community level.

Here the concept of 'Continuum of Care' plays a key role. As we know, in order to decrease the congestion at tertiary level, quality health services should be provided at the primary care facilities including PHC and SHC-HWC. At the same time, it is equally important to bring awareness at the community level and ensure follow up of patients who have received treatment from primary or higher level health facilities back to the community.



Key roles of Medical Officer are as following:

Management and Referral

- Management and/or timely referral of ENT cases with complications which require secondary level care including surgical intervention. This module explains both primary as well as secondary level management of ENT conditions. As MO, you should provide primary level care to the patient, however, knowledge on secondary level care is important to counsel a patient in case of referral.
- Mapping of the public health facilities which are equipped for confirmation and management of complications of ENT diseases nearest to your HWC for appropriate and timely referral of the patient.
- Management of common ENT problems and of referred cases from Health and Wellness Centres (HWCs-SHC) and communities.
- Providing/referral of patients for hearing aids, and other listening and signalling devices.
- Offering support services to hearing aid users, e.g., day-to-day care such as change of batteries, do's & don'ts while handling the aid, etc.
- Advocacy for appropriate ENT services, including otological and audiological services, at health care facilities as close to the community as possible.
- Organising screening camps as an outreach activity for vulnerable and marginalised community.
- Ensure timely follow up of the patients with complications.

IEC/BCC

- Raising awareness on associated risk factors, healthy lifestyle, and benefits of screening for common ENT problems. Key messages to include awareness of structure and normal functions of ear, nose and throat, and causes and prevention of common ENT problems.
- Using community-based platforms like Village Health Sanitation and Nutrition Committee (VHSNC), Mahila Arogya Samiti (MAS) to educate community on healthy habits related to ENT, and early identification of common ENT problems.

- Educating school teachers and Anganwadi workers about the special needs of children with ENT problems, including deaf children.
- Educating community on early signs of ear, nose and throat infections, including pain, itching and swelling.
- Counselling community on early care seeking for cold, sore throat, allergies, and common ENT problems.
- Creating awareness on the dangers of self-medication and counselling on not to attempt removal of foreign body from ear, nose and throat at home.
- Sensitisation of community to seek care/advice only from a qualified/trained health care professional for foreign body impaction (ear, nose, throat) and ear wax conditions.
- Educating community for accidents and injury prevention.
- Enabling a child friendly environment to minimise the chances of foreign body insertion in nose and ear like grains, food particles, insects, or objects.

Capacity Building

- As in-charge of PHC-HWC, the Medical Officer should train and mentor the team at SHC-HWC level – MPWs and CHOs on preventive and promotive care of common ENT problems, early detection of cases for ENT conditions, primary management of common ENT conditions, referral, and follow-up mechanism.
- Medical Officer should mentor ASHAs to identify signs and symptoms of common ENT related conditions, health promotion, risk factors associated with ENT conditions, and services available at HWCs and referral centres.
- ASHA facilitators should also be trained for enabling better support to ASHAs in the extended package of services.

Monitoring and Supervision

- Technical support for the staff nurse/pharmacist/lab technician/MPW/ASHA/CHO for appropriate maintenance of records and reports on screening, treatment, counselling, referral and follow up, and timely submission to higher level.
- Teleconsultation with the CHO/MPW for minor ailments, drug refilling for chronic diseases and timely decision on referral system can be very beneficial at patient level.

03

NATIONAL PROGRAMME FOR PREVENTION AND CONTROL OF DEAFNESS (NPPCD)

Taking note of the 6.3% prevalence of disabling hearing loss in India, the National Programme for Prevention and Control of Deafness (NPPCD) was launched by the Government of India on a pilot basis from August 2006 and formalised as a national programme in 2008. It has a vision to prevent deafness, reduce the total burden of deafness, and empower the hearing-impaired to lead a socially and economically productive life, by 2030.

The focus of the programme is to generate awareness about ear and hearing problems and to provide services at the primary health care level. The awareness-generating activities are being undertaken through electronic and written media, and include person-to-person communication. The service delivery is strengthened through capacity-building, screening activities and referral system.

The district hospitals have been upgraded with provision of diagnostic and surgical equipment as well as hearing aid fitting services. The additional human resources are employed at the district hospital, including an audiological assistant and a teacher for young hearing-impaired clients. As part of the programme, doctors at primary and community health centres are reoriented towards ear and hearing problems and provided with the basic diagnostic equipment for ear care.

The function of health care workers at various levels within the health care delivery system has been defined and trainings are oriented towards performance of the identified tasks with a focus on awareness generation in the community, early identification and referral. The training is based on WHO ear and hearing care manuals. The community-based camps and school screening activities through the school health system are a part of the programme. The programme also aims to strengthen existing intersectoral linkages for rehabilitation of people with hearing loss.

04

MANAGEMENT OF COMMON EAR CONDITIONS

Overview of Basic Anatomy of Human Ear

- Hearing in humans plays a central role in social communication, and also serves as a warning and orientation system that functions in all spatial directions. The vestibular system is important for maintaining balance and stability, and for spatial orientation.
- The ear is divided into three compartments: external, middle, and inner. The pinna is composed of cartilage covered by skin. The shape of the cartilage is very important, since it gives the shape of the auricle.

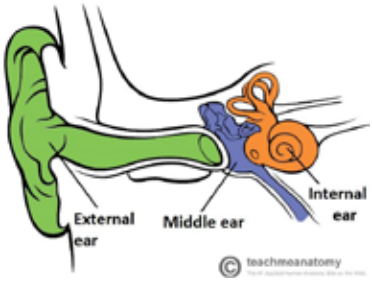


Figure showing External, Middle and Inner Ear

- The external auditory canal measures 2.5 cm approximately. The outer one-third is cartilaginous, and the inner two-third is bony.
- The middle ear is comprised of air-filled cavities that are subdivided into tympanic cavity and mastoid air cells. The eustachian tube connects the middle ear to the nasopharynx. The posterior one-third of the adult eustachian tube is bony and lies within the petrous portion of the temporal bone. The anterior two-third is cartilaginous. In adults, the tube lies at an angle of 45° in relation to the horizontal plane.
- The inner ear is located in the petrous part of temporal bone and consists of multiple interconnected ducts that are collectively known as labyrinth. There are two types: membranous labyrinth and bony labyrinth.

Hearing starts with the outer ear. When a sound is made outside the outer ear, the sound waves or vibrations travel down the external auditory canal and strike the eardrum (tympanic membrane), and the eardrum vibrates. The vibrations are then passed to three tiny bones – malleus, incus, and stapes (also known as auditory ossicles) in the middle ear which amplify the sound. The ossicles then sends the sound waves to the inner ear and into the fluid-filled hearing organ (cochlea). Once the sound waves reach the inner ear, they are converted into electrical impulses. The auditory nerve sends these impulses to the brain. The brain then translates these electrical impulses as sound.

Diseases of the External Ear

1. Impacted Ear Wax

External Auditory Canal (EAC) is divided into two parts. The inner two-third is bony and outer one-third is cartilaginous. This outer is lined by keratinising stratified squamous epithelium which produces Ear Wax (Cerumen). Ear Wax (Cerumen) consists of desquamated keratin mixed with lipid and peptide secretions from sebaceous and ceruminous glands respectively. Ear wax plays a protective role in the EAC by forming a barrier over the skin, creating a mildly acidic environment (pH5.0–7.0) and it is bacteriostatic.

Presentation:

- Blocked ear
- Decreased hearing
- Earache
- Tinnitus
- Giddiness
- Reflex cough (due to stimulation of Vagus nerve)

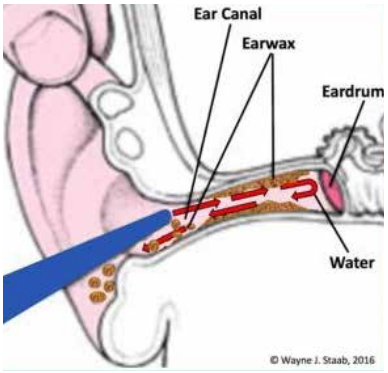


Figure: Jet of water pushing wax/ foreign body out in syringing

Management:

i. Syringing: (Refer to Annexure)

- Patient is seated with ear to be syringed towards the doctor/ examiner. After pulling the pinna upwards and backwards, water at body temperature is delivered through a syringe along the postero-superior wall of EAC (as shown in figure). The pressure of water builds up in the meatal recess and pushes out the wax.
- Commercial drops containing cerumenolytic agents like paradichlorobenzene and Soda Bicarbonate drops 2% can be used if wax is too hard and impacted.
- Complication of syringing:
  - Vertigo (if water is too hot or too cold)
  - Rupture of Tympanic Membrane
  - Reactivation of dormant Otitis Media
- Contraindication of syringing:
  - Perforated Tympanic membrane
  - Acute inflammatory condition
  - Visible blood discharge from EAC

ii. Instrumental manipulation: Only to be done by a skilled medical officer and under direct vision. Jobson-Horne probe/cerumen hook is often used for the procedure. First, a space is created between the wax and meatal wall, the instrument is passed beyond the wax and then the whole plug is dragged out in a single piece.

2. Trauma to Pinna

Pinna Laceration	**Pinna Hematoma**
Trauma with a sharp object, e.g., a knife, results in a laceration of the skin and/or cartilage of the pinna.	A sub-perichondrial or pinna hematoma is a collection of blood between the auricular perichondrium and cartilage. It normally occurs as a result of a shearing action on the pinna, tearing the perichondrial capillaries. This type of blunt injury can occur with contact sports or assaults. Also known as boxers ear or wrestlers ear.
Management: • The wound should be washed thoroughly, and any necrotic tissue debrided. It may be necessary to trim exposed cartilage or use a local skin flap to provide soft tissue cover. • A tetanus booster is recommended in those whose vaccination schedule is unknown. • In the presence of a human bite, Hepatitis B vaccination is generally provided. • Broad-spectrum antibiotics are prescribed in the context of delayed presentation and/or bites.	**Management:** • Drainage of the hematoma either by aspiration or by incision, usually under local anaesthetic, forms the mainstay of treatment. • Broad-spectrum antibiotics are prescribed if there is delayed presentation and high risk of infection.
	

3. Diseases of External Auditory Canal

i. External Auditory Canal Injury:

The EAC skin can be traumatised by insertion of an object into the ear canal resulting in some bleeding from the canal and associated otalgia. At times, the injured area can become infected. Other cause of direct trauma to the EAC may include chemical burns from a hearing aid battery.

Management:

- Any foreign object should be removed.
- Hearing aid or any other batteries should be removed with urgency as these will cause progressive damage.
- The EAC should be kept dry until the skin has healed.
- Aural toilet and topical antibiotic/steroid drops are recommended in the presence of infection.
- If history of hearing aid button battery is there, put 2% Acetic Acid drops.

ii. External Auditory Canal Infection

- Infections of the EAC are known as Otitis Externa. These can be bacterial, fungal, or viral.
- It generally develops within 48 hours and can last up to 3 weeks.
- Causes include any chemical or physical irritation (including syringing and cotton bud abuse) which can predispose one to infection.
- Any cause of immunosuppression, including diabetes, can also be a predisposing factor for otitis externa.
- The common symptoms include itching or pain (which can be severe) with variable discharge and a feeling of blockage; a conductive hearing loss may be noted due to occlusion of the external canal.
- Contact dermatitis, eczema and psoriasis can affect the skin of the external canal.
- If there is any bony tenderness over the mastoid, or the pinna is protruding, consider mastoiditis as a differential diagnosis.

Fungal Otitis Externa/ Otomycosis	• Most Common type, also known as Otomycosis. • Most common organism is Aspergillus niger followed by Candida. • Management by careful ear toileting and topical antifungal for at least 3 weeks.
Bacterial Otitis Externa/ Furunculosis	• Also known as furunculosis. • Most Common organism is Staphylococcus aureus. • Usually, patient complains of severe pain which increases with movement of jaw. • On examination of EAC, furuncle can be seen. In case furuncle is ruptured, then a frankly purulent (without mucus) discharge can be seen. If mucopurulent discharge is seen than infection of middle ear should be suspected. • On pressing the tragus, patient complains of pain, known as Tragal Sign. • Management is by antibacterial antibiotic like T. Amox 500 mg (20-40 mg/kg for children) TDS or T. Amoxicillin plus Clavulanic acid 625 mg (20-40 mg/kg for children) TDS for 5 days along with other supportive management. A 10% Ichthammol-glycerine pack can be put in EAC to reduce oedema. • For pain management – Tab Ibuprofen 400 mg TDS in adults and Syp. Ibugesic 10-15mg/kg/dose TDS in children can be given.
Diffuse Otitis Externa/ Swimmer's Ear	• Also known as Singapore ear/tropical ear/telephonist's ear/ swimmer's ear. • Mostly seen in tropical area where climate is hot and humid. • Excessive sweating or water of the swimming pool changes the acidic environment to alkaline which leads to growth of pathogens and subsequently leads to bacterial infection. • Most common organism responsible is Pseudomonas aeruginosa followed by Staphylococcus aureus. • Management is done by antibiotic like T. Amox 500 mg (20-40 mg/kg for children) TDS or T. Amoxicillin plus Clavulanic acid 625 mg (20-40 mg/kg for children) TDS for 7 days, along with ear toileting, use of medicated ear pack and keeping the ear canal dry. • A gauze wick soaked in antibiotic preparation is inserted in the ear canal and the patient is advised to keep it moist by instilling the same drops twice or thrice a day. Wick is changed daily for 2–3 days until it can be substituted by ear drops.

Malignant Otitis Externa/ Necrotizing Otitis Externa	• It is not a malignant condition. • Malignant (necrotizing) otitis externa is a rare but dangerous extension of infection into the mastoid and temporal bones. • It is more common in immunocompromised patients, such as the elderly diabetic, and is often caused by Gram negative bacilli such as Pseudomonas aeruginosa. • The patients often have a severe deep otalgia and may develop cranial nerve palsies. (MC VII cranial nerve). • Diagnosis: Malignant otitis externa is diagnosed by high definition computed tomography (CT) or magnetic resonance imaging (MRI) scans of the temporal bones. Tc^{99}Scan can be done for early diagnosis. Since these equipment are not available at the primary health facility level, the patient should be referred to a higher centre in case severe otalgia with cranial nerve involvement is present. • Management: Management should be done only at tertiary care centres under the supervision of ENT specialist. As a PHC-MO, it is important for you to do an early identification through signs/symptoms and refer the patient to the higher centre after providing symptomatic treatment like prescribing painkillers and antibiotics like ciprofloxacin. • These patients also need nutrition, blood sugar control (if diabetic) and analgesia. Debridement of necrotic material can be done.
Viral Otitis Externa Herpes Zoster Oticus	• Infection by Herpes zoster virus is characterised by vesicle formation over tympanic membrane, EAC skin, pinna and even skin surrounding the pinna along the dermatome of the involved nerve. • Herpes zoster of the ear with facial palsy is known as Ramsay Hunt syndrome. • Management is by steroid and antiviral drugs.

4. Disease of Tympanic Membrane (TM)

Disease of tympanic membrane may be categorised as primary or secondary as per the conditions affecting external ear, middle ear or eustachian tube.

Normal TM: It is shiny and pearly grey in colour with the concavity on its lateral surface. A bright cone of light can be seen in the anteroinferior quadrant. A normal TM is mobile when tested with pneumatic otoscope or siegle's speculum.

Figure showing Normal TM of Right side showing bright cone of light

Conditions related to Tympanic membrane

a. **Retracted TM:**

- Dull and lustreless
- Cone of light is absent
- Handle of malleus appears small
- It is usually seen as a result of negative intra-tympanic pressure when the Eustachian tube is blocked

b. **Myringitis bullosa:**

- Painful condition
- Formation of haemorrhage blebs
- Caused by virus or Mycoplasma pneumoniae

c. **Traumatic Rupture:**

- Usually seen due to hair pin, matchstick, or unskilled removal of foreign body
- Other causes include sudden change in the air pressure, e.g., a slap, sudden blast near ear, forceful Valsalva, pressure by fluid, e.g., diving, water sport or forceful syringing, and fracture of temporal bone.

d. **Perforation of TM:**

- Management depends on location of perforation which might be central, attic or post or marginal. May be associated with long-standing infection like CSOM. Immediate referral to higher centre should be done in such cases.

Consultation with ENT specialist is advisable for diseases involving tympanic membrane as it has wide spectrum of underlying causes.

Diseases of Middle Ear

1. Acute Suppurative Otitis Media (ASOM)

- It is an acute inflammatory condition of middle ear cleft involving Eustachian tubes, middle ear, Antrum (opening of mastoid air cells in middle ear) with pus discharge from external auditory canal due to bacterial infection or following exanthematous fevers. It is also called safe ear in case infection is limited to lower part of Eardrum.
- Most common route of ASOM is through Eustachian tube or any dysfunction of it.
- Most common organism causing is Streptococcus pneumoniae followed by Haemophilus influenza.

- **There are four stages/course:**
  - Stage of tubal occlusion
  - Stage of hyperaemia
  - Stage of suppuration
  - Stage of resolution
- **Symptoms & Signs:**
  - Severe Pain
  - Fever
  - General malaise
  - Vomiting
  - Irritability
  - Discharge from ears
  - Mucopurulent discharge after dry mopping or suction.
  - Tympanic membrane may show congestion, perforation, and pulsatile discharge
  - Signs of upper respiratory tract infection like sinus, nasal & throat involvement

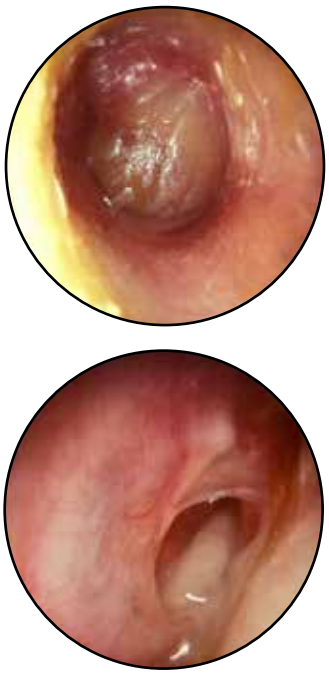


Figure showing inflamed middle ear cleft in ASOM

- **Management:**
  - Steam inhalation and keep the ear clean in case of pus discharge
  - For fever – T. Paracetamol 500 mg SOS for adults and 10-15 mg/kg in case of children
  - Cap. Amoxycillin 250-500 mg 8 hourly for 7 days for adults. For children, 20-40mg/kg in 3 divided doses for 7 days.

    OR

    Cap. Cephalexin 250-500 mg 8 hourly. For children, 20-40mg/kg/day in 3 divided doses

    OR

    Cap. Amoxicillin plus Clavulanic acid 625mg 12 hourly. For children (2-6 years), 375mg 12 hourly.
  - Xylometazoline HCl 0.1% 1-2 nasal drops in each nostril 1-2 times daily. For children, (0.05%) 1-2 nasal drops 1-2 times (Refer to Annexure on use of nasal drops)

Refer to ENT Specialist if there is intense pain, bulging of the ear drum, persistent fever or patient is not responding to treatment.

2. Chronic Suppurative Otitis Media (CSOM)

It is a chronic inflammatory disease characterised by foul smelling ear discharge with cholesteatoma (skin in the wrong place). There are two types of CSOM depending on the location – benign/safe ear and unsafe ear. Benign/safe ear involves the anteroinferior part of middle ear cleft whereas involvement of posterosuperior part of the cleft is called as unsafe ear (infection may get routed to nearby structures leading to complications).

Figure showing suppuration seen in CSOM

The cholesteatoma is aggressive in nature and has got tendency of bone erosion leading to intracranial and intratemporal complications. It is also called as Atticoantral disease or unsafe type of CSOM.

