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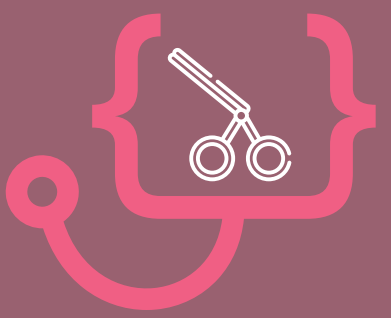

2019 Edition, Vol. I

# STANDARD TREATMENT WORKFLOWS *of India*

PARTNERS

national health authority

World Health Organization

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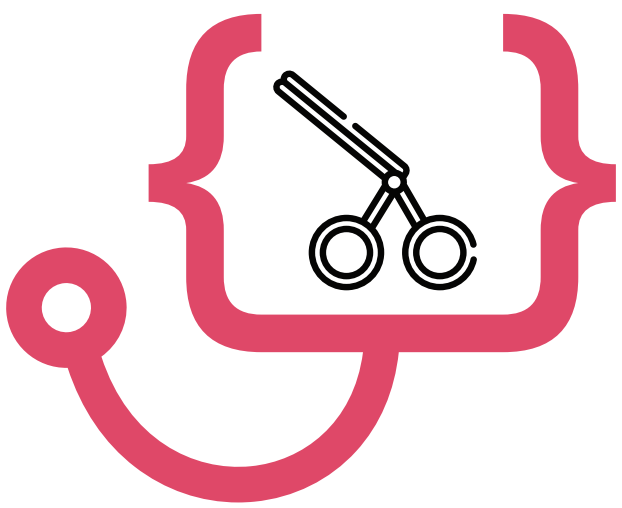

# STANDARD TREATMENT WORKFLOWS of India

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These STWs have been prepared by national experts of India with feasibility considerations for various levels of healthcare system in the country. These broad guidelines are advisory, and are based on expert opinions and available scientific evidence. There may be variations in the management of an individual patient based on his/her specific condition, as decided by the treating physician. There will be no indemnity for direct or indirect consequences. Kindly visit our web portal (**stw.icmr.org.in**) for more information.

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# INTRODUCTION

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## GOAL

To empower the primary, secondary and tertiary care physicians/surgeons towards achieving the overall goal of Universal Health Coverage with disease management protocols and pre-defined referral mechanisms by decoding complex guidelines

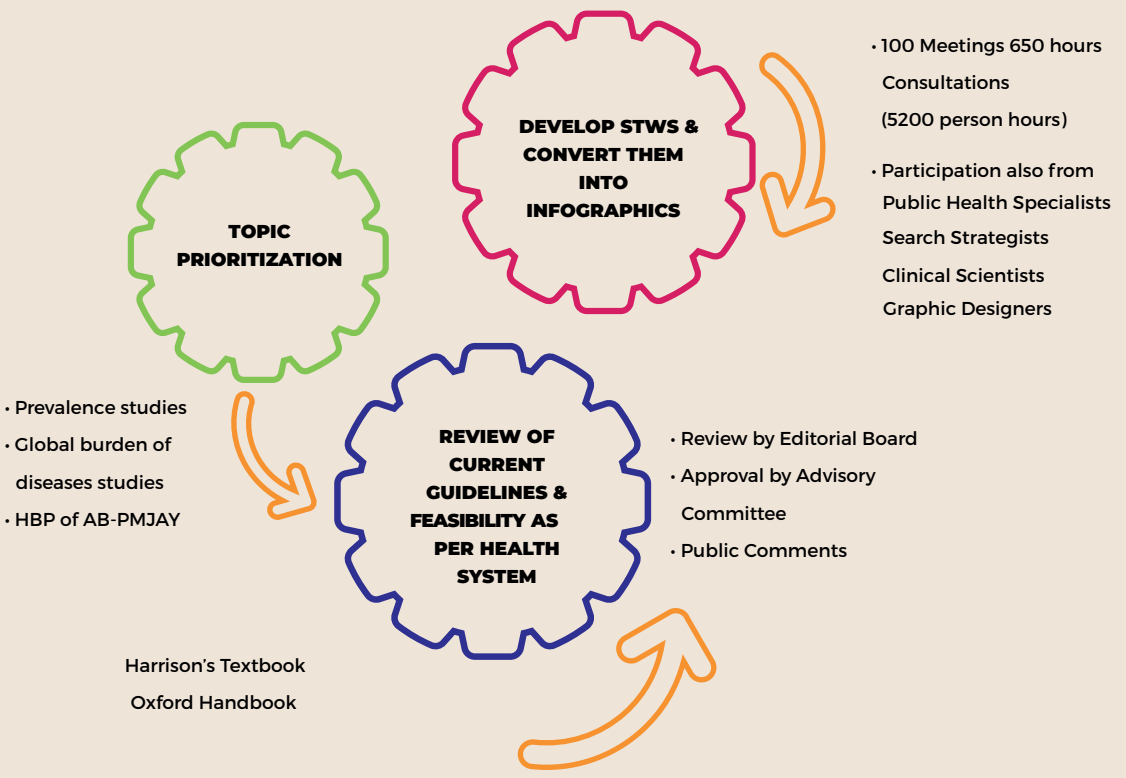
## OBJECTIVES

***Primary Objective:***
To formulate clinical decision making protocols for common and serious medical/ surgical conditions for both OPD and IPD management at primary, secondary and tertiary levels of healthcare system for equitable access and delivery of health services which are locally contextual

***Secondary Objective:***
To facilitate PMJAY arm of Ayushman Bharat with secondary and tertiary level management of all surgical and medical conditions covered under the scheme.

