



ASSOCIATES

REGIONAL ASSESSMENT
of the
USAID INFECTIOUS DISEASE PROGRAMS IN THE
NEWLY INDEPENDENT STATES

Submitted by

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ACRONYMS AND FOREIGN TERMS

ARI	Acute Respiratory Infection
AFP	Acute Flaccid Paralysis
BASICS	Basic Support for Institutionalizing Child Survival
CA	Cooperative Agreement
CAIDP	Central Asia Infectious Disease Program
CAR	Central Asian Republics
CDC	Centers for Disease Control and Prevention
CDD	Control of Diarrheal Disease
DOTS	Directly Observed Therapy, Short Course
DPT, DT	Combined diphtheria/pertussis/tetanus or diphtheria/tetanus vaccine
ENI/DGSR/ HRHA	Bureau for Europe and the Newly Independent States/Office of Democracy, Governance and Social Reform/Health Reform and Humanitarian Assistance
EPI	Expanded Programme on Immunization
FAP	Feldsher-Accoucheuse Post (Medical attendant/midwife facility)
FDA	Food and Drug Administration
H(M)IS	Health (Management) Information System
IEC	Information, Education, and Communications
IICC	Interagency Immunization Coordinating Committee
IMCI	Integrated Management of Childhood Illness
IMIS	Immunoprophylaxis Management Information System
MCH	Maternal and Child Health
MMWR	Morbidity and Mortality Weekly Report
MOHMI	Ministry of Health and Medical Industry
MOU	Memorandum of Understanding
NIS	Newly Independent States
Oblast	Province
PASA	Participating Agency Service Agreement
PATH	Program for Appropriate Technology in Health
Prikazi	Government regulation
R4	Results Review and Resource Request
Raion	District
REACH	Resources for Child Health
RPM	Rational Pharmaceuticals Management
SCSES	State Committee for Sanitary-Epidemiology Service
STD	Sexually Transmitted Disease
Td	Combined tetanus/diphtheria vaccine (reduced dose for adults)
UNICEF	United Nations Children's Fund
USAID	United States Agency for International Development
WHO	World Health Organization

Note on Orthography It should be noted that many terms and names have alternative spellings when transposed from Cyrillic to Latin spelling (e.g. raion rayon). Other spellings have been changed since the NIS gained independence from the Soviet Union. The Latin spellings now used by the countries visited, especially where the country has declared a preference (e.g. Kazakstan instead of Kazakhstan, Kyrgyz Republic instead of Kyrgyzstan) are what is used in this report.



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The assessment team members and the respective countries that each pair of team members visited are

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Dr Lefèvre has worked in the field of health policy analysis for approximately 20 years Trained as an epidemiologist, he has served as a Medical Officer in the Ivory Coast and Immunization Officer in Madagascar He has served as a consultant on several health projects for the World Bank, CIDA, USAID, PATH, and CARE

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EXECUTIVE SUMMARY

This report summarizes the findings of a regional assessment of the United States Agency for International Development's (USAID) support for infectious disease control in the newly independent states (NIS) since the collapse of the Soviet Union. Existing documentation was reviewed and site visits were conducted to five of the NIS countries involved. The assessment team members met with public health officials to discuss activities which have been carried out to date, differences that have occurred as a result of these activities, where momentum has developed, and issues and opportunities which currently confront USAID.

USAID has financed the infectious disease work of three principal organizations: Basic Support for Institutionalizing Child Survival (BASICS) project, Program for Appropriate Technology in Health (PATH), via a cooperative agreement concentrating on the Ukraine, and, Centers for Disease Control and Prevention (CDC), through participating agency service agreements (PASAs) to strengthen surveillance, revise disease control policies, and disseminate up-to-date scientific information. Grant funding to the World Health Organization (WHO) and the United Nations Children's Fund (UNICEF) in the countries in question were examined and three other grants that were designed to restore vaccine production in Russia were summarized.

Although the origins of the programs in the various countries were similar—the need to control a growing diphtheria epidemic and a humanitarian need to strengthen faltering public health capabilities to preserve public health—the programs that evolved in specific countries differed because of divergent resources, opportunities, partner organizations, and perceived needs. The activities carried out in each country are best understood in the context of that country and the mix of interventions that occurred, therefore, the findings are presented by country rather than by program, including the major contributions of each collaborator in each country. The general lessons reported relate only to the five countries visited—Russia, Ukraine, Moldova, Kazakstan, and the Kyrgyz Republic. (Information available at the time of the site visits concerning those NIS countries not visited lacked the richness of the opinions gathered from host country collaborators in the countries actually visited, rendering any analysis of activities in those countries of uncertain validity.)

A 2-person team traveled to Russia, the Ukraine, and Moldova for 3 weeks in November–December 1997. A second team visited Kazakstan and the Kyrgyz Republic for 2 weeks in December. In each country, the team encountered dedicated health workers and public health officials struggling to re-establish workable systems to monitor and control communicable diseases in an unstable environment which has altered all aspects of disease prevention and control. Beginning with the urgent need to control the diphtheria epidemic that ravaged the former Soviet Union between 1990 and 1996, the USAID programs gradually broadened their



focus from targeted diseases to the strengthening of local capacity to manage the full spectrum of infectious diseases in an effective and sustainable way

RUSSIA

Russian scientists and other health officials welcomed collaboration with the USAID program staff to study urgent health problems and find solutions. Together, disease control policies have been revised and new methods tested. In general, however, Russians prefer to implement their own interventions and remain sensitive to any suggestion that they require any outside assistance. The full contribution of USAID programs is difficult to determine, but vaccine production and distribution has been restored. BASICS activities are closing. CDC continues to assist in addressing infectious diseases in general, diabetes, and tuberculosis. USAID interest focuses broadly on health sector reform.