Symptoms & Signs:

- Usually scanty, intermittent, odourless mucoid or mucopurulent discharge. If associated infections, foul smelling & continuous ear discharge may be present, occasionally blood stained
- Gradually increasing hearing loss – conductive type
- Perforation – usually central
- May have associated polyp
- Fever – due to Acute Mastoiditis, Meningitis, lateral Sinus thrombosis (fever chill and rigors)
- Headache – due to Meningitis, Extradural abscess
- Vertigo, Tinnitus, Vomiting – due to Labyrinthitis, Brain abscess, Increased intracranial tension, Meningitis
- Facial weakness or paralysis
- Post aural swelling due to Mastoiditis

Management:

a. Investigations (needs referral to a higher centre where following investigations are possible):
   i. Oto microscopy
   ii. Aural swab for culture and anti-bacterial sensitivity test
   iii. X-ray mastoids/CT-scan/MRI to confirm the destructive pathology and spread of disease

iv. Pure tone Audiometry – It gives an assessment of degree of hearing loss and its type

v. Investigations to assess the co-morbid conditions (Biochemical & other lab investigations)

b. Treatment:

i. Patient should be referred to a higher centre after giving symptomatic treatment.

ii. Ear toileting should be done to remove all discharge and debris. It can be done by dry mopping (See Annexure) or suction clearance.

iii. Topical antibiotics:

a. Ciprofloxacin HCl 0.3% w/v ear drops 2-3 drops 3-4 times daily

b. When ear infection is associated with marked inflammation – Combine Prednisolone 0.5% + Chloramphenicol 5% + Lignocaine 2% + Acetic acid 2% – 3 4 drops 3-4 times daily. (See Annexure)

iv. In case of profuse mucopurulent discharge and for any associated upper respiratory tract infection, give systemic antibiotics like Cap. Amoxycillin 750-1500 mg in 3 divided doses, and for children, give 20-40 mg/kg in 3 divided doses. The choice of antibiotic depends on the culture and sensitivity report of the pus along with Tab. Cetirizine 10mg once daily, for children suspension 5ml.

Complications of CSOM (needs referral to higher Centre)

i. Facial Nerve palsy

ii. Labyrinthitis

iii. Meningitis

iv. Brain abscess – Extradural, Subdural abscess

v. Lateral sinus thrombosis

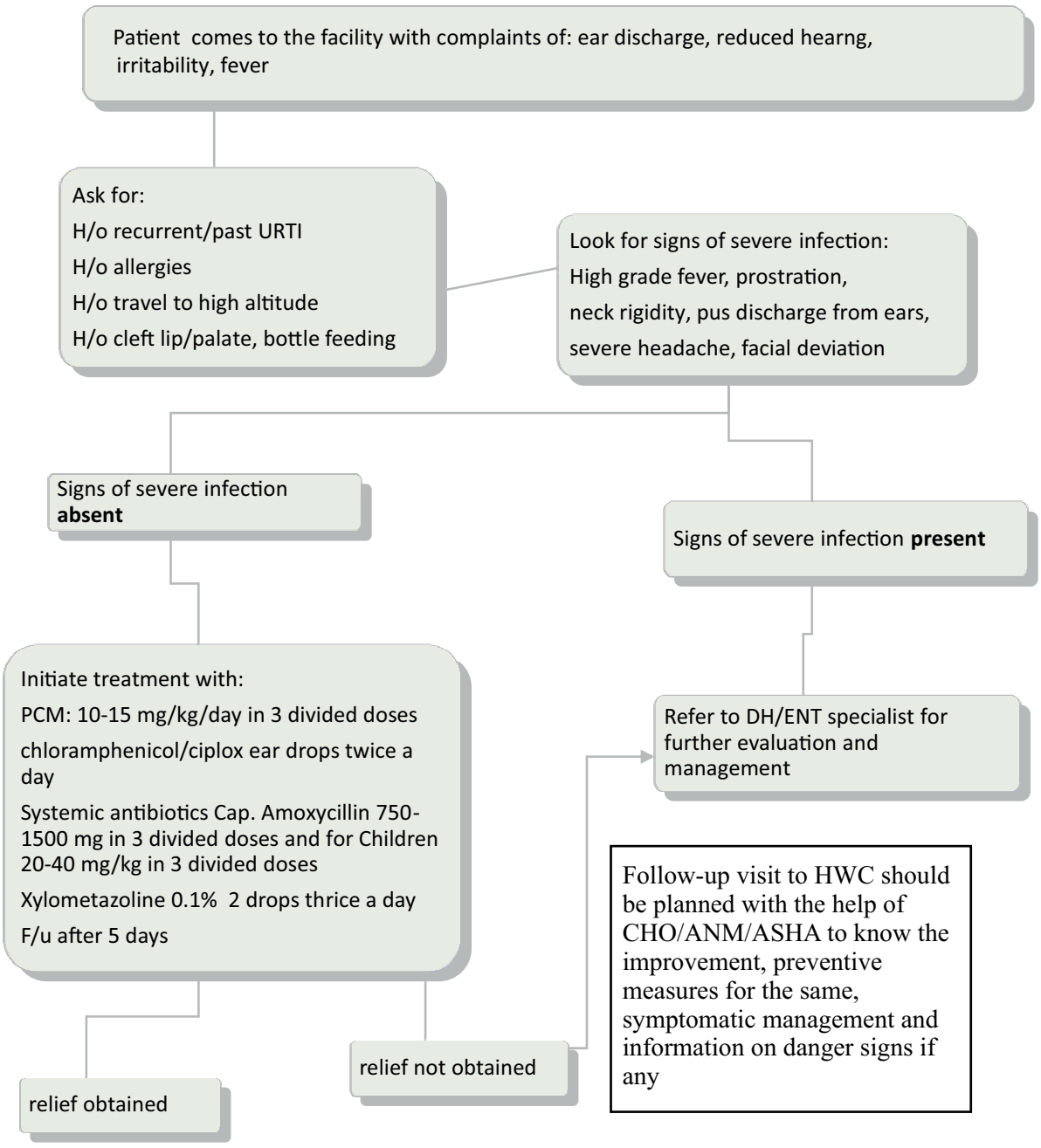
vi. Mastoiditis

vii. Petrositis

Indications for referral to ENT specialist:

- If patient has persistent foul smelling discharge in spite of treatment, with headache and vomiting and vertigo, immediately refer the patient to otorhinolaryngologist for further treatment as patient may have unsafe CSOM with complications.

Referral Pathway for CSOM



3. Serous Otitis Media

It is characterised by the presence of non-purulent fluid in middle ear cleft due to Eustachian tube dysfunction, unresolved acute otitis media or viral infection. It is one stage further then Eustachian tube catarrh where fluid having a consistency of glue collects in the middle ear producing conductive deafness.

Symptoms & Signs:

- Deafness
- Sensation of fluid
- Tinnitus
- Earache and ear drum appear to be normal, lustreless retracted or fluid level or air bubbles may be seen behind the drum
- Look for Adenoid enlargement by X-ray ST Neck – Lateral View

Management

a. Investigation

- Audiogram reveal conductive deafness
- Impedance audiometry show flat type of curve (B curve)

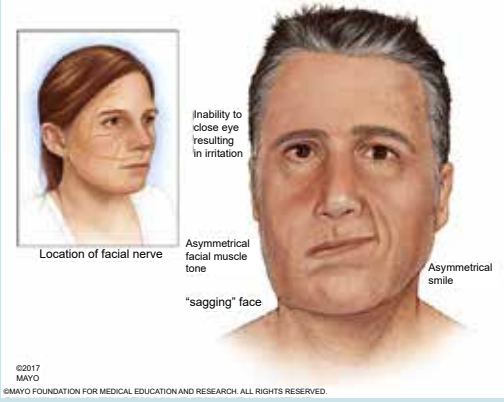
b. Treatment

- Analgesic – For adults: Tab. Diclofenac 50 mg TDS x 5 days. For children: Ibuprofen 200mg TDS
- Antipyretic – For adults: Paracetamol 325 mg TID x 5days; for infants and children over 3 months: 5 to 10 mg/kg 3-4 times/day (maximum daily dose 40 mg/kg/day)
- Decongestant nasal drops like Oxymetazoline or Xylometazoline – 1% for adults and 0.5% for children (See Annexure). This will help reduce congestion
- Symptomatic treatment – Application of dry local heat to relieve pain
- Antibiotic indicated: Cap. amoxycillin 250 mg with clavulanic acid 375 mg TDS for adults and in dose of 20-40mg/kg TDS for children for 21 days.
- Surgical treatment: For patients not responding to long term pharmacological measures. This includes myringotomy with or without grommet insertion, adenoidectomy, treatment for sinusitis. The patient needs to be referred to a higher centre.

Facial Nerve and its disorder

Bell's Palsy

- Most common idiopathic cause of facial nerve palsy
- Risk factors: immunosuppressed condition like HIV AIDS, Diabetes, Pregnant status
- Complete recovery is seen in 70-80% of the cases
- **Presentation:** acute onset, unilateral, rapidly progressing lower motor neuron facial palsy. Sometimes, other cranial nerve like V, VIII, IX and X may be involved
- **Poor prognostic sign:** Complete palsy (i.e., involvement of upper motor neuron too), loss of tearing from eyes and salivation
- **Management:**
  - Oral steroid (1 mg/kg maximum up to 60 mg prednisolone) – gradual tapering by halving the dose every 5 days over 21-day period should be done and if patient is diabetic, blood glucose monitoring is also required
  - Antiviral like acyclovir should be started within 72 hours of palsy
  - Vitamin B supplements
  - Physiotherapy plays a very important role in recovery (facial massage and exercise)
  - Eye care (in form of lubrication and covering the affected eye during sleep is advised)



Ramsay Hunt Syndrome

- Rare form of facial palsy
- Caused by Herpes Zoster infection of external ear, also known as Herpes Zoster of the ear
- It is because of reactivation of latent Varicella Zoster Virus (HZV) in the geniculate ganglion
- With pain, patient will typically complain of vesicles over the ear canal, pinna and skin surrounding it
- Extension of infection to VIII nerve might lead to hearing loss and vertigo
- Other cranial nerves might also get involved
- Prognosis is poorer than Bell's Palsy
- It is advisable to consult ENT Specialist before initiation of treatment which is same as Bell's Palsy

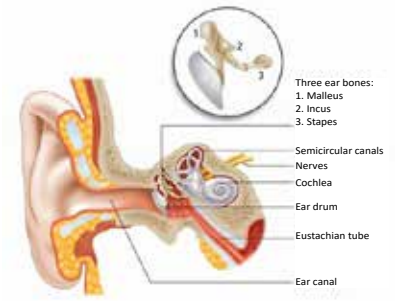
Earache (Otalgia)

Pain in the ear is known as Otalgia. It is a symptom and thus it is essential to find the cause before starting any specific treatment. It commonly occurs during childhood, although it may occur in adults also.

Causes:

a) **Primary otalgia** (most common):

- The cause of the pain exists within the ear itself. E.g., external otitis, otitis media, mastoiditis, impacted wax etc.



b) **Secondary otalgia** (needs referral to higher centre):

- The ear is innervated by many nerves, namely the cranial nerves number V, VII, IX and X.
- Any abnormal stimulation of any branch of the above-mentioned nerves leads to pain in ear. E.g., problems in the teeth, jaw, trigeminal neuralgia, intracranial lesions, etc.

Management:

a. Investigations

- Usually, none required
- Audiometry & Radiological investigations like CT/MRI – less frequently

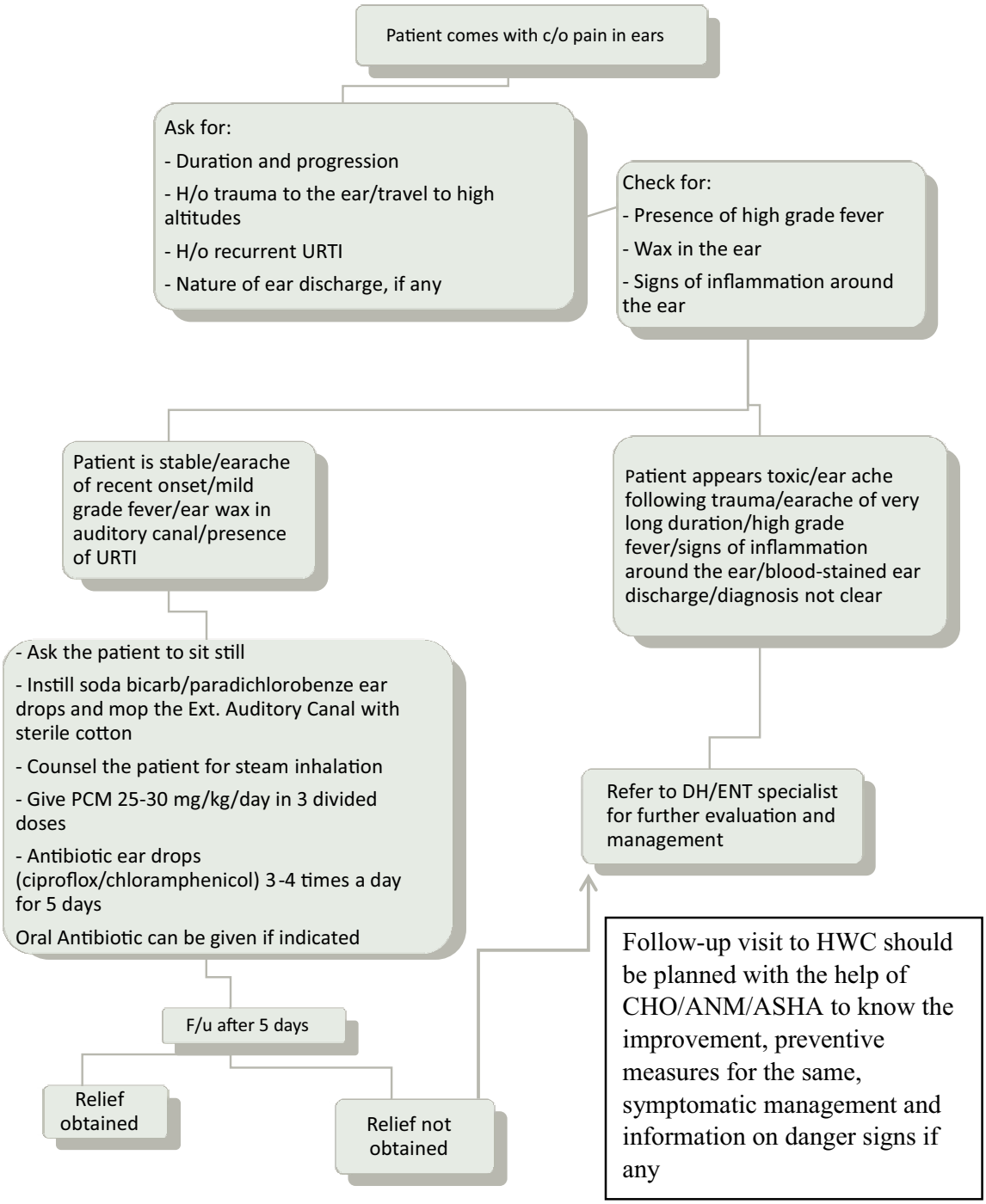
b. Treatment

- Carry out a thorough general and systemic examination, including ear, oral and throat examination
- It is important to find out the underlying cause before starting any specific treatment
- Look for signs of infection/trauma around the ear
- If there are secretions in the ear canal, mop them clean with a sterile gauze piece
- In case of active discharge, the possibility of ear perforation may be there, therefore, keep the ear dry unless specifically advised
- Analgesic indicated: For adults – Tab. Diclofenac 50 mg TDS x 5 days or Brufen 400mg TDS, and for children – Ibuprofen 200mg TDS or syp. Ibugesic in dose of 10-15 mg/ kg/ dose is recommended
- Follow up after 5 days to assess response to treatment

Indications for referral to ENT specialist

- Pain not responding to analgesic
- Any visible injury, bleeding, signs of trauma, any visible mass in EAC
- Very high-grade fever not responding to antipyretics

Referral Pathway in case of Earache (Otalgia)



Vertigo

A subjective feeling of movement, either of self or the objects around in the environment, is known as vertigo. Various terms are used by patients to describe this feeling, e.g., bouncing, oscillating, twisting, rolling, spinning, light-headedness, imbalance, floating, fainting, etc. It is important to note that the condition is mostly benign, but, in few cases, it signals the presence of important neurological/systemic disorders.

Causes

- **Ear related causes:** Meniere's disease, Benign paroxysmal positional vertigo (BPPV), labyrinthitis, vestibule-toxic drugs, otosclerosis, etc.
- **Neurological causes:** Multiple sclerosis, transient ischemic attacks, intra-cranial tumours, seizures, etc.
- **Systemic causes:** Hypotension, certain viral infections, hypothyroidism, Diabetes Mellitus, polycythemia, syphilis of inner ear, head injury
- Certain drugs such as anti-convulsants (phenytoin, pregabalin, gabapentin), anti-hypertensive (nifedipine, propranolol, furosemide, hydrochlorothiazide), anti-depressants (fluoxetine), analgesics (codeine), alcohol, etc.

Symptoms & Signs

- Dizziness
- Feeling of rotation or spinning
- Light headedness, faintness, weakness
- May be associated with blurring of vision, syncope or 'blacking out' and imbalance/ unsteadiness

Management

- Investigation
    - Detailed general and systemic examination (especially CVS and CNS examination), BP and RBS
    - Tuning fork tests
    - Romberg's test:

      Ask the patient to stand with his/her feet together (touching each other). Then ask the patient to close his/her eyes. Remain close at hand in case the patient begins to sway or fall.

Interpretation:

i. If the patient does not sway at all: Normal

ii. Patient sways after closure of eyes: Also known as Romberg Positive

iii. Occurs due to diseases in the vestibular system (ear problem) or sensory nervous systems (proprioceptive dysfunctions)

iv. Patient sways even with eyes open: Disease in the cerebellar functions of the patient

- **Treatment**
  - Reassurance regarding the nature of the disease if it is benign
  - Avoiding the posture that triggers the symptoms
  - Certain drugs like Prochlorperazine 5mg BD OR Cinnarizine 25 mg BD OR Betahistine 16 mg BD for 5 days may be started
  - Multi-vitamin supplements may also be added
  - Counsel the patient about:
    - Reduced intake of caffeine/alcohol
    - Avoid performing tasks which may cause harm to patient such as working on heavy machines, driving, etc.
    - Keep a note of the medicines being taken and emergency contact numbers in your pocket whenever going out of the house alone

Exercises are helpful in regaining the balance and confidence of the patient: The manoeuvre consists of six positions. *(Note: Not to be done in unstable patients)*

Position 1: Ask the patient to sit on the bed. Turn the head 45 degrees towards the affected ear.

Position 2 - With the head turned 45 degrees, the patient is made to lie down in head hanging position. It will cause vertigo and nystagmus (sudden jerky movements of the eyes). Wait till vertigo and nystagmus subside.

Position 3 - Head is now turned so that the affected ear is up.

Position 4 - The whole body and head are now rotated away from the affected ear to a lateral recumbent position in a facedown position.

Position 5 - Patient is now brought in a sitting position with head still turned to the unaffected side by 45 degrees.

Position 6 - The head is now turned forward and chin brought down 20 degrees.