## METHODOLOGY


## PROCESS OVERVIEW



# ENT

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# Standard Treatment Workflow (STW) for the Management of

# ACUTE RHINOSINUSITIS

## ICD 10 J01.90

### WHEN TO SUSPECT?

**Usually a sequela of viral infection which causes ciliary impairment and bacterial superinfection**

**Diagnosis- persistence of nasal blockage/ nasal discharge and facial pain/ hyposmia beyond 7 days (maximum upto 3 months)**

### RELATED CLINICAL SCENARIOS

**Recurrent acute sinusitis** is episodes of acute sinusitis interspersed with symptom free intervals of more than 3 months in duration.

Symptoms with duration less than 7 days are treated as **viral upper respiratory infection.**

**Invasive fungal sinusitis** is suspected if in addition to above symptoms the following are present: facial hyposthesia, facial skin/palatal/ turbinate discoloration and proptosis/ diplopia/ reduced or loss of vision

Children may present with acute febrile illness/cough associated with these symptoms.

### ALTERNATIVE CLINICAL SCENARIOS

- Consider alternate diagnosis if: Unilateral symptoms/ Bleeding/ Crusting/ Cacosmia (foul smell)
- Rule out other contributory factors: Allergy/ upper alveolar dental caries/ DNS/ LPR/ smoking.
- Rhinorrhoea and nasal congestion in second trimester of pregnancy is considered hormonal in etiology and is to be managed with saline irrigation/ drops

### RED FLAGS FOR REFERRAL TO DISTRICT HOSPITAL

- Known diabetic/ immunocompromised
- Suspicion of complications viz. (A) Orbital involvement (Periorbital edema/ erythema, displaced globe, ophthalmoplegia, visual disturbance); (B) Meningitis/ altered sensorium; (C) Frontal fullness.
- Non-resolution with oral antibiotics for ten days
- Pointers of invasive fungal sinusitis (Facial hypoesthesia, facial skin/palatal/turbinate discoloration)

## CLINICAL EXAMINATION

### PRELIMINARY

- Anterior rhinoscopy: Discharge, bleeding, crusting, polyposis
- Oral examination: Dental caries, post nasal drip, palatal discolouration
- Assess for contributory factors listed above

### DESIRABLE

- Nasal endoscopy

## LABORATORY INVESTIGATIONS

Desirable in non-resolving/worsening cases despite antibiotic therapy

- Endoscopy- for guided nasal swabs/ KOH smear
- CT PNS (for suspected complications / non-resolving cases on antibiotics for 14 days)
- Screen for Diabetes / Immunodeficiency

## MANAGEMENT

### PHC / PRIMARY LEVEL

**Duration of treatment 7-14 days**

- Oral antibiotics- Amoxycillin/ Co-amoxyclav for 7-10 days. Levofloxacin and Azithromycin can be opted for patients intolerant/ sensitive to penicillins.
- Topical budesonide/ mometasone nasal spray once/twice a day for 2 weeks provides earlier symptomatic relief.
- Normal saline nasal washes help in clearing secretions and improved effect of topical medications
- Topical/ oral decongestant (Oxymetazline/ pseudoephedrine) for 3-5 days relieves symptoms.
- Adequate hydration and steam inhation.
- Antihistaminics (patients with co-existing allergy).

### INDICATIONS OF PARENTERAL ANTIBIOTIC THERAPY

- Orbital/ intracranial complications
- Non-resolution of symptoms with atleast 7 days of oral antibiotics
- Worsening of symptoms while on oral antibiotics

### DISTRICT HOSPITAL

- Surgical interventions to manage: Underlying anatomical conditions causing recurrent acute sinusitis like- DNS/ adenoid hypertrophy/ anatomical variations seen on CT
- Ophthalmology referral for suspected intraorbital complications
- Dental deferral for suspected dental origin infection.
- Invasive fungal sinusitis- start antifungal medications, control underlying immunocompromising co-morbidity and consider debridement.

### TERTIARY LEVEL

Cases of acute invasive fungal sinusitis/ complicated acute bacterial sinusitis and patients with immunocompromised status may be referred for management.

## KEEP A HIGH THRESHOLD FOR INVASIVE PROCEDURES

### ABBREVIATIONS

**CT:** Computerized Tomogram
**PHC:** Primary Health Center
**DNS:** Deviated Nasal Septum
**LPR:** Laryngo Pharyngeal Reflux

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# Standard Treatment Workflow (STW) for the Management of CHRONIC RHINOSINUSITIS

## ICD 10 - J32.9

**WHEN TO SUSPECT?**
If symptoms persist for more than 12 weeks:

nasal obstruction/ nasal discharge and facial pain/ reduced sense of smell

**RULE OUT FOLLOWING PRECIPITATING/ EXACERBATING CONDITIONS**

- Occupational exposure to irritants/ pollutants (refer to hyperlink)
- Allergic rhinitis, aspirin sensitivity, asthma, laryngopharyngeal reflux, smoking
- Adenoid hypertrophy, bottle feeding, passive smoking in children
- Medications and hormones associated with nasal congestion (NSAIDS, antihypertensive, psychotropic drugs, prolonged use of topical nasal decongestants)

**EXAMINE THE NOSE FOR NASAL POLYPI**
**TWO PHENOTYPES**
- Chronic sinusitis with nasal polypi (CRSwNP)
- Chronic sinusitis without nasal polypi (CRSsNP)

**RED FLAG**

**Frontal swelling**

**Signs of meningitis/ intracranial complications**
a. Fever with headache
b. Neck stiffness
c. Photophobia
d. Altered sensorium
e. Vomiting

**Orbital symptoms**
a. Periorbital edema/ erythema
b. Displaced globe
c. Double or reduced vision (loss of green-red color differentiation may be the first sign)
d. Ophthalmoplegia