BASICS in Russia provided technical assistance for diphtheria control and demonstrated modern information, education, and communications (IEC) approaches in Moscow and three oblasts. The project collaborated with CDC and others on policy changes to improve the effectiveness and decrease the costs of diphtheria vaccination. Examples include a revised calendar of vaccinations and the removal of scientifically unsupported contraindications to vaccination.

CDC provided technical assistance through a variety of channels to help Russian counterparts carry out epidemiologic assessments of the diphtheria epidemic and develop appropriate response strategies. More broadly, methods for surveillance, training in applied epidemiology, and emergency response were demonstrated, and an epidemiologic bulletin focusing on infectious diseases was started.

USAID provided focused grants to help restore vaccine production in the Russian Federation. A grant to American-Cyanamid/Lederle-Praxis provided support to the Russian Poliomyelitis Institute and Biomed to restore the production of polio and diphtheria/pertussis/tetanus (DPT) vaccines as well as commodities and observational visit training. A grant to Merck and Company provided commodities and observational training to the D. Mazai Stock Company and to N. P. O. Vector to restore measles vaccine production. The Food and Drug Administration (FDA), through a PASA, provided information and training in vaccine quality control and good manufacturing practices to personnel from the Tarasevitch Institute, the Poliomyelitis Institute, D. Mazai, and Biomed.



UKRAINE

The PATH program has been the major USAID-supported participant in the Ukraine. Beginning with humanitarian assistance in May 1994, the program expanded to address three priority health problems—the diphtheria epidemic, childhood diabetes, and the transmission of bloodborne infections among health workers.

With CDC assistance, diphtheria vaccine coverage was broadened and surveillance strengthened. With assistance from Japan, vaccine supply, storage, and distribution were addressed, antitoxin was obtained for acute cases, and antibiotics were provided for contacts. Laboratories were supplied. Training was provided in the Expanded Programme on Immunization (EPI) methods, information, education, and communications (IEC), and laboratory methods. By the end of 1997, more than 85 percent of the Ukraine's population had been fully vaccinated against diphtheria, the epidemic had subsided, new control and surveillance measures were in place, and the capabilities of the vaccination program were strengthened in all respects.

To address the transmission of bloodborne infections among health workers (especially hepatitis B), PATH used hospital-based research to test barrier methods of control and used the findings to influence hospital policy, training, and procurement/production of physical barriers to the nosocomial transmission of infection.

PATH continues to contribute to the development of an improved Ukraine health management information system (HMIS) through collaboration with the Ukraine Sanitary-Epidemiology Service (SES), CDC, and BASICS in USAID/Kyiv's new Ukraine Infectious Disease Program.

CDC in the Ukraine assisted in early studies of the diphtheria epidemic that prompted studies of vaccine efficacy, development of new control strategies, epidemiologic training, and improved surveillance.

MOLDOVA

Beginning with the Resources for Child Health (REACH) project and continuing under BASICS, a major portion of USAID support for infectious disease control in Moldova has focused on developing a sustainable EPI program. The cold chain has been strengthened with Japan supplying much of the equipment needed. A special USAID grant to UNICEF that targeted diphtheria control provided vaccine, supplies, and antitoxin. Additional efforts improved program policies, strategic planning, vaccine procurement, awareness of cost-effectiveness, health worker training, IEC, program monitoring, and infectious disease



surveillance The diphtheria epidemic subsided as near universal vaccination was implemented

The major focus of CDC efforts in Moldova has been controlling the spread of hepatitis B Moldovan scientists were trained to carry out transmission studies and assisted to introduce improved control strategies

KAZAKSTAN

USAID-supported infectious disease activities in Kazakstan began with a focus on the vaccine preventable diseases, diphtheria at first and more recently, polio and tuberculosis The efforts of the two USAID interventions, BASICS and CDC, were largely complementary While BASICS concentrated on strengthening the management of sustainable service delivery systems, CDC concentrated on policy reform backed by applied epidemiology Those two themes were brought together in USAID/Central Asian Republics (CAR)'s Central Asia Infectious Disease Program (CAIDP) and can still be traced in the current health sector program that also includes *ZdravReform* activities Another element brought into current programs is Project HOPE's groundbreaking demonstration of directly observed therapy, short course (DOTS) effectiveness for tuberculosis control in western Kazakstan

Activities carried out by BASICS in Kazakstan have been organized and managed as two complementary packages The first was assistance to support, strengthen, and reform the EPI program as a measure to counter diphtheria, then other EPI diseases It addressed almost all aspects of the EPI system with a national focus Its guiding/facilitating function will be continued by WHO, UNICEF, and others in the future The second package, as part of the CAIDP program, included other child survival interventions, principally control of diarrheal disease (CDD) and acute respiratory infection (ARI) Concentrating its efforts in Zhambul oblast as a pilot area, it was able not only to introduce WHO programs for ARI and CDD, but to institutionalize improved training and project management methods as well The latter will have a permanent impact on public health programs in the country The use of highly accessible national technical staff by BASICS made its programs particularly effective Support for training programs initiated by BASICS is included in the new Mission program package

