

54556

EUR/ICP/CMDS 94 06/MT07

04605

ORIGINAL: ENGLISH

# DIPHTHERIA CONTROL IN TURKEY AND NEWLY INDEPENDENT STATES OF CENTRAL ASIA AND THE CAUCASUS

Report on a WHO Meeting

Ankara, Turkey  
31 January – 1 February 1995

## ABSTRACT

A meeting on diphtheria control in Turkey and the newly independent states of central Asia and the Caucasus was convened by WHO with support from the United Nations Children's Fund (UNICEF). After reviewing the current diphtheria situation in the eight countries, the participants made recommendations on national action plans for diphtheria control, including estimates for resource requirements with particular emphasis on vaccines, antitoxin and antibiotics. The recommendations were based on the WHO/UNICEF strategy for diphtheria control, which was endorsed during the meeting. To ensure the necessary support for the implementation of the strategy, WHO and UNICEF will present the action plans to potential donors.

### *Keywords*

DIPHTHERIA - prevention and control  
IMMUNIZATION  
(1) UNICEF  
TURKEY  
NIS

## CONTENTS

	<i>Page</i>
Introduction.....	1
Discussion.....	2
The diphtheria situation in Europe, with emphasis on the NIS.....	2
WHO/UNICEF strategy for diphtheria control.....	4
Conclusions.....	7
Recommendations.....	8
Annex 1. WHO/UNICEF strategy for diphtheria control in the Newly Independent States .....	10
Annex 2. Participants .....	21



## INTRODUCTION

A meeting on diphtheria control in Turkey and the eight newly independent states (NIS) of central Asia and the Caucasus was held from 31 January to 1 February in Ankara, Turkey, in conjunction with a WHO meeting on Operation MECACAR (mass immunization campaign in bordering countries of the WHO European and Eastern Mediterranean regions aimed at eradicating poliomyelitis). The meeting was convened by the WHO Regional Office for Europe with support from UNICEF.

Participants included representatives of each of the target countries (except Armenia) as well as representatives of the Aga Khan Foundation, BASICS, USA, Centers for Prevention and Disease Control (CDC), USA, International Federation of Red Cross and Red Crescent Societies (IFRC), Rotary International, US Agency for International Development (USAID) and UNICEF and WHO staff. Annex 2 gives a list of participants.

The objectives of the meeting were:

- to review the current diphtheria situation in Armenia, Azerbaijan, Georgia, Kazakhstan, Kyrgyzstan, Tajikistan, Turkey, Turkmenistan and Uzbekistan;
- to review the current diphtheria control programmes in these countries;
- to elaborate steps to strengthen the diphtheria surveillance and control activities in these countries, based on national plans of action, according to strategic recommendations made by WHO and UNICEF;
- to estimate the funding and resource requirements for diphtheria surveillance and control activities with particular emphasis on vaccines, antitoxin and antibiotics.

## DISCUSSION

### **The diphtheria situation in Europe, with emphasis on the NIS**

The estimated 47 000 cases of diphtheria reported in 1994 represents an approximate 250% increase over 1993. Epidemic diphtheria has spread to all NIS, excluding Estonia. From 1992 to 1994, about 20 cases imported from the NIS were reported in Bulgaria, Finland, Germany, Norway and Poland.

NIS can currently be classified into three groups according to the degree to which diphtheria has already spread:

- (1) countrywide epidemic diphtheria: large numbers of cases in all or most regions (e.g. the Russian Federation, Tajikistan, Ukraine);
- (2) diphtheria reported from many regions, but the majority of cases from a few cities or regions (e.g. Georgia, Latvia);
- (3) localized cases/outbreak only (e.g. Estonia).

There are two main patterns of age distribution:

- (1) two thirds or more cases occurring among individuals aged 15 years or older (especially the Russian Federation, Ukraine, the Baltic republics);
- (2) half or more cases among children aged less than 15 years (e.g. countries of the Caucasus and central Asia).

The age distribution pattern of diphtheria cases within a country may change within a relatively short period of time.

When setting priorities for strategies to implement immunization campaigns in steps, the geographical and age distribution of diphtheria in each country should be considered.

Case fatality rates vary between 2–3% in the Russian Federation and Ukraine, 5–10% in Armenia, Kazakhstan, Latvia and

the Republic of Moldova, and 17–23% in Azerbaijan, Georgia and Turkmenistan. Major factors responsible for this variation are the availability of antitoxin and the extent of surveillance for mild cases.

Bacteriological confirmation of cases varies from 29% in Georgia up to 90% in the Russian Federation. A major factor is the availability of laboratory supplies.

