Case Response for Diphtheria

Infectious agent: Bacterium: *Corynebacterium diphtheriae*

Mode of transmission: The disease is transmitted from person to person by respiratory droplets or direct contact with respiratory secretions, discharges from skin lesions or, rarely, fomites.

Incubation period: **2-5 days** (range, 1-10 days).

Alert Threshold: One probable case is an alert and requires an immediate investigation.

Outbreak threshold One confirmed case is an outbreak.

Case Definition:

Probable Case:

An acute illness characterized by a visible adherent "membrane" on the tonsils, pharynx and/or nose and any one of these:
Laryngitis
Pharyngitis
Tonsillitis

Confirmed Case:

A confirmed case is a probable case who has been laboratory confirmed or linked epidemiologically to a laboratory confirmed case. At least one of the following criteria is used for diagnosing a confirmed case:
Isolation of Corynebacterium diphtheriae from a clinical specimen; OR
PCR assay showing presence of the A and B subunits of the Diphtheria toxin gene (tox).

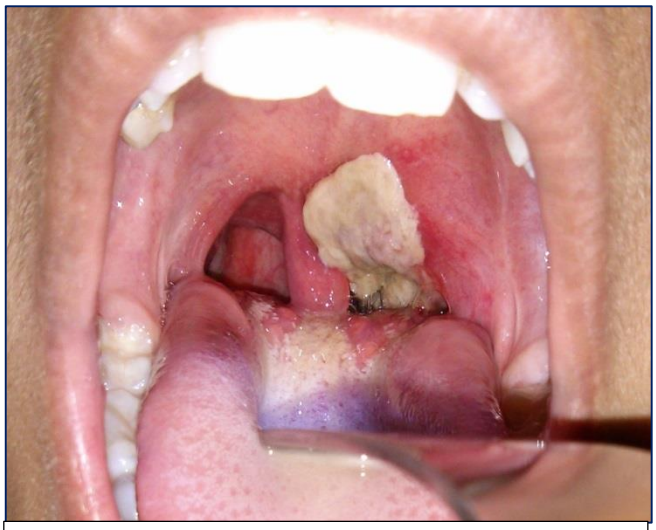
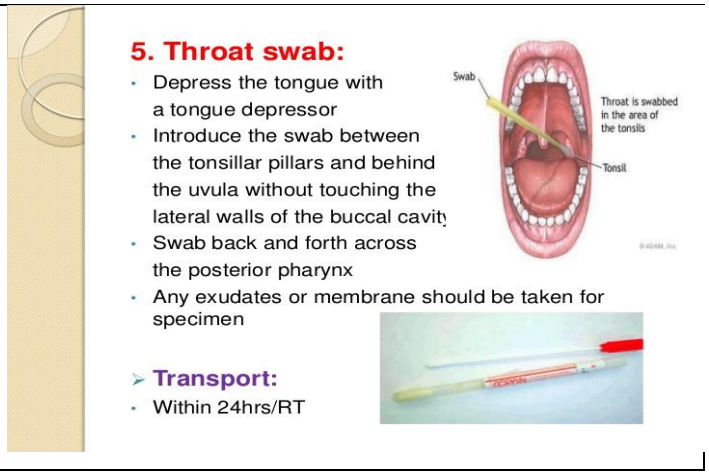


Fig-I: Dirty white pseudomembrane classically seen in diphtheria

- **Specimen Collection**:

Collect nasopharyngeal samples by using alginate swabs or throat culture by cotton swabs or any specific swab/media/tube/stick used for diphtheria in the hospital

- Pharynx should be clearly visible and well illuminated.
- Depress the tongue with a tongue-depressor and swab the throat without touching the tongue or inside the cheeks.
- Rub vigorously over any membrane, white spots, or inflamed areas; slight pressure with rotating movement must be applied to the swab.
  - If any membrane is present, lift the edge and swab beneath it to reach the deeply located organisms.
- Place the swab in Amies transport medium and dispatch immediately to the laboratory for culture.