**Known diabetic/ AIDS/ immunosuppressive medications (suspect invasive fungal sinusitis)**

## TREATMENT OF CRS

- Mild/ moderate symptoms (no significant congestion/ discharge/ polypi/complications)
  1. Address etiology and exacerbating factors.
  2. For allergic rhinitis, antihistamines and nasal steroid spray to be given.
  3. Saline nasal wash
  4. Steam inhalation
  5. Stretching exercises and yoga are very effective for nasal congestion
  6. Topical (oxymetazoline/ xylometazoline) and oral decongestants are associated with cardiovascular risks and rebound phenomenon. Hence, careful patient selection and short course treatment to be followed.
  7. Intra nasal steroid sprays for 6-8weeks (Fluticasone proprionate/ Fluticasone furoate/ Mometasone) after discussing risk - benefit - cost issues with patient regarding steroid sprays

  If no symptomatic relief to above treatment, perform nasal endoscopy and consider NCCT of paranasal sinuses

**IN ALL PATIENTS, ESPECIALLY IN THE PRESENCE OF NASAL POLYPI, RULE OUT ALLERGY/ALLERGIC RHINITIS**
1. Consider allergen avoidance
2. Skin prick test
3. Co-existing bronchial asthma needs to be treated
4. Consider AIT if indicated.

In presence of nasal purulent discharge
1. Culture directed antibiotics to be considered
2. If culture is negative, empirical antibiotics (Amoxycillin/ Co-amoxyclav/ Fluoroquinolone/ Roxithromycin) to be given for at least 2weeks.
3. Upper dental (particularly 1st molar) infection may cause maxillary sinusitis which is to be treated with metronidazole.

**HYPERLINK**
(https://www.dovemed.com/diseases-conditions/airborne-irritant-induced-sinusitis/)

- In the presence of nasal polypi, initial nasal steroid spray and subsequent endoscopic surgery is to be planned.
  1. Short course of oral steroid (Prednisolone 0.5 mg/kg for 5 - 10 days) provides temporary relief in nasal obstruction in extensive polypi.
  2. Steroid therapy is not a replacement for surgery.

1. Identification of precipitating or exacerbating factors is the key to successful treatment outcome.
2. Always rule out DNS/ nasal polypi in CRS, as surgical treatment may be necessary for complete resolution of symptoms.
3. Ensure adherence to nasal saline washes / regular physical activity / medications.
4. Educate patients on correct technique of using steroid nasal sprays and nasal irrigation.
5. Prolonged use of topical nasal decongestant beyond 5-7 days may cause rebound congestion and rhinitis medicamentosa and to be strongly discouraged.

## ABBREVIATIONS

**CT:** Computerized Tomogram
**AIT:** Allergen Immuno Therapy
**DNS:** Deviated Nasal Septum

## REFERENCES


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# Standard Treatment Workflow (STW) for the Management of EPISTAXIS

## ICD-10-R04.0

### CLINICAL SCENARIOS

- Acute bleeding from the nose after physical trauma/ barotrauma/ nose picking/ physical exertion.
- Acute bleeding from the nose in hypertensive / hematological disorders.
- Acute bleeding from the nose without any obvious cause.

### ESSENTIAL CLINICAL EXAMINATION

**ESSENTIAL**

- Local examination by anterior rhinoscopy/ endoscopy to look for source of bleeding (scanty/moderate).
  - Little's area bleeder/clot/congestion
  - Sharp septal spur
  - Congested nasal mucosa as in URTI
- General physical examination to evaluate other systems (Cardiovascular/Lower Respiratory/Neurological) clinically.

**SYSTEMIC ASSESSMENT**

Screen for coagulation disorders/ anticoagulant medications/ hematological malignancies

## MANAGEMENT

### STEP-WISE MANAGEMENT PRINCIPLE

1. Ensure patent airway/ avoid aspiration by head down/lateral positioning
2. Restore hemodynamic stability by intravenous fluid replacement/ transfusion
3. Control bleeding/bleeder by
   - Bidigital compression of nose for 10 minutes in Trotter's position (cotton pledgets soaked in 4% xylocaine with adrenaline may be used)
   - Short term tab labetalol will take care of uncontrolled hypertension
   - Chemical/electrocauterization of bleeder in Little's area
4. Tamponade of bleeders by anterior nasal packing/ epistaxis balloon
5. Posterior nasal packing if bleeding is not controlled with above measures
6. Antibiotic prophylaxis and hospitalizarion is recommended after nasal packing
7. H2blockers/ PPI to be given in case of blood aspiration to avoid gastritis
8. Persisting bleeding despite nasal packing > consider arterial ligation (sphenopalatine / anterior ethmoidal artery).
9. Selective embolization is an alternative to surgery
10. Address identified etiology, if any


### INVESTIGATIONS

**ESSENTIAL**

1. Hemoglobin level
2. Coagulation profile
3. Complete blood count

**DESIRABLE**

CT scan with contrast in cases with no obvious cause// suspected benign or malignant lesion

### RED FLAG SIGNS

- Features suggestive of neoplasia
  . Unilateral bleeding
  . Nasal obstruction
  .Visual/orbital symptoms
  . Obvious mass lesion
- Altered blood counts/ coagulation profile
- Persistent bleeding despite nasal packing
- Recurrent profuse bleeding
  - Consider JNA in teenage boys
  - Aneurysmal bleeding (specially following trauma) to be ruled out by DSA
  - To be managed by appropriate treatment at tertiary level

### FOLLOW UP SERVICES

1. Continued nasal lubrication for 2 weeks with liquid paraffin
2. Repeat anterior rhinoscopy/ endoscopy to know/confim the cause of bleeding
3. Oral hematinics to be considered if needed

### QUALITY ASSESSMENT PARAMETERS

1. Recurrence of episodes
2. Improvement in hemoglobin level over a period of time.

### POINTS TO PONDER WHILE MANAGING EPISTAXIS

1. Epistaxis in children is almost always anterior and from Little's area, consequent to mucosal drying by dry air.
2. Epistaxis in adults is often related to hypertension and arises posteriorly from the posterior end of inferior turbinate
3. Initial non-invasive methods may suffice in a large majority of patients.