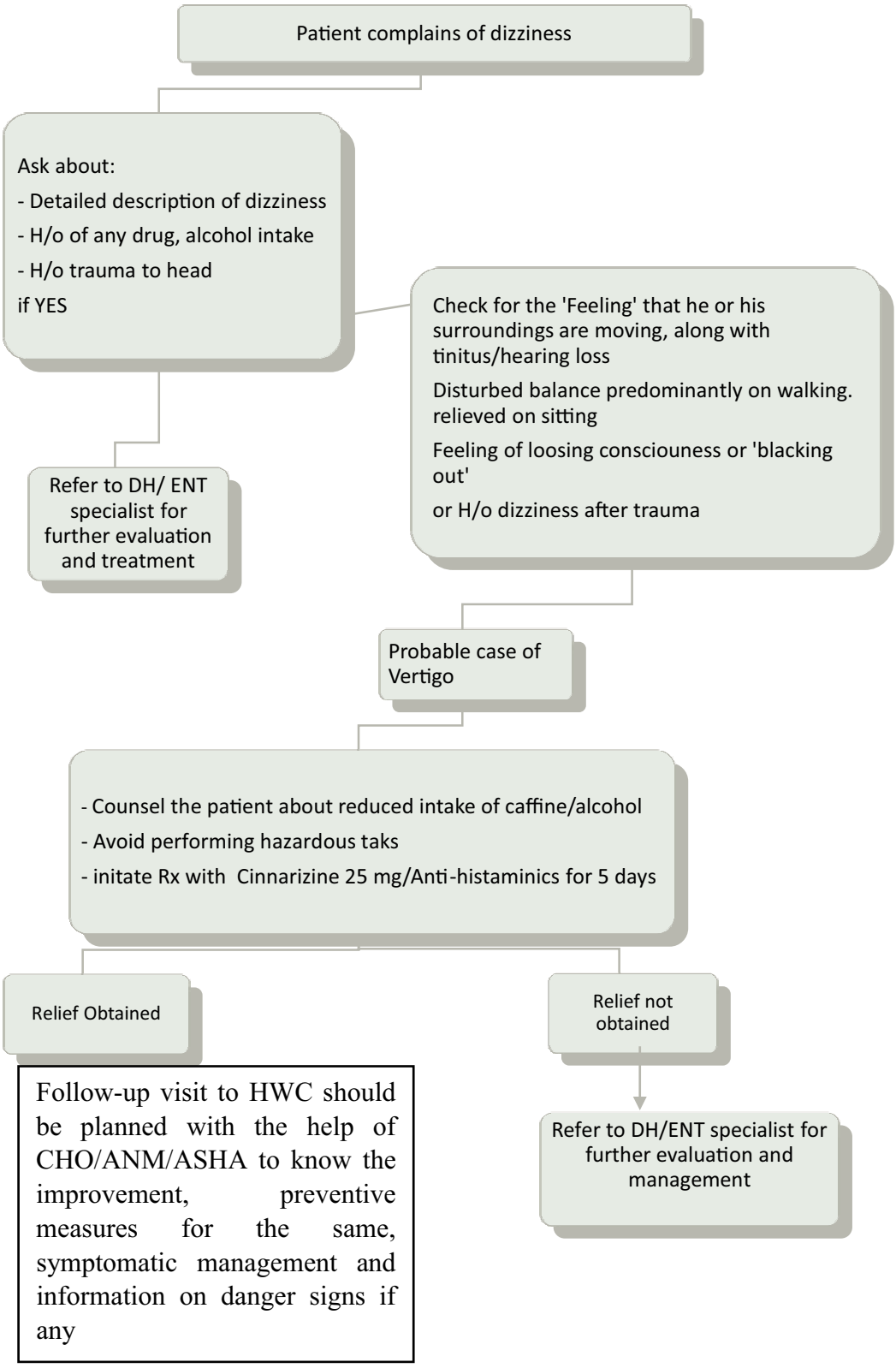
Important Note: There should be a pause at each position till there is no nystagmus or there is slowing of nystagmus, before changing to the next position. After the manoeuvre is complete, the patient should maintain an upright position for 4 to 6 hours.

80% of the patients will benefit from this exercise. If the patients remain symptomatic, the manoeuvre can be repeated.

Indications for referral to ENT specialist:

- No improvement after 2 days of starting the treatment
- Sudden fainting
- History of injury to the head or ear
- Known case of Epilepsy (fits)
- Known case of any inner ear problems, tumours

Referral Pathway in case of Vertigo



Follow-up visit to HWC should be planned with the help of CHO/ANM/ASHA to know the improvement, preventive measures for the same, symptomatic management and information on danger signs if any

Hearing Loss/Reduced Hearing

Hearing loss can be of three types:

i. Conductive hearing loss (CHL) – middle ear problem

ii. Sensorineural hearing loss (SNHL) – ear nerve problem

iii. Mixed type

At the HWC level, it is important to have a good history of hearing loss. Some of the questions that should be asked and answered are:

a) Onset of hearing loss – from birth or later

b) Hearing loss sudden or gradual

c) Stationary or progressive

d) Any family history of hearing loss

e) Any other ear symptoms

f) Any test or treatment done earlier

> **Presbycusis: Sensorineural hearing loss associated with physiological aging process in the ear is called Presbycusis. It is usually seen in individual > 65 years.**

Since most of the diagnosis and treatment requires a specialist, the medical officer and team can only identify hearing loss and refer the patient to the higher centre where an ENT specialist is available.

Before referring the person, you can check for the following:

1) Any obstruction in the ear canal – foreign body, wax, etc.

2) Any ear discharge or recent history of injury to the ear

3) Whether speech is also affected

4) If the hearing is lost for low frequency sounds or high frequency sounds

5) Any history of taking certain drugs recently – streptomycin, gentamicin, tobramycin, salicylate, antimalarials

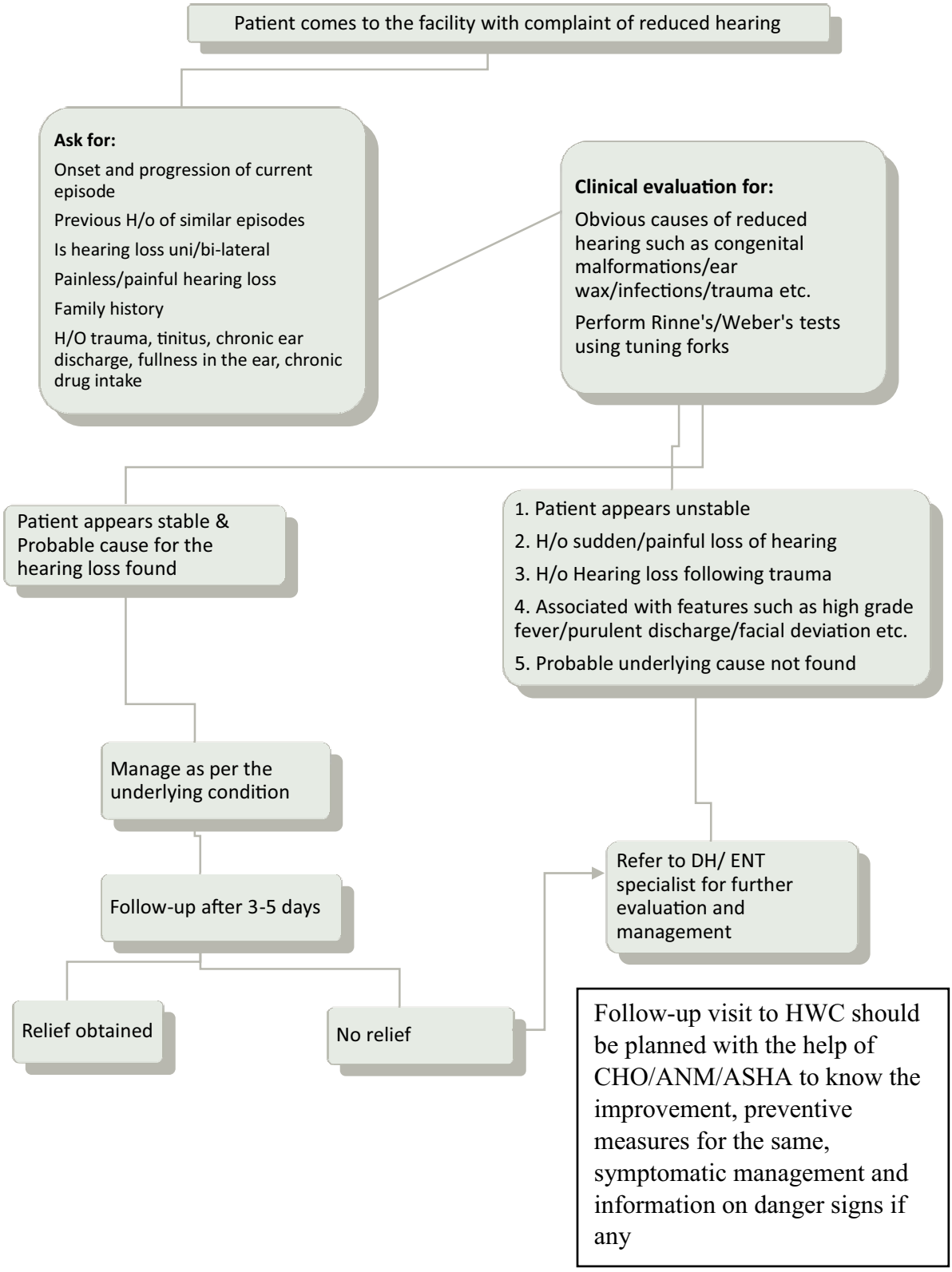
6) Exposure to very loud sounds – explosion, gun fire

Degree of hearing loss (WHO Classification)

S No.	Degree of impairment	Ability to understand speech	% of disability
1.	Not significant	No significant difficulty with faint speech	
2.	Mild	Difficulty with faint speech	<40 %
3.	Moderate	Frequent difficulty with faint speech	40-50%
4.	Moderately severe	Frequent difficulty even with loud sounds	
5.	Severe	Can understand only shouted or amplified speech	51-70%
6.	Profound	Usually, cannot understand even amplified speech	71-100%

Issue of Disability Certificate: The certificate of disability is to be issued by a medical board consisting of at least three members, of which one shall be an otolaryngologist.

Referral Pathway in case of Hearing Loss/ Reduced Hearing



Foreign Body in Ear

Foreign Bodies (FB) of the ear are relatively common in emergency medicine. They are found more frequently, but not exclusively, in children. As many as nearly 40% of the cases would be within the age group of 2-8 years. The type of foreign body in the ear varies with the age. In children, objects such as small toys, beads, stones, folded paper, and biologic materials such as insects or seeds are more frequent. In adults, it is usually cotton swabs/ first-aid products, etc.

Classification of Foreign Body:

(a) Living: e.g., Insect, Flies, Maggots

(b) Non-living:

i. Hygroscopic (can expand in moisture): e.g., vegetable, beans, and seeds

ii. Non-hygroscopic: e.g., beads, stones, pebbles, rubber, metallic FB

Symptoms & Signs:

- History of foreign body entering the ear
- Ear Pain
- Tinnitus
- Discomfort and complain of nausea or vomiting if a live insect is present in the ear canal
- Hearing loss

Physical findings vary according to the nature of object and duration of time it has been in the ear.

- An inanimate object that has been in the ear for a very short time typically presents with no abnormal finding other than the object itself seen on direct visualisation or otoscopic examination.
- Pain or bleeding may occur with objects having sharp edges.
- With delayed presentation, erythema and swelling of the canal and a foul-smelling discharge may be present.

Management:

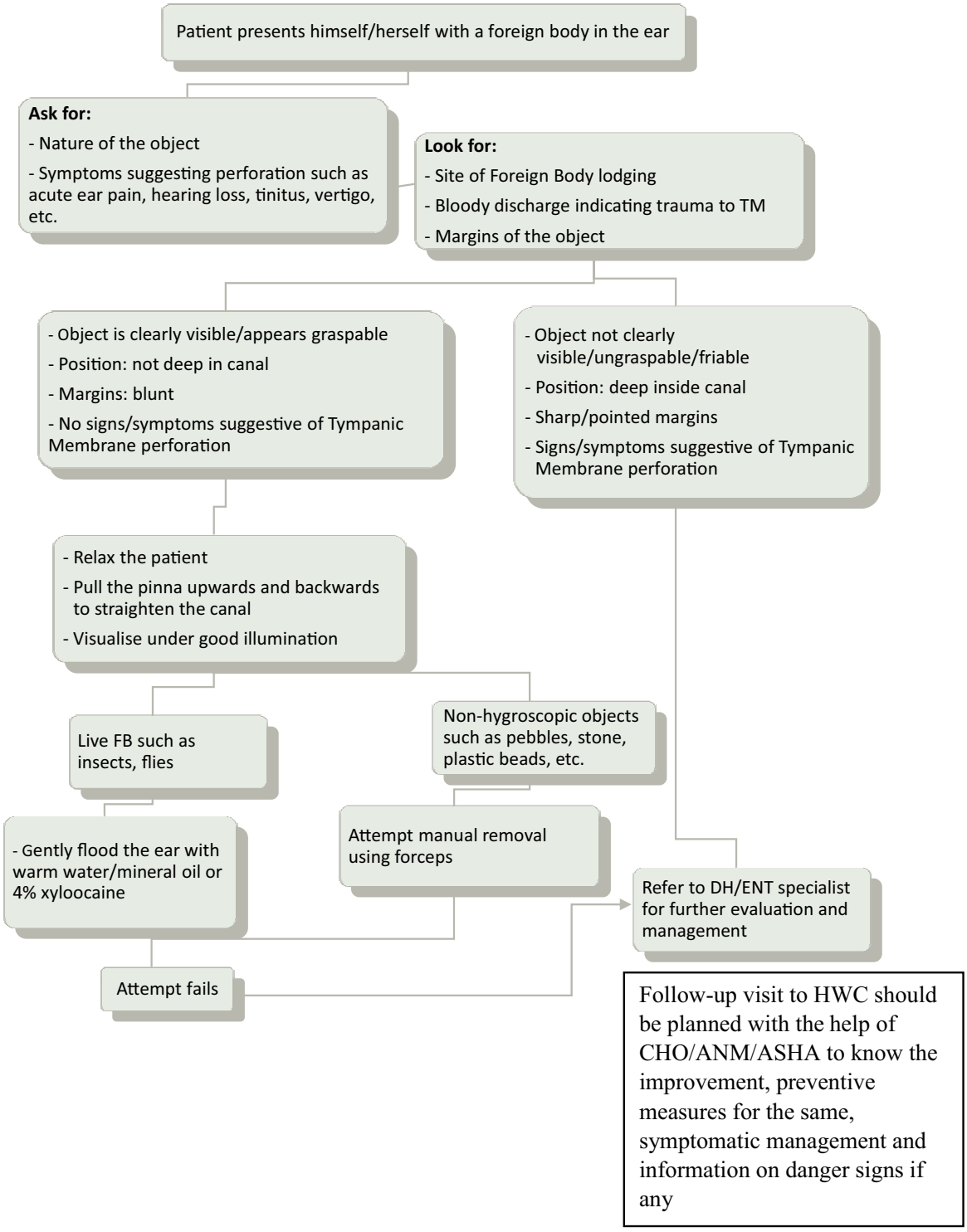
- Method of removing foreign body depends on the type of foreign body:

Type of foreign body	What to use to remove
Soft and irregular FB, like a piece of paper, swab, or a piece of sponge	Fine alligator forceps
Smooth objects like seed grains	Manual Removal
Hard objects like metal (ball bearings)	Use syringing, Don't use forceps
Insect	First step is to kill the insect with mineral oil or lidocaine Then remove dead insect with forceps

Indications for referral to ENT specialist:

- Small child who cannot stay in one position to attempt removal
- Sharp objects
- Objects appear deep in ear canal
- Object appears to be tightly impacted
- Any kind of discharge from the ear
- Previous removal attempt was unsuccessful

Referral Pathway in case of Foreign Body in Ear



Tumours of External and Middle Ear

Tumours of ear are very rare, and hence, the etiology is also not fully understood. Some of the possible causes of tumours of external and middle ear are as following:

- Ear infections: Repeated or chronic ear infections may contribute to some ear cancers.
- Age: Ear cancer is more common in older people, especially those in their 70s.
- Sun exposure: Skin cancers on the outer part of the ear are often caused by sun exposure or use of tanning beds. People with light skin are especially vulnerable to skin cancers, but anyone can get them.
- Associated with other cancers like Acoustic Neuroma associated with neurofibromatosis type 2.

As PHC-MO, you should identify and timely refer the individuals suspected of cancer. MO should also focus on prevention of ear cancer through awareness generation in the community and follow up with the treated patients who cannot visit the tertiary centre on a frequent basis.

Alarming features that require proper diagnosis and management at tertiary centre are:

1. Hearing loss (unilateral Sensorineural)
2. Mass/polyp which is bleeding seen in external auditory canal
3. Facial palsy (anesthesia over the posterosuperior part of EAC known as Hitzelberger's Sign)
4. Focal neurological symptoms
5. Symptoms of V cranial nerve involvement like loss of corneal reflex.

Management including investigations (Rinne's, Weber's ABC, Schwabach, PTA, SISI, Tone decay, Acoustic reflex decay, speech discrimination, Calorie test, VEMP MRI) should be done at tertiary care hospital.

Treatment in most of the cases is surgery depending on the type, location, and extension of tumour.

05
MANAGEMENT OF COMMON NOSE CONDITIONS

Overview of Basic Anatomy of Human Nose

Nose is divided into two parts:

- External Nose
- Internal Nose

A. External Nose:

- Upper one-third is bony which is made up of two paired and one unpaired bone:
  - Two nasal bone
  - Lateral to the nasal bone are the two frontal process of maxilla
  - Intersection of the two nasal bone with frontal bone is known as Nasion
- Lower two-third is cartilaginous consist of three paired and one unpaired cartilage

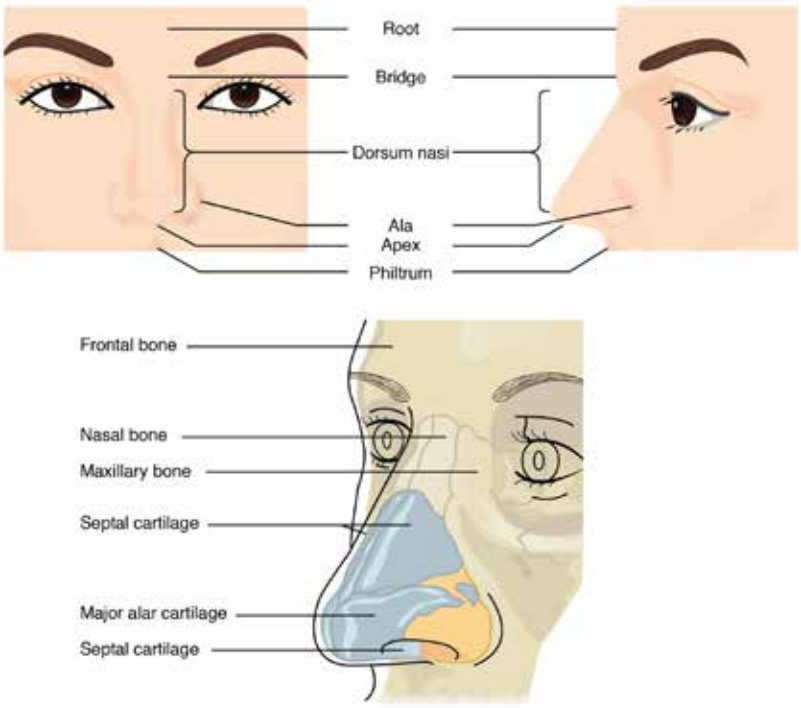


Figure showing External Nose Anatomy

B. Internal Nose:

- Inner Nose is divided into two nostrils by the septum. Each nostril has a roof, floor and two walls – medial & lateral. In the lateral wall of nose there are three projections of bone known as concha/turbinates. They are: superior, middle and inferior turbinate

Physiology of Nose

a. Respiration

b. Olfaction

c. Temperature regulation

d. Humidification of air

e. Protection of lower Airway

f. Nasal Resonance

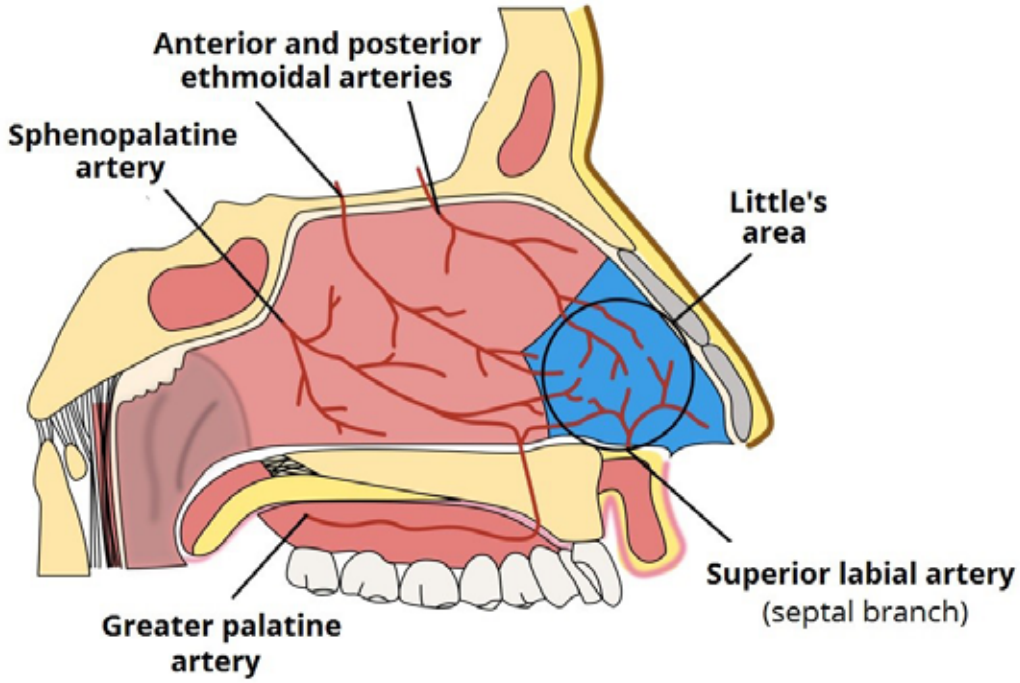


Figure showing Internal Nose Anatomy

Upper Respiratory Tract Infection (UTRI)

Most people will develop an acute upper respiratory tract infection (URTI) at least once every year. URTIs are one of the most common reasons for seeking Out-Patient medical care, especially amongst children. Most of these are caused by viruses.