Procedure for the collection of Nasopharyngeal swabs

- Through one nostril, insert the swab into the nose beyond the anterior nares.
- Gently introduce the swab along the floor of the nasal cavity, under the middle turbinate, until the pharyngeal wall is reached.
- Force must not be used to overcome any obstruction.
- Place the swab in Amies transport medium and dispatch immediately to the laboratory for culture

Laboratory criteria for diagnosis:

(i) Isolation of Corynebacterium diphtheriae from a clinical specimen, or

Population at risk Those having close contact with the patient in a household-type setting. This includes those living and/or sleeping in the same household; those such as relatives/friend/students etc. who sleep in the same house or have shared kitchen facilities etc.

Brief guidelines to investigate and control Diphtheria outbreaks;

1. **Epidemiological Investigation of probable diphtheria**
   - i. Medical Officer with Preventive Out-reach Team (SH&NS, Vaccinator, LHS, CDCS, SI, LHW)
   - ii. Investigate and examination of the case and identify close contacts
   - iii. Review of the existing outdoor/indoor/emergency record of the hospital and Data Collection
   - iv. Desk review (Pentavalent-I, II & III coverage analysis in this UC)
   - v. 30 H-H cluster for active case search and RI status
   - vi. If you found case, then again 30 H-H cluster in surrounding area
   - vii. School visit of area to probe for similar cases
   - viii. Epidemiological existence / confirmation and verification of Outbreak
   - ix. Sampling of at least 5 case having signs and symptoms of Diphtheria
   - x. Health seeking behavior of community and risk factors
   - xi. Identify high risk population
   - xii. Interaction with Community influencers and Local GPs
   - xiii. Recommendations for control measures
   - xiv. Final report should have CIF, Penta Coverage analysis, 30 H-H Cluster & Case response report
2. **Case Response activity**
   - i. 40 houses in the surrounding of Diphtheria case (Urban)
   - ii. Whole Village if small and 40 houses if large (Rural)
3. All due and defaulter children should be covered for Penta I, II & III less than 02 years of age.
4. A single dose of Pentavalent vaccine to children age between 2 to 5 years, followed by a 2nd doses after 28 days.
5. Give two doses of Td vaccine to close contacts, age higher than 5 years of probable or confirmed case. Duration between the doses should be at least 28 days.
6. Prophylactic dose of antibiotic (Oral Erythromycin) to close contacts of up to 15 years for 7-10 days with monitoring for signs and symptoms for at least 7 days.
7. Report Generation and dissemination of information to all concern.

7. **Follow-up:**
   All outbreaks need follow up visit after 30 days to confirm whether the outbreak has subsided or continue.

MOP UP REPORT

District:

Mop up date	Epid # of Index Case	Name	Father"s Name	Village/ Mahalla	UC	Tehsil/ Town	Date of Onset (dd/mm/yy)	Lab Result-1	Lab Result-2	No of houses where mop up was conducted	No of due & defaulters covered for P-I, P-II & P-III	No of children who were given MOP UP dose	No of Pentavalent Doses used for Mop up	No of children who were given Injectible antibiotics	No of children who were given Oral antibiotics	No of other VPD case/cases found	No of EPI LINKED case/cases found	No of children died	Remarks
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20

Compiled by: *Date:* District Health Authority:
Name: *Name:*
Designation: *Designation:*

Annexure-1

Case Management:

Patients: Do not wait for laboratory results before starting treatment/control activities.

Diphtheria antitoxin: WHO recommend the following schedule for Anti Diphtheria Toxin (ADS)

a. For mild cases with laryngeal or pharyngeal disease, 20,000 - 40,000 IU
b. For moderate nasopharyngeal disease, 40,000 - 60,000 IU
c. For severe extensive or late cases 60,000 - 80,000 IU
d. Removal of membrane to prevent airway obstruction.

