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**DIPHTHERIA CONTROL
IN MOLDOVA**

Follow-up Visit
30 September-18 October 1996
Additional Follow-up via Internet

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ACRONYMS/DEFINITIONS

Amb	Ambulatorio: Ambulatory Care Clinic (same as SVA)
BASICS	Basic Support for Institutionalizing Child Survival
BCG	Bacillus Calmette-Guerin (tuberculosis vaccine)
Cohort	Group of children with the same particular attribute
CIE	Centrul de Igiena si Epidemiologie (same as SES)
CRIE	Centrul Republican de Igiena si Epidemiologie (old name for RSES)
CRS	Congenital Rubella Syndrome
CSAHE	Center for Scientific and Applied Hygiene and Epidemiology (successor to RSES - the national public health organization)
Di	Diphtheria vaccine; not available from UNICEF
DPT or DTP	Diphtheria, pertussis and tetanus vaccine
DT	Diphtheria and tetanus vaccine
DT-M	Russian description of Td: modified diphtheria (reduced component) and tetanus vaccine
EPI	Expanded Program on Immunization
EURO	WHO's Regional Office for Europe (in Copenhagen)
FAP	Feldsher and Patronage Nurse Station (same as PM)
FIC	Fully Immunized Child
Freeze Watch	A heat sensitive indicator which indicates temperatures below -4°C
Hb	Hepatitis B vaccine
MMR	Mumps, measles and rubella vaccine
NBC	Newborn children
OPV	Oral polio vaccine
Peri-urban	PMs or FAPs in the area around the raion which are supplied directly by the raion SES, not by an SC or an Amb (cluster headquarters)
Policlinic	The largest out-patient facility
Primary doses	All immunizations given before the first dose for revaccination (booster dose)
Poli	Abbreviation for policlinic
PIS	WHO/UNICEF Product Information Sheets
PM	Punct Medical (same as FAP): the smallest health facility staffed by a male paramedic and an obstetric nurse responsible for domiciliary services; some only have a feldsher.
Raion	An administrative sub-division, equivalent to a district
RSES	Republican Sanitary and Epidemiological Station (old name for CSAHE)
SC	Spital de Circumscripție: rural hospital at sub-district level (same as SUB)
SES	Sanitary and Epidemiological Station (same as CIE; the public health headquarters)
SUB	Rural hospital at sub district level (same as SC)
SVA	Ambulatory care clinic (same as amb)
TB	Tuberculosis
Td	Diphtheria (reduced component) and tetanus vaccine

TT	Tetanus toxoid
TTM	Time Temperature Monitor (electronic temperature logger)
UNICEF	United Nations Children's Fund
USAID	United States Agency for International Development

EXECUTIVE SUMMARY

Diphtheria was controlled for almost 30 years following the implementation of childhood immunization in the Soviet Union in the late 1950s. In 1990 a wave of epidemic diphtheria swept the Newly Independent States of the Former Soviet Union. The World Health Organization declared an international public health emergency.

Moldova, a newly independent republic formed at the collapse of the Soviet Union, is surrounded on three sides by Ukraine, a country which experienced a 77 percent increase in diphtheria cases in the 1995-1996 transmission season². During the peak 1995-1996 season, 11 of the 15 NIS experienced increases in diphtheria cases, while Moldova experienced a 12 fold decline.

Immunization services were routinely delivered through an extensive national health service implementing an overly complicated immunization schedule. Immunization coverage was apparently maintained at relatively high levels until just before independence then fell when sources of vaccine and funding were disrupted. With donor assistance immunization coverage in children was restored from 1992-1993. While population levels of diphtheria protection were broadly similar to those in other developed countries, it was not sufficient to prevent a widespread epidemic in the face of the reintroduction of an infectious agent.

Diphtheria toxoid vaccines prevent disease to a large extent. Recently a vaccine efficacy of around 40 percent to 90 percent has been suggested. The vaccines do not always prevent infection, particularly with a large inoculum. Recent work in Ukraine has indicated that population immunization levels of around 95 percent are required to achieve herd immunity. The initial diphtheria control strategy in Moldova focused on immunization and surveillance. In 1993-1994 immunization efforts were limited by the availability of vaccines.

In June 1995 a national diphtheria control program plan was established with the issuance of Order Number 3 On Additional Measures for Eradication of Diphtheria Epidemics in the Republic of Moldova. Program components included:

- An immunization campaign, a revised immunization schedule and targets, contact identification and treatment, and the reduction of contraindications for diphtheria immunization.
- A National Diphtheria Prevention and Control Coordinating Committee.
- District-level Diphtheria Prevention and Control Coordinating Committees.
- A budget for diphtheria control campaign supplies, equipment, and social mobilization.

² By the end of 1996, Ukraine experienced a decrease of reported cases of 40 percent in 1996 compared to 1995.



- Specialists assigned to provide consultative support on social mobilization methodology and immunization at national, district, and municipal levels.
- Mandated weekly statistical reporting on the progress of immunization and the availability of vaccines.

The National Diphtheria Prevention and Control Committee and the National Centre for Epidemiology and Applied Hygiene implemented an effective range of activities including the following:

- Operational vaccine, syringe, antibiotic, and antitoxin supply logistics;
- District-level planning of campaigns;
- Social mobilization: radio and television, and door-to-door;
- Mass immunization (0 to 60 years of age);
- Surveillance (case and contact identification and treatment);
- Coordination of clinicians and epidemiologists;
- Coordination of government ministries and departments; and
- Coordination of donors.

The cumulative immunization coverage since the initiation of immunization activity to control diphtheria had reached more than 81 percent for a single dose across the entire population of Moldova by June 1996. First dose coverage in many population groups is less than that required for herd immunity (93 percent to 95 percent). Second dose coverage in the target population of adults 30 to 50 years of age remained around 73 percent as of June 1996.

A review of actions taken in all notified clusters of cases and contacts during the first six months of 1996 is summarized in the table on page 10. There have been more than adequate supplies of vaccines and antibiotics throughout this period. It is noteworthy that 82 percent of the identified contacts received antibiotics and 41 percent received immunization. Compliance with the policy on the treatment of contacts reached 56 percent.

Unfortunately in 37 percent of the outbreak clusters no antibiotics were provided to identified primary contacts. In three outbreaks (seven percent) no contacts appear to have been identified or treated while in a further seven (16 percent) outbreak clusters five or fewer contacts were identified, suggesting that the investigation of outbreak was not thorough. Recording and reporting standards appear to be variable.

The use of antibiotics in cases and contacts appears to be having some effect on the ratio of carriers to cases. If the efficiency of outbreak investigation including contact identification and the completeness of the treatment of primary contacts were improved, a further reduction in the numbers of carriers would be expected.

Successes

- Immunization coverage for 2 to 60 year olds reached 82 percent by the end of June 1996.
- Immunization coverage for children under 2 years of age reached 96 percent by the end of June 1996.
- All cases were treated with diphtheria antitoxin and antibiotics.
- Most primary contacts of cases received a single injection of benzathine penicillin.
- Only one diphtheria death in 1996 versus 23 in 1995.
- A rapid and sustained decline in diphtheria cases and carriers since the immunization campaign and appropriate treatment of cases and contacts beginning in November 1995.

Remaining Problems and Recommendations

It is recommended that these critical remaining problems be addressed as a matter of urgency:

- Immunization coverage in children aged 3 to 6 years is below 93 percent.
- Immunization coverage in adults aged 30 to 45 years is inadequate.
- Low immunization coverage pockets still exist.
- Case and contact investigations are not always thorough.
- Not all identified primary contacts of cases are treated with antibiotics and diphtheria vaccine according to the treatment schedule.
- Other preventive measures such as personal hygiene and disinfection of common objects (e.g., door handles) in public places have not been explored.
- Neighboring countries continue to have high numbers of diphtheria cases.
- Migration into Moldova from countries with high diphtheria rates continues without insuring immunization of the immigrants.
- Regional measures for diphtheria control remain unexplored.

INTRODUCTION

Diphtheria was controlled for almost 30 years following the implementation of childhood immunization in the Soviet Union in the late 1950s. In 1990 a wave of epidemic diphtheria swept the Newly Independent States of the Former Soviet Union. This epidemic spread from the Russian Federation to Ukraine in 1991 and to 14 of 15 of the NIS by 1993 -1994 with a 10 fold rise to nearly 50,000 reported cases. The World Health Organization declared an international public health emergency. Approximately 150,000 cases have occurred in the NIS since the start of the epidemic.

Moldova, a newly independent republic formed at the collapse of the Soviet Union, is surrounded on three sides by Ukraine, a country which experienced a 77 percent increase in diphtheria cases in the 1995-1996 transmission season¹. During the peak 1995-1996 season, 11 of the 15 NIS experienced increases in diphtheria cases, while Moldova experienced a 12 fold decline.

Immunization services were routinely delivered through an extensive national health service implementing an overly complicated immunization schedule. Immunization coverage was apparently maintained at relatively high levels until just before independence² then fell when sources of vaccine and funding were disrupted. With donor assistance immunization coverage in children was restored in 1992-1993. While population levels of diphtheria protection were broadly similar to those in other developed countries it was not sufficient to prevent a widespread epidemic in the face of the reintroduction of an infectious agent.

IMMUNIZATION

Diphtheria was a serious childhood disease in the pre-vaccine era throughout the world. Case fatality rates have been around 5 percent to 10 percent for the last 50 years. Immunization has brought epidemic diphtheria under control in the developed countries and in some less developed countries.

“The WHO recommends that all countries should give priority to ensuring that at least 90 percent of children under one are immunized with three doses of DPT vaccine. The same high immunization coverage should be attained for booster doses of diphtheria toxoid in countries where these are included in immunization schedules. In developing countries where the reservoir of diphtheria organisms is large, the primary series of immunization may be enough to secure long lasting immunity.”³

¹ By the end of 1996, Ukraine experienced a decrease of reported cases of 40 percent in 1996 compared to 1995.

² 27 August 1991.

³ WHO/UNICEF. State of the World's Vaccines and Immunization, p. 54, Geneva, 1996.

“However, in developing countries with a sustained high levels of immunization coverage, a series of booster doses may also be needed - possibly at the end of the second year of age (DPT) and/or another when the when the child begins school (a DT vaccine), or a dose at school leaving (an adult Td combination with a reduced amount of Diphtheria toxoid).”⁴

The USSR and the Newly Independent States

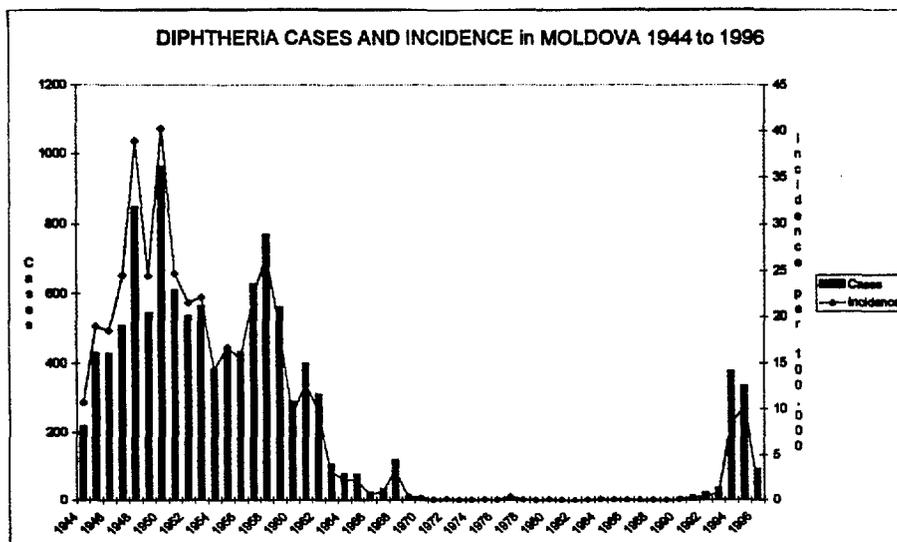
Wide scale diphtheria immunization was introduced throughout the Soviet Union in the late 1950s through the early 1960s and led to the almost total elimination of diphtheria as a public health problem.