#### *Diphtheria vaccines and immunization*

In the pre-vaccine era, adults were generally immune because of natural exposure to diphtheria. In the post-vaccine era, the level of population immunity among adults has declined because:

- over 30 years have elapsed without significant exposure to diphtheria;
- routine booster immunization of adults has not been practised; and
- vaccine-induced immunity wanes without regular Td boosters.

Use of Td vaccine for primary immunization in children, a practice that was widespread in the former USSR, induces poor immunity in children.

#### *Microbiological investigations during the current epidemic*

Several countries have insufficient funds to obtain the laboratory reagents necessary for the isolation and laboratory confirmation of *C. diphtheriae*.

In 1994, the diphtheria WHO reference unit for molecular typing received 110 isolates of toxigenic *C. diphtheriae*. Of the 81 *gravis* biotypes found, 71 had molecular typing pattern G1, 4 had pattern G2, 1 had pattern G3, 4 had pattern G4, and 1 had pattern G5. Of the 26 *mitis* biotypes found, 25 had molecular typing pattern M1 and 1 had pattern M2.

### *Schedule for routine immunizations*

The current immunization schedules in the NIS vary, but they generally require four doses of DPT before age 2 years and two booster doses (DT or Td) for children of school age. The WHO recommended immunization schedule (with regard to diphtheria prevention) calls for three doses of DPT between 2 and 6 months of age, a fourth dose at age 15-24 months, and at least one booster dose during school age.

### **WHO/UNICEF strategy for diphtheria control**

The emerging or accelerating diphtheria epidemics in NIS are public health emergencies requiring urgent, coordinated and collaborative international support if control efforts are to succeed. In view of the severe situation in the NIS, a joint WHO/UNICEF strategy for diphtheria control in the NIS has been developed in close cooperation with USAID, CDC, the Robert Koch Institute and IFRC (Annex 1).

The WHO/UNICEF strategy is intended to coordinate the activities of WHO, UNICEF and governmental and nongovernmental organizations, and secure resources for the implementation of recommended control measures.

Epidemic diphtheria can be controlled by carrying out the following three measures, of which the first is of paramount importance:

- (1) primary prevention by ensuring high immunity among the population through mass immunization;
- (2) secondary prevention of contact cases of diphtheria by rapid investigation of close contacts and standardized treatment;
- (3) tertiary prevention and prevention of complications and death from diphtheria by early diagnosis and proper management (immediate treatment and hospitalization) of diphtheria cases.

### *Immunization*

Through routine immunization, countries should attain vaccination coverage of more than 95% of children aged less than 2 years with a four-dose primary series of DPT. Countries should also attain vaccination coverage of more than 95% of school-age children as per the national immunization schedule.

If the whole country or several regions of the country have reported diphtheria cases and/or diphtheria outbreaks, the following immunization strategy must be implemented as soon as possible.

- Immunization campaigns should be carried out in all pre-school institutions, schools and higher educational institutions (technical institutes and universities). A single dose of diphtheria-toxoid-containing vaccine should be given immediately to all persons attending such institutions (DT for children up to and including first grade, and Td for older individuals), unless they have documented evidence of having completed primary immunization or having received a booster within the last 12 months.
- Additional dose(s) will be needed if a child/adolescent has not yet completed a three-dose schedule.
- All adolescents and adults should receive one dose of Td. Certain groups of adults may later need additional doses of Td for optimal protection. For example, in the Russian Federation and Ukraine, adults aged 30–50 years will require a total of three doses: two doses given a minimum of four weeks apart and a third 6–12 months later. However, the need for additional doses in the NIS of the Caucasus and central Asia has not been clearly established. Longer intervals between doses do not reduce the effectiveness of vaccination. In other republics, different age groups may be more susceptible and require additional doses, depending on the epidemiological situation.

- Children not attending preschool institutions should be included in immunization campaigns together with their mothers/parents.

A strategy for mass immunization of the total population should be elaborated according to the epidemiological situation within the country and address logistical and vaccine storage and distribution issues.

Countries requesting the assistance of the donor community need to clearly define their objectives and resource needs and present to the donor community the *best* public health strategy for ensuring control of the diphtheria epidemic.

Special efforts should focus on immunizing migrant populations, which may be at special risk for diphtheria and may contribute to the spread of the disease.

#### *Case management*

WHO recommends antitoxin doses of 10 000–100 000 immunization units (IU) per case, depending on the severity of illness (Table 1).