CDC posted two expatriate personnel in Almaty and many of their Central Asia efforts have been concentrated there CDC/CAR has been particularly effective in prompting changes in infectious disease control policies, including the vaccination calendar, acceptable contraindications to vaccination, adoption of standard WHO protocols for CDD and ARI, the end of mandatory hospitalization for hepatitis A, the cessation of mandated terminal disinfection of houses, and the decision to adopt the DOTS strategy for tuberculosis control



These changes will not only improve the effectiveness of infectious disease control, but will result in significant cost savings

In the area of infectious disease surveillance, CDC helped establish new surveillance protocols, a polio eradication index laboratory in Almaty, an infectious disease bulletin modeled on the Morbidity and Mortality Weekly Report (MMWR), and a CAIDP study in Zhambul oblast to identify intervention points to prevent infant mortality. Efforts to computerize surveillance activities through the introduction of CDC-developed programs such as EPI-INFO and EPI-MAP are continuing with noted successful usage in Zhambul oblast in Kazakstan and Ferghana oblast in Uzbekistan. CDC has established support for continued CDC surveillance activities as incorporated in the new USAID/CAR program. As in Russia, CDC is training MOH experts in the role of applied epidemiology with the eventual goal of institutionalizing the approach in the public health systems throughout the CAR.

KYRGYZ REPUBLIC

Organized around the broad health sector strategy of the World Bank MANAS program, and benefiting from a greater readiness to reform than in most NIS countries, USAID's infectious disease activities in the Kyrgyz Republic have encountered little resistance to institutionalization. The package of USAID programs has been similar to that in Kazakstan (i.e., CDC, BASICS, and *ZdaviyReform*). The new USAID program resembles that of Kazakstan, but without the extra support for tuberculosis from Project HOPE.

BASICS activities have been organized into EPI and ARI/CDD components. ARI/CDD has concentrated its CAIDP pilot efforts in Osh oblast where its innovations in participatory hands-on training, supervision, and program management are becoming institutionalized. The EPI component, expanded from an early focus on diphtheria, has been particularly effective in introducing changes to EPI's HMIS that permits managers to monitor two important indicators—regular progress on coverage and minimizing contraindications—in a continuous fashion. The new indicators were developed in Alamadun raion on the outskirts of Bishkek. The MOH was so impressed that it instituted the changes nationally, and the possibility of modifying the HMIS for other program management purposes is now established. Continued support for training and surveillance functions is included in the current USAID health sector package.

The major achievements of CDC in the Kyrgyz Republic are EPI policy changes (simplified calendar of vaccinations, fewer contraindications, expanded vaccination for diphtheria) and the successful introduction of an MMWR-like epidemiologic bulletin. CDC is continuing to devise improved surveillance for reporting tuberculosis and the incidence of acute flaccid paralysis (AFP) associated with polio. Efforts to expand computer technology



and epidemiologic software are continuing consistent with available resources and interest at the local level. CDC remains part of the continuing USAID health sector intervention team.

OTHER CENTRAL ASIAN REPUBLICS (CAR) AND THE CAUCASUS

The overall impact of USAID support for infectious disease control in Uzbekistan, Tajikistan, and Turkmenistan as well as the Caucasus could not be directly assessed. However, available reports and USAID officials and project staff in Almaty indicate that similar efforts have strengthened vaccination services in all three CAR countries, and the diphtheria epidemic has receded. All of these countries have also established epidemiologic bulletins modeled on the MMWR.

Uzbekistan contributed the third pilot zone for CAIDP activities. CDC infectious disease efforts have varied according to disease priorities. While health services in Tajikistan continue to be disrupted by widespread unrest, malaria and a severe typhoid epidemic in the capital (Dushanbe) have been successfully addressed. In Turkmenistan and elsewhere, hepatitis B outbreaks have been significant. Preliminary USAID/CAR plans are to support limited training (initiated by BASICS) and continued epidemiologic surveillance assistance by CDC with resident advisers. The USAID-supported emergency programs to address severe outbreaks of typhoid, diphtheria, tuberculosis, and measles were successful in the Caucasus. Vaccine security systems are now in place and immunization efforts are continuing by the MOHs in each country.

FINDINGS AND LESSONS LEARNED

The three main programs reviewed contributed significantly to the control of diphtheria, as well as to the strengthening of public health systems to monitor and respond to infectious diseases. However, little new information was gleaned regarding the focused grants, support for WHO and UNICEF was hard to disentangle from the ongoing programs of those organizations.

The public health culture of the NIS differs significantly from that of the West. The diphtheria epidemic is under control and USAID-supported health programs have evolved from their original functions to play a broader role. The improvement of health program management is now the focus of most USAID health sector activities in the region. A process of active policy review and revision has been introduced within these countries. Programs are developing separately in NIS countries, only one type of intervention is not appropriate for all of the countries. NIS countries have had limited experience dealing with international donors, and special guidance may be required.



RECOMMENDATIONS

The principal recommendations are listed here in the order in which they appear in the final report. They are presented with further explanation in section IV.