### ABBREVIATIONS

**JNA:** Juvenile Nasopharyngeal Angiofibroma
**DSA:** Digital Subtraction Angiography
**CT:** Computerized Tomograms
**URTI:** Upper Respiratory Tract Infection

**KEEP A HIGH THRESHOLD FOR INVASIVE PROCEDURES**

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## Standard Treatment Workflow (STW) for the

# Management of HEARING IMPAIRMENT IN PEDIATRIC AGE GROUP (0 - 12 YEARS)

**ICD 10 H90.5**

Disabling hearing impairment (31 or more dB HL in better ear) may affect language development and learning outcomes and hence needs urgent intervention

### WHEN TO SUSPECT IN CHILDREN

1. Parental concern about delayed speech, language, and developmental delay (refer to red flags)
2. Family history of Hearing Loss (HL).
3. Exposure to ototoxic drugs/ hyperbilirubinemia requiring exchange transfusion/ Neonatal ICU stay for > 3days.
4. In-utero infections (CMV/ rubella/ syphilis/ herpes/ toxoplasmosis)
5. Syndromes (NF) Or neurodegenerative disorders (Hunter syndrome, FA) associated with HL.
6. Post-natal infection known to cause HL (Meningitis)
7. Head Trauma
8. Recurrent/ persistent (>/=3 months) middle ear disease
9. Chemo/ Radiotherapy to head and neck

### UNIVERSAL HEARING SCREENING FOR CONGENITAL DEAFNESS

- Community based hearing screening:
  - i. May be co-ordinated with immunization schedule
  - ii. By primary health care workers.
  - iii. Using calibrated noisemakers/ toys
- All children who fail preliminary screen to undergo detailed evaluation at health care facility.

## EVALUATION

### ESSENTIAL

1. Clinical examination to look for ear canal deformities, tympanic membrane and middle ear status by otoscopy/ otoendoscopy.
2. Age appropriate audiological/ behavioral observation tests in a soundproof room by audiologist/ ENT specialist.
3. Tympanic membrane mobility test/ tympanometry.

### COMMON CAUSES OF HL

1. Impacted wax
2. Middle ear fluid assciated with adenoid hypertrophy/ cold climate
3. Tympanic membrane perforation
4. Sensorineural Hearing loss (SNHL) due to various causes as indicated earlier

### RED FLAGS POINTING FOR URGENT HEARING EVALUATION

- 6months- no head turning to the side of calling
- 1yr- no babbling/ speech like sound production
- 1.5yrs- not saying mama/papa/dada or other names
- 2yrs-not pointing to pictures/ body parts when named or speaking less than 10 words
- 3 yrs- does not understand action words or not asking for things by names or not speaking small sentences.
- At any age- has regressed or lost previously acquired speech/ language milestones

## MANAGEMENT

### GUIDING PRINCIPLES

**CONDUCTIVE HL**

- Wax removal under direct vision by ENT specialist relieves hearing impairement
- Appropriate surgery is to be planned for tympanic membrane perforation
- Middle ear fluid (OME) may be associated with adenotonsillar disease which needs to be treated. Initially medical treatment and surgery to be considered for OME persisting for more than 3months/ earlier in the presence of speech and language delay
- For non-surgical condidates/ delayed surgical management, amplification by hearing aid to be reinforced in bilateral CHL.

**SNHL**

- Appropriate amplification, preferential seating in classroom
- Periodic evaluation for hearing aid users for mould fitting and amplification settings
- Screening for developmental delay by pediatrician/ psychologist

### DIVISION OF RESPONSIBILITIES

**PHC LEVEL**

- Suspect HL
- Initial evaluation
- Referral if initial evaluation is suggestive of HL
- Follow up of rehabilitated/ treated patients with HL
- Prevention of HL

**DH LEVEL**

1. Audiometric evaluation by Audiologist/ Otolaryngologist
2. Hearing aid dispensing (mould fitting and HA programming)
3. Rehabilitation by speech therapist
4. Appropriate surgery for CHL
5. Training programme for parents of hearing impaired children to enhance pre-school language development

**TERTIARY LEVEL**

- Surgical intervention options : Cochlear implant / BAHA (as per ADIP guidelines)
- Interdisciplinary team based interventions in children with multiple disabilities.

**QUALITY ASSESSMENT PARAMETERS**

- Short term: Quality of amplification using electroacoustic objective measures and culturally appropriate subjective questionnaire tools
- Long term (Desirable) : Use CBR matrix based measurement for ensuring holistic rehabilitation

### FOLLOW UP SERVICES

1. Home visits by Health Worker/ASHA to ensure utilization of assistive devices and support parents to enhance language development.
2. School visits to educate teachers and normally hearing children to include their peers with hearing disability in the school environment
3. Home/ school visit by social worker for evaluation of social/ educational/ livelihood/ justice and empowerment domains of the child

**KEEP A HIGH THRESHOLD FOR INVASIVE PROCEDURES**

### ABBREVIATIONS

**ADIP :** Assistance to disabled persons for purchase/ fitting of aids and appliances
**BAHA :** Bone Anchored Hearing Aid
**CBR :** Community Based Rehabilitation
**CMV :** Cyto Megalo Virus
**FA :** Friedreich Ataxia
**NF :** NeuroFibromatosis
**OME :** Otitis Media with Effusion

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- *ADIP Guidelines : http://disabilityaffairs.gov.in/content/page/adip-scheme.php*

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# Standard Treatment Workflow (STW) for the Management of

# NECK SPACE INFECTION

## ICD-10-J36, J39.0, K 12.2, J39.1

Rapidly progressive bacterial infections which spread along facial planes and spaces of head and neck region. They may be fatal unless emergently treated. Most of these infections are secondary to dental infection.