The USSR immunization schedule included the primary series and numerous booster doses of all childhood vaccines including diphtheria toxoid . This schedule proved not to be financially unsustainable following the dissolution of the Soviet Union.

THE DIPHTHERIA EPIDEMIC

Historical Cases and Incidence

As part of Soviet Union, the introduction of wide scale diphtheria immunization in the late 1950s through the early 1960s led to the almost total elimination of diphtheria as a public health problem in Moldova by the 1970s.



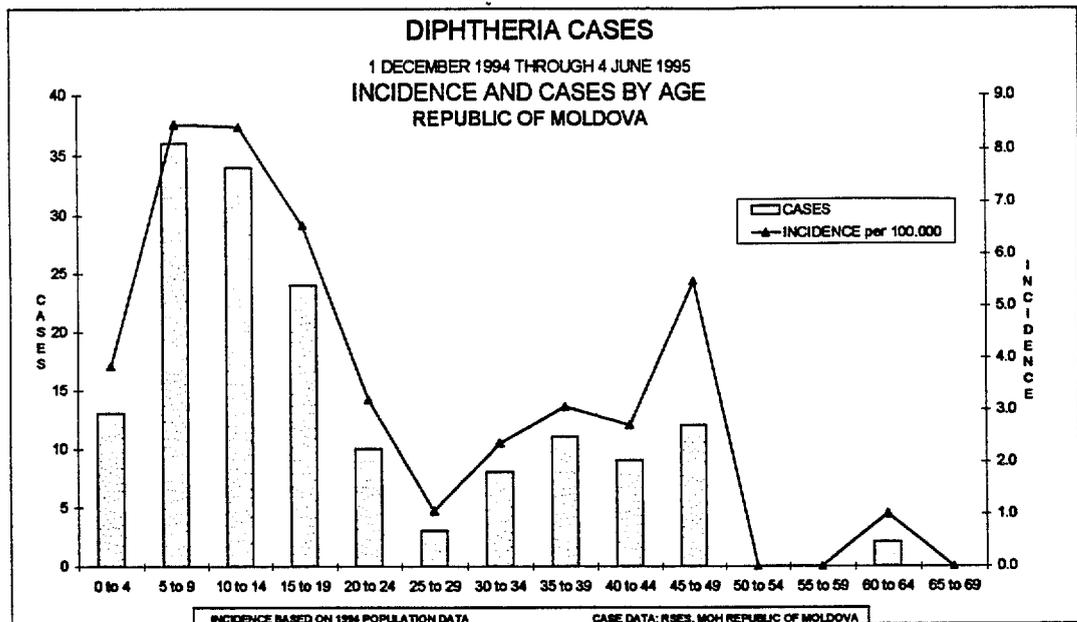
The disruption of routine childhood immunization services in 1990 through 1994 and the increased movement of people throughout the former Soviet Union are widely attributed as the

⁴ Ibid. WHO/UNICEF. State of the World's Vaccines and Immunization, p. 54, Geneva, 1996.

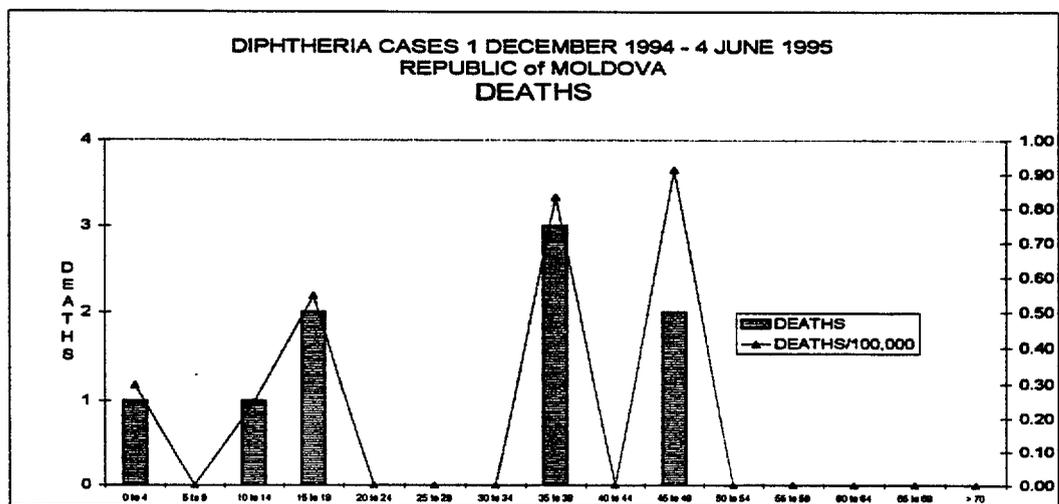
main causes of the rapid spread of epidemic diphtheria. In the period from 1991 through 1995, diphtheria cases returned to a level not seen since 1962, though both prevalence and incidence rates remained below post World War II levels.

1994 and 1995 Cases and Incidence

In 1994 and 1995 the highest proportion of cases and the age-specific incidence of cases were in infants and children up to age 19.



Deaths occurred in infants under 4 years of age, teenagers between 10 and 19 years of age, and in adults 35 to 49 years of age.



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THE DIPHTHERIA CONTROL STRATEGY

The WHO/UNICEF joint strategy for diphtheria control in the Newly Independent States⁵ has been elaborated and detailed in a series of WHO/EURO meetings, consultations, and documents from 1993 through 1995.

*THE WHO/UNICEF STRATEGY FOR DIPHTHERIA CONTROL IN THE NEWLY INDEPENDENT STATES:*⁶

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

- *Primary prevention* by ensuring high population immunity through immunization as the most effective measure to control epidemic diphtheria.
- *Secondary prevention* of contact cases of diphtheria by the rapid investigation of close contacts and their standardized treatment.
- *Tertiary prevention* of complications and death by early diagnosis and proper management of diphtheria cases.

Herd Immunity

Diphtheria toxoid vaccines prevent disease to a large extent. Recently a vaccine efficacy of around 40 percent to 90 percent has been suggested. The vaccines do not always prevent infection, particularly with a large inoculum.⁷

Recent work in Ukraine has indicated that population immunization levels of around 95 percent are required to achieve herd immunity.

Diphtheria Herd Immunity

	Minimal vaccination coverage needed from modeling for herd immunity
One dose Td	93.3%
Two Td doses	90.3%

From: Roland Sutter, Serological Studies,
WHO/CDC Working Paper, 31 May 1996, WHO/EURO

⁵Dittmann, S. "Diphtheria in the NIS - Situation, Projection and Strategy." WHO/EURO, April 1995.

⁶ Ibid. Dittman, S.

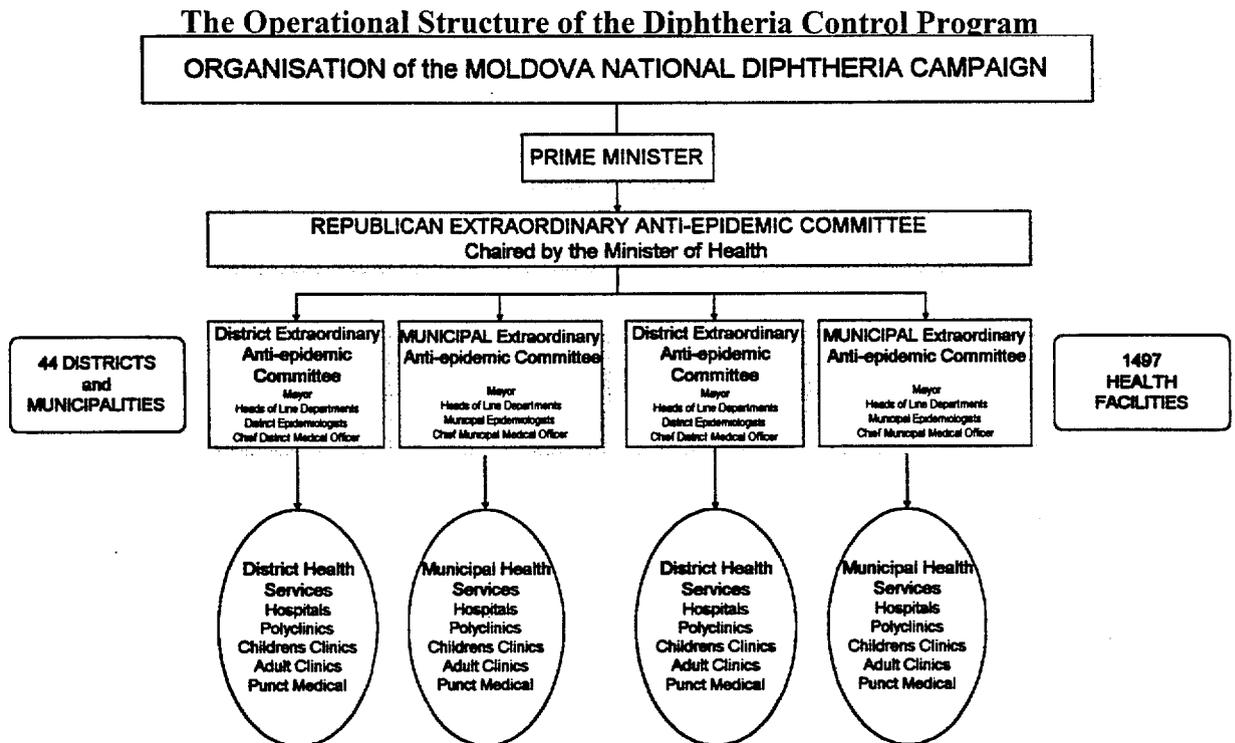
⁷ Robbins, J.B., Schneerson, R., Szu, S.C. "Serum IgG Antibody by Sufficient to Confer Protection Against Infection by Inactivation the Inoculum." *Journal of Infectious Diseases*, 1995; vol. 171, pp.378-98.

THE CONTROL STRATEGY IN MOLDOVA

The initial diphtheria control strategy in Moldova focused on immunization and surveillance. In 1993–1994 immunization efforts were limited by the availability of vaccines.

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The National Diphtheria Prevention and Control Committee and the National Centre for Epidemiology and Applied Hygiene implemented an effective range of activities:

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- Mass immunization (0 to 60 years of age);
- Surveillance (case and contact identification and treatment);
- Coordination of clinicians and epidemiologists;
- Coordination of government ministries and departments; and
- Coordination of donors.

Primary Prevention: Immunization

The national diphtheria control plan stated that at least 95 percent of children under 3 years of age would complete the primary immunization series with diphtheria/pertussis/tetanus (DPT) vaccine while most of the population up to age 60 would receive one booster dose of the adult diphtheria-tetanus (Td) vaccine. Adults from 30 to 50 years of age would receive two or three booster doses depending on their immunization history.

High risk groups such as health care workers, teachers in primary and secondary schools, university staff, retail trade, catering and transport staff, frequent international travellers, and the clergy were supposed to have priority for booster vaccine doses.

In February 1995 a limited vaccination campaign was attempted in the capital city. Those who received the vaccine had to get through a screening process which enforced numerous contraindications. The fact that very little vaccine was actually available caused the national and municipal health authorities to lose credibility. It is estimated that less than 10 percent of the target population received vaccine.

In June 1995, a second two-week municipal immunization campaign was attempted, this time with adequate supplies of vaccines and syringes procured by the government. Initially health facility-based and with rigid screening for contraindications, the campaign shifted to door-to-door operations in its second week as it was apparent that uptake was severely limited. In the door-to-door phase all contraindications were abandoned except in health facilities. The estimated coverage achieved was 58 percent. As the graph⁸ of cases and carriers indicates, this campaign led to a reduction of diphtheria cases and carriers for a short time.