Antibiotics: e. Penicillin 250 mg orally 6 hourly or Erythromycin 500 mg orally 6 hourly for 7-14 days.

Vaccination: Clinical diphtheria does not necessarily confer natural immunity, and patients should thus be vaccinated before discharge from a health facility with either primary or booster doses.

Contacts: a. All close contacts regardless of vaccination history should have nose or throat culture.
b. One dose of Benzathine Penicillin IM (600,000 Units for <6 years and 1.2 million units for 6 years and above) or a 7-10 days' course of Erythromycin orally.
c. If culture of contact is positive and person is symptomatic, admit him/her to the hospital and treat as positive case.
d. If culture is positive and the case is asymptomatic treat the case as carrier.

Carrier treatment: Give single dose of Benzathine Penicillin G (600,000 Units for <6 years and 1.2 million units for 6 years and above).
If allergic to penicillin, give erythromycin (40-50 mg/kg/day) in divided doses for 14 days.

Prevention: a. Contacts and children (age 45 days to 4 years) in the area of outbreak who are unimmunized or partially immunized should be given 3 doses or complete the vaccination schedule (each dose 4 weeks apart) with Pentavalent vaccine.
b. Children above 4 years and adults should receive 3 doses of Td vaccine (currently not available with the program) as per following schedule;
1st dose on first contact, 2nd dose after 2 months and 3rd dose after 6-12 months.

Supportive care: Refer all probable or confirmed diphtheria cases for specialist assessment by a pediatrician or ENT surgeon. Patients with respiratory diphtheria require careful monitoring (ideally in a high or intensive care setting) for potentially life-threatening complications from local disease (e.g. airway obstruction or respiratory compromise due to tracheobronchial disease) or systemic manifestations (especially cardiac complications).

Annexure-2

Diphtheria Case Investigation Form
1st copy to be sent to laboratory with specimen, 2nd copy to DHO/ AS office and 3rd copy to be kept in the reporting health facility

PART I: For Use by Reporting Facility and DHO/ Agency Surgeon

Name of Reporting Health Facility: _____
Union Council: _____Tehsil/City: _____
District: _____Province/Area: _____
Date Patient Visited Hospital: _____/_____/_____
PAK/Province Code/District ID/Year/Dip/Case Serial # # # #
Patient's Name: _____Sex: Male/ Female
Father's Name: _____
Date of Birth: _____/_____/_____ Age: _____Months
Address of Patient: Village/Street/Mahalla_____
Union Council: _____ Tehsil/Taluka/City_____
District: _____Province/Area: _____

Clinical evidence: ☐ Sore Throat ☐ Low Grade Fever ☐ Adherent Membrane
Date of onset: _____/_____/_____
Number of Pentavalent vaccine doses received (circle): Nil/ One/ Two/Three
Date of last dose of pentavalent vaccination: _____/_____/_____
Type of specimen (circle): Nasal swab Throat swab
Date of Specimen Collection: ____ / _____/ _____ _____/_____/_____
Date of Specimen S e n t to Lab: ____ / _____/_____ ____ / _____/_____
Lab Result to be Sent to: (EDO-H, DSC/SO-WHO, Provincial and Federal officials) and
Name: _____ Telephone/FAX: _____ Email: _____
Address: _____
Name of person completing the form: _____
Designation: _____ Signature: _____D a t e : _____/_____/_____

PART II: For Use by Receiving Laboratory

Type of specimen (circle): Nasal swab Throat swab
Date specimens received at lab: _____ /____ / ____ _____/_____/_____
Lab Number: _____ _____
Condition of specimen:
Quantity Adequate: Yes No Yes No
Cold Chain OK Yes No Yes No
Specimen Received by:
Name: _____ _____
Designation: _____ _____
Date of Lab Test done: _____ / ____ / _____ _____/_____/_____
Type of test done: _____ _____
Test result: _____ _____
Comment: _____
Report sent by: Nam: _____ Signature: _____
Designation: _____ Date: _____