Diphtheria Clinical Management

Clinical Management and Operations Unit
Country Readiness Strengthening
Health Emergencies Program

March 2024
Introduction

During our long-term studies about diphtheria (Behring) and tetanus (Kitasato), we also approached the questions of therapy and immunization, and for both infectious diseases we were able to cure infected animals as well as pretreat healthy ones so that they did not fall ill of diphtheria or tetanus.

Emil Behring (1854 to 1917) and Shibasaburo Kitasato (1853 to 1931)
Diphtheria vaccination

WHO recommends a **3-dose primary vaccination** series with diphtheria containing vaccine **followed by 3 booster doses**.

The primary vaccination series should begin as early as **6-week of age** with subsequent doses given with a minimum interval of 4 weeks between doses.

The 3 booster doses should preferably be given during:

- **2° year of life** (12-23 m)
- **at 4-7 years**
- **and at 9-15 years**.

Ideally, there should be at least **4 years** between booster doses.

To further promote immunity against diphtheria, combined diphtheria and tetanus toxoid vaccine (Td or TD) should be used rather than tetanus toxoid alone. **This can be used in pregnancy as well as following injuries.**
“We are talking about a disease that should be confined to the archives of history that is raging in West Africa”

Dagemlidiét Worku, Medecins Sans Frontières Emergency Medical Program Manager
Vaccine Preventable Diseases

Effects of the COVID-19 pandemic

The COVID-19 pandemic impacted delivery of routine immunization services and surveillance activities. These setbacks have left many children susceptible to vaccine preventable diseases such as diphtheria.

No WHO region is completely free from diphtheria, and areas with low immunization coverage with the diphtheria toxoid-containing vaccine allow the bacteria to circulate, increasing the likelihood of outbreaks and putting all unvaccinated and under vaccinated individuals at risk.

Immunization and surveillance programs should be strengthened within primary healthcare, and efforts should be made to reach all children with 3 diphtheria toxoid-containing vaccine doses during infancy, childhood and adolescence. Countries should also implement robust surveillance systems to identify and confirm cases and close immunity gaps rapidly.
After the COVID-19 pandemic, the Diphtheria outbreak surpassed all previous records. According to the Ministry of National Health Services, Regulations and Coordination, from 1 January to 27 December 2023, a total of 996 Diphtheria cases (912 suspected and 84 labs confirmed) resulting in 124 deaths were recorded from all provinces of Pakistan.
Vaccine Preventable Diseases

Childhood immunization begins recovery after COVID-19 backslide

The vaccine against diphtheria, tetanus and pertussis (DTP) is used as the global marker for immunization coverage. Of the 20.5 million children who missed out on one or more doses of their DTP vaccines in 2022, 14.3 million did not receive a single dose, so-called zero-dose children. The figure represents an improvement from the 18.1 million zero-dose children in 2021 but remains higher than the 12.9 million children in 2019.
Recent Outbreaks

Disease Outbreak News

**Diphtheria - Guinea**

18 October 2023

**Situation at a Glance**

On 5 September 2023, the Ministry of Health notified WHO of a diphtheria outbreak in Guinea. From 4 July to 13 October 2023, a total of 538 cases of diphtheria, were reported in the Kankan region, in the east-central part of Guinea. Of the total cases reported, 520 are suspected and 18 confirmed with 58 deaths including 13 among confirmed cases (case fatality rate (CFR) among all cases, 11%).

Disease Outbreak News

**Diphtheria - Nigeria**

13 September 2023

**Situation at a Glance**

Since epidemiological week 26, ending 2 July 2023, Nigeria has recorded an unusual increase in cases of diphtheria across several states. From 30 June to 31 August 2023, a total of 5898 suspected cases were reported from 59 Local Government Areas (LGAs) in 11 states. In week 34 (ending 27 August 2023), 234 suspected cases have been reported from 20 LGAs in five states,
### Recent Outbreaks

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<th>Country</th>
<th>Total suspected cases</th>
<th>Total deaths</th>
<th>CFR (%)</th>
<th>Confirmed cases</th>
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#### World Health Organization

Consolidated Regional Situation Report # 006 – As of February 25, 2024
Recent Outbreaks

Epidemiology of weekly cases of Diphtheria reported by countries within the WHO Africa Region as of February 25, 2024
Recent Outbreaks

1a. Nigeria

1b. Guinea

1c. Niger

1d. Mauritania
Diphtheria cases by country
Questions from Clinicians

1. Antibiotic selection and availability

2. Diphtheria Antitoxin
   - Indication
   - Dosing
   - Sensitivity Testing

3. Isolation of cases

4. Treatment of contacts

Medical News in Brief
February 28, 2024
WHO Issues First Recommendations for Managing Diphtheria
Emily Harris
Article Information
JAMA. 2024;331(11):907. doi:10.1001/jama.2024.1117
Diphtheria antitoxin

Anti-Diphtheric Serum No. 3, 1898. In 1898, the museum collected from Parke, Davis & Co. some of the earliest commercial antitoxin manufactured in America.

Diphtheria Toxoid (Anatoxin-Ramon) Bio. 2100 - Diphtheria Prophylactic - Two Doses for One Person, ca 1938.
Diphtheria antitoxin

Life-saving diphtheria drug is running out

Two children’s deaths in Europe spur search for new sources of antitoxin

By Kai Kupferschmidt