In November and December 1995, a full scale national immunization campaign was implemented. With diphtheria cases rising with the onset of colder weather in October 1995, it is

⁸See the Graph "Diphtheria Cases and Carriers" in section VI, "Successes".

clear⁹ that the national immunization campaign had reduced the number of cases and carriers over what might have been expected by January 1996.

Diphtheria Campaign Immunization Schedule for 1995 and 1996

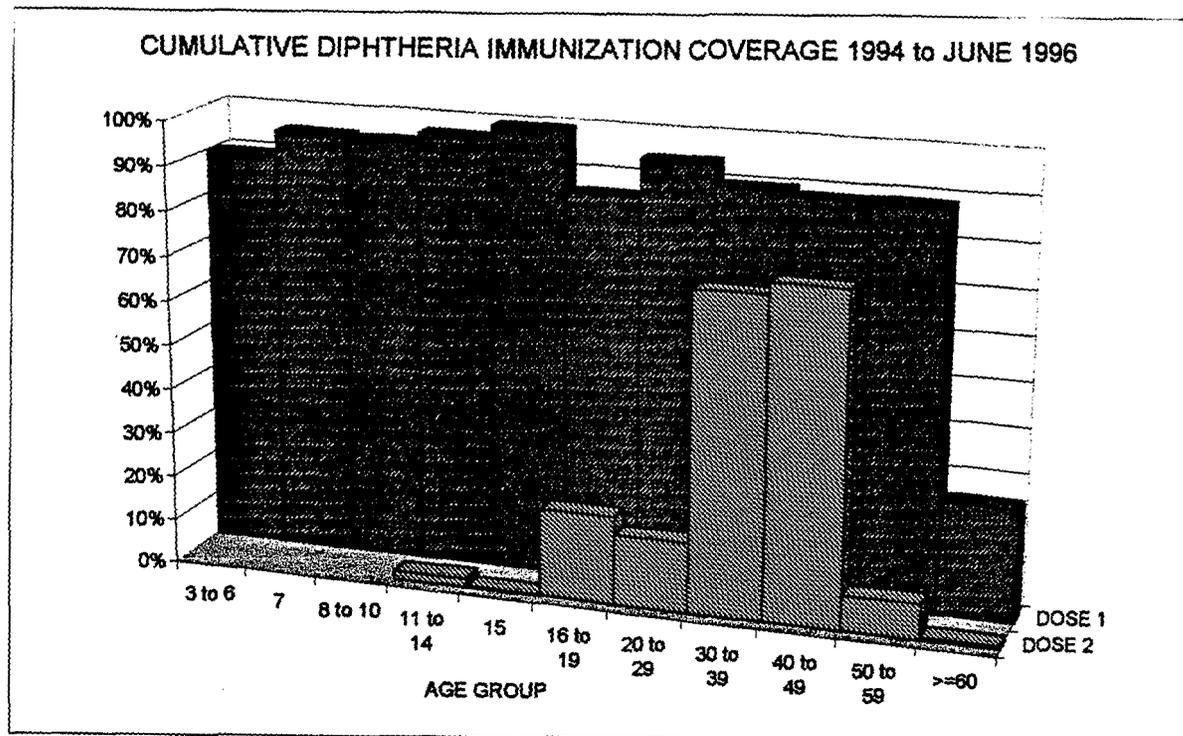
TARGET GROUP	VACCINE						notes
	Primary Series			Booster			
	1	2	3	1	2	3	
Children < 3 years	DPT	DPT	DPT				>95% coverage
Children < 3 years contraindicated	DPT	DT	DT				
Children < 2 years who received Td				DT			12 months after previous dose
Children 3 to 7 years inclusive				DT			6 months after previous dose
Children 8 to 14 years				5LF or Td			6 months after previous dose
Children 11 to 14 who previously received Td or 5LF				Td or 5LF			2 months after previous dose
Children at 15				Td			routine immunization
Adults 30 to 50				Td	Td	Td	2nd dose 6 weeks after 1st, 3rd 6 months after 2nd only 2nd & 3rd given if 1st received in 1994-95
Adolescents and Adults 16 to 29				Td			except those vaccinated in 1994-95
Adults 51 to 60				Td			except those vaccinated in 1994-95
Adults > 60 years				Td			on request or if epidemiologically indicated

Immunization

National Coverage

The cumulative immunization coverage since the initiation of immunization activity to control diphtheria had reached more than 81 percent for a single dose across the entire population of Moldova by June 1996. First dose coverage in many population groups is less than that required for herd immunity (93 percent to 95 percent).

⁹Ibid.



Second dose coverage in the target population of adults 30 to 50 years of age remained around 73 percent as of June 1996.

Immunization Coverage in Moldova Children under 3 Years of Age In 1995

BCG 1 Year	DPT 1 Year	DPT3 + DT 1 Year	DPT4 3 Years	DPT4 + DT 3 Years	OPV3 1 Year	MEASLES 2 Years	MUMPS 2 Years
97.3%	95.5%	96.7%	83.0%	93.7%	95.4%	98.6	23.0%

Source: RSES GOM May 1996

Geographic

Geographical pockets of low coverage continued to exist. One of the most important low coverage areas was in the Moldova capital of Chisinau, where reported coverage in children 3 to 6 years of age was 68 percent and 78 percent in seven year olds. Coverage in children appeared to be under-reported due to errors in consolidating individual provider reports.

In adults coverage ranged from 77 percent to 87 percent, with the exception of adults from 20 to 29 years which was high at 96 percent.

Pre-immunization screening continued for facility-based immunization but not in door-to-door immunization activity. In addition to the denial of immunization as a result of perceived contraindications, a number of conditions (e.g., trauma) are given as a reason for delaying immunization for six months to one year.

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Out of an estimated population of 747,000 in the capital, the medical authorities estimate that 71,000 remained un-immunized.

SUGGESTED REASONS for an UN-IMMUNIZED 71,000 estimated in CHISINAU				
Contraindications	Refusers	Out of the country	Transients resident in hostels	No reason
8,256	9,668	16,000 to 20,000	20,000	13,000
12%	14%	28%	28%	18%

Due to a misunderstanding the Chisinau health authorities failed to implement the spring 1996 national diphtheria immunization campaign. This was being addressed in a series of national disease control meetings.

Other geographical pockets of age-specific low coverage were identified in a review of both the national coverage figures and a review of the outbreak clusters. The main problem identified by the immunization service providers in all regions visited has been the large numbers of adults traveling to other countries for work or trade. This was being discussed in a series of national disease control meetings. Regional or international measures may be required to raise coverage.

Secondary Prevention: Identification and Treatment

After immunization, secondary prevention offers another effective means of outbreak control. The negative aspect of secondary prevention is that an outbreak must occur prior to the initiation of control measures.

Surveillance

Surveillance continues to be maintained through the urgent notification of cases by clinicians to the raion-level epidemiologist. The raion epidemiologist then calls on the procedures negotiated and agreed at the national level in 1995. These procedures call for a team composed of the raion epidemiologist, the district doctor and medical assistants to attend the case, take cultures, test blood, identify contacts, and provide immunization and antibiotics to all primary contacts.

Some pressure has been exerted by the national authorities to screen out suspected diphtheria case notifications prior to confirmation as diphtheria. Now that case numbers are small, this may serve to reduce the sensitivity and timeliness of surveillance notifications, though it will improve its specificity.

Cases and Contacts

A review of actions taken in all notified clusters of cases and contacts during the first six months of 1996 is summarized in the table below. There have been more than adequate supplies of vaccines and antibiotics throughout this period.

16

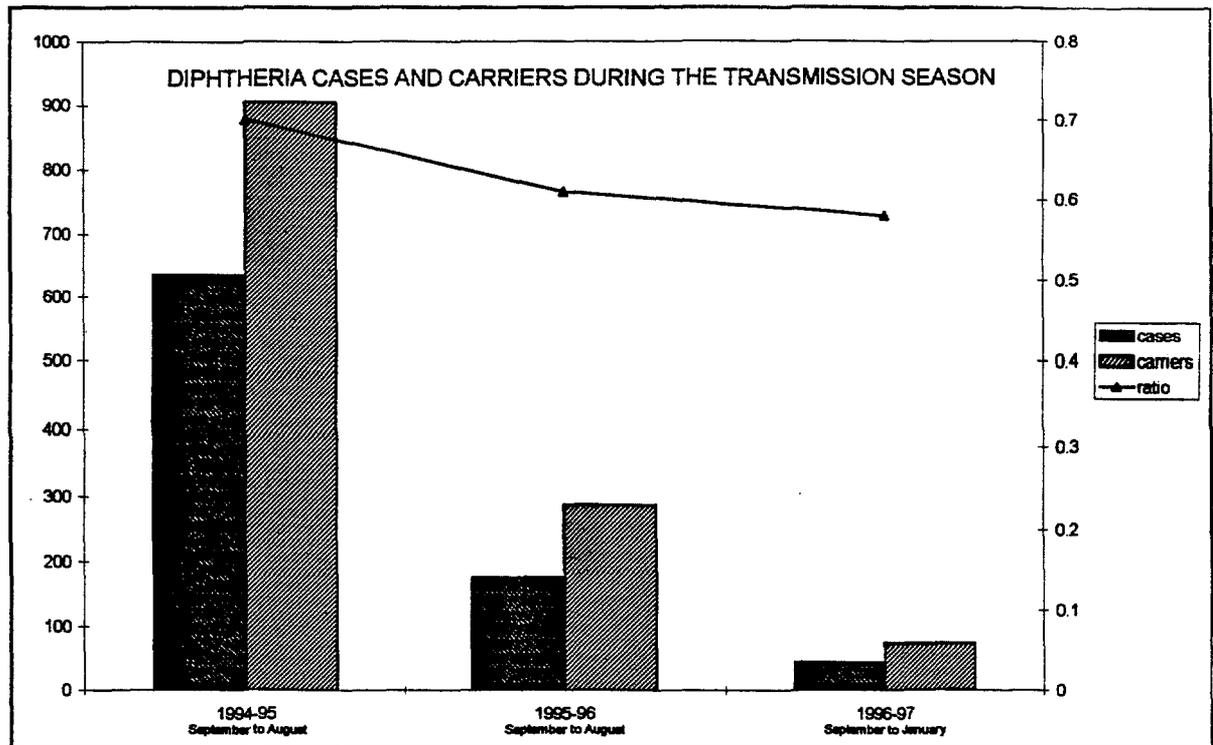
It is noteworthy that 82 percent of the identified contacts received antibiotics and 41 percent received immunization. Compliance with the policy on the treatment of contacts reached 56 percent.

January through July 1996 Diphtheria Outbreak Summary								
Diphtheria Outbreak Clusters	Duration of the Cluster	Total Cases and Carriers	Total Number of Contacts	Not Immunized or No Data	Bacterial Culture	Immunized	Antibiotic Treatment	Compliance with Antibiotic Policy in Outbreaks
43	Mean 20 days	169	3147	755 or 23%	2065 or 62% of contacts & cases Cultured	1282	2589	Yes = 24 56% of Outbreaks
Fully Investigated 74%	Median 15 days		73 average Contacts per cluster		Bacterial Positive 162	41% of Contacts Immunized	82% of Contacts Treated	No = 16 37% of Outbreaks no Antibiotics Used
Not fully Investigated 26%	Range 1 to 73 days		18 average contacts per case or carrier		or 8% of cultures			Partial = 3 7% of Outbreaks

Identification and Treatment

Unfortunately in 37 percent of the outbreak clusters no antibiotics were provided to identified primary contacts. In three outbreaks (seven percent) no contacts appear to have been identified or treated while in a further seven (16 percent) outbreak clusters five or fewer contacts were identified. This suggests that the investigation of outbreaks was not thorough. Recording and reporting standards appear to be variable.

The use of antibiotics in cases and contacts appears to be having some effect on the ratio of carriers to cases. If the efficiency of outbreak investigation, including contact identification and the completeness of the treatment of primary contacts, were improved a further reduction in the numbers of carriers would be expected.