Table 1. Antitoxin treatment strategy

Type of diphtheria	Dosage (units)	Route
Nasal	10 000 – 20 000	Intramuscular
Tonsillar	15 000 – 25 000	Intramuscular or intravenous
Pharyngeal or laryngeal	20 000 – 40 000	Intramuscular or intravenous
Combined types or delayed diagnosis	40 000 – 60 000	Intravenous
Severe diphtheria (e.g. with extensive membranes and/or severe oedema (bull-neck diphtheria))	40 000 – 100 000	Intravenous or part intravenous and part intramuscular

Scientific evidence does not support the use of higher doses (>100 000 IU per case) of antitoxin in the treatment of diphtheria.

Because there is generally a limited amount of antitoxin available, the use of higher doses of antitoxin (>100 000 IU per case), when it is not indicated, limits the number of people with diphtheria who can be effectively treated with antitoxin. Use of higher doses of antitoxin has resulted in shortages of available antitoxin. Use of lower but still clinically effective doses of antitoxin allows treatment of a greater number of people with diphtheria and can save more lives.

As for antibiotics, penicillin remains the preferred treatment. There is no evidence of penicillin-resistance at this time.

#### *Management of close contacts*

Close contacts include household members, kissing or sexual contacts, and other close, intimate contacts. Close contacts of a diphtheria case should be identified, monitored, cultured, treated prophylactically with penicillin immediately after cultures are taken and before culture results are known, and immunized, unless they have documented evidence of having completed primary immunization or having received a booster within the last 12 months. It was emphasized that antibiotic prophylaxis is not being recommended for casual or relatively brief contacts. Antibiotic prophylaxis should also be considered when diphtheria cases or outbreaks occur in closed institutions, such as homes for mentally ill children and orphanages or in refugee camps. In such cases, *all* staff and occupants should be treated.

## CONCLUSIONS

1. The participants agreed that the WHO/UNICEF strategy for diphtheria control in the NIS should be the basis for development of national action plans for diphtheria control.
2. Further characterization of *C. diphtheriae* strains is desirable.

## RECOMMENDATIONS

1. Each country should develop, according to the WHO/UNICEF strategy for diphtheria control in the NIS, a detailed plan of action for control of diphtheria that covers the whole range of diphtheria control activities. Each plan also should include:
  - strategies for implementation of mass immunization of the target age group as determined by the epidemiological situation within the country, including detailed plans for social mobilization; and
  - strategies for setting priorities for the various steps in implementing mass immunization, including a map showing priority areas.

Each country should send a draft copy of the plan to WHO/UNICEF by 15 March 1995 including an estimate of vaccine requirements for 1995 and 1996. Estimates for antibiotics, antitoxin, syringes and needles, laboratory reagents and other resources should also be included.

2. Primary immunization for diphtheria consists of four doses of DPT vaccine given before two years of age. Countries should ask UNICEF to expand and alter existing contracts it has with the republics to provide a fourth dose of DPT vaccine for children aged less than 2 years to meet the recommendations for primary immunization.
3. Special efforts should focus on immunizing migrant populations who may be at special risk for diphtheria and may contribute to the spread of disease.
4. Special efforts should be made to identify and vaccinate children who received Td vaccine for primary immunization.

5. All countries should follow WHO policy on continued use of partially used vials of any inactivated vaccine, including DPT, DT and Td.
7. WHO and UNICEF should develop a simple protocol for the collection and analysis of data on vaccine usage and wastage before and after a change in policy in a variety of operational settings.
8. UNICEF and WHO should develop strategies to raise the necessary funds to procure vaccine and other supplies to control diphtheria that cannot be provided locally.
9. An agency such as UNIPAC Copenhagen should be asked to assist in vaccine procurement and planning, coordinating vaccine requests with manufacturers on a regional (e.g. Caucasus, central Asia) level and managing priorities according to the logistics of vaccine supplies.
10. Each country should implement the WHO recommendations for management of cases and close contacts.
11. WHO should provide all countries with documentation on the effectiveness of antitoxin at recommended doses (up to 100 000 IU antitoxin per case). Each country should adhere to WHO recommendations for antitoxin use.
12. Laboratory capabilities for case and contact investigation should be strengthened to permit laboratory confirmation of more than 80% of cases and laboratory investigation of more than 80% of all close contacts.
13. All countries should send selected strains of *C. diphtheriae* isolates to the regional reference laboratory in the United Kingdom for further characterization.

*Annex 1***WHO/UNICEF STRATEGY FOR DIPHTHERIA  
CONTROL IN THE NEWLY INDEPENDENT STATES****1. Introduction**

The current diphtheria situation in all newly independent states (NIS) of the former USSR is extremely serious, and makes coordinated international support for the countries affected by epidemic diphtheria an urgent priority. The rapidly expanding epidemic is an international public health emergency. In the Russian Federation, the epidemic has intensified in each successive year since 1990, and historical records underscore the potential for further increases in the magnitude of the epidemic across the continent.