### CLINICAL SCENARIOS

They usually present as
- Ludwig's angina (submandibular space infection)
- Peritonsillar abscess
- Parapharyngeal abscess
- Retropharyngeal abscess

The typical presentation is with acute onset of pain and swelling in the neck with fever, malaise, trismus and dysphagia.

Extension along spaces to involve multiple deep neck spaces is frequent and may extend to parotid space, masticator space, temporal space, visceral vascular (carotid) space.

Cervical space infection may spread inferiorly to the anterior mediastinum and posteriorly along prevertebral space.

Tubercular cold abscess involves the same anatomical spaces but would not display inflammatory signs or rapid progression.

## SYSTEMIC ASSESSMENT

Screen for diabetes mellitus, HIV infection, agranulocytosis and immunosuppressive therapy or chemotherapy.
Signs of inflammation may be less marked and disease course may be more rapidly progressive in immunocompromised patients.

## CLINICAL EXAMINATION

- Airway assessment to rule out stridor or respiratory compromise
- Look for signs of dehydration
- Monitor temperature, heart rate, respiratory rate, BP, and signs of sepsis/ septic shock.
- Oral cavity examination to check jaw opening, condition of teeth and floor of mouth
- Oropharyngeal examination to check for inflammed medially displaced tonsil & uvula and bulge in lateral pharyngeal wall
- Palpation of neck for lymph nodes, cellulitis, abscess or subcutaneous crepitus
- Cranial nerve examination to rule out lower cranial nerve palsies

### RED FLAGS FOR REFERRAL TO DISTRICT HOSPITAL

- Breathing difficulty
- Trismus
- Torticollis/ neck stiffness
- Subcutaneous crepitus and skin discolouration or blisters suggest necrotizing fibrofascitis.
- Toxaemia
- Lower cranial nerve palsy
- Facial puffiness suggestive of venous thrombosis
- Mediastinal extension

## INVESTIGATIONS

### ESSENTIAL INVESTIGATIONS

1. **Contrast enhanced CT scan** of head and neck is the standard in evaluation of neck space infections. If CT Scan facility is not available, following should be done:-
   a. **Lateral x-ray neck:** Prevertebral soft tissue thickening >7 mm at the level of C2 or > 2/3rd of the width of the vertebral body at C6 is highly suggestive of retropharyngeal abscess. It may also demonstrate foreign bodies, subcutaneous air, air fluid levels and erosion of vertebrae.
   b. **Ultrasound neck** can suggest abscess and guide aspiration attempts.
2. **Blood:** Total and differential leukocyte count, blood sugar, urea
3. **Abscess Cultures with Gram stain** to direct antimicrobial therapy. Anaerobic culture, when available.

## MANAGEMENT

### PHC/PRIMARY LEVEL

1. Cautiously assess the airway. If found compromised, do endotracheal intubation/ consider tracheotomy
2. Immediately gain an IV access for hydration, broad spectrum antibiotics and pain killers.
3. Transfer the patient to hospital with facility for surgical drainage

### DISTRICT HOSPITAL

1. **Hospitalization:** As an emergency for close watch and intensive management.
2. **Airway management:** In progressive disease, in view of impending airway compromise, consider securing the airway early. During acute respiratory difficulty, tracheostomy should be done if intubation is difficult
3. **Correction of fluid and electrolyte imbalance**
4. **Antibiotics:** Early and aggressive IV antibiotic therapy with a combination of Crystalline Penicillin, Aminoglycoside and Metronidazole or Clindamycin is preferred.
5. **Incision and drainage:** Peritonsillar abscess is drained intraorally. All other abscesses are drained via an external approach

### INDICATIONS FOR I&D

- Necrotizing fibrofascitis
- Abscess formation
- No response to antibiotics over 48-72 hours
- Deterioration despite antibiotics over 24 hours
- Airway compromise or impending airway compromise
- Mediastinal spread
- Vascular complication like venous thrombosis

## QUALITY ASSESSMENT PARAMETERS

Complete resolution of infection and follow up to ensure no recurrence; treatment of initial cause of infection in tooth or tonsil.

## FOLLOW UP SERVICES

Consider cold tonsillectomy for patients with history of multiple episodes of tonsillar abscess