SUCSESSES

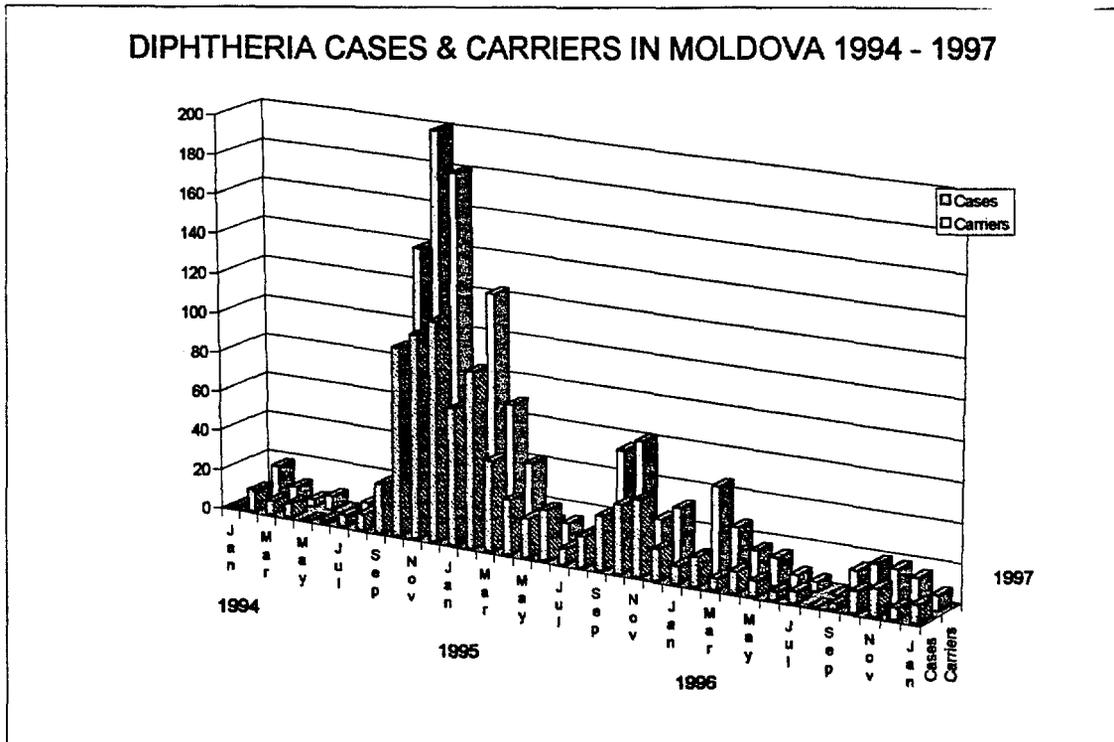
The following are successes of the program:

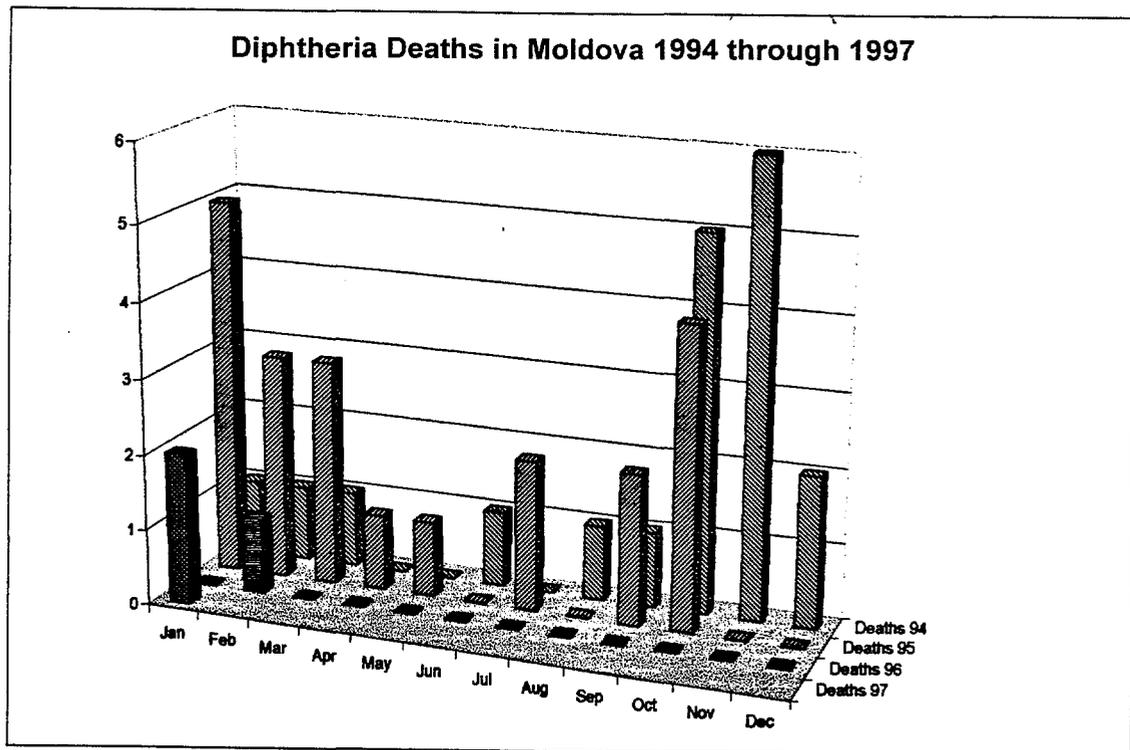
- Immunization coverage for 2 to 60 year olds reached 82 percent by the end of June 1996.
- Immunization coverage for children under 2 years of age reached 96 percent by the end of June 1996.
- All cases were treated with diphtheria antitoxin and antibiotics.
- Most primary contacts of cases received a single injection of benzathine penicillin.
- Only one diphtheria death in 1996 versus 23 in 1995.
- A rapid and sustained decline in diphtheria cases and carriers since the immunization campaign and appropriate treatment of cases and contacts beginning in November 1995.

In 1995 these estimates of diphtheria cases and primary contacts were made on the assumption that no control activities would be implemented. This was a worst case projection.

1994 Total Diphtheria cases	1994 Estimated Primary Contacts	1995 Projected Number of Cases	1995 Projected Primary Contacts	1996 Projected Number of Cases	1996 Projected Primary Contacts
376	18,000	3,158	157,920	15,792	789,600
MOH	MOH	WHO and BASICS	BASICS	BASICS	BASICS

The outcome as of January 1997 is illustrated in the graph below. A major decline in diphtheria cases and carriers has been achieved; however, diphtheria has not been completely controlled or eliminated.





OPERATIONAL CONSTRAINTS

Phase I in 1994 and Early 1995: Low Immunization Coverage < 40 Percent

- No vaccine.
- No syringes.
- No antibiotics.
- Public apathy.
- No experience in social mobilization.
- No cooperation between clinicians and epidemiologists.
- Low salaries and high cost of living.
- Weak MIS.

Phase II in Mid-1995 to Mid-1996: Medium Immunization Coverage < 60 Percent

- Some clinicians continuing to apply incorrect contraindications.
- Inmates of residential and closed institutions contraindicated.
- Nongovernmental organizations not active in social mobilization.
- Migration and emigration of large part of adult population.

- Children 3 to 6 years of age in the capital hard to immunize.
- Outbreak investigations not complete in 26 percent of outbreaks.
- Primary contacts treated with antibiotics in 56 percent of outbreaks.
- Forty-one percent of primary contacts of cases immunized.

Phase III from Mid-1996 Onward: Higher Coverage < 94 Percent

- Some clinicians continuing to apply incorrect contraindications.
- Low salaries and high cost of living.
- Weak MIS.
- Seventy-six percent rise in diphtheria cases in Ukraine.
- Migration primarily for work and trade by population between 30 and 60 years of age.
- Open international borders.
- No border immunization controls.
- Delicate regional international solution?

D. Remaining Problems and Recommendations

It is recommended that these critical remaining problems be addressed as a matter of urgency:

- Immunization coverage in children aged 3 to 6 years is below 93 percent.
- Immunization coverage in adults aged 30 to 45 years is inadequate.
- Low immunization coverage pockets still exist.
- Case and contact investigations are not always thorough.
- Not all identified primary contacts of cases are treated with antibiotics and diphtheria vaccine according to the treatment schedule.
- Other preventive measures such as personal hygiene and disinfection of common objects (e.g., door handles) in public places have not been explored.
- Neighboring countries continue to have high numbers of diphtheria cases.

- Migration into Moldova from countries with high diphtheria rates continues without insuring immunization of the immigrants.
- Regional measures for diphtheria control remain unexplored.

APPENDIXES

APPENDIX A

Draft Cable for USAID

PROPOSED CABLE FOR USAID TO BE SENT

TO: ACTION OFFICE NIS 03

CC:HEALT 04

PLEASE PASS TO BASICS

BASICS CONSULTANT ALLAN BASS ALONG WITH BASICS CONSULTANT SPANNER BRIEFED USAID/US EMBASSY ON THE FINDINGS AND ACTIVITIES OF THE MISSION TO MOLDOVA FROM 2 OCTOBER THROUGH 18 OCTOBER 1996.

CONSULTANT ACTIVITIES INCLUDED WORKING WITH MOH AND RSES OFFICIALS CONTINUING WORK BEGAN IN JUNE, SEPTEMBER, OCTOBER 1995 AND FEBRUARY - MARCH 1996 PROVIDING TECHNICAL ASSISTANCE TO THE MANAGEMENT AND PROGRESS OF THE NATIONAL DIPHTHERIA IMMUNIZATION CAMPAIGN AND DIPHTHERIA CONTROL PROGRAM. REVIEWED AND IDENTIFIED OPERATIONAL CONSTRAINTS AND ASSISTED IN DEVELOPING SOLUTIONS. IN ADDITION REVIEWED PROGRESS OF THE POLIO NATIONAL IMMUNIZATION DAYS ACTIVITY.

BASS'S FINDINGS FOLLOW:

1. THE NATIONAL POLIO IMMUNIZATION DAYS FIRST ROUND COVERAGE BASED ON 27 OF 43 RAIONS REPORTING IS ESTIMATED TO BE AROUND 92%.
2. MASS IMMUNIZATION CONDUCTED IN TWO CAMPAIGN ROUNDS HAS ACHIEVED HIGH LEVELS OF IMMUNIZATION COVERAGE. NATIONAL COVERAGE WITH DIPHTHERIA VACCINE IS ESTIMATED TO BE 85%. COVERAGE OF BETWEEN 90% AND 94% IS REQUIRED TO INTERRUPT TRANSMISSION OF DIPHTHERIA.
3. IN THE CAPITAL, CHISINAU, DIPHTHERIA IMMUNIZATION COVERAGE IS LOWER THAN THE NATIONAL AVERAGE, AND LOWEST IN CHILDREN AGED 3 TO 6 YEARS OF AGE AND ADULTS OVER 30 YEARS OF AGE.
4. IN THE REMAINDER OF THE COUNTRY DIPHTHERIA IMMUNIZATION COVERAGE IS AROUND 90% EXCEPT IN THE POPULATION ABOVE 30 YEARS OF AGE.
5. SUFFICIENT ANTI-DIPHTHERIAL VACCINES AND SYRINGES ARE AVAILABLE IN MOLDOVA FOR CONTROL ACTIVITIES THROUGH 1997. ANTIBIOTIC SUPPLIES FOR THE TREATMENT OF CASES AND CONTACTS ARE EXPECTED TO BE SUFFICIENT FOR THE REMAINDER OF THE 1996 - 1997 TRANSMISSION SEASON.

6. CONTROL OF THE DIPHTHERIA EPIDEMIC: THIS HAS BEEN A VERY SUCCESSFUL BASICS TA INTERVENTION. IN 1995 BETWEEN 2,000 AND 3,158 CASES OF DIPHTHERIA WERE EXPECTED ALONG WITH SOME 160 DEATHS.