- USAID should support the ongoing translation and distribution of major documents of public health importance into Russian for use in the NIS
- USAID should support CDC efforts to institutionalize training in applied epidemiology for assessing and monitoring health problems, including infectious diseases, in the Russian Federation
- USAID should encourage key Russian health officials to visit integrated health systems and should promote greater participation of Russian scientists at international public health meetings
- USAID should be sensitive to the Russian fear of the aid recipient stigma and should structure future health-sector activities as collaboration with Russian counterparts, not as assistance
- Grants should be avoided as a mechanism for funding health interventions unless clear evaluation and reporting requirements are enforced
- USAID should support the review and revision of the Ukraine's vaccine procurement and management system
- USAID should support the Ukraine health information system and management reform activity that builds on previous USAID-sponsored work and should guide program managers in making effective and efficient decisions
- USAID should accelerate the introduction of hepatitis B vaccination in Moldova
- USAID should offer to assist Moldova in the reorganization of health services and financing
- USAID should monitor the success of the Kazakhstan health system in sustaining and extending the EPI, CDD, and ARI innovations already introduced
- USAID should develop and implement a short-term strategy to smooth the transition from BASICS to new sources of support in Kazakhstan



- USAID should support the development of a comprehensive HMIS
- USAID should continue to structure its interventions in the Kyrgyz Republic within the framework of the MANAS program
- USAID should develop and implement a short-term strategy for the close-out of BASICS support in the Kyrgyz Republic and the transfer of support for key elements to other organizations
- Reform of health information systems in the Kyrgyz Republic, along with computerization when it can be supported effectively, should be a USAID objective

SUMMARY

The efforts of USAID to address a range of issues for eradicating and controlling infectious diseases throughout the NIS represent a true success story. Epidemic outbreaks of diphtheria, malaria, and typhoid were successfully addressed. Each of these epidemics, through a variety of intervention strategies, were reduced to manageable levels comparable to those of the Soviet period. In fact, ongoing epidemiologic surveillance indicates that these diseases are falling to levels comparable to other eastern European nations. Technical assistance was provided by USAID-supported efforts (e.g. CDC, FDA, UNICEF, and PATH) to prevent further outbreaks by providing public health training and establishing detection surveillance systems.

Each country in the NIS is continuing to improve and expand its health surveillance activities to avoid any new outbreaks of disease. Moreover, the NIS is also involved in developing health care finance reforms consistent with their nascent democratic social structures.

In addition, USAID accomplished seven other objectives which are the foundation of successful health programs: coordination among donors; partnerships with host countries, a long-term public health focus, capacity-building, public/private initiatives, cross-fertilization among donors and host countries, and generating data for decision-making at both the community and national levels.



I INTRODUCTION

Beginning with emergency relief in response to an expanding diphtheria epidemic in 1992, the United States Agency for International Development (USAID) has provided health sector assistance to the countries of Central Asia through several channels. The goal of this assessment was to examine those interventions, collect information by which the results can be assessed, and present that information in a way that helps program planners and managers of USAID and host country institutions to build on what has been accomplished to date.

OBJECTIVES

The objectives of this assessment, specified in the scope of work issued in May 1997, are the following (see annex A)

- Identify, describe and quantify to the extent possible, the results of USAID-funded infectious disease assistance in the Newly Independent States (NIS) to date, including success stories and lessons learned
- Provide recommendations for the direction of future USAID-funded assistance, if any. Present the experience, findings, conclusions, and recommendations to infectious disease specialists and decision-makers in the NIS, so that they may replicate the successes elsewhere
- To the extent possible, involve and/or enable concerned NIS officials and infectious disease experts to assist in identifying and analyzing lessons learned (problems, successes) which might be applied to future infectious disease activities in the area (whether or not USAID-funded)

SCOPE OF THE ASSESSMENT

Geographically, the assessment focused on countries of the former Soviet Union. Due to limited time and resources, it was not feasible to visit all the NIS countries that have benefited from USAID infectious disease program assistance. The countries selected for field visits were the Russian Federation, Ukraine, Moldova, Kazakstan, and the Kyrgyz Republic. The sections discussing the remaining Central Asian Republics (CAR) and the Caucasus rely on secondary information without field confirmation.

Programmatically, the assessment examined USAID-funded activities that had the potential to build capacity in ways that included helping Russian vaccine producers to return to production, helping to strengthen immunization planning and management (including diphtheria control and polio eradication), financing technical assistance and commodities to combat diphtheria and eradicate polio, and helping the World Health Organization (WHO)



mobilize and coordinate donor activities relating to immunization Three long-term implementers constituted the major focus of the assessment

- Basic Support for Institutionalizing Child Survival (BASICS),
- Centers for Disease Control and Prevention (CDC), and
- Program for Appropriate Technology in Health (PATH)

In addition, the assessment included preparing brief reviews summarizing five grants

- American Cyanamid/Lederle-Praxis support to restore vaccine production by the Poliomyelitis and Viral Encephalitis Institute and Biomed Stock Company,
- Merck and Company assistance to the D Mazai Joint Stock Company to restore measles vaccine production,
- Food and Drug Administration (FDA) assistance to the Tarasevich Institute and local vaccine manufacturers,
- United Nations Children's Fund (UNICEF), for the combined tetanus/diphtheria (Td) vaccine, commodities, and expenses for diphtheria control, and,
- World Health Organization (WHO), for support of the Interagency Immunization Coordinating Committee (IICC)