## ABBREVIATIONS

**CT** – Computerized Tomography

**MRI** – Magnetic Resonance Imaging

## REFERENCES

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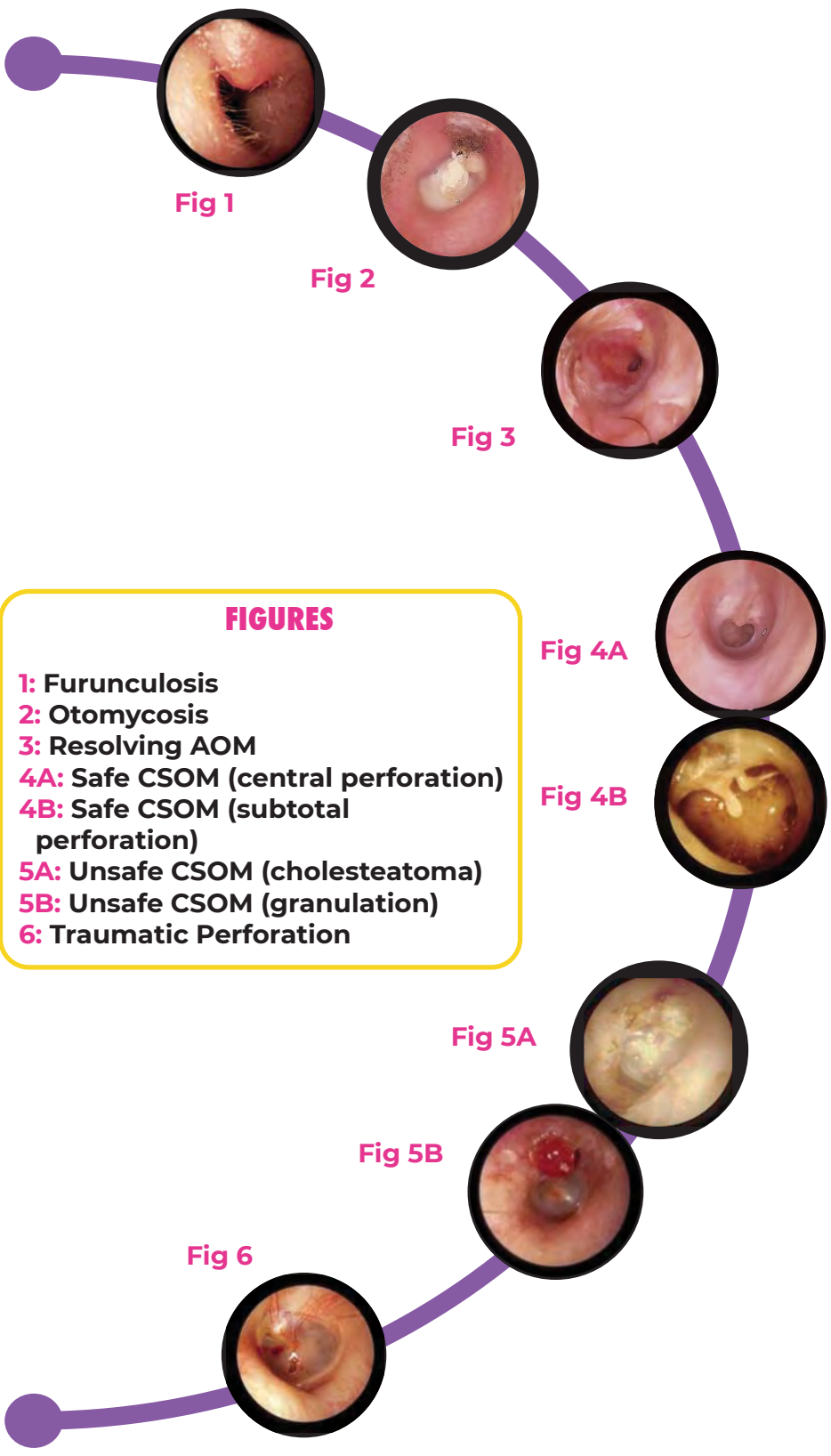
# Standard Treatment Workflow (STW) for the Management of

# OTORRHOEA

## ICD-10-H92.10

## CLINICAL SCENARIOS




### FIGURES

**1:** Furunculosis
**2:** Otomycosis
**3:** Resolving AOM
**4A:** Safe CSOM (central perforation)
**4B:** Safe CSOM (subtotal perforation)
**5A:** Unsafe CSOM (cholesteatoma)
**5B:** Unsafe CSOM (granulation)
**6:** Traumatic Perforation

### DISEASES OF EXTERNAL EAR

- Serous/purulent discharge with significant tenderness of external ear amidst edema (localized-pus: furunculosis or generalized: **Acute otitis externa** denoting Staph/ Pseudomonas infection)
- Thick discharge with itching usually in hot/ humid climate: **Otomycosis** (Candida- white spores; Aspergillus- black spores) [Fig 2]
- Scanty serous discharge & itching with desquamated debris in ear canal **Eczematous otitis externa** (EAC)

### DISEASES OF MIDDLE EAR

- URI with severe ear pain (manifested in children as inconsolable crying and ear tugging), relieved with episode of mucopurulent blood stained otorrhoea: **Resolving AOM** [Fig 3]
- Mucopurulent discharge > 12 weeks : CSOM
  - Active : otorrohoea in last 12 weeks
  - Inactive : no otorrohoea in last 12 weeks
  - Safe type : central perforation [Fig 4A] and total perforation [Fig 4B]
  - Unsafe type : cholesteatoma [Fig 5A] and granulation [Fig 5B]
- Recurrent painless profuse mucopurulent discharge with pale granulations/ multiple perforations unresponsive to antibiotics: **Tubercular otitis media** should be suspected and needs biopsy confirmation
- Bloody otorrhoea following Trauma: **Traumatic perforation**
- Acute onset bloody discharge with neural deficits/ neck nodes: **Neoplasia**
- Watery otorrhoea (may be associated with trauma) : **CSF Otorrhoea**

## CLINICAL EXAMINATIONS

- Otoscopy as a part of Complete ENT examination by primary physician (Tele-otoscopy interpreted by physician)
- Hearing evaluation by conversation/ whisper/ Tuning forks tests
- General and systemic clinical examination

## INVESTIGATIONS

- Pure tone audiometry
- Routine hemogram including blood sugar (fasting and postprandial)
- CT/ MRI in suspected complications (refer to red flags)
- Soft tissue x ray nasopharynx (To examine adenoid enlargement in children)
- Culture & sensitivity of aural secretions.