The following proposed strategy for controlling the diphtheria epidemic has been developed by WHO/UNICEF, in close cooperation with the US Agency for International Development (USAID), the Centers for Disease Control and Prevention (CDC), USA, the Robert Koch Institute, Germany and the International Federation of Red Cross and Red Crescent Societies. The programme is not intended to duplicate WHO's technical recommendations on diphtheria control, but to coordinate the actions taken by WHO, UNICEF and other governmental and nongovernmental organizations in close cooperation with the health authorities of the NIS to provide resources for the implementation of recommended measures. The proposed strategy was discussed and approved during the WHO meetings held between these agencies and senior health representatives of the NIS in Berlin, Germany, 18–20 January 1995, and Ankara, Turkey, 31 January–1 February 1995.

The strategies outlined in this document are applicable to all NIS that are experiencing epidemic diphtheria. Donor support in controlling the epidemic has already been offered to the Baltic countries (Estonia, Latvia and Lithuania) by the Nordic Consortium. However, for the central Asian republics (Kazakhstan, Kyrgyzstan,

Tajikistan, Turkmenistan and Uzbekistan), the Caucasian republics (Armenia, Azerbaijan and Georgia), and Belarus, Moldova and Ukraine, the donor support provided to date has not been sufficient and the need for additional assistance is urgent. The Russian Federation has indicated that it is self-sufficient with regard to vaccine, antitoxin and antibiotics, and does not require assistance in this respect.

## **2. Reasons for the resurgence of epidemic diphtheria in the NIS**

The re-emergence of epidemic diphtheria in the NIS can be explained by the reintroduction of toxigenic strains into populations with a high proportion of susceptible adults and children. The susceptible population results from gaps in immunity in unimmunized adults, low immunization coverage of children in many areas and suboptimal immune responses following the common use of low-potency Td vaccines for infant primary series immunization. The spread may have been facilitated by large population migration since the dissolution of the former Soviet Union and by the absence of adequate control measures, especially mass immunization, during the early phase of the epidemic. The erosion of public health services and, in some countries, the inadequate supplies of vaccine have been important contributory factors in allowing the disease to reach epidemic proportions.

## **3. Recommended strategies**

It is not the purpose of this strategy paper to describe the full scope of public health actions, including surveillance, diagnostics, prevention and control measures and social mobilization, necessary to control epidemic diphtheria in the NIS. This is described in detail in the WHO plan of action for the prevention and control of diphtheria in the European Region (1994) and the WHO manuals for the management and control of diphtheria (1994) and for the laboratory diagnosis of diphtheria (1994). The purpose of this paper is to

describe prevention and control strategies with regard to immunization, treatment of cases and prophylaxis of close contacts, and the resulting needs for vaccines, antitoxin, antibiotics, syringes and needles, in order to allow the epidemic-stricken countries and the donor community to act on commonly agreed principles.

Epidemic diphtheria can be controlled by the following three well recognized measures:

- (1) primary prevention by ensuring high population immunity through immunization (the most effective measure to control epidemic diphtheria);
- (2) secondary prevention of contact cases of diphtheria by the rapid investigation of close contacts and their standardized treatment;
- (3) tertiary prevention and prevention of complications and death from diphtheria by early diagnosis and proper management (immediate treatment and hospitalization) of diphtheria cases.

### **3.1 Immunization**

#### **3.1.1 Routine immunization**

The first priority is achieving and maintaining high vaccination coverage of children through routine immunization:

- every district of a country should achieve at least 95% coverage with the full course of primary immunizations (DPT4) for children by the time they reach 2 years of age;
- booster dose(s) of a diphtheria-toxoid-containing vaccine should be given according to the national immunization schedule to children of school age, aiming to achieve at least 95% coverage. DT is recommended for children at school entry or in the first year of school, and Td is recommended for older children.

### 3.1.2 Immunization campaigns

#### 3.1.2.1 Countrywide immunization campaigns for children, adolescents and adults

If the whole country or several regions of the country have reported diphtheria cases and/or diphtheria outbreaks, the following immunization strategy must be implemented as soon as possible.