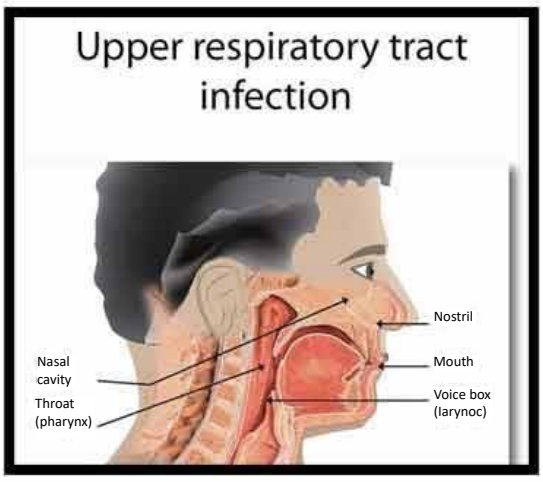
Types of URTIs:

- Common cold
- Flu
- Rhinitis
- Pharyngitis
- Laryngitis
- Sinusitis

Both flu and common cold are respiratory illnesses caused by different viruses. The flu is an infection of the respiratory system caused by the influenza virus whereas common cold is caused mainly by rhinoviruses.

Although the symptoms are similar and it is difficult to tell the difference between common cold and flu based on symptoms alone, flu is worse than the common cold. Flu is usually associated with fever (temperature above 39°C), and symptoms such as headache, body aches, extreme tiredness, sore throat, and dry cough are more common and intense. These symptoms appear suddenly. On the other hand, people with cold are more likely to have a runny or stuffy nose. Cold generally does not result in serious health problems, such as pneumonia, bacterial infections, or hospitalisations.

People recover from common cold in a week, however, recovery from the flu may take more than a week.



Clinical features of common cold and flu

	Common Cold	Flu
Virus	Rhinovirus	Influenza
Contagiousness	Droplets by inhalation or touch	Droplets by inhalation
Onset	1–3 days after virus entrance	Sudden
Duration	One week	One week or more
Frequency	Children – six to eight per year, Adults – two to four colds per year	Once
Symptoms	Milder Weakened senses of taste and smell, cough, runny or stuffy nose, sneezing, scratchy throat	Worse Fever (39°C or above), body aches, extreme tiredness, dry cough more common, headache, sore throat, chills, tiredness
Complications	No serious complications	May have serious complications like pneumonia and bacterial infections May be fatal in elderly, immunocompromised, and chronically-ill patients
Treatment	Acetaminophen Antihistamine and/or decongestant Adequate fluid intake (eight glasses of water or juice) Avoid smoking and alcohol Avoid caffeine and alcohol No antibiotics	Acetaminophen Antihistamine and/or decongestant Adequate fluid intake (eight glasses of water or juice) Avoid smoking and alcohol Avoid caffeine and alcohol Antibiotics like Oseltamivir can be used

Clinical feature comparison with other types of URTIs

Viral URTI	Rhinitis	Pharyngitis	Sinusitis
Clinical features			
Fever Runny nose Cough Hoarseness	Itching of eyes, nose, palate, ears Runny nose Sneezing Nasal congestion	Swollen tonsils Painful swollen glands under jaw and in the neck Fever No runny nose Cough, hoarseness	Pain above eyebrows or on either side of nose, Increases while bending head or blowing with pressure Pus in nasal discharge Fever Nasal congestion
Usually caused by virus	Cause by virus or allergy	Caused by virus – can be bacteria especially in children	Usually caused by bacteria

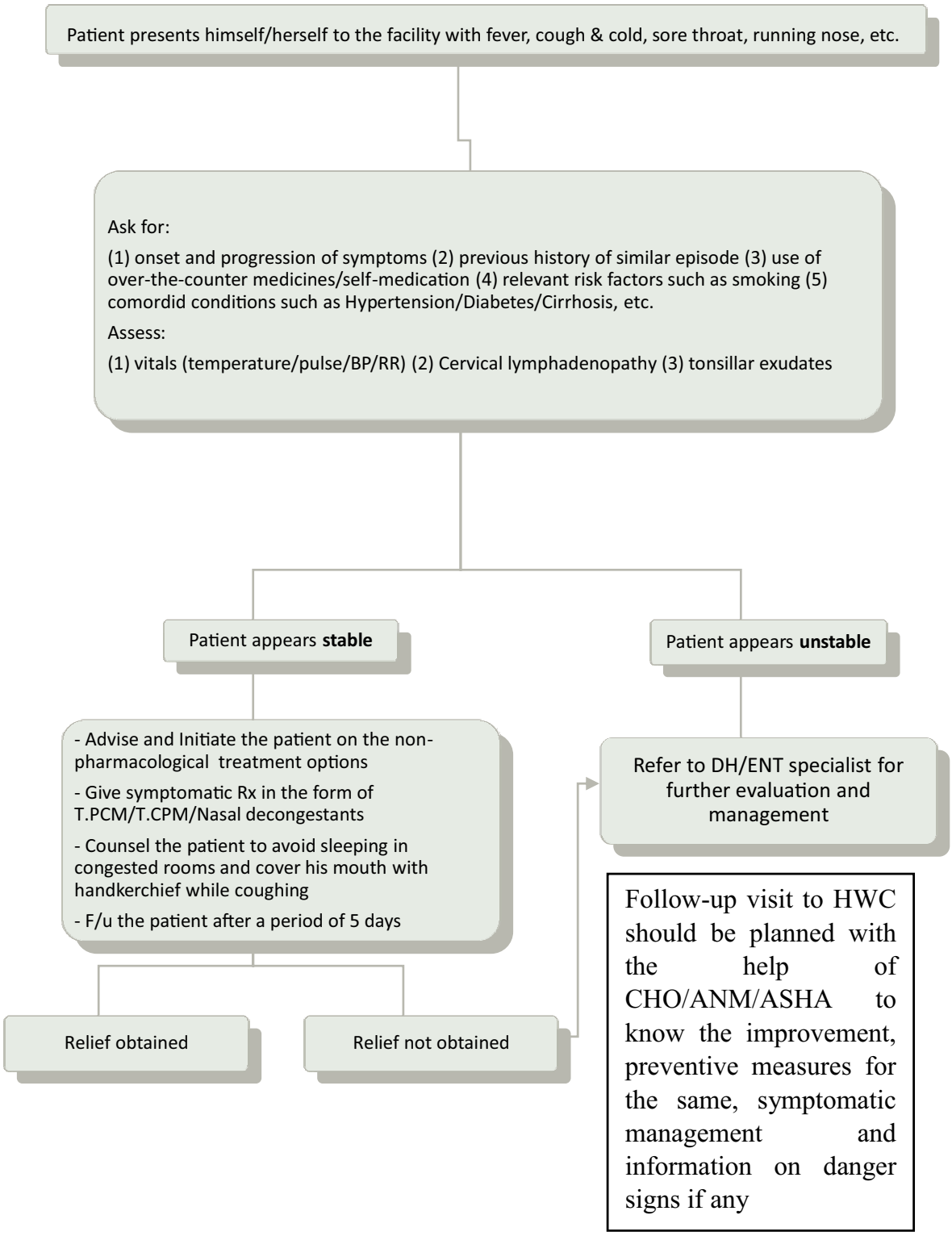
Treatment			
General: Drink plenty of water and get enough rest Eat food items containing Vit. C (citrus, tomatoes) Wash hands often, wipe nose gently Do steam inhalation Isolate from others **Specific:** Tab. Paracetamol for fever Saline nasal drops for blocked nose	**General:** Drink plenty of water and get enough rest Eat food items containing Vit. C (citrus, tomatoes) Wash hands often, wipe nose gently Do steam inhalation Isolate from others **Specific:** Tab. Paracetamol for fever Saline nasal drops for blocked nose May need some anti – allergy	**General:** Drink plenty of water and get enough rest Eat food items containing Vit. C (citrus, tomatoes) Wash hands often, wipe nose gently Do steam inhalation Isolate from others **Specific:** Tab. Paracetamol for fever Antibiotic if required	**General:** Drink plenty of water and get enough rest Eat food items containing Vit. C (citrus, tomatoes) Wash hands often, wipe nose gently Do steam inhalation Isolate from others **Specific:** Tab. Paracetamol for fever Antibiotic if required
Usually lasts up to 10 days (max)	Usually lasts for 2 weeks	Usually lasts for 1 week	Usually lasts for 1 to 2 weeks
If complaint of facial pain/sinus pain is lasting for more than 3 months then it is known as chronic sinusitis, for which you have to refer the patient to a higher centre for further management and treatment.			

Commonly used drugs:

- Tab. Chlorpheniramine 4mg 12 hourly for 5-7 days. (For children – 0.35mg/kg/day in 3 equal doses) or
- Tab. Cetirizine 10mg once a day, usually at bedtime, for 5-7 days (For children –5mg once per day)
- If patient has malaise and fever,
    - Tab. Paracetamol 500mg 3-4 times a day for 2-3 days and then as and when required (For children – 10-15mg/kg/day/dose)
- If nasal obstruction is severe
    - Xylometazoline 0.1%, 1-2 drops in each nostril 3 times a day for 2-3 days (For children – 0.05%, 1-2 drops 2 times daily)

(Caution: Not recommended in children below 6 years of age, medicated nasal drops should not be used for more than 7 days)

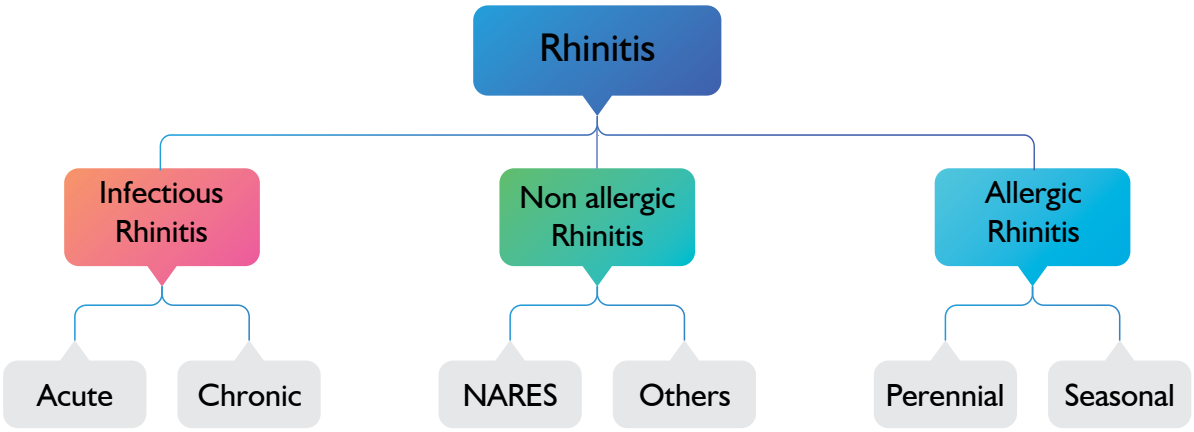
Referral Pathway in case of Upper Respiratory Tract Infection (URTI)



Rhinitis

Rhinitis is a clinical diagnosis and is defined as inflammation of the nasal mucosa with one or more symptoms of sneezing, itching, rhinorrhea, and nasal blockage lasting for at least one hour on most days. All diseases causing rhinorrhea and nasal obstruction should be considered in the differential diagnosis of rhinitis.

Classification of Rhinitis



Allergic Rhinitis

Allergic rhinitis is an IgE mediated type I hypersensitivity reaction of mucus membrane of nasal cavity, sometimes affecting paranasal sinuses due to mucosal continuity.

Symptoms & Signs

- Sneezing
- Itching
- Watery nasal discharge and a feeling of nasal obstruction. It may be associated with allergic conjunctivitis and bronchial asthma.

Sneezing, itching, watery rhinorrhoea and conjunctivitis are prominent symptoms in seasonal allergic rhinitis (SAR/Hay fever) while perennial allergic rhinitis (PAR) is mainly associated with purulent nasal discharge associated with nasal blockage, post nasal discharge and hyposmia due to long standing nasal mucosal congestion.

Management

a. Investigation

Usually not required, symptomatic management is sufficient but if patient is not improving then following investigations should be considered

- Peripheral blood eosinophilia, Nasal smear – shows eosinophilia

- Specific IgE antibody test
- X ray nose and para nasal sinuses or NCCT PNS only after consulting ENT specialist.

b. Treatment

- Avoid allergen if known
- Tab. Cetirizine 10 mg in a single daily dose for 7 days and for children 5 mg od

  Or
- Tab. Chlorpheniramine maleate 4 mg 12 hourly for 7 days. (Caution: Not recommended for children under 1 year)

  Or
- Tab. Pheniramine maleate 25-50 mg 12 hourly for 7 days. For children – 0.5mg/kg/day divided in 3 doses. The duration of treatment may need to be extended depending upon the response of the patient.
- If nasal obstruction and rhinorrhea is present,
  - Put normal saline nasal drops, 1-2 drops in each nostril 2 times daily **(Refer to Annexure regarding use of nasal drops)** or
  - Xylometazoline 0.1% nasal drops 1-2 drops 2-3 times daily for 5-7 days. For children – 0.05% 1-2 drops 2 times daily is recommended. Or
  - Oxymetazoline 0.5% nasal drops 2-3 drops 2-3 times daily for 5-7 days. For children – 0.025% 1-2 drops 2 times in each nostril which should not be used for more than a week.
- If the signs and symptoms are persistent,
  - Betamethasone/hydrocortisone nasal drops 2-3 times/day can be used. Beclomethasone inhaler (50 mcg/puff) 2 puffs 12 hourly or budesonide (50-100 mcg/puff) 1-2 puffs a day or fluticasone 150 meg/puff 1-2 puffs a day.

    Or
  - Topical azelastine intranasal spray 2-3 times a day (up to 2-3 weeks). In case patient does not respond to the above treatment, Tab. prednisolone 5-60 mg/day in 3-4 divided doses for 5-7 days could be given.

    Or
  - Tab. dexamethasone 0.5-5.0 mg/day in 3-4 divided doses for 5-7 days.

    Or
  - Tab. betamethasone 0.5-5.0 mg/day in 3-4 divided doses for 5-7 days.

c. Advice for the patient

- This disease is due to hypersensitivity and there is no cure. However, the symptoms can be controlled effectively by judicious use of drugs and the patient can lead a normal life.
- Avoid prolong use of topical decongestant nasal drops as it can cause atrophic rhinitis, anosmia, and rhinitis medicamentosa.
- Chlorpheniramine, pheniramine etc. can cause sedation, cognitive impairment. Therefore, the patient should avoid tasks requiring alertness and skills like driving or operating any kind of machinery. These drugs can also cause dryness of the mouth and urinary hesitancy.
- Systemic steroids should not be stopped abruptly. Dose should be tapered off before cessation of therapy.
- Medicated nasal drops should not be used for more than seven days.

Others less common form of Rhinitis

Nonallergic rhinitis with eosinophilia syndrome (NARES)	• It is a type of rhinitis associated with the symptoms of perennial rhinitis without any identifiable allergen hypersensitivity. • IgE-mediated mechanisms do not play a role. • Excessive eosinophilia is demonstrated in nasal secretions. • Nonallergic asthma and analgesic intolerance are more common in these patients. • The etiology is unclear. They often respond well to treatment with intranasal corticosteroids.
Occupational Rhinitis	• Arises in response to an airborne agent present in the workplace. • Causes include laboratory animals, hair (hairdressers), grain (bakers and agricultural workers), wood dusts, latex, and chemicals.
Hormonal Rhinitis	• Can occur during pregnancy, puberty, and in hypothyroidism and acromegaly. • Postmenopausal hormonal changes may also cause atrophic nasal pathologies.
Emotional Rhinitis	• It is the result of emotional factors such as stress and sexual arousal due to autonomic stimulation.
Gustatory Rhinorrhea	• Occurs on eating hot and spicy foods. True food allergy never produces isolated rhinitis symptoms. • Hypersensitivity reactions to colorants and preservatives in the food may also occur.

Vasomotor Rhinitis	• The term idiopathic rhinitis is generally used instead of vasomotor rhinitis. • Vasomotor rhinitis is a subgroup of NARES, which is thought to occur due to an imbalance of autonomic nervous supply and peptidergic nervous mechanisms. • Engorged blood vessels lead to nasal obstruction. • These patients present with nasal hyper-responsiveness to nonspecific stimuli such as strong smells, irritants such as exhaust fumes, or environmental temperature. • Non-immunologic stimuli such as cold air can de-granulate mast cells with mediator release and may cause the symptoms.
Atrophic Rhinitis	• It is characterised by progressive atrophy of the underlying bone of the turbinates and nasal mucosa. • Copious foul-smelling crusts fill the nasal cavity. The patient complains of hyposmia, nasal congestion, and constant bad smell in the nose. • Klebsiellaozaenae is generally found in the nasal cavity of these patients. **Management** ➢ Aims at maintaining nasal hygiene by removal of crusts and decreasing putrefied smell due to erosion & destruction. ➢ Nasal irrigation and removal of crusts – by retracted nasal douching with saline, glucose, and glycerin solution. ➢ **Nasal douching:** The patient must be asked to douche the nose daily with Normal Saline or Alkaline solution [Sodium Bicarbonate – 1part, Sodium biborate 1 part and Sodium Chloride – 2 parts (Total 1 spoon powder) mixed in 280 ml of lukewarm water] at least thrice a day till crust disappears. ➢ **25% glucose in glycerin:** After crusts removal, nose is painted with 25% glucose in glycerin twice a day for 1 month. ➢ **Saline spray 3 times a day.**

Diagnostic features of non-infectious rhinitis

	Seasonal	**Perennial**	**Perennial nonallergic**
Time of year	Seasonal	Perennial	Perennial
Age of onset	10-20 years	10-20 years	Adulthood
Prominent symptom	Rhinorrhea, sneezing, itching	Rhinorrhea, sneezing, itching	Rhinorrhea, blockage
Eye symptoms	Common	Uncommon	Not present
Nasal cytology	Eosinophil	Eosinophil	Eosinophil/Neutrophil
Allergens	Pollens	Dust mite, moulds, animal	Negative
Polyps	Uncommon	Common	Frequent

Sinusitis

According to the duration of the disease, sinusitis is divided into two categories: acute and chronic.

- Acute Sinusitis - <12 weeks/3 months (complete resolution of symptoms within 12 weeks)
- Chronic Sinusitis - >12 week/3 months (symptoms are completely resolved within 12 weeks)

Symptoms & Signs

- Headache
- Nasal obstruction
- Hawking and postnasal drip
- Fever, malaise
- Congested nasal mucosa
- Pus in the middle meatus
- Tender sinuses.