## RED FLAGS FOR REFERRAL TO DISTRICT LEVEL

- Periaural abscess or cellulitis
- High grade fever, dizziness and toxic appearance
- Severe headache with neck stiffness/ vomiting / altered sensorium.
- Facial palsy/ Neurological defecits
- Diabetic with severe deep seated ear pain / neural defecits (Skull base osteomyelitis)
- Physical trauma with bloody/ watery discharge (suspected CSF leak)
- Suspected tuberculosis/ neoplasm

## MANAGEMENT

### PHC / PRIMARY LEVEL

- Acute otitis externa: Oral Ciprofloxacin/ Amoxycillin clavulanic acid combination for 7-10 days (2 weeks maximum) and analgesics. Ichthammol gycerine (1:9) packing of EAC in moderate to severe edema. Refer pus pointing furuncle to DH
- Otomycosis: Cleaning and Clotrimazole ear drops
- Eczematous otitis externa: Ciprofloxacin ear drops with steroid combination.
- AOM / Resolving AOM: Oral amoxicillin / Erythromycin / Clarithromycin for 10 days. With no response in 3 days start Amoxycillin clavulanic acid combination for 10 days. Refer to DH if no resolution
- Inactive CSOM: Referral to DH for surgery.
- Active CSOM: Ciprofloxacin ear drops with dry mopping & referral to DH for surgery. A course of oral antibiotics maybe prescribed in ase of persistant otorrhoea after topical antibiotics
- Traumatic perforation: Topical antibiotics for otorrhoea if any and maintain ear dry till healing complete
- In case of suspicion of complications start intravenous Amoxycillin clavulanic acid combination and refer to DH

### DISTRICT HOSPITAL

- Surgical interventions except neurosurgical interventions (eg I&D, tympanoplasty, mastoidectomy)
- Biopsy in suspected neoplasm
- Medical management of medical co-morbidities such as diabetes, tuberculosis, meningismus/ meningitis

### TERTIARY LEVEL

Surgical management particularly of intracranial complications including neurosurgical interventions

- Patient to be educated for proper technique of ear mopping, contralateral lie (10 min) following instillation of drops & avoiding water entry e.g ear-plugs during bathing
- To ensure adequate immunization (measles/ H.Influenza/ Pneumococcus) in recurrent AOM and to adopt correct posture during breastfeeding while avoiding bottle feeding
- Pus culture sensitivity to guide antibiotic regime in recurrent/ complicated cases

**Patient education to refrain from indigenous (oil/ hot water/ acid etc) ear treatments**

## KEEP A HIGH THRESHOLD FOR INVASIVE PROCEDURES

### ABBREVIATIONS

**CT:** Computerized Tomogram
**MRI:** Magnetic Resonance Imaging
**AOM:** Acute Otitis Media
**CSOM:** Chronic Suppurative Otitis Media
**EAC:** External Auditory Canal
**URI:** Upper Respiratory Infection

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# Standard Treatment Workflow (STW) for the Management of PHARYNGITIS AND SORE THROAT

## ICD-10-J02

## CLINICAL SCENARIOS

Acute pharyngitis may include a spectrum of disease varying from simple viral pharyngitis to dreaded neck space infection.

- Acute onset of throat pain with or without – Fever, tonsillo-pharyngeal exudates, odynophagia and tender cervical lymphadenopathy is typically seen in **bacterial pharyngitis** Streptococcal (GABHS) pharyngitis is the commonest cause of bacterial pharyngitis
- Rhinitis, conjunctivitis, skin or mucosal rashes point towards a **viral etiology**. Pharyngitis and sore throat may be the initial symptoms in epidemics of flu
- Sore throat followed by high grade fever, cough, drooling, lymphadenopathy, breathing difficulty suggest Epiglottitis or Laryngotracheobronchitis, especially in pediatric patients
- An adherent membrane extending beyond the tonsillar confines with toxaemia suggests **Diphtheria**
- Pharyngitis with generalized lymphadenopathy is consistent with **Infectious Mononucleosis**(IM)
- Smoking and GERD are common causes of non-infective pharyngitis

## CLINICAL EXAMINATION

### PRELIMINARY

- Temperature chart: fever is usually absent or low-grade in viral pharyngitis
- Check for vitals/ signs of dehydration due to compromised oral intake due to odynophagia
- Complete oral and oropharyngeal examination with tongue depressor
- Palpate for cervical and generalized lymphadenopathy
- Rheumatic fever and acute glomerulonephritis are potential systemic complications of streptococcal pharyngitis
- Hepatosplenomegaly can be found in IM
- A sandpapery scarlatiniform rash may be seen in GABHS infection whereas maculopapular rashes are seen with various viral infections and with IM empirically treated with penicillin

### DESIRABLE

Assess Centor criteria and ascertain its score

| CLINICAL FEATURES | CENTOR SCORE | UNLIKELY TO HAVE GABHS | LIKELY TO HAVE GABHS | REQUIRE LAB TESTS TO CONFIRM GABHS INFECTION |
|---|---|---|---|---|
| Fever | 1 | Score = 0-1 | Score = 4 | Score = 2-3 |
| Anterior cervical lymphadenopathy | 1 | | | |
| Tonsillar exudate | 1 | | | |
| Absence of cough | 1 | | | |

### RED FLAGS

- Generalized lymphadenopathy
- Cardiac murmurs
- Purulent productive cough with tachypnea suggestive of LRTI
- Hot potato voice
- Unilateral tonsillar enlargement
- Tonsillar membrane going beyond its confines
- Agranulocyosis
- Epidemic of flu

## INVESTIGATIONS

| ESSENTIAL | OPTIONAL | DESIRABLE |
|---|---|---|
| Throat swab for culture, routine hemogram including total and differential leukocyte counts and peripheral smear to look for atypical lymphocytes (seen in IM). | GABHS rapid antigen detection test (RADT) | Lab tests to rule out EB Virus, Coxsackie virus, Herpes virus, fungal or Gonococcal pharyngitis |