7. IN THE EVENT, WITH THE COOPERATION AND SUPPORT OF THE USAID, BASICS, THE GOVERNMENT OF JAPAN, UNICEF, WHO, AND THE EUROPEAN UNION IN SUPPLYING VACCINES, SYRINGES, NEEDLES, ANTIBIOTICS AND DIPHTHERIA ANTITOXIN, THE TOOLS TO CONTROL THE EPIDEMIC WERE AVAILABLE AT THE START OF THE WINTER TRANSMISSION SEASON IN LATE 1995.

8. FROM NOVEMBER 1995 THE NUMBER OF REPORTED DIPHTHERIA CASES RAPIDLY DECLINED AND REMAINS LOW THROUGH OCTOBER 1996. A MASSIVE NUMBER OF DIPHTHERIA CASES AND DEATHS IN MOLDOVA HAVE BEEN PREVENTED AT A TIME WHEN DIPHTHERIA CONTINUES IN THE NEIGHBORING COUNTRIES OF UKRAINE AND RUSSIA. BASICS AND USAID WERE INSTRUMENTAL IN FACILITATING THE POLICY DEVELOPMENTS AND CONTROL STRATEGIES FOR CONTROLLING THE EPIDEMIC. THE WORLD HEALTH ORGANIZATION HAS CITED THE MOLDOVA DIPHTHERIA CAMPAIGN AS AN "EFFECTIVE NATIONAL DIPHTHERIA CONTROL PROGRAM".

9. IN 1995 THERE WERE MORE THAN 300 CASES OF DIPHTHERIA AND OVER 120 DEATHS WHILE IN THE FIRST NINE MONTHS OF 1996 THERE WERE ONLY 65 CASES. THE CONTINUED EPIDEMIC IN UKRAINE AND RUSSIA THREATENS MOLDOVA WITH THE REINTRODUCTION OF DIPHTHERIA.

EMBASSY REQUESTS RETURN VISITS BY BASICS CONSULTANT ALLAN G. BASS TO PROVIDE ADDITIONAL TA IN SUPPORT OF THE NATIONAL DIPHTHERIA CONTROL EFFORT AND THE STRENGTHENING OF THE NATIONAL IMMUNIZATION PROGRAM.

APPENDIX B

**Summary of Case and Contact Clusters
Early January to June 1996**

January to July 1996 Moldova DIPHtheria OUTBREAK Cluster Summary

clusters	cases carriers &	start date	end date	Duration of Cluster Days	Number of Contacts	Not immunized or No Data	Bacterial Culture	Bacterial Positive	Sero Positive	Immunized or DAT	Antibiotic	Compliance with Policy	
1	2	02-Jan-96	10-Jan-96	19		15						0	
1	3	11-Jan-96		18	4			4	2	4		0	
1	1	19-Jan-96	30-Jan-96	11	117			30		117	28	0	
1	9	27-Jan-96	07-Mar-96	40	85	3		52	6	167	34	0	
1	1	02-Feb-96	09-Feb-96	7	7			7		1		0	
1	1	06-Feb-96	09-Feb-96	3	6			6				0	
1	1	10-Feb-96		4	4			4		3		0	
1	1	11-Feb-96	21-Feb-96	10	3							0	
1	5	13-Feb-96	17-Feb-96	4	121			58	4	69		0	
1	1	15-Feb-96	26-Feb-96	11	3			3				0	
1	5	16-Feb-96	04-Mar-96	17	27	22		27	4	4	6	8	0
1	1	22-Feb-96	27-Feb-96	5	14			14	1	11			0
1	3	28-Feb-96	18-Mar-96	19	26			35	3			3	0
1	3	09-Apr-96	30-Apr-96	21	10	2		6	1	2		6	0
1	4	07-May-96	20-May-96	13	42	39		5	39	4	5	39	0
1	1	25-Jun-96	26-Jun-96	1									0
1	3	03-Jan-96	15-Jan-96	12	23	2		6	1	2		23	1
1	3	22-Jan-96	13-Feb-96	22	63	3		63	1	3		63	1
1	27	01-Feb-96	20-Mar-96	48	200	1		170	28	2		195	1
1	1	09-Feb-96	25-Mar-96	45	21			20				21	1
1	3	11-Feb-96	01-Mar-96	19	6	1		6	2	2	5	5	1
1	5	12-Feb-96	07-Mar-96	24	27	6		27	3	3	1	27	1
1	1	12-Feb-96	20-Feb-96	8	7			7	1	2		7	1
1	4	17-Feb-96	26-Mar-96	38	209	20		208		177		204	1
1	1	24-Feb-96	05-Mar-96	10	5			5				5	1
1	14	28-Feb-96	28-Mar-96	29	412	292		324	12	289		412	1
1	1	01-Mar-96	09-Mar-96	8	31			31	2			31	1
1	13	03-Mar-96	27-Apr-96	55	177	44		181	10	73		173	1
1	1	09-Mar-96		7	7			7	2			7	1
1	1	09-Mar-96	18-Mar-96	9	30			30	1			30	1
1	4	20-Mar-96	25-Mar-96	5	58			58	3	36	2	58	1
1	2	11-Apr-96	26-Apr-96	15	2			2	1			2	1
1	5	26-Apr-96	10-Jun-96	45	166	79		12	12	3	108	166	1
1	5	27-Apr-96	01-Jul-96	65	346	80		62	0	10		305	1
1	3	29-Apr-96		73		58		73	2	3	73	73	1
1	1	08-May-96	04-Jun-96	27	4							4	1
1	6	22-May-96		8	80	1			1			80	1
1	1	05-Jun-96	05-Jun-96	1	77	8		0	0	8	8	77	1
1	8	27-Jun-96	30-Jul-96	33	102	24		102	11	11	102	102	1
1	1	10-Jul-96	18-Jul-96	8	6			6		6	1	6	1
1	1	24-Dec-95	28-Dec-95	4	8			7	1		1	6	3
1	11	17-Jan-96	14-Mar-96	57	590	55		386	8		56	376	3
1	1	06-Mar-96	13-Mar-96	7	21			21				13	3
43	169				874	3147	755	2065	162	98	1282	2589	
			mean		20	73		8%			41%	82%	
			median		15		ratio +to all			%of contacts immunized	%of contacts treated		
clusters	cases carriers &	start date	end date	Duration of Cluster Days	Number of Contacts	Not immunized or No Data	Bacterial Culture	Bacterial Positive	Sero Positive	Immunized or DAT	Antibiotic	Compliance with Policy	
												no=0 16	
												yes=1 24	
												partial=3 3	

APPENDIX C

List of Contacts

July 20, 1997

List of main contacts and Senior Officials met during the mission of Allan Bass, Basics Consultant, diphtheria in Moldova

NAME	TITLE	ADDRESS	TOWN RAION	PHONE FAX
Dr. Mikhai Magdei	Vice Minister of Health	Ministry of Health st. NÎNCEȚI 1,	277028, Chisinau, MOLDOVA	72-99-93
Dr. Victor Babalau,	Chief Medic of the Republican Sanitary and Epidemiological Station (RSES)	RSES, st. Gh. Asachi 67 a	277028, Chisinau, MOLDOVA	72-66-47 73-53-86 Fax: 72-97-25
Dr. Vasily Sohotski	Deputy Chief Medic of the Republican Sanitary and Epidemiological Station (RSES)	RSES, st. Gh. Asachi 67 a	277028 Chisinau, MOLDOVA	72-96-91
Dr. Anatoly Melinik	Head of Antiepidemic Department of the RSES	RSES, st. Gh. Asachi 67 a	277028 Chisinau, MOLDOVA	72-81-32
Dr. Oleg Benesh	Epidemiologist, RSES	RSES, st. Gh. Asachi 67 a	277028 Chisinau, MOLDOVA	73-57-68
Dr. Victor Volovei	Chief of Curative and Preventive Medicine Department, Ministry of Health	Ministry of Health st. NÎNCEȚI 1,	277028 Chisinau, MOLDOVA	72-96-96 72-96-53
Dr. Valentina Melnik	Deputy Chief of Curative and Preventive Medicine Department, Ministry of Health	Ministry of Health st. NÎNCEȚI 1,	277028 Chisinau, MOLDOVA	72-97-05
Dr. Vasily Borsch	Chief, Republican Centre for Health (Information) MOH	RSES, st. Gh. Asachi 67 a	277028 Chisinau, MOLDOVA	72-96-33
Dr. Ruria Golovcova	Head of Department of Propaganda & Mass Media, Republican Centre for Health (Information) MOH	RSES, st. Gh. Asachi 67 a	277028 Chisinau, u, MOLDOVA	73-58-11

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NAME	TITLE	ADDRESS	TOWN RAION	PHONE FAX
Mr. Simeon Musteata	Prime Deputy Minister of Education	Piata Marii Adunâ Nationale, 1	277033, Chisinau Moldova	(8-0422) 233474 233519 FAX: (8-0422) 233474
Victor Savin	Director of Health Department of Chisinau City Council	st. Bucuresti, 35	277061 Chisinau, MOLDOVA	23-70-98 23-26-66
Dr. Ion Chebotar	Vice Principal Doctor of the Centre of Hygiene & Epidemiology, Khishinev City Council		277005 Chisinau, MOLDOVA	22-52-54
Dr. Nikolai Andrushenko	Chief Medic of Raion SES		Tiraspol	(233) 3-34-92 (233) 6-15-17
Dr. Peter Tkachenko	Chief Medic of Raion SES		Slobodzia	(257) 2-49-64 (257) 2-49-65
Mr. Stephan Toma	Resident Programme Officer, UNICEF Moldova	Str. 31 August, 131,	Chisinau, 2777012, Moldova	223-052 222-420 Fax: 223-052 EMAIL: unicef@cni.md
Ms. Viorica Ghimpu	Logistics Officer, UNICEF Moldova	National Centre of Hygiene and Epidemiology	Chisinau, 277001 Moldova	729600, 546569 FAX: 546544 unicef@cni.md

NAME	TITLE	ADDRESS	TOWN RAION	PHONE FAX
Dr. Michel Duprat	Primary Health Care Reform Consultant	TACIS Ministry of Health	Chisinau	729855 tacis@euro.apriori.c om
Dr. Pascal Frison	Primary Health Care Reform Consultant	TACIS Ministry of Health	Chisinau	729855 tacis@euro.apriori.c om
Dr. Liviu Vedrasco	Programs Director	SOROS Foundation Moldova 32 Bulgara St. Chisinau 2001 Moldova	Chisinau	260031 264480 Fax: 260507 lvedresco@soros.m d
Dr. S.K.Litvinov	Regional Advisor, Eurohealth Programme	WHO EURO	Copenhagen	Ski@who.dk
Dr. Bloomstein	Chief Medic	Dubasari SES	Dubasari	
Dr. Pavel Moraru	Chief Medic	Polyclinic 14	Chisinau	
Dr. Eugenia Bordea	Head, Therapeutics Division	Polyclinic 14	Chisinau	
Dr. Zinaida Coroi	Acting Head, Air Borne Infections,	Chisinau SES	Chisinau	

APPENDIX D

**Presentation Materials
Australian Public Health Association
Fifth National Immunization Conference
25 – 26 November 1996
Sydney Australia**

Abstract: The Control of the Diphtheria Epidemic in the Republic of Moldova
By Allan G. Bass, Australian Centre for International and Tropical Health and Nutrition,
University of Queensland Medical School, Herston Road, Herston, 4006

Diphtheria was controlled for almost 30 years following the implementation of childhood immunization in the Soviet Union in the late 1950s. In 1990 a wave of epidemic diphtheria swept the Newly Independent States of the Former Soviet Union. This epidemic spread from the Russian Federation to Ukraine in 1991 and to 12 of 13 of the NIS by 1993 -1994 with a 10 fold rise to nearly 50,000 reported cases. The World Health Organization declared an international public health emergency.

Moldova, a newly independent republic formed at the collapse of the Soviet Union, is surrounded on three sides by Ukraine - a country which has experienced a 76% increase in diphtheria cases in the 1995 -1996 transmission season. Increases in diphtheria cases have occurred in 11 of the 15 NIS. Moldova has had a 12 fold decline in cases during the same period.