ASSESSMENT PRODUCTS

The following types of summaries were prepared and shared with USAID Missions in the NIS at the end of the field visits

- results to date and projected activities, by NIS country, of BASICS, CDC, and PATH,
- a synthesis of diphtheria control efforts in the NIS (without duplicating CDC efforts),
- an overview of issues and problems facing infectious disease control in the area, noting systemic limitations that inhibit progress,
- an overview of collaboration with WHO, UNICEF, and other donors in the region, and,



- recommendations, based on lessons learned from these USAID-funded activities, that relate to future USAID and donor efforts in the NIS for infectious disease control and other health interventions

METHODOLOGY

The assessment was carried out in several steps. TVT project staff reviewed available documentation at USAID and prepared a notebook of background documents, copies of which were given to USAID and the team members. A work plan prepared at that time included interview guides (see annex B) for meetings with the Bureau for Europe and the Newly Independent States/Office of Democracy, Governance and Social Reform/Health Reform and Humanitarian Assistance (ENI/DGSR/HRHA) managers as well as health program managers. Lists of individuals to contact were obtained from USAID and BASICS. Initial contacts with individuals in the countries to be visited were initiated to secure logistic support and to schedule interviews.

Team Meeting

The four team members met in November 1997 to review the documents collected, meet with USAID and project staff in the United States, complete logistics arrangements, and prepare an outline for data collection during site visits. The outline, to be used with each program in each country, consisted of five major questions.

- 1 Why did USAID undertake this activity?
- 2 When? Where? At what cost?
- 3 What were the objectives, indicators, and results?
- 4 What current momentum exists in these activities?
- 5 What lessons were learned, conclusions can be drawn, and recommendations can be made?

Site Visits

Two teams, each including one native Russian speaker, visited separate countries and for the most part, worked on separate issues germane to the countries they visited. The two teams were

- Russia, Ukraine, Moldova. Dr. Alain Lefevre and Dr. Konstantin Pop (11/20–12/10/97) and



- Kazakstan, Kyrgyz Republic Dr James Sonnemann and Dr Herbert Koudry
(12/4-21/97)

The CAR team was delayed by difficulties in obtaining Mission approval and visas. Itineraries for the two trips are provided in annex C, and persons contacted by each team are listed in annex D.



II. BACKGROUND

Confusion and disorientation followed the collapse of the Soviet Union. Systems that had always existed were no longer functioning, including the public health system. There was no larger framework within which to look for solutions except for the outside world. One of the responses from the outside world was support for the control of infectious diseases which, in addition to affecting the former Soviet world, posed a threat to the rest of the world as well.

The infectious disease programs supported since 1992 by USAID in the Newly Independent States (NIS) developed in an organic fashion, responding to changing needs, perceptions, and opportunities. The major current programs, Basic Support for Institutionalizing Child Survival (BASICS), the Centers for Disease Control and Prevention (CDC), and the Program for Appropriate Technology in Health (PATH), began in response to urgent needs and expanded to strengthen the local systems they encountered. The USAID response has been complemented consistently by the efforts of the World Health Organization (WHO) and the United Nations Children's Fund (UNICEF). Although USAID grants to these international organizations and to specific local vaccine-producing institutions responded similarly to urgent needs, they did not expand as broadly to strengthen general public health system capacity.

An early manifestation of the collapse of previously adequate systems was a rise in diphtheria incidence that was recognized by the still functioning statistical surveillance system. When the alarm spread to international officials at USAID/Moscow, they requested immediate action to control the situation. Other than humanitarian assistance, the first NIS public health efforts of U.S. agencies in the early 1990's, notably CDC and USAID, were in response to a totally unexpected diphtheria epidemic and constitute the starting point for the infectious disease programs examined in this assessment. To understand how USAID came to support the range of programs that developed in the NIS, it is important to appreciate the sense of emergency of that time.

THE IMMUNIZATION PROGRAM INHERITED FROM THE SOVIET ERA

USAID support for immunization grew from two main sources. One was the recognition, in 1992 and 1993, that the monolithic centralized program of childhood immunization of the former Soviet Union was in danger of collapsing as the vaccine supply and logistics systems failed. Stocks of vaccine were exhausted, and infant vaccination coverage rates plummeted in many areas. In addition to a new requirement to pay for vaccines and supplies—vaccines had always arrived periodically, from the few sites of vaccine production in the Soviet Union, according to needs determined centrally in Moscow—there existed no established methods for procurement. The report from a November 1993 WHO/UNICEF meeting on vaccine supply

and child immunization policies for the CAR noted that vaccine prices had increased as much as tenfold over two years, and that interbank payment transfers were troublesome ¹ Health officials had little or no experience in projecting their own needs, ordering and paying for vaccines and their shipment from international sources, or storing them until distribution and use When public health personnel from REACH, a precursor to the BASICS project, assessed the situation for a USAID response, it was obvious that more than just an emergency delivery of vaccines was needed ²

There is such uniformity in the Expanded Programme on Immunization (EPI) throughout the world in 1998 that it is important to point out that the model developed by the former Soviet Union differs from the WHO standard in several important respects