Management

a. Investigation (As the decision of choice of investigation depends on ENT surgeon, therefore, the patient needs to be referred to the higher centre)
   - o X ray paranasal sinuses – Water's view - haziness or opacity /fluid level.
   - o CT-para nasal sinuses in selected cases where WBC, ESR, Positive blood culture confirm
   - o Trans illumination test reveal opaque sinuses

b. Treatment
   - o Steam inhalation via nose 2-3 times/day for 2-3 days and rest
   - o Tab. paracetamol 500 mg 3-4 times a day for 5 days (children 10 mg/dose) or Tab. ibuprofen 400 mg-600 mg 3 times a day for 5 days (children 10 mg/kg/dose)
   - o Cap. amoxicillin 500 mg 8 hourly for 5-7 days (children 50 mg/kg/day)

Sinusitis of dental origin

   - o Cap. amoxicillin 500 mg 3 times a day for 5-7 days (children 50 mg/kg/day)
   - o Tab. metronidazole 400 mg 3 times a day for 5-7 days
   - o Tab. bromhexine 8 mg 3 times a day for 7 days

If nasal obstruction or rhinorrhoea

- Normal saline nasal 1-2 drops in each nostril 2-3 times a day.

  Or
- Ephedrine 0.75% nasal drops in isotonic saline 1-2 drops in each nostril 2 times a day. For children, 0.5% 1-2 drops in each nostril 2 times daily.

  Or
- Oxymetazoline HCl 0.05% nasal drops. 1-2 drops in each nostril 2 times a day. For children, 0.025% 1-2 drops in each nostril 2 times daily.
- Xylometazoline 0.1% nasal drops 2-3 drops in each nostril 2-3 times a day. For children, 0.05% 1-2 drops in each nostril 2 times daily.

c. Advice for the patient

- Medicated nasal drops should not be used for more than 7 days.
- To take full course of systemic antibiotics to avoid the risk of developing antimicrobial resistance.
- Prolonged use of topical decongestants for more than a week should be avoided as it can cause atrophic rhinitis, anosmia, and rhinitis medicamentosa.

Indications for referral to ENT specialist:

- Periorbital oedema
- Displaced globe
- Double vision
- Ophthalmoplegia
- Reduced visual acuity
- Severe unilateral or bilateral frontal headache
- Frontal swelling
- Signs of meningitis or focal neurologic signs
- Refractory and recurrent and complicated cases

Complications of Sinusitis (needs referral to higher centre)

1. Osteomyelitis
   - Frontal (Pott's puffy tumour)

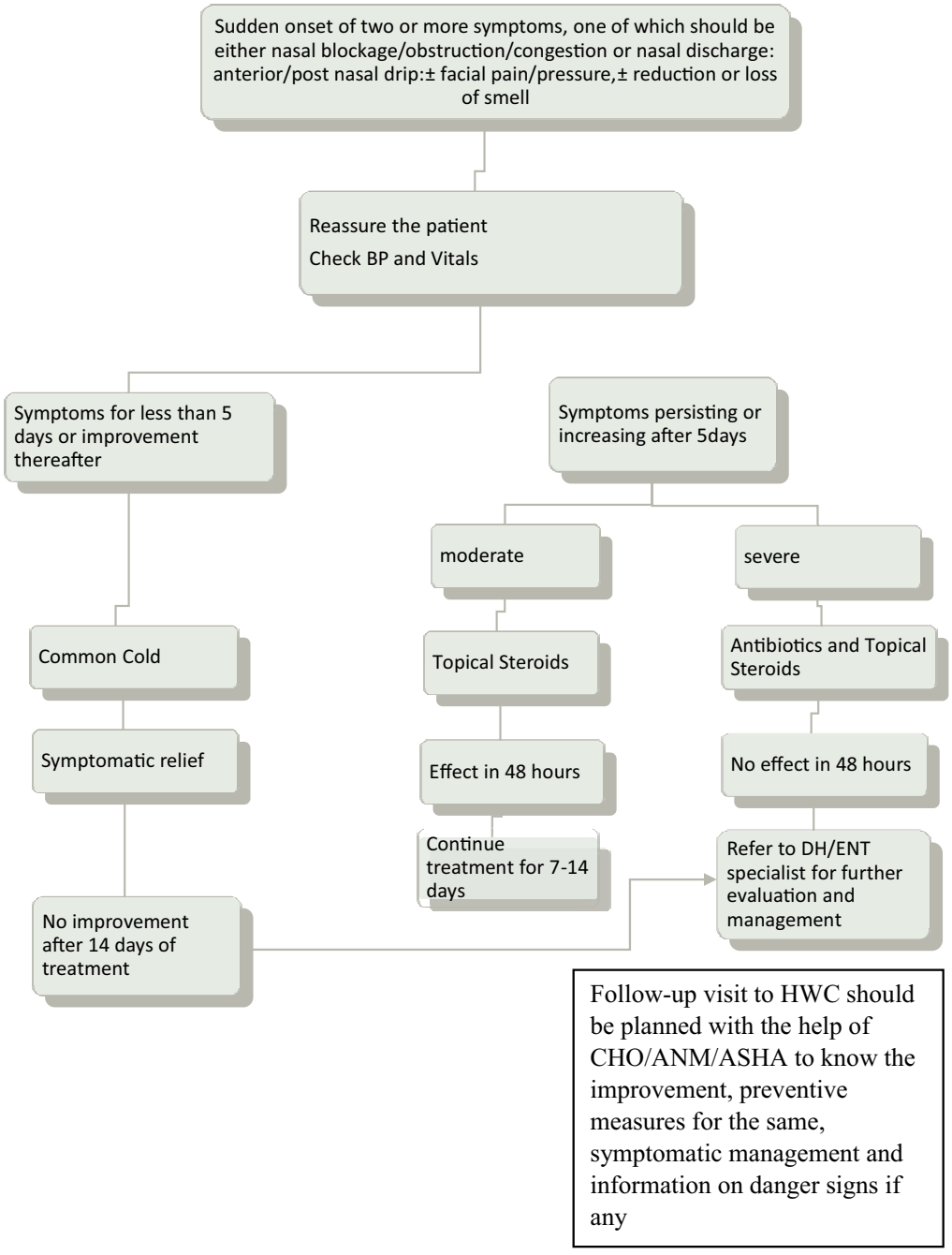
2. Intracranial

- Epidural abscess
- Subdural abscess
- Cavernous sinus thrombosis
- Meningitis
- Brain abscess

3. Orbital

- Inflammatory edema (periorbital cellulitis)
- Subperiosteal abscess
- Orbital cellulitis
- Orbital abscess
- Optic neuritis (cavernous sinus thrombophlebitis)

Referral Pathway in Sinusitis



Epistaxis (Nosebleed)

Epistaxis, or bleeding from the nose, is a common complaint, especially during winters. In majority of cases, nosebleeds are self-limiting and spontaneous, but raise significant concern if they are recurrent, massive or occurring in children.

Based on the site of bleeding, epistaxis is classified as:

a) Anterior bleeds:

- Most common and relatively easier to control
- Presents as bleeding from the nose

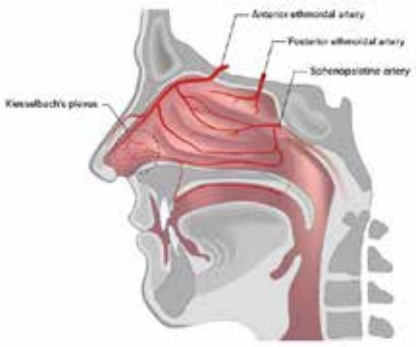
b) Posterior bleeds:

- Less common
- May cause profuse bleeding
- More difficult to control
- Usually occurs as bleeding from mouth

Causes of Epistaxis

Local	Systemic
• Trauma • Inflammation • Postoperative • Foreign body • Nasal and paranasal sinus tumours • Hereditary hemorrhagic telangiectasia • Atrophic rhinitis	• Hypertension • High venous pressure (mitral stenosis) • Blood dyscrasias (leukemia, hemophilia, vitamin K deficiency) • Anticoagulant drugs

The nose has a rich vascular supply (as depicted in the figure). The part in the anterior cartilaginous septum where a number of blood vessel connections (known as anastomosis) exist is the most common site for epistaxis.



Nosebleeds occur more frequently in the drier, colder months, and in less humid environments. This is because dry air facilitates drying and cracking of the nasal mucosa, vessel trauma, and subsequent epistaxis

Management:

History taking	Examination
Duration of current episode	Site of bleeding
Previous H/O of similar episodes	Blood pressure check
H/O trauma	Nasal septum deviation
H/O bleeding tendencies elsewhere	
H/O chronic liver disease	
H/O any drug intake	
Family history	
H/O Chronic alcohol intake	

Treatment of epistaxis:

If the bleeding is mild and from the anterior part of the nose, it can be managed. In cases of moderate to massive anterior bleeding as well as from the posterior part of the nose, specialised care is required, and therefore, the patient must be referred to a facility with a specialist for further management after giving first aid as explained below:

Treatment at primary level

a) Make sure the person is relaxed. Check whether the bleeding is anterior (bleeding from nose) or posterior (bleeding from mouth).

b) Make him/her sit upright with head slightly bent forward.

c) Ask the patient not to blow through his/her nose.

d) In case of anterior bleeds, apply pressure on the bleeding side of the nose for 10 minutes.

e) If bleeding doesn't stop, apply a combination of topical anaesthetic, such as 2% lidocaine and vasoconstrictor and wait for 10 mins. Soak cotton balls in a mix of 2% lidocaine and 1:1000 epinephrine. Put 1-2 cotton balls into the bleeding nostril. (If bleeding is not clearly unilateral, put cotton balls into both nostrils.) Place a dry cotton ball at the nostril opening to prevent leakage and dripping. Leave the cotton balls in place for 10 minutes.

f) If the bleeding still doesn't stop, or in case of posterior bleeds, pack the nose and refer to a higher centre for appropriate care.

g) Antibiotics may be given to prevent infection (sinusitis) and if pack is to be kept beyond 24 hours.

Anterior Nasal Packing of the nose:

Indication: Controlling the nasal bleeds which are not controlled by pinching, application of vasoconstrictor

Tools needed: Gloves, 2% lignocaine jelly, lubricants such as petroleum jelly, Gauze ribbon, forceps, etc.

Procedure:

i) Make the patient sit up with a back rest.

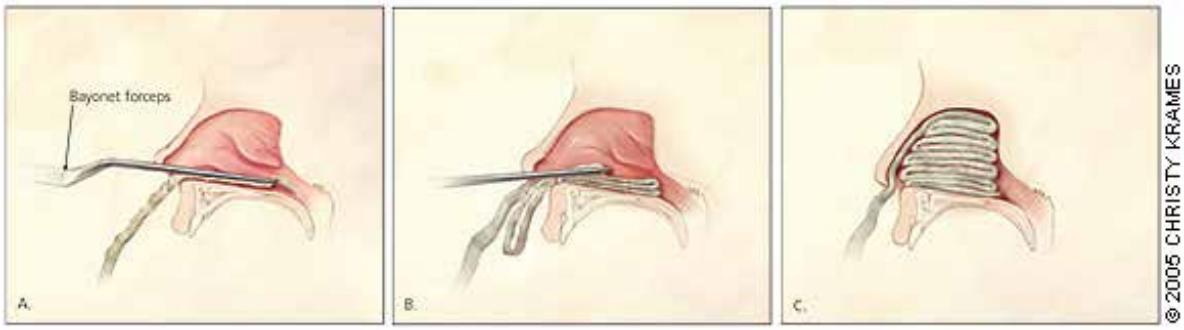
ii) Apply local anaesthetic such as lignocaine 2% to the nasal mucosa.

iii) Prepare a long ribbon gauze piece and smear it with abundant lubricant such as petroleum jelly.

iv) Using a scalpel, the gauze pieces have to be layered one upon each other, packing it from anterior to posterior, as depicted in the diagram below.

v) The gauze should be placed as far posteriorly as possible.

vi) Bilateral nasal packing may be considered in case unilateral packing fails to stop a confirmed and visible anterior bleeding source. This would increase the pressure on the nasal septum.



In case of posterior bleed, it is better to refer the patient to ENT specialist with general instructions:

- Nostrils should be compressed against the nasal septum.
- The patient should not swallow blood running down the pharynx.
- The patient is kept in an upright posture to reduce blood flow to the head and prevent swallowing of blood.

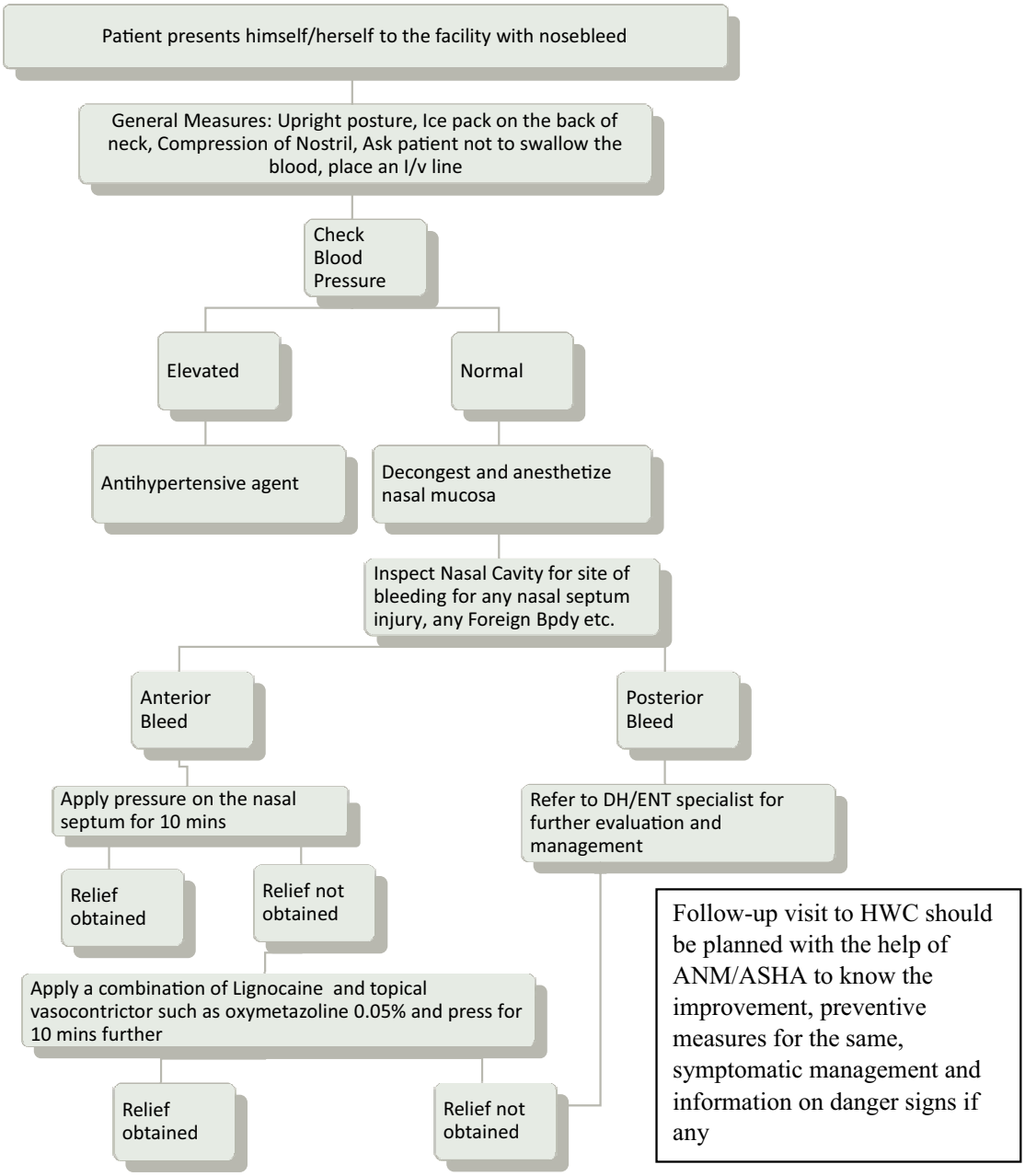
An ice bag can be placed on the back of the neck to induce reflex vasoconstriction. An intravenous line should be placed if bleeding is severe. The process of posterior nasal

packing is known as Bellocq pack and should be performed by an experienced/skilled person.

Systemic complications of anterior and posterior nasal packing (needs referral to a higher centre)

- Arterial hypoxia: fall of oxygen partial pressure with pulmonary dysfunction due to an impaired nasopulmonary reflux mechanism.
- Toxic shock: focal staphylococcal infection develops within 24 hours after nasal packing, with generalised shock symptoms caused by bacterial toxins.

Referral Pathway for Epistaxis

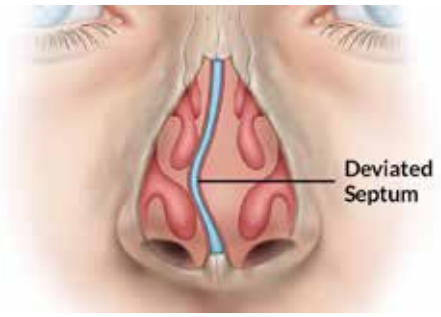


Deviated Nasal Septum

The septal deformities are of the following types:

- Deviations are smooth deflections which are upper or lower, anterior or posterior. i.e., C-shaped deviation.
- Spurs are isolated thickenings at the junction of the bone and the cartilage.
- Thickening may result from trauma leading to overriding of the cartilaginous fragments, which grow later in double layers.
- Dislocation: The anterior edge of the septal cartilage may be displaced to one side causing the widening of the columella of the nose.
- S Shaped Deformity.
- Bony posterior deformity of vomerine/ethmoid bone.

Symptoms & Signs:



- Unilateral or bilateral blocking of the nose
- Headache due to sinusitis
- Epistaxis
- Anosmia
- External deformity associated with deviation of the septum

Management

As definitive treatment is surgery, early identification and proper referral is important for DNS at primary health centre level. Follow-up treatment can be done.

a. Investigations
   - o History, examination of the nose
   - o X Ray PNS waters view
   - o CT scan PNS

b. Treatment
   - o Required only if the patient has persistent or recurrent symptoms due to the deviated septum or blockage of nose.
   - o Permanent relief is obtained by the Septoplasty surgery. Patient should be referred to the higher centre.

CSF Rhinorrhoea

Cerebrospinal Fluid (CSF) leakage into the nose is known as CSF Rhinorrhoea. It may be because of any disruption in the bone, dura and arachnoid of base of skull leading to leakage of CSF. The fluid is usually clear fluid but may be mixed with blood sometimes in case of acute injury.

Causes

- **Trauma:** Most of the cases follow trauma. It can be accidental or surgical. Surgical trauma includes endoscopic sinus surgery, trans-sphenoidal hypophysectomy, nasal polypectomy or skull base surgery. In endoscopic sinus surgery, CSF leak may be immediate or delayed in onset.
- **Inflammations:** Mucoceles of sinuses, sinunasal polyposis, fungal infection of sinuses and osteomyelitis, can all erode the bone and dura.
- **Neoplasms:** Tumours – both benign and malignant, invading the skull base.
- **Congenitallesions:** Meningocele, meningoencephaloceles and gliomas can have associated skull base defect.
- **Idiopathic:** Where cause is unknown, and the patient has spontaneous leak.

Sites of Leak

a. Anterior cranial fossa

b. Middle cranial fossa

c. Posterior cranial fossa

Differences between CSF and nasal secretions

Features	CSF Fluid	Nasal Fluid
History	Some history suggestive of leak like surgery, trauma/injury, tumour etc.	History of sign & symptoms of respiratory tract infections like nasal stuffiness, sneezing, lacrimation etc.
Flow of discharge	Flow increases on bending forward or straining, Discharge cannot be sniffed back	Continuous, no effect of changing posture, can be sniffed back
Discharge character	Thin, sweet and clear (watery)	Slimy (mucus)or clear (tears)
Taste	Sweet	Salty
Sugar content	>30 mg/dl	<10 mg/dl
Presence of β2 transferrin	+	-

Management

a. Investigation

- Sniff Test: Cannot sniff back if it is rhinorrhea due to CSF leak.
- Handkerchief Test: Mucus stiffens the handkerchief but CSF doesn't.
- Reservoir Sign: Posture changing from supine to upright with bending forward will lead to sudden gush of clear fluid from nose.
- Biochemical Test: Estimation of glucose and β2 transferrin can distinguish CSF fluid from nasal fluid.
- CT cysternography is imaging modality of choice for CSF rhinorrhea.

b. Treatment

- After symptomatic management, the patient should be referred to ENT specialist/ higher centre for further management.
- Advice – bedrest in propped up position, avoidance of straining, and prophylactic antibiotics and diuretics (Diamox 100 mg TDS) use can be advised if indicated.