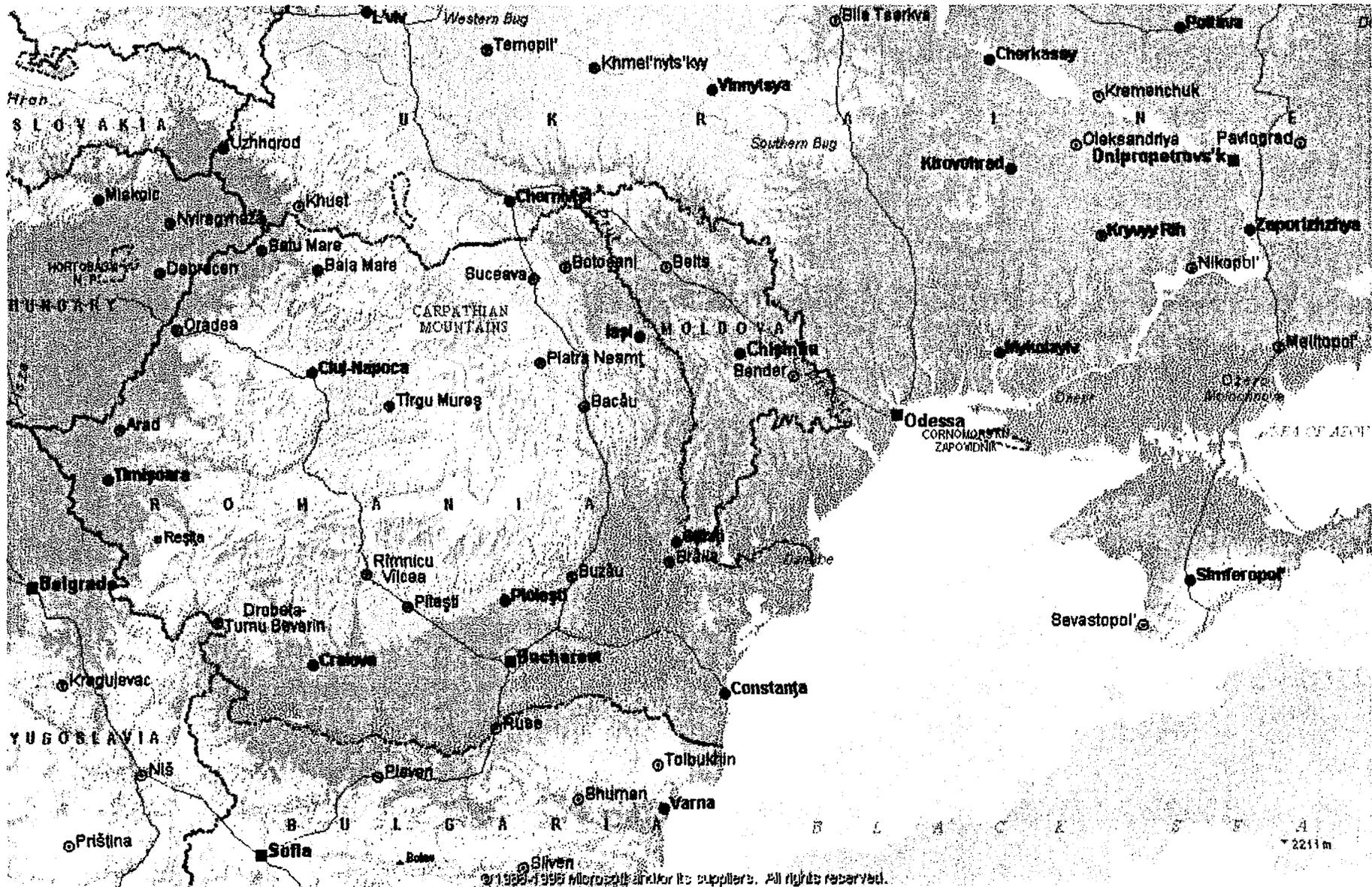
Immunization services were routinely delivered through an extensive national health service implementing an overly complicated immunization schedule. Immunization coverage was maintained at relatively high levels until independence then fell when sources of vaccine and funding were disrupted. With donor assistance immunization coverage in children was restored. While population levels of diphtheria protection were broadly similar to those in other developed countries it was not enough to prevent a widespread epidemic in the face of the reintroduction of an infectious agent.

In this paper, the underlying situation and the implementation of the successful diphtheria epidemic control strategy will be described.

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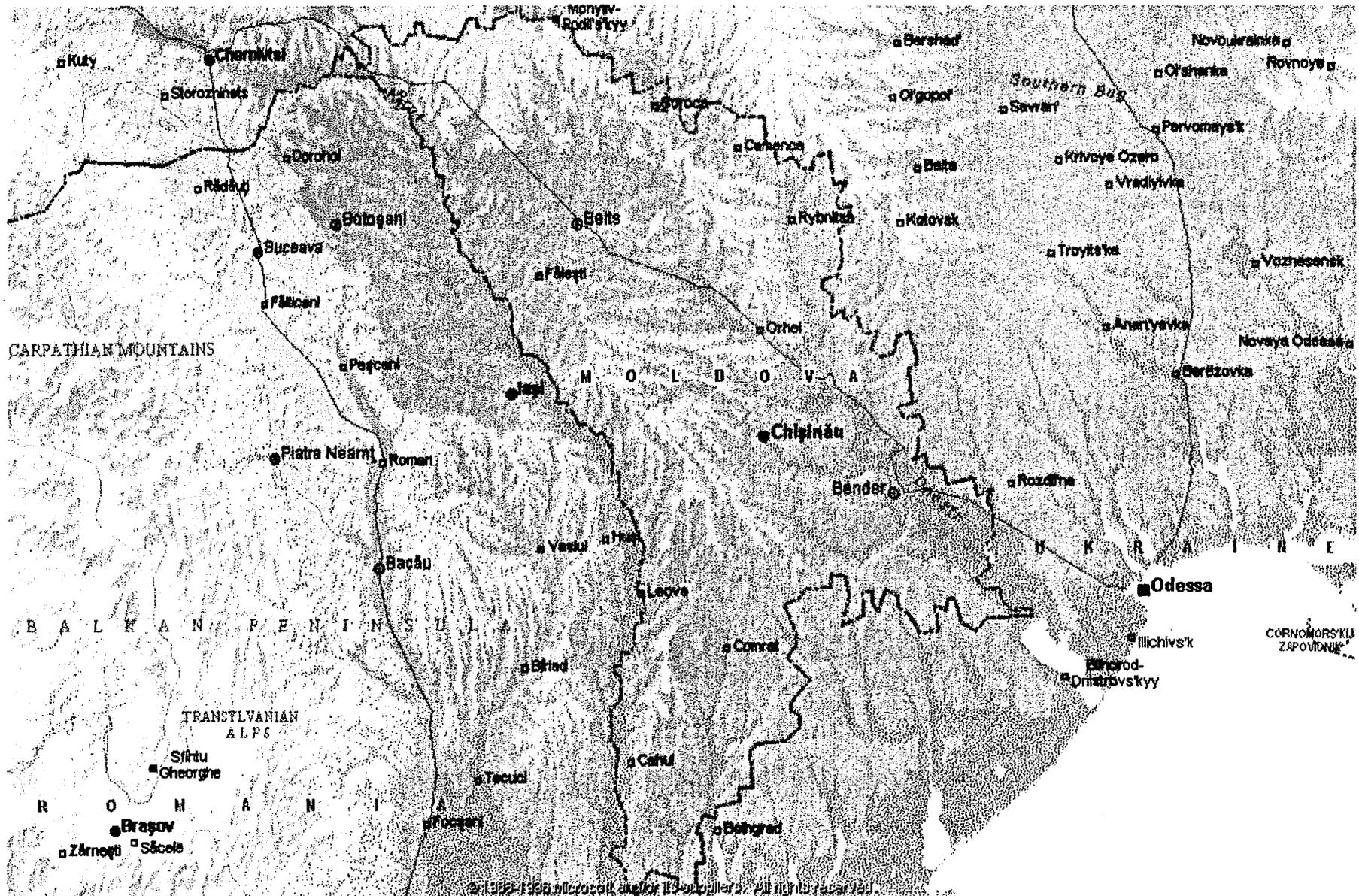


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DIPHTHERIA

- Diphtheria was a serious contagious disease throughout much of the world until the 20th century, when its incidence in Europe and North America was greatly reduced by immunization measures.
- It still occurs mainly in the temperate regions of the world, being more common during the colder months of the year and most often affecting children under the age of 10.
- Outbreaks are occurring in the NIS, Northern Thailand, Laos, and Mongolia at the present time.

DIPHTHERIA

- An acute bacterial disease involving primarily tonsils, pharynx, larynx, nose, occasionally other mucous membranes or skin and sometimes the conjunctivae or genitalia.
- Case-fatality rates of 5%-10% for non-cutaneous diphtheria have changed little in 50 years.
- The infectious agent - *Corynebacterium diphtheriae* of gravis, mitis or intermediate biotype. Toxin production results when the bacteria are infected by corynebacteriophage containing the diphtheria toxin gene *tox*.

DIPHTHERIA

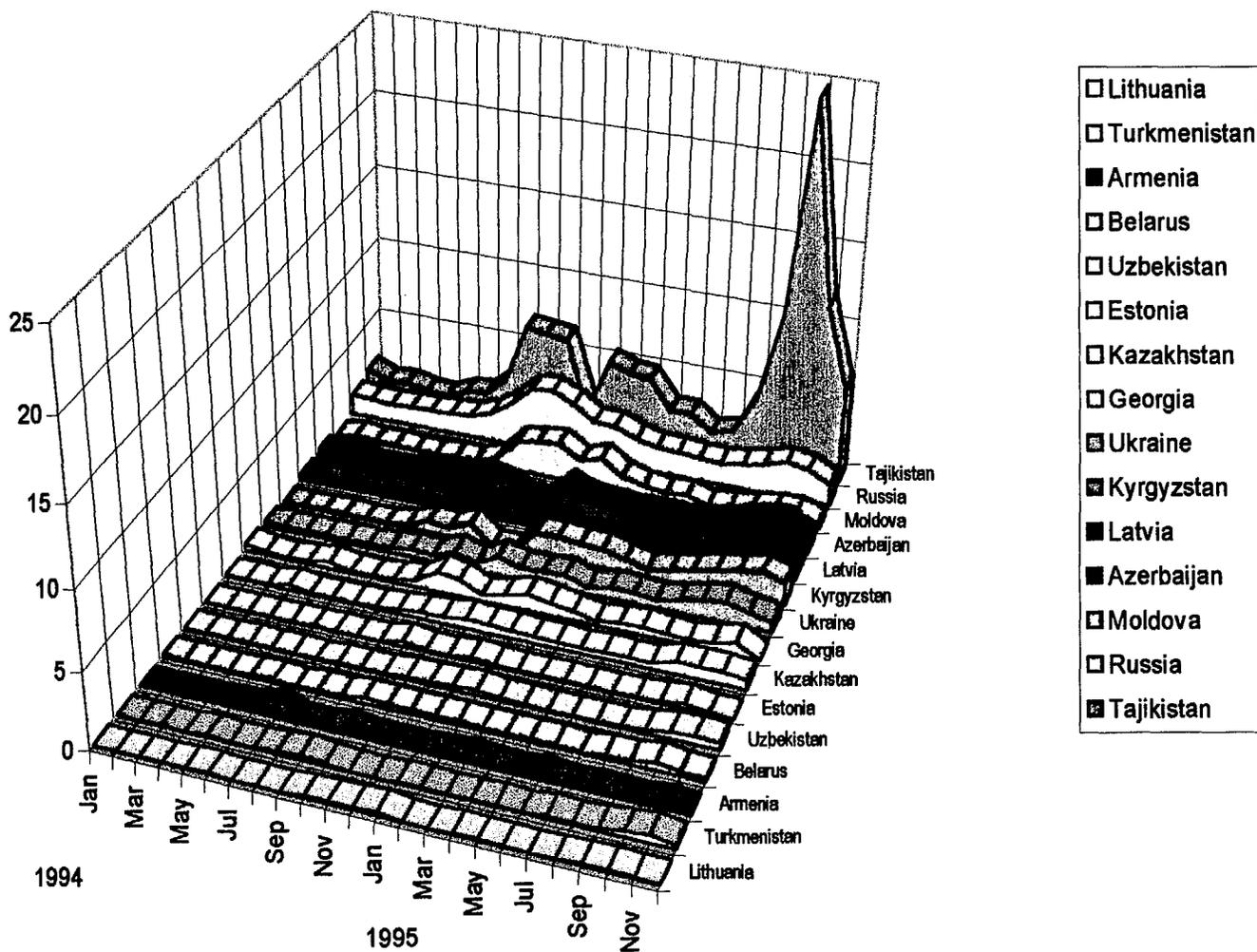
- Presumptive diagnosis is based on observation of a whitish membrane, especially if extending to the uvula and soft palate, in association with tonsillitis, pharyngitis or cervical lymphadenopathy, or a serosanguinous nasal discharge.
- The diagnosis is confirmed by bacteriological examination of lesions.
- If diphtheria is strongly suspected, specific treatment with antibiotics and antitoxin should be initiated while studies are pending, and should be continued even in the face of a negative laboratory report.