It is the responsibility of local health personnel, not the family or the community to ensure that children are vaccinated Therefore, little health communication or promotion was carried out, and no vaccination cards or other patient-retained records were needed

No child may be vaccinated unless examined first by a physician and determined to have no contraindication to vaccination Those found to have a contraindication are not vaccinated and, in the past, were removed from the denominator of persons to be vaccinated This resulted in fewer persons being protected and coverage figures that obscured the fact that a significant proportion of the population had no immune protection

Coverage has traditionally been determined by comparing vaccination records with records of population cohorts rather than by survey The absence of vaccination cards (to be introduced soon in Kazakstan) renders such surveys very difficult

Exhibit 1	
Kyrgyz Republic Immunization Schedule	
<i>(WHO EPI recommendations in bold)</i>	
BCG	day 3-4, 7 yrs
Hepatitis B	day 3-4, 6 wks, 14 wks
Polio (OPV)	day 3-4, 6 wks, 10 wks, 14 wks, 1-2 yrs 7-8 yrs
DPT	6 wks, 10 wks, 14 wks, 1½-2 yrs later
DT	6 yrs 11 yrs 16 yrs
Measles	12 mos, 6 yrs
Mumps	18 mos
Typhoid	>7 yrs 2 yrs later
Brucellosis	>18 yrs
Siberian Hemorrhagic	
Fever	>14 yrs 1 yr later
Encephalitis	>4 yrs annually for 3-4 yrs
Plague	>14 yrs
SOURCES MOH Kyrgyz Republic WHO	

¹Executive Summary Report of the Sixth Meeting of the Interagency Immunization Coordinating Committee (IICC) Oslo May 1997

²Robert Steinglass personal communication former technical director, REACH now with BASICS See also Robert Steinglass *Reflections on REACH Immunization Program Assistance to the Former Soviet Union, 1992-93* January 1994



The schedule of vaccinations included in the Soviet calendar is far more extensive than that recommended as standard by WHO. The calendar reproduced is the current schedule for the Kyrgyz Republic after revision in collaboration with WHO, UNICEF, BASICS, and CDC.

THE DIPHTHERIA EPIDEMIC

The second impetus for immunization program support was a diphtheria epidemic, of a size unknown in recent decades that grew gradually throughout the NIS. The incidence of diphtheria reported in Russia began to increase after 1990, increasing by about 13 times to a maximum of 26.9 cases per 100,000 population by 1994. By 1993, an epidemic had been declared as the number of cases exceeded 15,000 and the disease had spread to other parts of the former Soviet Union. The epidemic peaked in 1994-95 and has since declined to previous endemic levels.

Western scientists and Russian officials questioned during the assessment cited a number of factors that contributed to the epidemic. The most critical was that vaccination coverage rates had declined along with public health services in general, particularly in children. Additional reasons cited by the chief state sanitary inspector of the Russian Federation were housing and other environmental conditions were declining for almost the entire population; the mass media circulated unsubstantiated rumors of dangerous substances in Russian diphtheria and pertussis vaccines that discouraged compliance; migration from areas with endemic diphtheria increased, and, local health officials delayed announcing an epidemic for fear of being penalized for a negative health result. Over a period of five years, more than 200,000 cases of diphtheria occurred in the Russian Federation, an epidemic that WHO characterized as "the biggest public health threat in Europe since World War II." As the figures in table 1 illustrate, the other NIS countries experienced similar epidemics.

Table 1
DIPHTHERIA IN SELECTED NIS COUNTRIES, 1991-1996
 (Yearly Incidence per 100,000 Population)

Country	1991	1992	1993	1994	1995	1996
Russia	1.2	2.6	10.1	26.6	23.8	9.1
Ukraine	2.1	3.0	5.7	5.7	15.0	7.5
Moldova	0.3	0.5	0.8	8.5	9.6	2.2
Kazakhstan	0.2	0.3	0.5	2.8	6.3	2.6
Kyrgyzstan	0.2	0.1	0.1	6.4	15.0	8.8

SOURCE: Interagency Immunization Coordinating Committee, 1997.

It is noteworthy that the diphtheria epidemic hardly affected other parts of the world, although there was certainly fear that that could happen. Why was it confined to the NIS? The epidemic was a reflection of the decline of general vaccination already noted. However, assessment of the epidemic (in which CDC assisted) found that existing vaccination policies had excluded a surprisingly large proportion of children (see exhibit 2), and that infants were being vaccinated with reduced potency vaccine intended for older children or adults. This finding led, via several USAID support mechanisms, to continuing assistance for disease surveillance in the region and to review and revision of immunization policies and schedules in general.

Exhibit 2
The Vaccine Contraindications Problem

The former Soviet system of medical science that underlies prevention and treatment practices in the NIS gives much greater recognition to immunologic variation and its potential significance than does Western medical science. Unlike Western medicine which assumes a relatively uniform immune system among healthy individuals, so that almost everyone can be safely vaccinated following standard schedules and dosages, the NIS system recognizes much more immunologic variability and uses this to explain differences in well-being and susceptibility to illness. Both systems recognize the potential danger of giving live vaccine to an immunocompromised individual, but the NIS system considers that to be much more likely than the Western system. As a result, a long list of contraindications to vaccination evolved, and NIS trained health workers turned away significant numbers of candidates for vaccination. That the "herd immunity" that protects the relatively few unprotected individuals in a population no longer functioned was demonstrated by the diphtheria epidemic that ensued.