Deviated Nasal Septum

Furunculosis is acute infection of hair follicle with Staphylococcus aureus.

Symptoms & Sign

- Sever pain and tenderness over the tip of nose.
- May be associated with headache, malaise and pyrexia.
- Examination reveals congestion and swelling of vestibule.

Treatment

- Local application of moist heat will enhance the localisation of infection and promote drainage.
- Nasal vestibule can be packed with icthymol glycerol for rapid relief.
- Cap. amoxicillin 500mg 8 hourly for 5-7 days (for children, 25-50mg/kg/day in 3 divided doses) or Cap. amoxicillin 250/500mg plus clavulanic acid 125mg 8 hourly for 5-7 days.
- Tab ibuprofen 400-600mg 3 times in a day for 5 days (for children, 10mg/kg/dose) or Tab paracetamol 500 mg 6 hourly for initial 2-3 days. After that take medicine as and when required till pain and fever subsides (for children, 10mg/kg/dose 6-8 hourly).

Note: Usually improvement in pain, tenderness and inflammation occurs within 24-48 hours after initiation of treatment, the patient should be monitored regularly. However, if there is flaring of infection in the form of spreading facial cellulitis, then the patient should be hospitalised and shifted to systemic IV antibiotics. In case the patient is having recurrent furunculosis, then the patient must be investigated for diabetes mellitus. The patient should be advised strictly not to touch the nose as infection may spread rapidly.

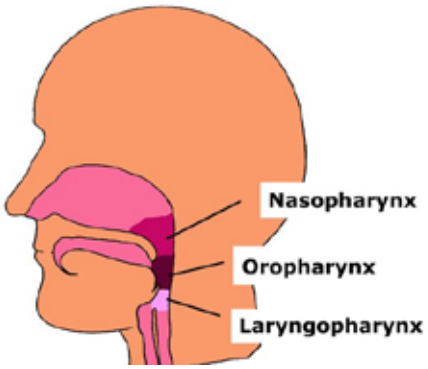
06
MANAGEMENT OF COMMON THROAT CONDITIONS

Overview of Basic Anatomy of Pharynx

Conical fibromuscular tube forming upper part of the air and food passages. It is 12-14 cm long with a width of 3.5 cm at top and 1.5 cm at the pharyno-oesophageal junction extending from base of the skull to the lower border of cricoid cartilage where it becomes continuous with the oesophagus.

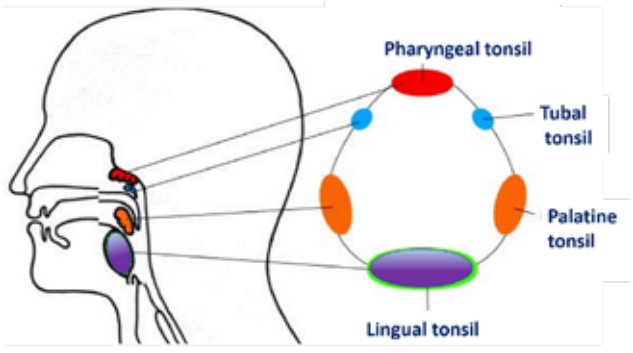
Division of pharynx

1. Nasopharynx: upper most part of pharynx lying posterior to the nasal cavity. Its lateral wall has opening of eustachian tube.
2. Oropharynx: below the nasopharynx is the oropharynx lying posterior to the oral cavity. Its lateral wall has the palatine/faucial tonsil.



3. Laryngopharynx/Hypopharynx: lies behind the larynx and opposite to C4, C5 cervical vertebrae.

Nasopharyngeal Tonsil (Adenoids): It is a subepithelial collection of lymphoid tissue at the junction of roof and posterior wall of nasopharynx and causes the overlying mucous membrane to be thrown into radiating folds. It increases in size till 8 years of age and then gradually atrophies.



Tubal Tonsil: It is the collection of subepithelial lymphoid tissue situated at the tubal elevation. It is continuous with adenoid tissue and forms a part of the Waldeyer's ring. When enlarged due to infection, it can cause eustachian tube occlusion.

Pharyngitis

Infection of pharynx is very common and occurs due to varied etiological factors like viral, bacterial, fungal or others.

Causes

Viral	Bacterial	Fungal	Miscellaneous
• Influenza • Parainfluenza • Measles and chickenpox • Coxsackie virus • Herpes simplex • Infectious mononucleosis • Cytomegalovirus	• Streptococcus (Group A, beta-haemolyticus) – Most Common • Diphtheria • Gonococcus	• Candida albicans • Chlamydia trachomatis	• Toxoplasmosis (parasitic, rare)

Symptoms & Signs

Mild infection

- Discomfort in the throat
- Malaise
- Low-grade fever

Pharynx in these mild cases is congested but there is no lymphadenopathy.

Moderate and severe infection is presented with

- Pain in throat
- Dysphagia
- Headache
- Malaise
- High grade fever

Pharynx in these cases shows erythema, exudate and enlargement of tonsils and lymphoid follicles on the posterior pharyngeal wall. Very severe cases also show oedema of soft palate and uvula with enlargement of cervical nodes.

Treatment:

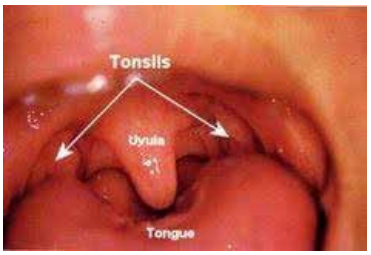
- Bed rest and improvement of oral hygiene
- Soft bland diet with plenty of fluids
- Antibiotics: Antibiotics of choice are Amoxicillin 500mg 3 times/day x 5 days (for children, 25-50mg/kg/day in 3 divided doses), Amoxicillin with Clavulanic acid 625 BD x 5days
- Antacids: Tab. Ranitidine 150 mg/Cap. Omperazole 20 mg daily in case of reflux
- Anti-inflammatory agents like Diclofenac and Paracetamol (50+325mg) BD x 5days (for children, paracetamol 10mg/kg/dose 6-8 hourly)
- Antiseptic Gargles like Betadine or Chlorhexidine

Acute Sore Throat/Tonsillitis

Tonsils are a pair of special glands situated at the back of the throat which act as filters, capturing most of the germs which would otherwise enter the lungs and cause infection. Often, especially in children, they get infected and inflamed leading to a condition known as Tonsillitis.

Causes:

Tonsillitis is caused by common viruses, but bacterial infections can also be the cause.



Normal throat

Clinical features:

Symptoms:

- Sore throat
- Difficult or painful swallowing
- Fever
- Earache
- Change in voice
- General symptoms like headache, body ache etc.


Inflamed tonsils with exudates

Signs:

- Person may look sick and febrile
- Red and swollen tonsils. May have exudates. (White or yellow coating or patches on the tonsils)
- Enlarged, tender glands (lymph nodes) in the neck

Management:

Most of the cases with tonsillitis can be managed by medicines alone. Timely initiation of medicines would bring relief to them within 5-7 days. The usual line of treatment in uncomplicated cases includes:

1. T. PCM (500 mg) three times a day OR Syrup PCM 10-15mg/kg bodyweight in 3 divided doses (Paediatric)
2. T. Amoxicillin (500 mg) three times a day OR (Syrup Amoxicillin 40mg/kg/day in 3 divided doses for Paediatric age group)
3. Warm Saline Gargles/betadine gargles 3-4 times a day

Complications **(needs referral to a higher centre)**

- Peritonsillar abscess
- Parapharyngeal abscess
- Cervical abscess due to suppuration of jugulo-digastriclymph nodes
- Acute otitis media. Recurrent attacks of acute otitis media may coincide with recurrent tonsillitis
- Rheumatic fever – Often seen in association with tonsillitis due to Group A beta-haemolytic Streptococci
- Subacute bacterial endocarditis – Acute tonsillitis in a patient with valvular heart disease may be complicated by endocarditis. It usually happens due to Streptococcus viridans infection

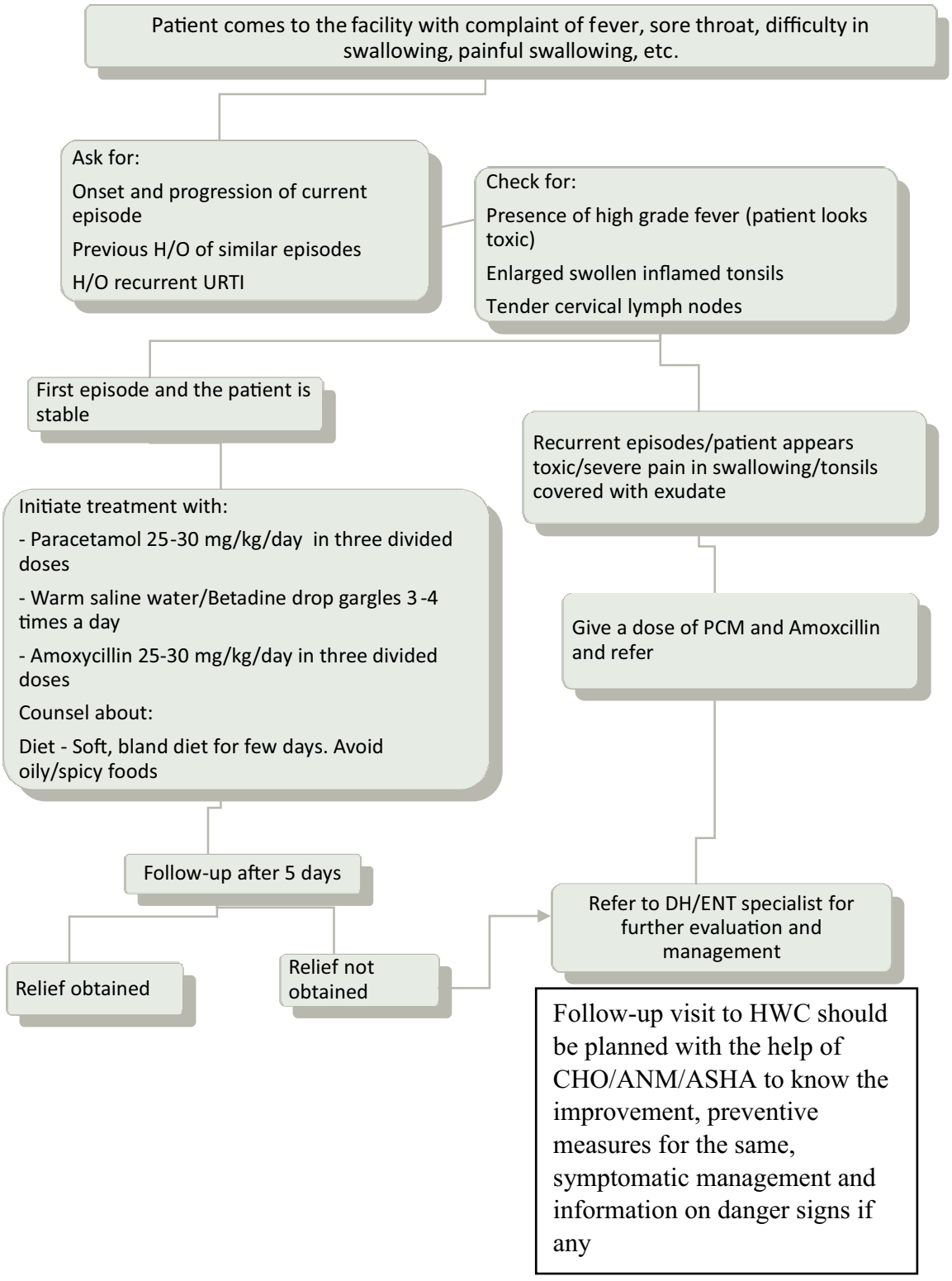
If the symptoms persist, then the person must be referred to an ENT specialist or to the DH for investigations (Blood counts, throat swab, Chest X-ray)

Indications for surgery (needs referral to a higher centre):

It is important to note that some patients may need to undergo surgery for cure. Some indications of surgery include:

- Recurrent infection of throat: 6 or more episodes in 1 year or 5 episodes per year for 2 years
- Association with febrile seizures
- Tonsillar swelling causing airway obstruction or sleep apnoea
- Difficulty in swallowing/speaking, suspicion of malignancy
- Cases which do not respond with antibiotics
- Single episode of peritonsillar abscess

Referral Pathway for Acute Sore Throat/Tonsillitis



Ludwig's Angina

Infection of submandibular space is known as Ludwig's angina. Submandibular space lies between mucous membrane of the floor of mouth and tongue on one side and superficial layer of deep cervical fascia extending between the hyoid bone and mandible on the other side.

Causes

- Dental infections. They account for 80% of the cases
- Submandibular sialadenitis
- Injuries of oral mucosa
- Fractures of the mandible
- Part of parotid abscess

Symptoms & Signs

- Difficulty in swallowing (odynophagia) with varying degrees of trismus
- Stridor may be present due to disrupted airflow
- Structures in the floor of mouth are swollen and tongue seems to be pushed up and back (when infection is sublingual)
- Submandibular regions become swollen and tender and impart woody-hard feel (when infection is submandibular)

Treatment

1. All cases of Ludwig's angina must be referred to a higher centre after providing symptomatic treatment as they may need aggressive management especially in neglected cases including:

a. Incision and drainage.

   - Intraoral — if infection is still localised to sublingual space.
   - External — if infection involves submandibular space. A transverse incision extending from one angle of mandible to the other is made with vertical opening of midline musculature of tongue with a blunt haemostat

b. Tracheostomy, if airway is endangered

Peritonsillar Abscess (Quinsy)

It is a collection of pus in the peritonsillar space which lies between the capsule of tonsil and the superior constrictor muscle. It usually follows due to blockage of ebners glands in tonsillar crypts.

Symptoms & Signs

Peritonsillar abscess generally happens due to septicemia or localised infection and resemble any acute infection. Symptoms like fever with chills and rigors, general malaise, body aches, headache, nausea and constipation are present. Local symptoms like unilateral severe throat pain, odynophagia, muffled thick speech like hot potato voice, foul breath, Ipsilateral earache, trismus are also associated with peritonsillar abscess.

On examination, tonsil, pillars and soft palate on the involved side are congested and swollen, uvula is swollen and edematous along with bulging of the soft palate and anterior pillars. Muco-pus may be seen covering the tonsillar region. Cervical Lymphadenopathy is commonly seen.

Treatment

- IV antibiotics Inj. Amoxicillin + Clavulinic Acid + Gentamycin 1 ml 12 hourly for 5 days, IV fluids, and analgesics like Paracetamol 500 mg bid for 5 days, good oral hygiene
- Should be referred as surgical drainage is first line of management

Hoarseness of Voice

Hoarseness is a term used to describe changes in voice quality. It results from changes in vocal cords. A hoarse voice is rough and unpleasant, and it results from lesions of the vocal cords. The causes of hoarseness may range from innocent Acute Laryngitis to Laryngeal Diphtheria and Malignancy.

Evaluation of hoarseness

In the absence of upper respiratory tract infection any patient with hoarseness persisting for more than two weeks needs evaluation.

Physical examination

a. Thorough head and neck examination.

b. Upper airway mucosa, tongue mobility. Cranial nerve examination.

c. Examination for signs of systemic disease such as Hypothyroidism or neurologic dysfunction such as Tremors or Parkinson's disease.

d. Refer to a higher centre for laryngeal examination via flexible laryngoscope.

Treatment

- For habitual dysphonia treatment is by prevention of vocal abuse.
- Rest to the voice.
- Drink plenty of water.
- Don'ts:
    - Tobacco
    - Shouting
    - Drinking alcohol
    - Trying to talk too much when there is cold or laryngitis
    - Whispering or talking loudly for very long
    - Trying to change natural voice
- **Voice therapy:** Maladaptive vocal habits and techniques are replaced with appropriate use of vocal mechanism. If not responding to this then surgery may be advised. The patient should be referred to a higher centre.

Stridor

It is a laryngeal manifestation of disordered respiratory functions due to airflow changes (narrowed airway) within larynx, trachea or bronchi.

Stridor can be categorised as following:

- **Inspiratory -** when obstruction is at the level of supraglottis and above
- **Expiratory -** when obstruction is at the level bronchioles
- **Biphasic -** i.e., both during inspiration and expiration and obstruction is at the level of trachea or sub glottis

Types:

Congenital & Acquired (can be diagnosed on history, age of presentation)

Symptoms & Signs

- Stridor is not a disease but a sign
- Noisy breathing which may be wheezing, crowing, whistling, croaking, sighing, rattling or snoring
- Cough
- Hoarseness
- May have difficulty in deglutition
- Change in voice

Management

a. **Investigation**

- Indirect laryngoscopy
- Xray neck lateral view
- X-ray chest
- Bronchoscopy
- C.T. scan to find out cause & level of stridor

The Patient should be referred to a higher centre for investigation.

b. **Treatment**

- Humidified oxygen
- Steroids (Prednisolone up to 40mg/day x 7 days)
- Antibiotics – Ampicillin 500mg TDS x 5days
- Intubation or tracheostomy is indicated to relieve airway obstruction in case of stridor, therefore, the patient should be referred to the higher centre

Foreign Body in Air Passage

Foreign body (FB) aspiration into air passage is yet another emergency which may be presented to you. FB can lodge in the back of the throat, voice box or upper lung tubes called bronchi depending on the size of the foreign body. This condition is more common in children (50% of them are below 4 years) but can also occur in adults.

Clinical features:

- Foreign body in the back of throat: there will be an initial period of choking, gagging and wheezing. Then it may be coughed out or it may lodge in the larynx.
- Foreign body in voice box (larynx): will have discomfort, pain in throat, hoarseness of voice, cough, difficulty in breathing, wheezing and coughing of blood.
- Foreign body in upper tube (Tracheal): A sharp FB will produce cough, difficulty in breathing and hemoptysis (blood in sputum).

Management:

The only way of confirming a foreign body is through X-ray. A person can suspect there is a foreign body if there is a sudden choking after eating food, or sudden bout of cough, discomfort and difficulty in breathing.