DIPHTHERIA IN THE NIS 1994 - 1995

COUNTRY	POPULATION	CASES	INCIDENCE
Armenia	3,354,000	68	2.03
Azerbaijan	7,174,000	1,238	17.26
Belarus	10,297,000	557	5.41
Estonia	1,571,000	26	1.65
Georgia	5,471,000	675	12.34
Kazakhstan	17,267,564	1,593	9.23
Kyrgyzstan	4,421,000	832	18.82
Latvia	2,650,000	619	23.36
Lithuania	3,771,000	75	1.99
Moldova	4,373,000	790	18.07
Russia	149,740,000	75,623	50.50
Tajikistan	5,357,000	6,269	117.02
Turkmenistan	4,254,000	130	3.06
Ukraine	51,846,958	8,270	15.95
Uzbekistan	20,739,000	871	4.20
Total	292,286,522	97,636	33.40

NIS DIPHTHERIA INCIDENCE 1994 - 1995

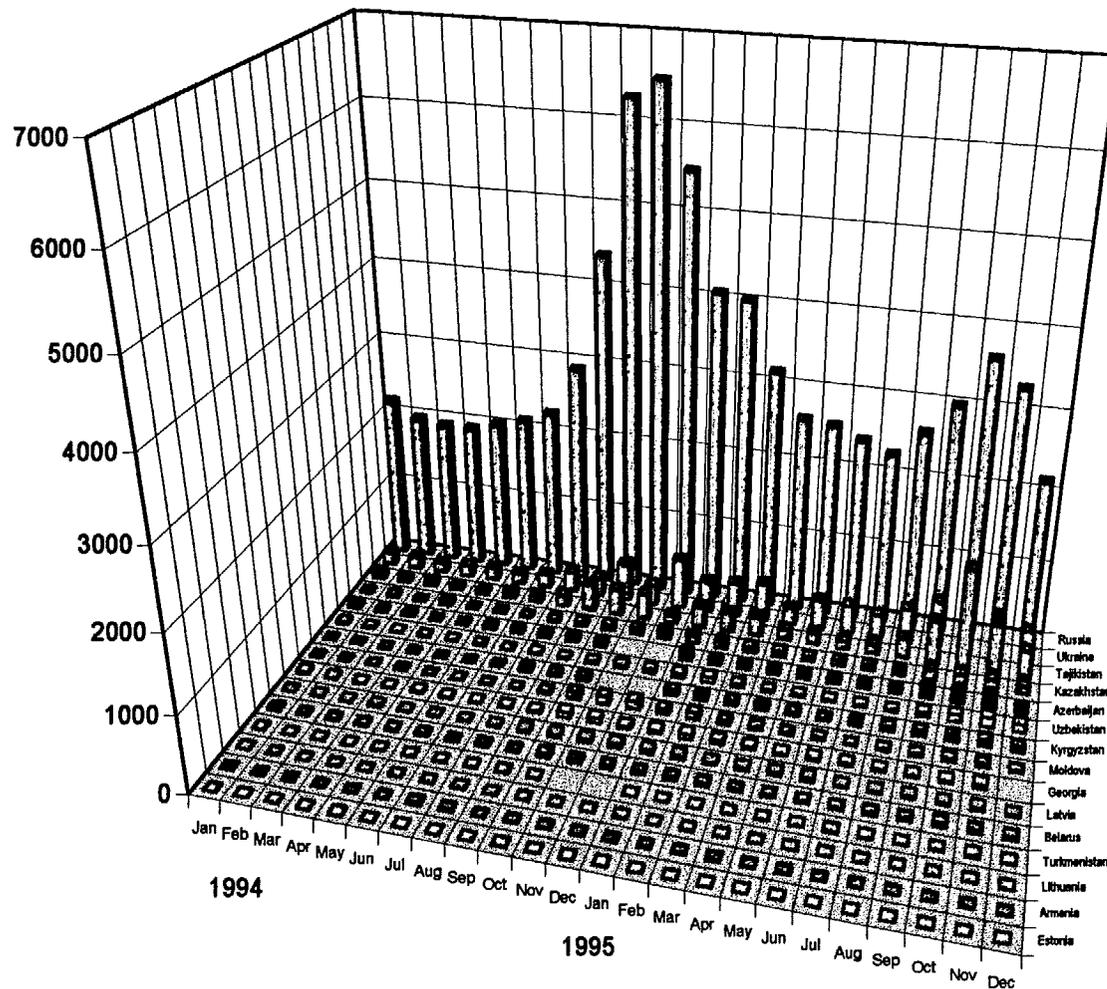
Cases per 100,000 Population



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DIPHTHERIA CASES in the NIS in 1994 & 1995



- Estonia
- ▣ Armenia
- ▤ Lithuania
- ▥ Turkmenistan
- ▧ Belarus
- ▨ Latvia
- ▩ Georgia
- Moldova
- ▬ Kyrgyzstan
- ▮ Uzbekistan
- ▯ Azerbaijan
- ▰ Kazakhstan
- ▱ Tajikistan
- ▲ Ukraine
- △ Russia

Data Source:
WHO/EURO
March 1996

DIPHTHERIA

HERD IMMUNITY

	Immunity achievable (Kiev)	Coverage 95%	Coverage 90%	Minimal vaccination coverage needed from modeling for herd immunity
One dose Td	90.2%	85.7%	81.2%	93.3%
Two Td doses	93.2%	88.5%	83.9%	90.3%

From: Roland Sutter, WHO/CDC Working Paper, Serological Studies, 31 May 1996, WHO/EURO

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THE WHO/UNICEF STRATEGY FOR DIPHTHERIA CONTROL IN THE NEWLY INDEPENDENT STATES

Epidemic diphtheria can be controlled by the following well recognised measures:

- *Primary prevention* by ensuring high population immunity through immunization as the most effective measure to control epidemic diphtheria
- *Secondary prevention* of contact cases of diphtheria by the rapid investigation of close contacts and their standardised treatment
- *Tertiary prevention* of complications and death by early diagnosis and proper management of diphtheria cases

Moldova Plan of Action for the Control of Diphtheria

- An immunization campaign, a revised immunization schedule and targets, contact identification and treatment, and the reduction of contraindications for diphtheria immunization.
- Establishes a Diphtheria Prevention and Control Coordinating Committee.
- A budget for diphtheria control campaign supplies, equipment, and social mobilisation.
- Assigns specialists to provide consultative support on social mobilisation methodology and immunization at national, district, and municipal levels.
- Orders weekly statistical reporting on the progress of immunization and the availability of vaccines

IMMUNIZATION

- The national diphtheria control plan focuses on mass immunization as a means of preventing diphtheria.
- It incorporates and provides mechanisms for strengthening the national immunization programme, particularly in the areas of contraindications and reporting.

Contraindications

Previously a multiplicity of contraindications applied to the administration of all vaccines. In the analysis of the 1994 cases of diphtheria in Moldova, 43.4% of all reported cases were non immunized. 37.5% of the non-immunized cases had been medically contraindicated for immunization by Moldovan medical standards. Parenthetically, 31.3% of the non-immunized cases were reported to have refused vaccination.

Anecdotal data suggests that as many as 30% of all children presenting for immunization were contraindicated. Contraindicated clients were subtracted from the health facility's immunization target population.

CONTRAINDICATIONS

The June 1995 Order On Additional Measures for Eradication of Diphtheria Epidemics in the Republic of Moldova states:

- To determine, that the only contraindication to diphtheria vaccines in the time of epidemics can be *strong allergic reaction to the previously administered dose of the preparation in question.*

IMMUNIZATION SCHEDULE

The plan states that at least 95% of children under 3 years of age will complete the primary immunization series with Diphtheria Pertussis Tetanus (DPT) vaccine while most of the population up to age 60 will receive one booster dose of the adult Diphtheria - Tetanus (Td) vaccine. Adults from 30 to 50 years of age will receive 2 or 3 booster doses depending on their immunization history.

High risk groups such as health care workers, teachers in primary and secondary schools, university staff, retail trade, catering and transport staff, frequent international travellers, and the clergy are supposed to have priority for booster vaccine doses.

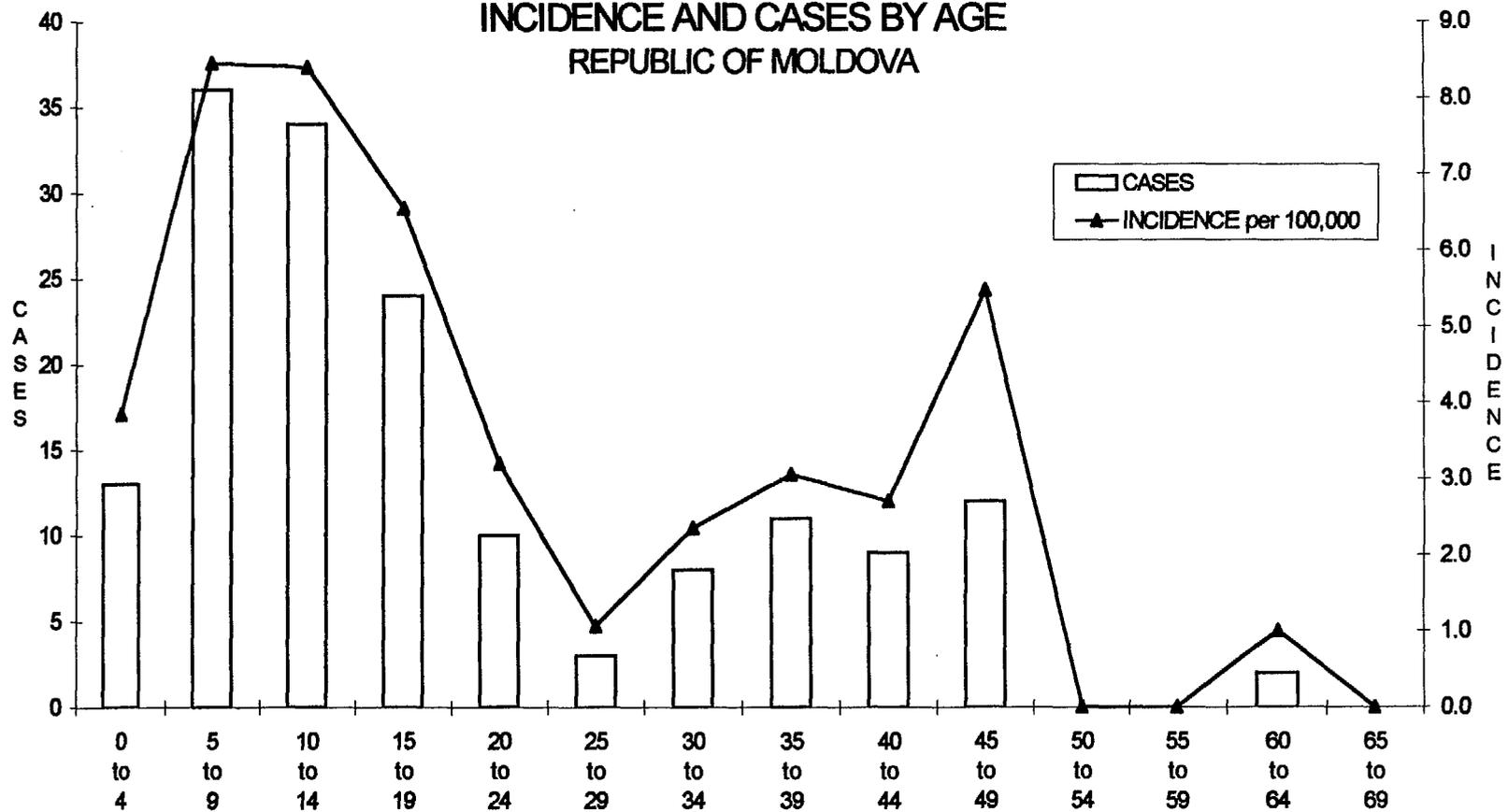
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DIPHTHERIA CAMPAIGN IMMUNIZATION SCHEDULE FOR 1995 AND 1996