- Immunization campaigns should be carried out in all preschool institutions, schools and higher educational institutions (technical institutes and universities). A single dose of diphtheria-toxoid-containing vaccine should be given immediately to all persons attending such institutions (DT for children up to and including first grade and Td for older individuals), unless within the last 12 months they have documented evidence of having completed primary immunization or having received a booster.
- Additional dose(s) will be needed if a child/adolescent has not yet completed a three-dose schedule.
- All adolescents and adults should receive one dose of Td. Certain groups of adults may later need additional doses of Td for optimal protection. For example, in the Russian Federation and Ukraine, adults aged 30–50 years will require a total of three doses: two doses given a minimum of 4 weeks apart and a third 6–12 months later. Longer intervals between doses do not reduce the effectiveness of vaccination. In other republics, different age groups may be more susceptible and require additional doses, depending on the epidemiological situation.
- Children not attending preschool institutions should be included in immunization campaigns together with their mothers/parents.

When beginning immunization campaigns, priority should be given to the following groups since they are at high risk of contracting diphtheria:

- health care workers
- members of the armed forces
- refugees
- teachers; staff of kindergartens, crèches and similar institutions
- homeless people
- alcoholics
- drug users.

Homeless people, drug users and alcoholics can be difficult to reach. Special attention must be given to social care institutions and to the involvement of nongovernmental organizations that have developed special programmes for those groups of people who are at higher risk of disease and death from diphtheria.

### *3.1.2.2 Immunization campaigns for children, adolescents and adults in high risk areas*

The principles mentioned above for countrywide epidemics should be applied for localized areas of risk where outbreaks occur (villages, towns, districts or regions with diphtheria outbreaks). In case of localized outbreaks, immunization should be carried out immediately for all population groups in the affected area.

### *3.1.2.3 Organization of immunization campaigns*

Immunization campaigns can include use of Immunization Days, immunization centres and mobile immunization points. Immunization carried out on a house-to-house basis could be a very useful strategy in villages and small towns. The key to success is proper preparation in collaboration with local mass media and local organizations. It will be necessary to formulate detailed strategies appropriate to the particular conditions (e.g. epidemiological, logistical) of each country.

### *3.1.2.4 Contraindications to diphtheria immunization*

There are virtually no contraindications to the use of diphtheria toxoid or diphtheria-tetanus toxoids. The only valid contraindication

is the occurrence of a severe adverse reaction (anaphylaxis, collapse, shock) after a previous dose.

Simple febrile reaction following a previous dose is not a contraindication and further immunization should not be withheld. Advice should be given to prevent recurrence of these symptoms, i.e. by the use of antipyretic drugs.

### **3.2 Treatment of close contacts**

All persons who in the previous seven days have been in close and intimate contact with a case of diphtheria caused by toxigenic *C. diphtheriae* should be considered at risk. Contacts of cases due to non-toxicogenic *C. diphtheriae* or *C. ulcerans*, however, are not at risk.

Close contacts include the following:

- household members
- kissing/sexual contacts or other intimate contacts
- those who share the same small room at work
- health care staff exposed to oropharyngeal secretions of the case.

#### **3.2.1 Surveillance for close contacts**

All close contacts should be identified and clinically monitored for symptoms and signs of diphtheria for seven days from the date of the last contact with the case.

#### **3.2.2 Culture**

If diagnostic facilities are available, close contacts should have nasopharyngeal cultures for diphtheria. Antibiotic prophylaxis should not be dependent on the results of such cultures, but identified carriers of toxigenic *C. diphtheriae* should be isolated and receive follow-up cultures after treatment to ensure that the organism has been eliminated.

### ***3.2.3 Penicillin prophylaxis***

Close contacts should be given penicillin, preferably a single dose of intramuscular benzathine penicillin (600 000 units for children <6 years of age and 1.2 million units for persons  $\geq$ 6 years of age), for reasons of compliance. Alternatively, oral erythromycin (40 mg/[kg/d]) for children and 1 g/d for adults, in 4 divided doses) may be given for 7–10 days. It is emphasized that antibiotic prophylaxis is not being recommended for casual or relatively brief contacts. Antibiotic prophylaxis (and immunization of close contacts – see below) should also be considered when diphtheria cases or outbreaks occur in closed institutions, such as homes for mentally ill children or orphanages or in refugee camps. In such cases, all staff and occupants should be treated.

### ***3.2.4 Immunization of close contacts***

The immunization status of close contacts should be assessed, and it must be ensured that they all immediately receive one dose of a diphtheria-toxoid-containing vaccine (DPT or DT for infants, pre-school children, and children in the first year of school, and Td for older individuals), unless within the last 12 months they have documented evidence of having completed primary immunization or having received a booster. People who have not completed primary immunization should continue to receive the additional doses needed in order to be fully protected.

