DIPHTHERIA

Epidemiological determinants

Agent factors:

- Causative agent: Corynebacterium diphtheriae.
- 3 major clinical types: anterior nasal, faucial and laryngeal
- Produces exotoxin which is responsible for greyish or yellowish membrane (false membrane) over the tonsils, pharynx or larynx, enlargement of the regional lymph nodes; and signs and symptoms of toxaemia.
- Source of infection: cases, carriers – temporary or chronic nasal or throat carriers
- Infective material: nasopharyngeal secretions, discharges from skin lesions, infected fomites.

Host factors

- Age: majority children
- Sex: both sexes affected.
- Immunity

Environment factors: occur in all seasons.

Mode of transmission

- Droplet infection
- Infected cutaneous lesions
- Objects contaminated with infective material

Clinical features

- Sore throat
- Difficulty in swallowing
- Low grade fever
- Pseudomembrane
- Edema of submandibular region and anterior portion of neck with lymphadenopathy – Bull neck appearance
- Skin lesions

CONTROL OF DIPHTHERIA

1) **Cases and carriers**

a) **Early detection**:

- An active search for cases and carriers amongst family and school contacts.
- Carriers can be detected only by culture method
- Swabs should be taken from both the nose and throat and examined by culture methods for diphtheria bacilli.

b) **Isolation**:

- All cases, suspected cases and carriers should be isolated, preferably in a hospital, for at least 14 days or until proved free of infection.
- At least 2 consecutive nose and throat swabs, taken 24 hours apart, should be negative before terminating isolation.

c) **Treatment**:

➢ CASES:

- diphtheria antitoxin, 20,000 to 100,000 units IM or IV, depending upon the severity of the case, after a test dose of 0.2 ml SC.
- For mild early pharyngeal or laryngeal disease - 20,000-40,000 Units.
- For moderate nasopharyngeal disease, 40,000-60,000 units.
- For severe extensive or late (3 days or more) disease, 80,000-100,000 units.
- In addition to antitoxin, every case should be treated with penicillin or erythromycin for 5 to 6 days to clear the throat of C.diptheriae and thereby decrease toxin production.

➢ CARRIERS:

- The carriers should be treated with 10 days course of oral erythromycin.

2) **Contacts**

- Contacts merit special attention.

(a) if primary immunization or booster dose was received within the previous 5 years, no further action would be needed
(b) if primary course or booster dose of diphtheria toxoid was received more than 5 years before, only a booster dose of diphtheria toxoid need be given
(c) non-immunized close contact should receive prophylactic penicillin or erythromycin + 1000-2000 units of diphtheria antitoxin.

- Contacts should be placed under medical surveillance and examined daily for evidence of diphtheria for at least a week after exposure

3) **Community**

- The only effective control is by active immunization with diphtheria toxoid to all infants as early in life as possible, as scheduled, with booster doses every 10 years thereafter.
- The vaccine being a toxoid and is not directed against organisms. Therefore, immunization does not prevent the carrier state.

DIPHTHERIA VACCINATION

i. Combined or mixed vaccines
   - DPT (diphtheria-pertussis-tetanus vaccine)
   - DTPw (diphtheria, tetanus, whole-cell pertussis)
   - DTPa (diphtheria, tetanus, acellular pertussis)
   - DT (diphtheria-tetanus toxoid)
   - dT (diphtheria-tetanus, adult type)
   - Pentavalent (diphtheria, tetanus, pertussis, hepatitis B and Hib)

ii. Single vaccines
   - FT, APT, PTAP

iii. Antisera
   - Diphtheria antitoxin

PENTAVALENT VACCINE

- Combined vaccine
- Provides protection to child from 5 life threatening diseases - diphtheria, pertussis, tetanus, hepatitis B and haemophilus influenzae type b (Hib).
- Dose (0.5 ml)

- Route intramuscular injection in anterolateral aspect of the mid-thigh.
- Pentavalent vaccine is a freeze sensitive vaccine and should be stored and transported at 2-8°C temperature.
- Side effects: Pain, redness and swelling at the site of injection, fever, vomiting, loss of appetite, abnormal crying, allergic reaction.
- Advantage: When used, it replaces Hepatitis B and DPT primary vaccination schedule at 6, 10 and 14 weeks in the immunization programme, except that the birth dose of hepatitis B and booster doses of DPT are continued. And reduce the number of pricks.