It was only through careful scientific discussion and continued caution that health officials in the NIS agreed to reduce the contraindications list, but it is significant that a doctor's permission still is required preceding every inoculation. The generally accepted contraindications as recognized by WHO and the NIS contraindications are as follows:

WHO Contraindications

- Serious reaction to previous vaccination
- Acute febrile illness ($T \geq 38^{\circ}C$)
- Immunodeficiency

Additional NIS System Contraindications

- Diarrhea
- History of allergy
- Family history of allergy

Although diphtheria incidence and cases continue to be monitored in the countries of the region, the epidemic of the mid-1990's has essentially abated. USAID-supported efforts played a major role in regaining control. Personnel from CDC and the Interagency Immunization Coordinating Committee (IICC) (a multinational entity that USAID helped to establish and maintain) have collaborated with infectious disease authorities in the countries involved to prepare a special supplement to the *Journal of Infectious Diseases* that recounts the story. The 24-page supplement is scheduled for submission in the spring of 1998, with



publication expected by the end of the year ³ Annex E is a 1996 summary of the CDC response to the diphtheria epidemic. The results of the diphtheria control efforts were noted during this assessment, but the effort was concentrated primarily on the other results of USAID support for infectious disease control.

The hurried early international responses to the alarm over the infectious disease control system in the former Soviet Union are no longer occurring. The diphtheria epidemic did not spread beyond the borders of the area, and the disease appears to be once again under reasonable control. USAID programs have evolved to address broader, more systemic concerns than the vaccination program. This assessment represents one attempt to understand that evolution and to describe some of the options and opportunities faced by USAID at the end of 1997.

USAID interests have evolved, expanded, and matured over the years since the first infectious disease initiated in the NIS. Table 2 on the following page indicates current USAID strategic plan packages that can provide continued support for infectious disease control.

³Coordinated by Melinda Wharton, National Immunization Program, CDC

Table 2
SUMMARY OF CONTINUING HEALTH CARE EFFORTS IN THE NEWLY INDEPENDENT STATES

COUNTRY	1998 Economic Assistance Budget (in millions)	STRATEGIC OBJECTIVES							CONTINUING HEALTH CARE EFFORTS
		Economic Growth	Trade/Investment	Democratic Transition	Social Stabilization	Economic Restructuring	Cross cutting and Special Initiatives	Economic Transition	
RUSSIA	\$241.5	▪	▪	▪	✓				Improved effectiveness of social benefits/services health care financing reform
UKRAINE	\$225.5			▪	▪	▪	✓		Improved social benefits continued support for immunization efforts
MOLDOVA	\$32.8					▪	✓		Ongoing diphtheria immunization program
KAZAKSTAN	\$52.0			▪	▪	▪	✓		Development of new immunization policies/schedules effective efficient, cost-effective surveillance measures for infectious disease programs
KYRGYZ	\$36.5			▪	✓		▪	▪	Improved surveillance measures for infectious diseases health reform program
UZBEKISTAN	\$32.5			▪	▪	▪	✓		Health care reform improved infectious disease surveillance and reporting system
TAJKISTAN	\$15.4			▪	▪	▪	✓		Improved methods for identification/reporting of malaria cases modern epidemiological methods for infectious disease surveillance
TURKMENISTAN	\$6.0			▪	▪	▪	✓		Fully equipped reproductive health clinics which can train clinicians throughout the nation
ARMENIA	\$80.0			▪	▪	▪	✓		Improvement of health monitoring system expanded immunization efforts providing medical services to women and children
GEORGIA	\$41.9			▪	▪	▪	✓		Providing medical services to internally displaced persons and women and children in Tbilisi
AZERBAIJAN	\$31.5			▪	▪	▪	✓		Training programs include primary health care continuing immunization efforts against diphtheria

PRIMARY SOURCE USAID Congressional Presentations Fiscal Year 1998 ✓ = The health efforts listed are part of this strategic objective



III FINDINGS BY COUNTRY AND PROGRAM

This section summarizes the findings regarding USAID-supported infectious disease control activities. In the five countries visited, activities are reported as described by national and midlevel public health counterparts and remaining project staff in those countries (see annex D). Because circumstances did not permit extensive examination of existing documentation within each country, this is first and foremost a summary of the observations of key persons who participated in or witnessed USAID's activities at implementation level. Levels of funding from implementing units or from USAID in the countries visited could not be verified or analyzed.

The findings for the three large, ongoing interventions are grouped by country rather than by program because differences in recognized health sector priorities and in the readiness of different countries to adopt new or reformed methods resulted in somewhat different programs and results. The findings concerning the three CAR countries (Uzbekistan, Turkmenistan and Tajikistan) and the three Caucasus countries (Armenia, Azerbaijan, and Georgia) not visited are necessarily limited since they lack corroboration by host country counterparts. Findings regarding the small grants to restore vaccine production are found at the end of the section on Russia because that is where the recipient organizations were concentrated. Findings relating to grants to WHO and UNICEF, international organizations providing widespread assistance to programs that included diphtheria control and vaccination, are discussed in the findings for each country and summarized after the country-specific findings.