### ***3.3 Treatment of cases***

Bacteriological examination may take several days. If diphtheria is suspected, specific treatment with antitoxin and antibiotics must be initiated immediately while bacteriological investigations are still pending. Antitoxin treatment is still the mainstay of treatment; antibiotic therapy is also required to eliminate the organism and prevent spread of the disease.

### 3.3.1 *Diphtheria antitoxin*

The dose of antitoxin to be administered depends on the site and extent of the diphtheritic membrane, the degree of toxicity and the duration of illness. A single dose of 10 000 to 100 000 units, depending on the severity of the illness, should be given. The whole of the intended antitoxin treatment should be given immediately. There is no clear evidence that doses above 100 000 units provide additional benefit, and this maximum should not be exceeded. Table 1 (proposed by Krugman, S. et al in 1992, and slightly modified) provides an example of recommended doses for various clinical situations. This scheme is widely used in many countries of the world. However, manufacturers of antitoxin and national health authorities may recommend certain variations.

Table 1. Dosage of antitoxin recommended for various types of diphtheria

Type of diphtheria	Dosage (units)	Route
Nasal	10 000 – 20 000	Intramuscular
Tonsillar	15 000 – 25 000	Intramuscular or intravenous
Pharyngeal or laryngeal	20 000 – 40 000	Intramuscular or intravenous
Combined types or delayed diagnosis	40 000 – 60 000	Intravenous
Severe diphtheria (e.g. with extensive membranes and/or severe oedema (bull-neck diphtheria))	40 000 – 100 000	Intravenous or part intravenous and part intramuscular

Source: Krugman, S. et al. *Infectious diseases of children*. 8th ed. St Louis, MO, 1985.

### 3.3.2 Antibiotics

Antibiotic treatment is necessary to eliminate the organism and prevent spread; it is *not* a substitute for antitoxin treatment. The preferred antibiotics are penicillin or erythromycin. The recommended dose regimens are as follows: penicillin, preferably intramuscular procaine penicillin G (25 000 units/[kg/d] for children and 1.2 million units/d for adults, in two divided doses) *or* intravenous erythromycin (40–50 mg/[kg/d], in four divided doses, with a maximum of 2 g/d) until the patient can swallow comfortably, at which point erythromycin may be given orally in the same dosage, or oral penicillin V (125–250 mg four times daily) may be substituted. Antibiotic treatment should be continued for 14 days.

### 3.3.3 Immunization

Clinical diphtheria does not necessarily confer natural immunity. Patients with diphtheria should therefore be vaccinated before discharge from hospital. Partially vaccinated or unvaccinated cases should receive a dose of a diphtheria-toxoid-containing vaccine immediately and, if necessary, complete a full primary course.

## 4. Laboratory diagnosis

Adequate means for laboratory confirmation of diphtheria is an essential component of surveillance and therefore of epidemic control measures. It will be necessary to ensure the availability of culture media in particular and other reagents necessary for basic laboratory diagnosis of diphtheria, i.e. isolation of *C. diphtheriae*, and toxigenicity testing.

## 5. Monitoring and surveillance

As a minimum, at least, the following data should be collected and analysed in a standard and timely fashion:

- disease incidence by age group and region
- vaccination coverage by age group and region.

Coverage should be calculated using a simple, standard method in which the denominator is the entire population within the specified age group, and the numerator is the number of persons actually vaccinated. The Regional Office for Europe has provided a proposal for data collection.

Serological studies during an outbreak are of limited usefulness. The most useful studies are likely to be of response to vaccination by age and type of vaccine received. Such studies should be carefully designed in order to be meaningful. Routine serological testing is not required to screen individual children prior to immunization nor to assess individual seroconversion.

## **7. Social mobilization and training**

Putting diphtheria control strategies into practice needs strong support for social mobilization and training in the NIS. The general public should be informed of the danger of the disease and the benefits of immunization. An aggressive and comprehensive social mobilization programme should be launched to combat the lack of information or even misinformation about diphtheria and diphtheria immunization, especially when preparing immunization campaigns. The programme should widely involve the mass media. The key messages should be simple, short and clear. Experts should respond promptly to any misleading information given in the media.

Health workers at all levels should be informed and educated about the strategies to control diphtheria, the benefits and importance of immunization, and false contraindications against immunization. Training for medical staff at the national and regional level should include the following topics:

- diphtheria prevention by immunization (national immunization schedule, routine immunization, immunization campaigns, false contraindications);
- case management, clinical diagnosis, treatment of cases;
- laboratory diagnosis;
- preventive measures for close contacts;

- the use of the mass media for informing the public on the dangers of diphtheria and the need for immunization.