TARGET GROUP	VACCINE						
	Primary Series			Booster			
	1	2	3	1	2	3	notes
Children < 3 years	DPT	DPT	DPT				>95% coverage
Children < 3 years contraindicated	DPT	DT	DT				
Children < 2 years who received Td				DT			12 months after previous dose
Children 3 to 7 years inclusive				DT			6 months after previous dose
Children 8 to 14 years				5LF or Td			6 months after previous dose
Children 11 to 14 who previously received Td or 5LF				Td or 5LF			2 months after previous dose
Children at 15				Td			routine immunization
Adults 30 to 50				Td	Td	Td	2nd dose 6 weeks after 1st, 3rd 6 months after 2nd only 2nd & 3rd given if 1st received in 1994-95
Adolescents and Adults 16 to 29				Td			except those vaccinated in 1994-95
Adults 51 to 60				Td			except those vaccinated in 1994-95
Adults > 60 years				Td			on request or if epidemiologically indicated

DIPHTHERIA CASES

1 DECEMBER 1994 THROUGH 4 JUNE 1995
INCIDENCE AND CASES BY AGE
REPUBLIC OF MOLDOVA

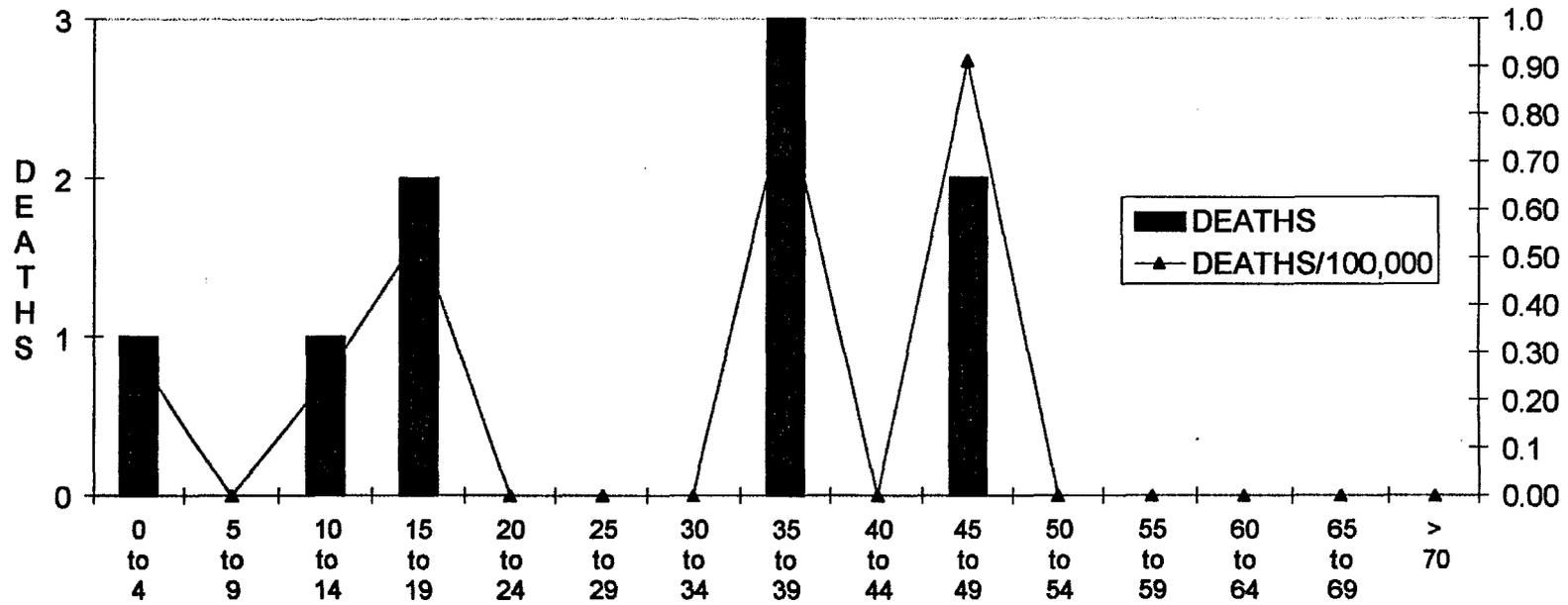


INCIDENCE BASED ON 1994 POPULATION DATA CASE DATA: RSES, MOH REPUBLIC OF MOLDOVA

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DIPHTHERIA CASES 1 DECEMBER 1994 - 4 JUNE 1995 REPUBLIC of MOLDOVA DEATHS



**DIPHTHERIA IN THE REPUBLIC OF MOLDOVA
PROJECTIONS OF CASES AND PRIMARY CONTACTS
for the years 1995 and 1996**

ITEM	1994 Total diphtheria cases	Estimated average primary contacts ²	1995 Projected number of cases	1995 projected primary contacts	1996 Projected number of cases	1996 Projected primary contacts
	376	18,800	3,158	157,920	15,792	789,600
Syringes 2 ml	children		11,054	39,480	55,272	197,400
Syringes 5 ml	adults		66,326	118,440	331,632	592,200
Procaine penicillin G	vials of 3 million units		15,476		77,381	
Benzathine penicillin	vials of 2.4 million units			69,090		345,450
Sterile water 5 ml				69,090		345,450
Sterile water 10 ml			15,476		77,381	
Diphtheria Antitoxin	ampules of 10,000 units		7,106		47,376	
Syringes 2 ml for diphtheria antitoxin			7,106		47,376	
Syringe Safe incinerator	for safe disposal			2,424		12,239
CONTACT PROPHYLAXIS AND CASE TREATMENT SUPPLIES						

Notes:

1. Assumes 100% reporting and case contact investigation.
2. Based on SES epidemiologist's estimated average number of primary contacts (30-50) with the high end of this range being used for supply projections. In 1994 the reported number of primary contacts was 25,000 or 66.5 contacts per confirmed case.
3. Moldova outbreak reported rate of annual increase 1993 -1994 (8.4 fold). 1996 estimated at 5 fold.
4. Diphtheria antitoxin estimated as an average dosage assuming more frequent mild cases than extremely severe cases. An estimated 75% of cases will receive antitoxin.
5. 1996 projections assume that vaccines, syringes, and antibiotics are not provided and that immunization campaigns and primary contact prophylaxis are not carried out in 1995.

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MOLDOVA DIPHTHERIA CONTROL CAMPAIGN VACCINE ESTIMATES

TOTAL CAMPAIGN VACCINE REQUIREMENTS			
VACCINE	REQUIRED DOSES	DOSES PER VIAL TOTALS	VIALS (rounded)
DPT	1,021,226	10	102,200
DT	738,670	10	73,900
Td	7,884,246	20	394,300

AGE GROUP	POPULATION	VACCINE	DOSES	DOSES BASE REQUIRED	DISPENSING WASTAGE	SESSIONAL WASTAGE	RESERVE	DOSES PER VIAL	REQUIRED NUMBER of VIALS	REQUIRED NUMBER of DOSES	VACCINE
0 to 2	174,569	DPT	3	523,706	1.2	1.3	1.25	10	102,123	1,021,226	DPT
0 to 2 contraindicated	19,397	DT	2	38,793	1.2	1.5	1.25	10	8,728	87,284	DT
3 to 7	394,779	DT	1	394,779	1.2	1.1	1.25	10	65,139	651,385	DT
8 to 14	580,175	Td	1	580,175	1.1	1.1	1.10	20	38,611	772,213	Td
15	73,297	Td	1	73,297	1.1	1.1	1.10	20	4,878	97,558	Td
16 to 29	888,578	Td	1	888,578	1.1	1.1	1.10	20	59,135	1,182,698	Td
30 to 50	1,253,290	Td	3	3,759,870	1.1	1.1	1.10	20	250,219	5,004,387	Td
51 to 59	421,631	Td	1	421,631	1.1	1.1	1.10	20	28,060	561,191	Td
> 60	200,000	Td	1	200,000	1.1	1.1	1.10	20	13,310	266,200	Td
TOTAL	3,805,715		TOTAL	6,880,829				TOTALS	570,202	9,644,142	

NOTES:

1. Sessional wastage estimated for campaign strategy
3. Reserve estimated: DPT/DT for routine immunization and Td for campaign strategy
3. Population data Republic of Moldova MOH 1994

DIPHTHERIA CONTROL ACTIVITIES

- Vaccines, Syringes, Antibiotics, and Antitoxin Supply and Logistics
- District Planning
- Social Mobilisation: Radio & TV, & Door to Door
- Mass Immunization: 0 to 60 years of age
- Surveillance: Case and contact identification and treatment.
- Coordination of Clinicians and Epidemiologists
- Coordination of Government Ministries and Departments
- Coordination of Donors

OPERATIONAL CONSTRAINTS

PHASE I

Low Coverage < 40%

No Vaccine

No Syringes

No Antibiotics

Public Apathy

No Experience in Social Mobilisation

No Cooperation between

Clinicians and Epidemiologists

Low Salaries & High Cost of Living

Weak MIS

OPERATIONAL CONSTRAINTS

PHASE II

Medium Coverage < 60%

Some Clinicians Applying Contraindications

Inmates of Residential and Closed Institutions
Contraindicated

NGOs Not Active

Migration & Emigration of large part of Adult
Population

Children 3 to 6 Years of Age Hard to Reach in the
Capital

58

OPERATIONAL CONSTRAINTS

PHASE III

Higher Coverage < 94%

Some Clinicians Applying Contraindications

76% Rise in Diphtheria Cases in Ukraine

**Migration Primarily for Work and Trade by Population
between 30 and 60 Years of Age**

Open International Borders

No Border Immunization Controls

Delicate Regional International Solution?

SOME SUCCESS

- Immunization Coverage for 2 to 60 year olds reached 82% by the end of June 1996
- immunization coverage for under 2s reached 96% by the end of June 1996
- All cases were treated with diphtheria antitoxin and Antibiotics.
- Most primary contacts of cases received a single injection of benzathine penicillin.
- Only 1 diphtheria death in 1996 against 23 in 1995.
- A rapid and sustained decline in diphtheria cases and carriers since the immunization campaign and appropriate treatment of cases and contacts beginning in November 1995

REMAINING PROBLEMS

- Immunisation coverage in children 3 to 6 is below 93%.
- Immunisation coverage in adults from 30 to 45 is around 70%.
- Low coverage pockets still exist.
- Neighbouring countries have high and increasing numbers of diphtheria cases.
- Migration into Moldova from countries with high diphtheria rates continues without insuring immunization continues.