## MANAGEMENT

### PHC / PRIMARY LEVEL

1. Assess the patient for signs of toxicity, epiglottitis or oropharyngeal abscess
2. Ensure vitals/ hydration of the patient
3. Saltwater gargle, warm liquids, and rest may be helpful in relieving symptoms
4. Ibuprofen or Paracetamol is recommended for analgesia
5. Antibiotic therapy:
   a. Patients positive for all 4 Centor criteria to be treated with antibiotics without waiting for antigen testing or cultures
   b. Patients with Centor score of 2&3 to be treated with antibiotics only if antigen testing or throat swab culture is positive
   c. Patients with Centor score of only 1 not to be treated with antibiotics
   d. Amoxicillin (50 mg/kg/d in 2-3 doses orally) for 10 days is the first choice for GABHS infection. For patients who are sensitive for penicillin group, Erythromycin or Azithromycin is the antibiotic of choice
6. Parenteral antibiotics (Ceftriaxone/ cefotaxime) and steroids are to be started when the airway is compromised due to suspected epiglottis/ Croup.

### DISTRICT HOSPITAL

Management of complication e.g.
- Deep neck space infection
- Diphtheria
- Epiglottitis
- Croup

## FOLLOW UP SERVICES

Recurrent (more than 7 episodes in previuos year or 5/year in last two years or 3/year in last 3 years) tonsillitis episodes need to be evaluated for tonsillectomy.

## KEEP A HIGH THRESHOLD FOR INVASIVE PROCEDURES

### ABBREVIATIONS

**GABHS:** Group A Beta Hemolyticus Streptococcus
**GERD:** Gastro Esophageal Reflux Disease
**LRTI:** Lower Respiratory Tract Infection
**EB:** Epstein Barr
**RADT:** Rapid Antigen Detection Test

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# CONTRIBUTORS

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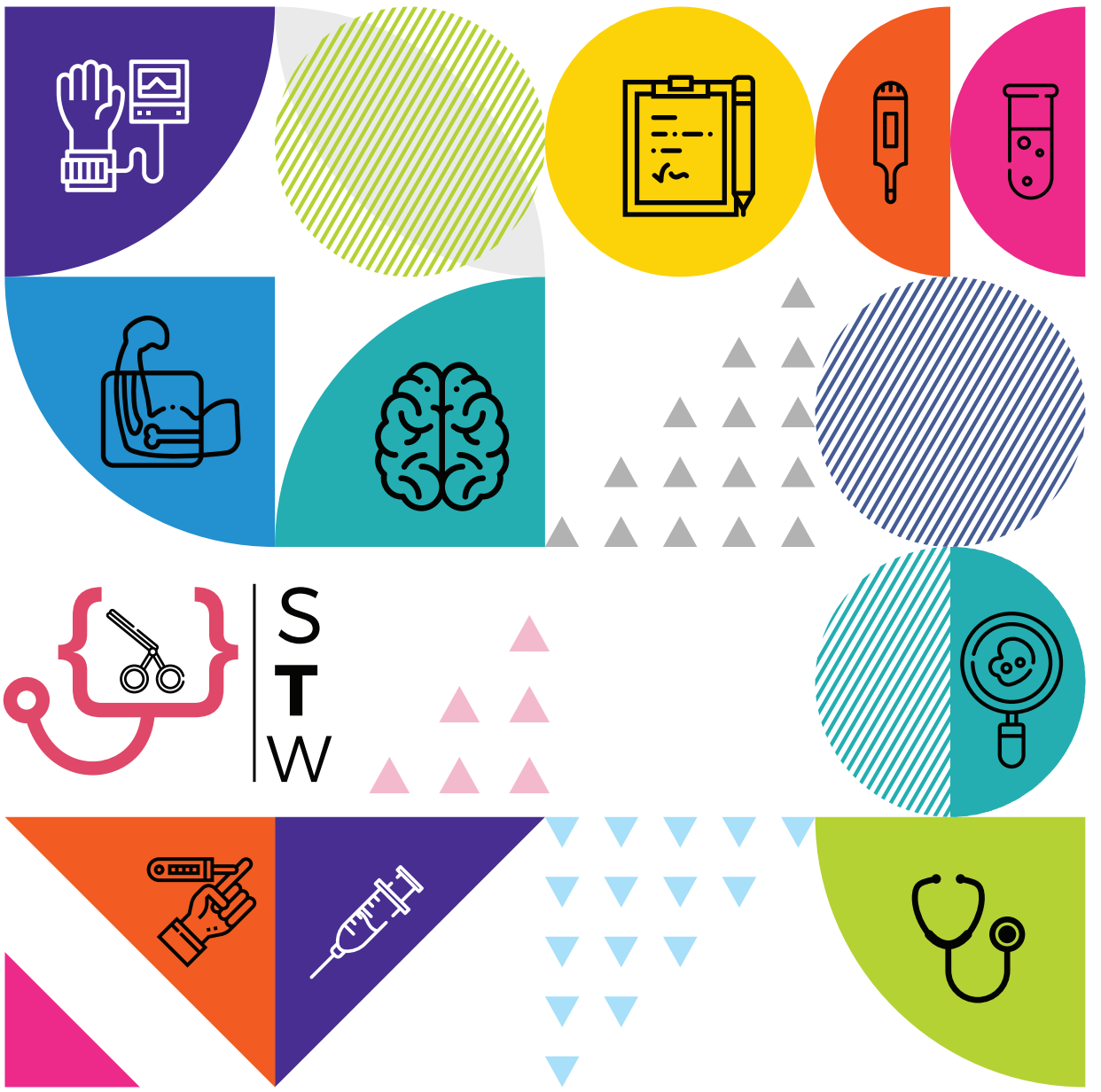


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