## **8. National action plans for the control of diphtheria and resource requirements and logistics**

Based on the strategies described above, national diphtheria control plans, including the resource requirements for 1995 and 1996, should be elaborated in all NIS. The implementation of mass immunization should be given priority according to the epidemiological situation and the logistics available. A questionnaire developed during the WHO meetings held in Berlin and Ankara gives further advice on the planning process.

Each country should send a draft copy of this plan to WHO or UNICEF by 15 March 1995.

*Annex 2***PARTICIPANTS***Azerbaijan*

Mrs Zemfira Guseinova  
Deputy Minister of Health, Baku

Dr S. Abbas Velibekov  
Director-General, Republican Centre of Hygiene and Epidemiology,  
Baku

*Georgia*

Dr N. Shavdia  
Head, Department of Sanitation and Epidemiology, Ministry of  
Health, Tbilisi

*Kazakhstan*

Dr Anatolij G. Dernovoy  
Deputy Minister of Health and Chief Medical Officer of Health,  
Ministry of Health of the Republic of Kazakhstan, Almaty

*Kyrgyzstan*

Dr Svetlana Nikolaevna Firsova  
Head, Republican Centre of Immunoprophylaxis, Ministry of Health,  
Bishkek

*Tajikistan*

Dr Ashur R. Dostiev  
First Deputy Minister of Health, Coordinator National Programme on  
EPI, Ministry of Health, Dushanbe

*Turkey*

Dr Nedret Emiroglu  
Polio Eradication Programme, Primary Health Care General  
Directorate, Ministry of Health, Ankara

Dr Cihanser Erel  
MECACAR Coordinator, c/o M. Siddik Ensari, Ministry of Health,  
Department of External Relations, Ankara

*Turkmenistan*

Dr Jumaguli Akmamedov  
Chief, Sanitary and Epidemiological Department, Ministry of Health,  
Ashgabat

*Uzbekistan*

Professor Shanasyr S. Shavakhabov  
Director, Institute of Epidemiology and Microbiology, Ministry of  
Health, Tashkent

### **Observers**

Dr Levent Eker

Head, Communicable Diseases Department Primary Health Care  
General Directorate, Ministry of Health, Ankara

Dr Muzaffer Kececi

Deputy General Director of Primary Health Care, Ministry of Health,  
Ankara

Dr Sehnaz Tümay

Polio Eradication Programme, Primary Health Care General  
Directorate, Ministry of Health, Ankara

Dr Cenap Yildirim

Polio Eradication Programme, Primary Health Care General  
Directorate, Ministry of Health, Ankara

### **Temporary Advisers**

Dr Sergei E. Deshevoi

Chief, Department of Scientific Medical Information, St Petersburg  
Pasteur Institute, St Petersburg, Russian Federation

Dr Stanislova Popova  
Head, Department of Communicable Diseases Control, Ministry of  
Health, Sofia, Bulgaria

Sir Joseph Smith  
95 Lofting Road, Barnsbury, London, United Kingdom (*Chairperson*)

### **Representatives of Other Organizations**

#### *Aga Khan Foundation*

Dr Pierre Claquin  
Health Programme Officer, Geneva, Switzerland

#### *BASICS*

Mr Lyndon Brown  
Technical Operations Officer, Arlington, VA, USA

Mr Alasdair Wylie  
Technical Officer, BASICS Consultant, Arlington, VA, USA

#### *Centers for Disease Control and Prevention*

Dr Siiri Bennett  
Medical Epidemiologist, National Immunization Program, Atlanta,  
GA, USA (*Rapporteur*)

Dr Steve Cochi  
Chief, Polio Eradication Activity, National Immunization Program,  
Atlanta, GA, USA

Dr Dalya Güris  
Epidemiologist, National Immunization Program, Atlanta, GA USA

Dr Robert Linkins  
Epidemiologist, National Immunization Program, Atlanta, GA, USA

Dr Roland W. Sutter  
Medical Epidemiologist, Infant Immunization Section and Polio  
Eradication Unit, National Immunization Program, Atlanta, GA, USA

*Rotary International*

Mr Asbjørn Austvik  
Foundation Trustee, Trondhjem Rotary Club, Trondheim, Norway

Mr Erich Gerber  
Regional Advisor PolioPlus Europe, Secretary CEP Committee,  
Zurich, Switzerland

Dr Mario Grassi  
Chairman CEP, Massagno, Switzerland

Mr Franco Richard  
Head of Information, Rotary International Europe/Africa Office,  
Zurich, Switzerland

Dr Edward S. Trainer  
PolioPlus Program Manager, Evanston, IL, USA

*US Agency for International Development*

Ms Molly Mort  
Division of Health and Population, Bureau for Europe and New  
Independent States, Washington, DC, USA