WHAT TO DO

Steps to perform in case of choking:

i. If the person is able to cough forcefully, the person should keep coughing.

ii. If the person is choking and can't talk, cry or laugh forcefully, the American Red Cross recommends a five-and-five approach to delivering first aid:

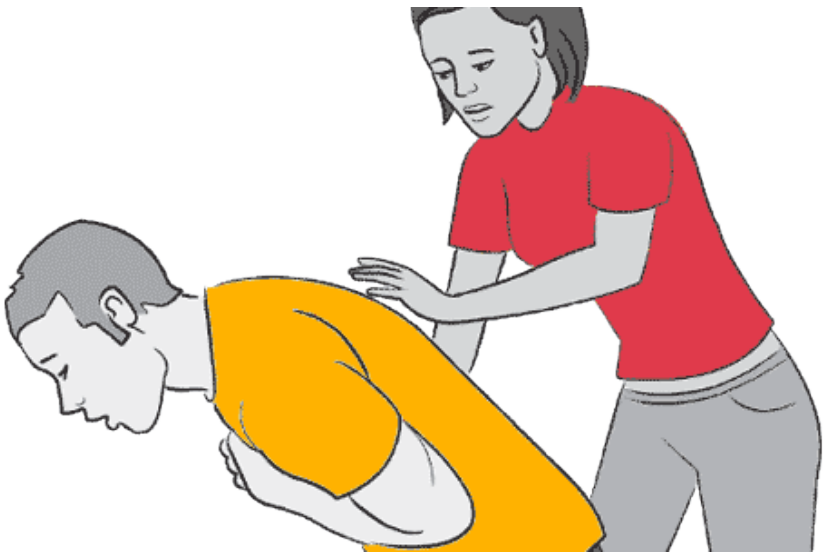


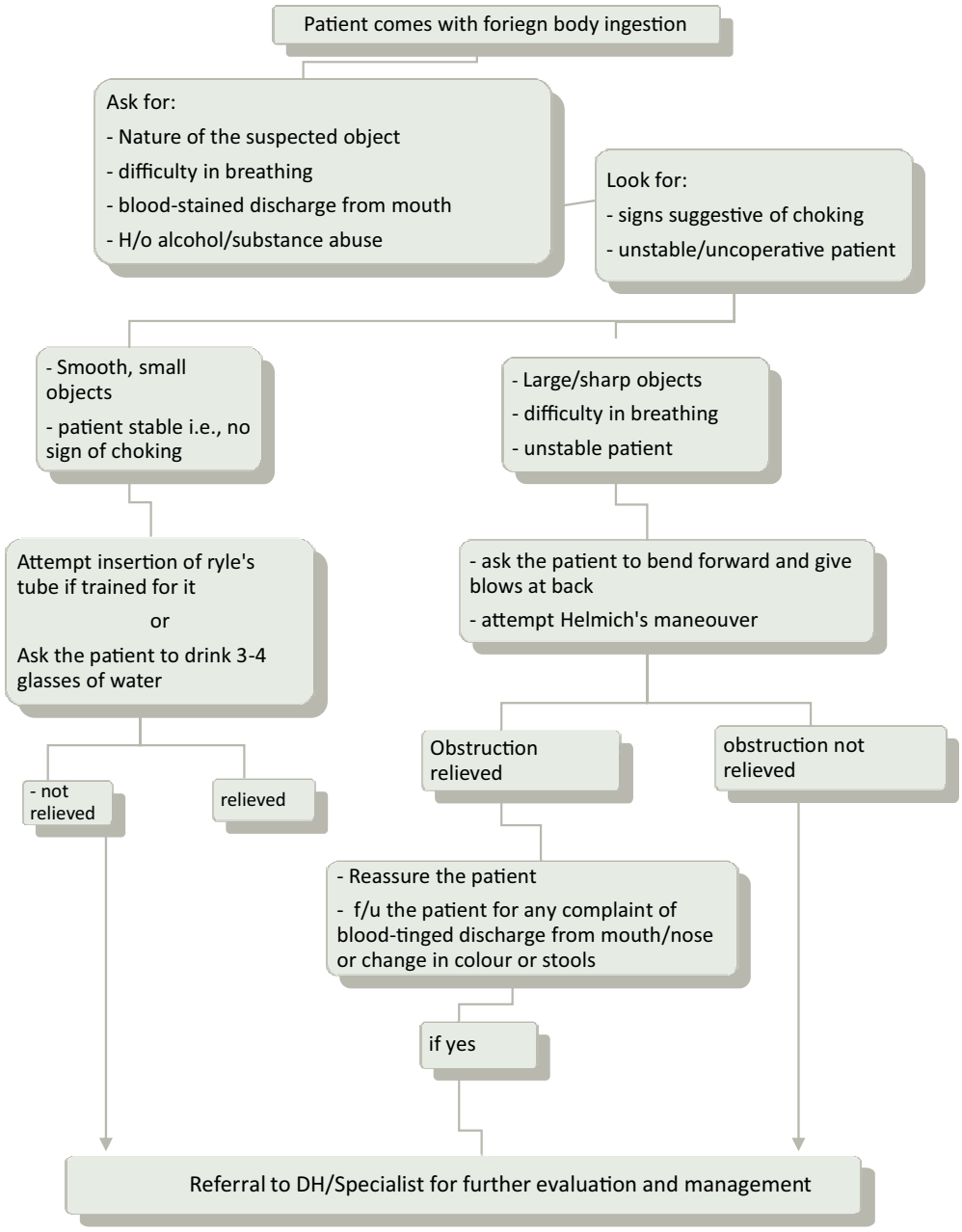
Figure: Showing 'five-and-five' approach in case of choking

a) Give 5 back blows (as shown in the image above). Stand to the side and just behind the choking adult. In case of a child, kneel down behind. Place one arm across the person's chest for support. Bend the person over at the waist so that the upper body is parallel with the ground. Deliver five separate back blows between the person's shoulder blades with the heel of your hand.

b) Give 5 abdominal thrusts. Perform five abdominal thrusts (also known as the Heimlich manoeuvre – refer to annexure - SKILLS section for further details).

Alternate between 5 blows and 5 thrusts until the blockage is dislodged.

Referral Pathway Foreign Body in Air Passage



Miscellaneous

1. Road Traffic Accident involving Nose, Maxilla, Neck

a. Fracture Nasal Bone

b. Fracture Maxilla

c. Penetrating Neck Injuries

After symptomatic management as mentioned below, the patient should be referred to a higher centre for further evaluation and treatment

- Measuring of vitals
- Securing iv line if indicated

a. Fracture Nasal Bone

Nasal bone present on nasal bridge usually gets fractured in head and facial trauma, assault, RTA, sport, or industrial accident.

Symptoms and Signs

- History of Trauma
- Nasal deformity with swelling.
- Pain
- Bleeding nose
- Nasal blockage
- Discoloration of nasal skin
- Epistaxis (active or clots in nasal cavity)
- Crepitus on palpation over nasal bone area
- Deformity
- Oedema on and around nose
- Nasal obstruction.
- Associated traumatic injury
- Black eye

Management

a. Investigation

- Imaging study like X-ray nose lateral view, Xray PNS, CT scan
- Anterior & Posterior rhinoscopy
- Routine Biochemical & Serological Laboratory test if patient is hemodynamically stable

b. General Treatment

- Head up position, cold compression to reduce oedema
- Suturing of open wound
- Anti-inflammatory drug (Tab. Diclofenac 50 mg BD x 7 days)
- Antibiotics (Amoxycillin 500mg TDS x 5 days or Amoxiclav 1gm I.V. 12 hourly)

Refer to a higher centre for further evaluation & treatment (surgery)

b. Fracture Maxilla

Maxillary bones are present on either side of nose and are part of skull bone. Maxillary bone fracture occurs in head and facial trauma, assault, RTA, sport, or industrial accident.

Symptoms and Signs

- History of trauma
- Nasal deformity with swelling.
- Pain
- Bleeding nose
- Nasal blockage
- Discoloration of nasal skin
- Epistaxis (active or clots in nasal cavity)
- Deformity
- Associated traumatic injury
- Black eye

Management

a. Investigation

- Imaging study like X-ray nose lateral view, Xray PNS, CT scan
- Anterior & Posterior rhinoscopy
- Routine Biochemical & Serological Laboratory Test

b. General Treatment

- Airway maintenance
- Control of oral & nasal bleeding
- Anti-inflammatory drug (Tab. Diclofenac 500mg BD x 7 days
- Antibiotics (Amoxicillin 500mg t.i.d. x 5 days or Amoxiclav 1 gm IV 12 hourly

Multi-disciplinary approach with involvement of ENT surgeon, Maxillofacial surgeon & Neurosurgeon may be needed depending upon types & severity of fracture.

c. Penetrating Neck Injuries

Causes

- Gunshot
- Stab
- Penetrating shrapnel with or without speed

Levels

- Includes skin and platysma.
- Includes important structures like major vessels (carotid & jugular vein), trachea, esophagus, cranial & other nerves.
- Involvement of spine & vertebrae

Signs

- Dysphagia
- Hoarseness of voice
- Oropharyngeal bleeding
- Neurological deficit
- Hypotension
- Sub cutaneous emphysema
- Air bubbles through wound & tracheal area

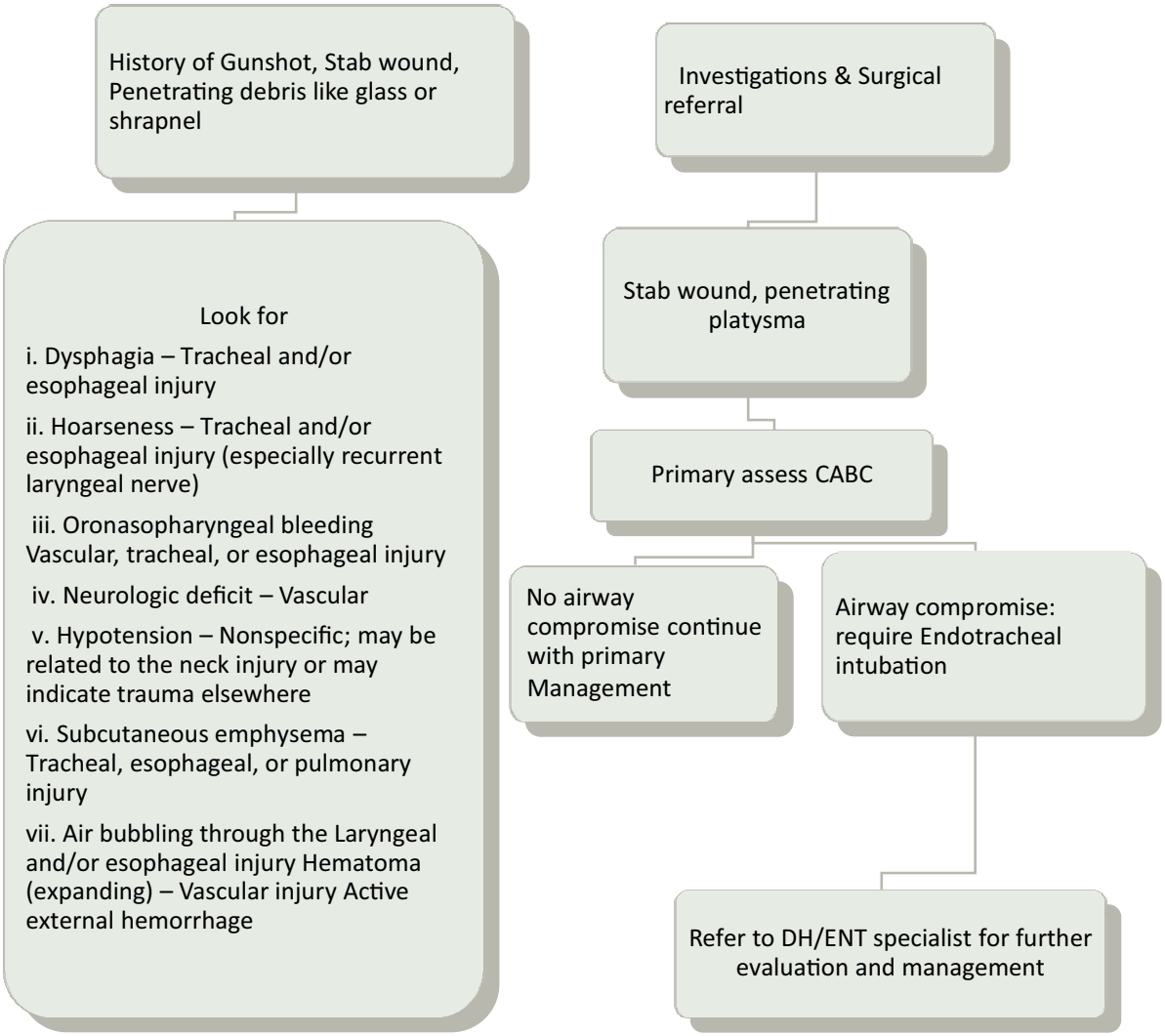
Management

Immediate Treatment – ABC

- Securing Airway by neck stabilisation & endotracheal intubation if necessary
- Maintaining Breathing
- Maintaining Circulation
- Emergency medical intervention to maintain BP through IV fluid, airway maintenance through plastic airway in mouth or intubation
- Pressure dressing should be done in case of active bleeding

Patient should be immediately referred to the higher centre for further evaluation & treatment (surgery)

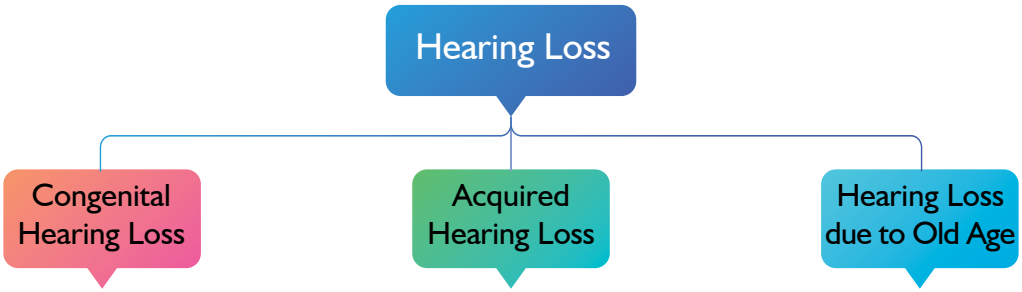
Referral Pathway for Penetrating Neck Injuries



07

SCREENING THROUGH CAMPS FOR COMMON ENT CONDITIONS

Community awareness on common ENT conditions is one of the major roles of medical officer posted at HWC. Medical Officers should focus on awareness program at Health and Wellness centre by use of health talks in OPD area, role play in nearby community centre or during VHSND etc. Along with the community awareness, screening of community for hearing loss/deafness is also equally important. Hearing loss is a condition prevalent in all age groups. It may be congenital (present at birth) or acquired later in life. Both these types of hearing loss are preventable.



Various National Programmes have aimed at screening the population regularly for hearing loss. Early diagnosis of deafness by means of screening not only helps to find the cause but also support the team in early initiation of treatment.

- Rashtriya Bal Suraksha Karyakram (RBSK) – Screening of children and adolescents using platforms like Anganwadi Centres and schools.
- National Programme for Prevention and Control of Deafness (NPPCD) – Screening for deafness in hospitals and health camps.
- National Programme for Health Care of the Elderly (NPHCE) – Screening of geriatric population for deafness in primary health care facilities as well as specialised geriatric clinics.

GUIDELINES FOR SCREENING CAMPS TO BE HELD IN THE DISTRICTS:

1. **Objectives of the camps:** Identify all persons with ear diseases that are or can be the cause of hearing loss (or any other complication) in the affected person, such as:
    - Wax
    - Secretory Otitis media

- Suppurative Otitis media
- Otomycosis/otitis externa
- Exposure to Noise
- Presbycusis

- Treat or initiate treatment wherever possible, i.e., for:
  - Wax: removal by probing/syringing etc. to be done, if possible. Wherever this is not possible, suitable treatment for wax softening and removal must be initiated.
  - Initiate medical treatment for Secretory Otitis media
  - Initiate medical treatment for Suppurative Otitis media
  - Initiate medical treatment for Otomycosis/otitis externa
- Refer for further management wherever this is indicated. This may be:
  - Follow up for the medical treatment advised
  - Surgical treatment
  - Audiological assessment or work up
  - Specialised diagnostic work-up (x-rays, CT scan etc.)
- Provide suitable guidance and advice to the patient and/or the family members regarding:
  - Prevention of hearing loss
  - Need for surgical treatment
  - Need for rehabilitation therapy
  - Proper use of hearing aids

2. Preparation for the camp:

- The camps must be organised in different parts of the district every month.
- An NGO be identified as per the guidelines provided for identification of the NGO.
- A suitable day of the month may be fixed for the camps in consultation with the Programme assistant, the NGO and the technical resource persons, e.g., the 3rd of every month. This day should be a weekend in order to facilitate attendance by working people and school going children.
- For the initial part of the programme, the camps should be held in the Community Health Centres. After this, when all the CHCs have been covered, the camps may subsequently be held in the PHCs or a suitable venue near a PHC.

- Each camp must be preceded by creation of awareness in the given area regarding the camp. Notices regarding the camp must be posted at the CHC, PHCs, subcentres, Anganwadi as well as the Panchayat and any other common area of the village.
- The IEC material regarding deafness prevention (as made available under the programme) should preferably be displayed alongside the notice to help create awareness.
- Suitability of the venue must be ensured prior to the camp. If the Centre is not suitable, any other venue in the vicinity, such as a field, panchayat house or school hall/ground etc. can be identified, depending on the weather and the availability.

3. Infrastructure and Manpower Requirement for the camp:

1. For the camp, the following persons must be available:
    - 2 Doctors: At least one of them must be an ENT surgeon (District level ENT doctor or from Medical College in the vicinity). The other doctor may be an ENT surgeon, if feasible or else an MBBS doctor who has undergone training under the programme.
    - At least one, and preferably two Audiologists or Audiological assistants should be there to facilitate the camp process. One of them ought to be the Programme assistant at the district level. However, till the Programme assistant post is not filled at the district hospital, any other person trained as an Audiologist or Audiological assistant may be recruited for the camp.
    - Two Camp organisers or one organiser and one assistant from the identified NGO.
    - Equipment required:
        1. Head light (available at the PHCs)
        2. Otoscopes (1 is available at the PHC/CHC. The other may be brought along by the ENT doctor)
        3. Tuning forks (available at the PHC/CHC)
        4. 2 or more aural probes (for wax removal)
        5. Syringe, cannula, saline etc. for wax removal by syringing

4. Functioning of the camp:

At the time of the camp, it is proposed that the following methodology may be considered:

- The patient/s who arrives at the camp should first report to the camp organiser/ assistant.

- The camp organiser should then record the name of the patient and provide a referral slip with the name of patient on it (as provided under the programme).
- The patient will then carry the slip to the doctor.
- The doctor will assess the patient and provide suitable treatment, guidance, and referral.
- Wherever assessment of hearing is required, doctor should refer the patient to the audiologist/audiological assistant who will perform the informal hearing tests (voice tests) or tuning fork tests on the patient and send back to doctor or, wherever possible, take the necessary action on his/her own.
- On the referral slip the diagnosis and advice should be noted. On the way out, the patient must show the slip to the camp assistant who will make the necessary entry in the register regarding the patient's diagnosis and action taken so that a suitable record is maintained.

The format for this record is:

S. No.	Patient's Name	Age/Sex	Diagnosis (including normal)	Action taken	Whether referred. If yes, place of referral (District/ Medical College)

Once the camp has been completed, the camp organiser (NGO representative) should ensure that the data pertaining to the number of persons visiting the camps etc. are compiled as per the format given below and the necessary information is shared (in the proforma provided) to the district nodal officer as well as to the programme assistant at the district hospital.

NATIONAL PROGRAMME FOR PREVENTION & CONTROL OFDEAFNESS

DISTRICT LEVEL PROFORMA

Report to be submitted for the month of _____

SCREENING CAMPS

Number of screening camps organised:_____

Number of patients screened in the camps: _____

Morbidities:

Morbidities	0-5years	5-14years	>14-50 years	>50 years
Hearing Loss				
Mild				
Moderate				
Severe				
Profound				

Morbidities	0-5years	>14years
CSOM		
ASOM		
Secretory OM\		
Wax		
Ear Trauma		
Speech Problems		
Any other		

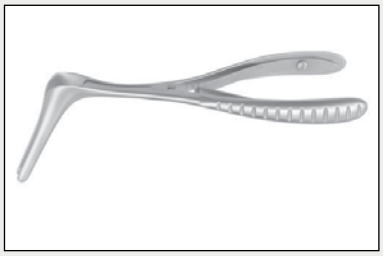
Annexure 1 : Equipment for ENT Examination

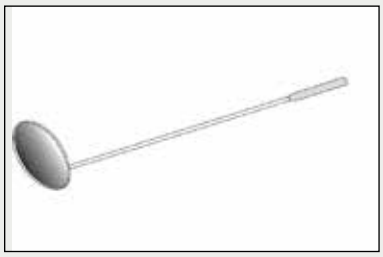
1. **Bull's eye lamp.** It provides a powerful source of light. The lamp can be tilted, rotated, raised or lowered according to the needs.
2. **Head mirror.** It is a concave mirror used to reflect light from the Bull's eye lamp onto the part being examined. It has a focal length of approximately 25 cm. The examiner sees through the hole in the centre of the mirror.
3. **Tongue depressors.** Different sizes for children and adults should be available. It is used in the examination of oral cavity and oropharynx.
4. **Nasal specula.** Two types are commonly used, namely Thudicum and Vienna. The size of the nasal speculum is selected according to the age of the patient and size of the nostril.
5. **Laryngeal mirrors.** They are used to examine the larynx and laryngopharynx. Various sizes, from 6 to 30 mm diameter, are available. To prevent fogging, a mirror is always warmed over a spirit lamp or by dipping it in hot water and then tested on the back of hand before insertion into the mouth.
6. **Postnasal mirror.** It is used to examine the nasopharynx and posterior part of nasal cavity. Like laryngeal mirror, it is also warmed and tested on the back of hand before use.
7. **Ear specula.** Various sizes are available to suit different sizes of the ear canal. The largest speculum which can be conveniently inserted in the ear canal should be used.
8. **Siegle's speculum.** Essential in examination of tympanic membrane; it gives magnified view of tympanic membrane and helps to test its mobility. It is also used to elicit the fistula sign.
9. **Tuning forks.** Commonly used tuning fork has a frequency of 512 Hz. Forks of other frequencies, e.g., 256and 1024 Hz should also be available.
10. **Jobson–Horne's probe.** One end of the probe is used to form a cotton bud to clean the ear of discharge and the other end (with ring curette) is used to remove the wax.
11. **Blunt probe.** It is used for palpation in the nasal cavity or ear canal.
12. **Tilley's or Hartman's forceps.** It is used in packing of ear canal or nasal cavity.