Dr Murray Trostle  
Office of Health, Washington, DC, USA

**Representatives of Other UN Agencies***United Nations Children's Fund*

Mr H. Juhani Alanko  
Head of Office, Yerevan, Armenia

Mr Ekrem Bireddine  
Area Representative for Central Asian Republics and Kazakhstan,  
Islamabad, Pakistan

Dr Alan Brody  
UNICEF Afghanistan, Peshawar, Pakistan

Mr Dean Echenberg  
Tbilisi, Georgia

Mr Stéphane Guichard  
EPI Officer, UNICEF CARK, Islamabad, Pakistan

Dr H. Umit Kartoglu  
Health Officer, UNICEF, CARK, Islamabad, Pakistan

Dr Bruno-Jacques Martin  
Health Adviser CEE/CIS Section, Geneva

Ms Alida Mussaeva  
Baku, Azerbaijan

Dr Akif Saatcioglu  
Health Programme Officer, Ankara, Turkey

Dr Claudio Sepulveda-Alvarez  
UNICEF Representative, Ankara, Turkey

Dr Figen Tunckanat  
UNICEF, Ankara

## **World Health Organization**

### *Regional Office for Europe*

Professor S. Dittmann  
Short-term Professional, Diphtheria Control

Mr Oltio Espinoza  
Special Representative of the Regional Director, Ankara, Turkey

Mrs Johanna Kehler  
Programme Assistant, Poliomyelitis Eradication

Mr Gordon Larsen  
Short-term Professional, Vaccines

Mrs Elena Nivaro  
Programme Assistant, Integrated Programme on Communicable  
Diseases

Dr Georgey Oblapenko  
Medical Officer, Poliomyelitis Eradication

Dr Colette Roure  
Regional Adviser, Expanded Programme on Immunization

Mrs Yüksel Shaw  
Liaison Assistant, WHO Ankara, Turkey

*Headquarters*

Dr Maureen Birmingham  
Medical Officer, Expanded Programme on Immunization

Dr Artur Galazka  
Expanded Programme on Immunization/Global Programme for  
Vaccines

Mr John Lloyd  
Technical Officer, Expanded Programme on Immunization

Dr Julie Milstien  
Scientist, Vaccine Supply and Quality, Global Programme for  
Vaccines

Dr Jean-Marc Olivé  
Medical Officer, Expanded Programme on Immunization

Dr Nick Ward  
Acting Director, Global Programme for Vaccines/Expanded  
Programme on Immunization

## TARGET 5

### REDUCING COMMUNICABLE DISEASE

*By the year 2000, there should be no indigenous cases of poliomyelitis, diphtheria, neonatal tetanus, measles, mumps and congenital rubella in the Region and there should be a sustained and continuing reduction in the incidence and adverse consequences of other communicable diseases, notably HIV infection.*

---

This report is issued in English, French, German and Russian, and all rights are reserved by the WHO Regional Office for Europe. The document may nevertheless be freely reviewed, abstracted, reproduced or translated into any other language, but not for sale or for use in conjunction with commercial purposes. The WHO name and emblem are protected and may not be used on any reproduction or translation of this document without permission. Any views expressed by named authors are solely the responsibility of those authors. The Regional Office would appreciate receiving three copies of any translation.

DIPHThERIA CONTROL IN  
TURKEY AND NEWLY  
INDEPENDENT STATES OF  
CENTRAL ASIA AND THE  
CAUCASUS



WORLD HEALTH ORGANIZATION  
Regional Office for Europe  
COPENHAGEN

## TARGET 5

### REDUCING COMMUNICABLE DISEASE

*By the year 2000, there should be no indigenous cases of poliomyelitis, diphtheria, neonatal tetanus, measles, mumps and congenital rubella in the Region and there should be a sustained and continuing reduction in the incidence and adverse consequences of other communicable diseases, notably HIV infection.*

---

This report is issued in English, French, German and Russian, and all rights are reserved by the WHO Regional Office for Europe. The document may nevertheless be freely reviewed, abstracted, reproduced or translated into any other language, but not for sale or for use in conjunction with commercial purposes. The WHO name and emblem are protected and may not be used on any reproduction or translation of this document without permission. Any views expressed by named authors are solely the responsibility of those authors. The Regional Office would appreciate receiving three copies of any translation.

DIPHThERIA CONTROL IN  
TURKEY AND NEWLY  
INDEPENDENT STATES OF  
CENTRAL ASIA AND THE  
CAUCASUS



WORLD HEALTH ORGANIZATION  
Regional Office for Europe  
COPENHAGEN