13. **Otoscope.** It is an electric or battery-operated device with a magnifying glass. Sometimes it has an arrangement to attach a bulb to function as Siegel's speculum. It is useful for detailed examination of the ear. It is an essential instrument to examine the ear of an infant, a child or a bedridden patient.
14. **Spirit lamp.** It is used to warm the laryngeal or postnasal mirror
15. **Gloves.** They are essential for intraoral palpation.
16. **Spray.** It is used to apply local anesthetic to abolish the gag reflex.
17. **Suction apparatus.** To clear the ear or nose of discharge or blood for detailed examination.

Head Mirror


Tongue depressors


Nasal specula

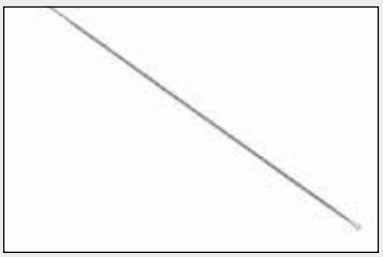

Laryngeal mirrors

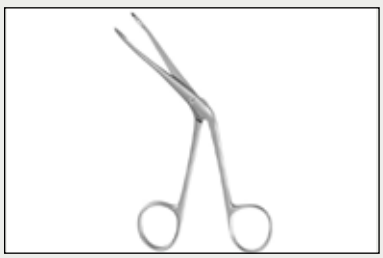

Postnasal mirror


Ear specula


Siegle's speculum


Tuning forks


Jobson–Horne's probe


Hartman's forceps


Otoscope

Spirit lamp

Annexure 2 : Common ENT test procedures

I. PERFORMING THE TUNING FORK TESTS

As you may be aware, hearing loss may be of 2 types – Conductive Hearing Loss and Sensorineural Hearing Loss. Rinne and Weber Test are the two simple clinical tests which can be performed to establish the presence or absence of a significant conductive hearing loss.

The steps to perform the test:

i. Make the patient sit upright on a chair, looking forward.

ii. Use a tuning fork on 512 Hz. By holding the tuning fork by its stem, strike one side of the tines on a padded surface or the ball of hand. Do not strike it on a hard surface as this may damage the tuning fork.

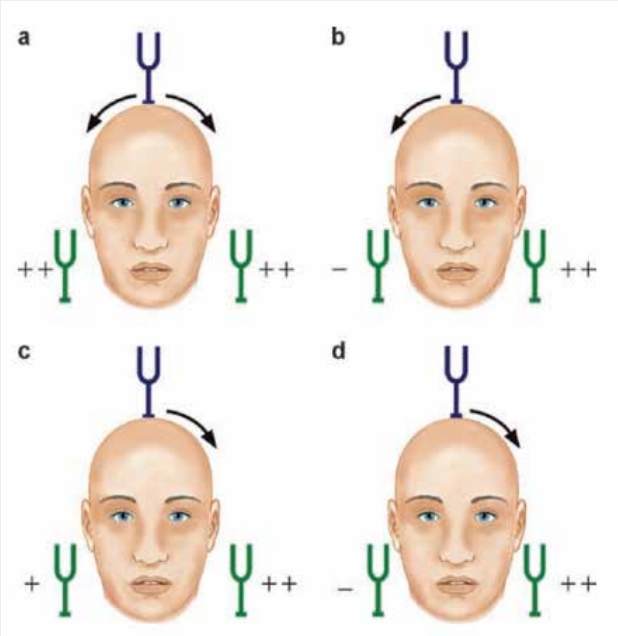


Figure: Tuning fork tests.

(a) Normal hearing: Weber test, the sound heard by both ears is equal, no lateralization; Rinne test bilateral +. (b) Conductive hearing loss in the right ear: Weber test, the sound is lateralized to the right ear; Rinne test is negative on the right ear, positive in the left ear. (c) Sensorineural hearing loss in the right ear: Weber test, the sound is lateralized to the left ear. Rinne test is positive in both ears; however, the duration is shorter in the right ear. (d) Total hearing loss in the right ear: Weber test, the sound is lateralized to the left. Rinne is positive in the left ear and negative in the right ear

iii. The Weber Test:

As shown in the image above, after striking the tuning fork, the footplate is placed on the patient's forehead. Hold the tuning fork in place for up to 4 seconds at least and ask on which side the sound was heard better.

Interpretation:

- Normal cases: the sound is heard equally well in both the ears

- Conductive deafness: the sound heard is better in the affected ear
- Sensorineural deafness: the sound heard is lower in the affected ear

iv. The Rinne's Test:

After striking the tuning fork, hold the tines of the tuning fork approximately 25mm from the ear canal entrance. Hold the tuning fork there for about 2 seconds. Without any interruption and without touching the tines press the footplate firmly against the mastoid. Hold the tuning fork in place for another 2 seconds. Ask the patient when the sound heard was better.

Interpretation:

- Normal cases and in sensorineural hearing loss: Sound is louder when the tuning fork is held near the ear canal

Tuning fork tests and type of hearing loss

Rinne's (diseased ear)	Weber	Type of Hearing Loss
Positive	Not lateralized	Normal hearing
Positive	Lateralized to the better ear	Sensorineural hearing loss
Negative	Lateralized to the diseased ear	Conductive hearing loss
Negative	Lateralized to the better ear	Total sensorineural hearing loss

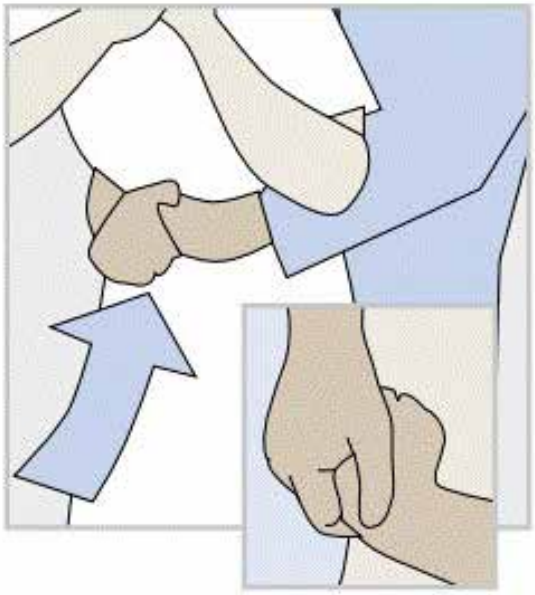
Common Causes of Conductive Hearing Loss	Common Causes of Sensorineural Hearing Loss
• Cerumen	• Presbycusis
• Congenital ear atresia	• Noise-induced hearing loss
• Foreign body in the external ear canal	• Ototoxicity
• Hemotympanum	• Endolymphatic hydrops
• Chronic otitis media	• Acoustic neuroma
• Tympanic membrane perforation	• Labyrinthitis
• Ossicular chain disruption	• Transverse temporal bone fracture
• Temporal bone fractures, longitudinal	• Enlarged vestibular aqueduct syndrome
• Benign tumours of the middle ear	• Congenital inner ear abnormalities
• Malignant tumours of the middle ear	

II. HEIMLICH MANOEUVRE:

This is an emergency first aid method used for choking – especially after a foreign object has entered the air passage and got stuck.

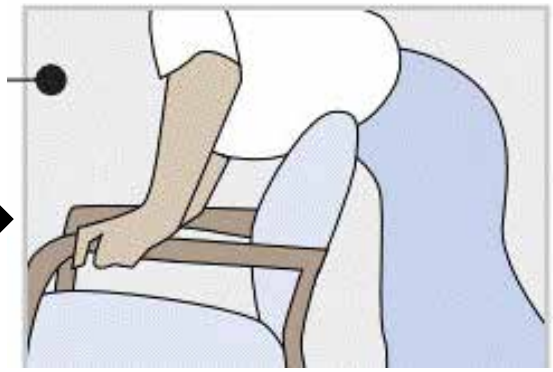
Heimlich manoeuvre

1. Stand behind the victim, wrap your arms around his or her waist
2. Clasp your hands together in a double fist and place the fist-thumb side in, just below the victim's rib cage and above the navel
3. Press into the victim's abdomen (not the rib cage) with a quick, upward thrust
4. Repeat thrusts until the object is dislodged



If you are alone

If alone and choking you can give yourself abdominal thrusts. Press your abdomen onto a firm object, such as the back of a chair



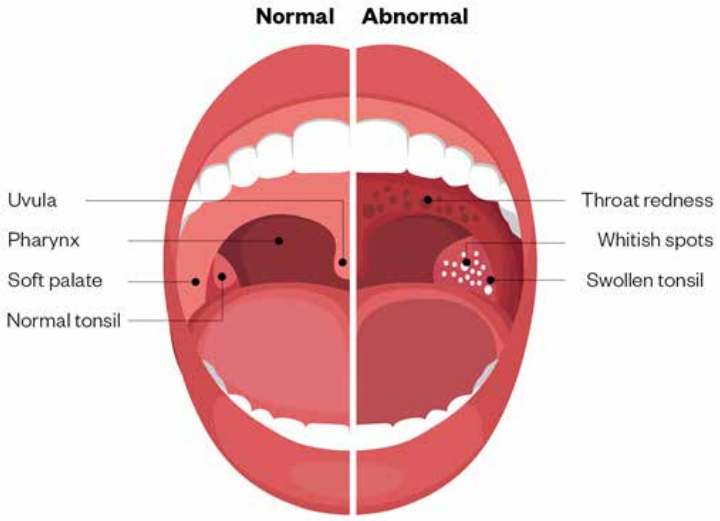
III. HOW TO REDUCE THROAT IRRITATION

Many people complain that they have an irritation in the throat. It feels like something is scratching the throat. Cough is rare and dry. They don't have pain but their voice can get hoarse.

There are many causes of irritation – it can be due to bacteria or viral germs. It could also be because of allergies to dust. Many times, it is due to gastric acidity which causes reflux into the throat.

Common causes of throat irritation:

1. Bacterial Infection (MC-Streptococcus) – symptomatic (fever, sputum, weakness, hoarseness of voice, pain during deglutination may be seen)
2. Viral Infection (cold or flu) – less symptomatic, mostly resolves by its own
3. Infection of the nasal passage or sinuses
4. Allergies (dust, mould)
5. Acid reflux



How to Reduce Irritation That Triggers Coughing:

1. **Hydrate:** The most important thing you can do is to drink plenty of water to reduce dryness of your throat. Drink at least 1 and a half litre of water each day, that is about 6-8 glasses of water. Avoid tea, coffee or soft drinks as they usually contain caffeine.
2. **Breathing:**
    a. Sit and stand in a good posture. Sit and stand with your neck and back straight and your chin gently tucked in. This opens your airway, makes breathing easier and allows you to relax the throat.
    b. Avoid bad posture. When you sit or stand in a lazy posture your shoulders tilt forward and your head tilts back and your chin lifts slightly. This puts pressure on your throat and vocal cords and your neck. It can increase irritation and put strain on your voice.
    c. Breathe through your nose. Mouth breathing dries your throat. Breathing through your nose cleans, warms, and moistens the air before it reaches your throat and vocal cords.

3. Talking:

a. Limit harmful voice use, such as shouting, grunting, or screaming. Talking, laughing or singing too loudly can also damage your vocal cords.

b. Try not to speak over other noise such as television or music or around machinery such as a lawnmower.

c. Do not whisper, as whispering increases air pressure in your vocal cords and may irritate your throat.

d. Use your natural voice, not too high, not too low and not too loud.

e. Limit coughing and clearing your throat. Sometimes coughing can be excessive and clearing the throat can become a habit. When you cough and clear your throat it puts too much force on your throat and vocal cords.

4. Everyday

a. Get plenty of sleep. Have a short rest during the day to stop and relax.

b. Limit intake of caffeine containing drinks as caffeine can increase dryness and irritation in the throat.

c. Don't smoke/avoid smoky environment and avoid alcohol. It also increases the likelihood of heartburn, which can also damage the throat and vocal cords.

d. Do not use mouthwash that contains alcohol as this will dry your throat.

e. Remember to drink plenty of water every day.

Where Referral is must:

- Refer to District Hospital for the following possible signs & symptoms:
  - ➢ Swelling of face/cheek/neck for more than 1 week.
  - ➢ Ulcer in oral cavity/neck for than 1 week.
  - ➢ Change in voice for than 2 weeks.
  - ➢ Progressive stridor and noisy breathing in children.
  - ➢ Progressive difficulty in swallowing for more than 2 weeks.

Refer immediately to ENT Surgeon District Hospital/Medical College Hospital

- ➢ History of foreign body ingestion/inhalation followed by respiratory distress/ dysphagia/vomiting.
- ➢ History of foreign body in ear or nose.

- Ear discharge with fever/giddiness/headache/vomiting/blurring of vision/loss of consciousness.
- Watery discharge from nose following trauma which increases on bending down or coughing (To rule out CSF leak).
- Inability to open mouth.

IV. TESTS TO CHECK FOR THE PATENCY OF THE NOSE:

Two clinical procedures can be carried out for assessing the patency of the nose:

a) Spatula Test:

i. Place a tongue depressor/spatula below the nostrils of the patient (as shown in the figure above).

ii. Ask the patient to blow through his nose and compare the area of mist formation from both the sides.

iii. In normal cases, the areas of mist formation under both the nostrils are equal.

b) Cotton-wool test:

Hold a fluff of cotton against each nostril and observe its movement when the patient inhales/exhales. In case of nasal obstruction due to polyp/septum deviation, the movement of the cotton fluff on that side would be reduced.

V. EAR WAX REMOVAL:

Various techniques are used for the removal of ear wax from the ear canal. Steps to be followed for removal of ear wax using syringing are as follows:

i. Make the patient sit on a chair, such that the affected ear is facing you.

ii. Pull the ear lobe gently upwards and backwards to straighten the external ear canal and enable better visualisation (in younger children, pull the pinna gently downwards and backwards).

Manual Syringing Equipment

Direction of water jet while syringing

iii. Place a kidney-shaped dish under the ear to collect the water overflow

iv. Fill a large (e.g., 20ml) syringe with a firmly attached metal or plastic cannula with lukewarm water

v. Direct the jet of water backwards and upwards and not directly at the tympanic membrane. A number of syringefuls may be required before the wax is cleared

vi. Intermittently inspect the canal

vii. Inspect the expelled water for evidence of the wax

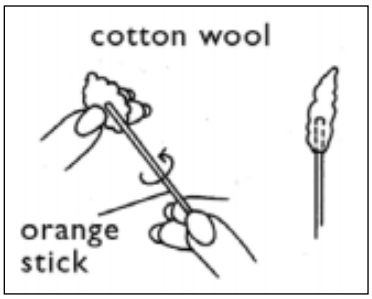
It is important to ensure that the water is at body temperature (37 °C); otherwise discomfort and vertigo may be induced by stimulation of the labyrinth (caloric effect).

VI. DRY MOPPING

- Only clean their ears with a dry mop when the ear is discharging.
- When the ear is dry it must not be cleaned with a dry mop.
- A dry mop is not the same as a 'cotton bud'.
- 'Cotton buds' must never be used to clean ear canals as they are too big and the cotton wool is wound onto the stick too tightly.

VII. HOW TO MAKE A DRY MOP

- Wash your hands with soap and water – air dry.
- Pull off a small piece of cotton wool.
- Gently pull it out into 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 eardrum there is still some cotton wool sticking out of the ear canal.
- This is so that you can hold onto the cotton wool and ensure that the cotton wool comes out of the ear canal.
- After completing dry mopping, wash your hands again.

VIII. HOW TO MAKE A WICK

- Make a wick by rolling the cloth or the tissue paper into a pointed shape.
- Gently pull the ear lobe 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.

IX. HOW TO PERFORM BASIC ENT CLINICAL EXAMINATION

How to use Nasal Drops:

i. Ask the patient to blow nose gently.

ii. Wash the hands thoroughly with soap and water.

iii. Check that the dropper tip should not be chipped or cracked.

iv. Avoid touching the dropper tip against the nasal mucosa

v. Tilt your head as far back as possible or lie down on your back on a flat surface (such as a bed) and hang your head over the edge (as shown in the figure).

vi. Put the correct number of drops into your nose.

vii. Bend your head forward towards your knees and gently move it left and right (as shown in the figure).

viii. Remain in this position for a few minutes.

ix. Clean the dropper tip with warm water. Cap the bottle right away.

x. Wash your hands to remove any medication.

How to put ear drops:

i. Make the patient lie down or tilt the head with the affected ear facing upward.

ii. Open the ear canal by gently pulling ear upwards and backwards. This straightens the ear canal.

iii. Clear any visible superficial discharge.

iv. Hold the dropper of the medicine upside down over the ear and put the recommended number of drops into the ear.

v. Avoid touching the dropper tip inside the ear, as it may get contaminated.

vi. After use, wipe the tip with a clean tissue. Do not wash with water or soap.

vii. Advise the patient to stay in the position for at least 15 minutes.

A small piece of cotton may be used to plug the ear

X. LIST OF OTOTOXIC DRUGS

Antibiotics	Streptomycin	Kanamycin
	Neomycin	Tobramycin
	Gentamycin	Netilmicin
	Erythromycin	Vancomycin
Anti-cancer Drugs	Cisplatin	
	Bleomycin	
	Vincristine	
Diuretics	Acetazolamide	Bumetanide
	Furosemide	Ethacrynic Acid
Cardiovascular Drugs	Captopril	Minoxidil
	Digitalis	Quinidine
	Guanfacine	Tocainide
	Metoprolol	

Annexure 3 : : List of Suggested Medicines and Consumables

The following medicines and consumables should be available at Community, Health & Wellness Centre and Referral Centre:

Community Level	Health and Wellness Centre	Referral Centre
• Normal Saline nasal drops – Sodium chloride (0.5% w/v) • Xylometazoline nasal drops • Wax solvent ear drops • Cetirizine syp/tablets • Boro spirit ear drops • Amoxycillin – Syrup/ tablets • Paracetamol – Syrup/ tablets • Existing equipment kit	• Combo ear drops (Chloramphenicol + Clotrimazole + Lignocaine hydrochloride) • Liquid paraffin – menthol drops • Nasal Speculum • Dressing/packing forceps • Tongue depressor • Tuning fork – 512 hz • App and headphones for App based audiometry • BP instrument • LED head lamp • Sterile Gauze • Sterile cotton swabs/pads • Ear speculum – metallic, dull finish • Jobson – Horne probe • Eustachian catheter • In addition to all medicines/ equipment available at the community level	• As per Indian Public Health Standards (IPHS) guidelines and NPPCD guidelines for district hospital

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Namaste!

You are a valuable member of the Ayushman Bharat – Health and Wellness Centre (AB-HWC) team committed to delivering quality comprehensive primary healthcare services to the people of the country.

To reach out to community members about the services at AB-HWCs, do connect to the following social media handles:

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