RUSSIA

With the development of the diphtheria epidemic in Russia and the crippling of the public health structures responsible for its control, USAID recognized an explosive health care situation, particularly in the area of vaccine preventable diseases. USAID therefore undertook a number of actions to support public health actions. Among these were the BASICS and CDC interventions, three focused grants to help restore vaccine production, and support for international assistance via WHO and UNICEF.

The BASICS Program in Russia

Since September 1994, the BASICS project has provided \$1.468 million worth of support for vaccine security, disease control, and immunization policy development in Russia.^{1,2}

¹Briefing Memorandum for the Administrator "USAID Response to the Diphtheria Epidemic in the NIS" June 2, 1995. Thomas A. Dine, AA/ENI, and Ann Van Dusen, A-AA/G.

²Memorandum of Understanding, 'Cooperative Activity on Diphtheria Prevention and Control in Russia'.



Approximately half was used to finance information, education, and communications (IEC) efforts to promote a mass diphtheria immunization campaign throughout the Russian Federation. The other half provided technical assistance for diphtheria control.

The objectives of the BASICS program in Russia were 1) to strengthen local capacity to plan, implement, and evaluate public health communications at the national level and in selected oblasts and 2) to assist in the control of diphtheria, polio, and other vaccine preventable diseases at both the national level and in selected oblasts. BASICS activities were carried out in collaboration with health officials from the Ministry of Health and Medical Industry (MOHMI), the State Committee for Sanitary-Epidemiology Service (SCSES), the Federal Research Institute for Health Education and Health Promotion, "Medicine for You," and three oblasts selected as pilot areas for USAID-sponsored activities—Novgorod, Voronezh, and Yekaterinburg. The project's principal legacy is improved capability in IEC.

Exhibit 3
BASICS Activities in the Russian Federation

- U S -Russian Joint Conference on Public Health Communications Moscow October 1995
- Joint diphtheria control assessment with CDC, Moscow, Voronezh, Novgorod, October 1995
- 3-week health communications planning seminar for 9 Russian specialists Washington March 1996
- Assistance to television and social mobilization support for national polio immunization days, Moscow April/May 1996
- 3-week qualitative research exercise for teams from oblast and federal levels Moscow Voronezh, Novgorod May 1996
- 1-week strategy development workshop for oblast and federal teams Moscow, July 1996
- Television production for diphtheria control campaigns Moscow, August 1996
- National immunization seminar, Balancing Science and Practice for Child Immunization in Russia and the United States Novgorod September 1996^{3,4}
- Design of a World Wide Web site with "Medicine for You" Moscow, September-December 1996
- Study of the impact of the communications program, Novgorod November/December 1996

The achievements of the BASICS work in the Russian Federation include demonstrating the effectiveness of modern methods of public health communications,³ strengthening

³ "Assessment and Planning for the Development of a Russian Ministry of Health 'Medicine for You' Information Dissemination System on the Internet" BASICS Project

⁴ Seminar on Balancing Science and Practice for Child Immunization in Russia and the USA BASICS Project

⁵ *U S -Russian Collaboration in Public Health Communication, 1995-1997 Overview of Achievements*, Mark Rasmuson, BASICS Project, January 1998



partnerships between medical institutions and the media to carry out IEC,⁶ and assisting the diphtheria IEC program.⁷ Partly as a result, Russia has achieved high rates of vaccination coverage among both children and adults. By the end of 1995, Russia began reporting decreases in diphtheria incidence.

BASICS support contributed to changes in vaccination policy. Meetings organized in collaboration with experts from CDC, WHO, and UNICEF helped to convince Russian officials to adopt very high coverage (90–95 percent) with the primary series of diphtheria/pertussis/tetanus (DPT) vaccine before 6 months of age as a target for vaccination. It was decided that low-potency diphtheria vaccine would no longer be used in the primary series for children. Boosters could be given at 16–36 months of age (DPT), at school entry, diphtheria/tetanus (DT) vaccine, and at school exit, a reduced dose of tetanus/diphtheria (Td). During epidemics, boosters for children of middle school years and for adults should be considered as well. Russian public health officials also received help in reviewing the list of contraindications that prevented a sizable proportion of individuals from being vaccinated, and the list of contraindications was reduced to that of WHO. These changes increased the efficiency as well as the effectiveness of diphtheria control.

The changes in diphtheria vaccination and control policies have been significant. Epidemiologic projections based on diphtheria incidence in Russia between 1990 and 1996 suggest that if the current measures had been instituted in the early 1990's, more than 270,000 cases of diphtheria and 7,000 deaths could have been prevented.

CDC Activities in Russia

In early 1992, shortly after the collapse of the Soviet Union, CDC was invited to help ascertain the urgent public health needs of the Russian Federation (see annex E). Approximately one dozen CDC officials traveled to Russia at that time and collaborated closely with the SCSES to determine immediate needs. CDC had begun to collaborate with Russian counterparts to study the diphtheria organisms responsible for the outbreak and to evaluate the efficacy of the vaccine. An early set of actions focused on diphtheria. USAID subsequently asked CDC to establish a public health surveillance system in three republics to guide USAID and other donors to the interventions most urgently needed. These activities were funded under two separate NIS-wide participating agency service agreements (PASAs): the first covered the period from October 1992 through May 1993 (\$924,813), the second extended

⁶*U S -Russian Cooperation with Health Communication Campaigns in Three Russian Oblasts 1995-1997* Paul Olkhovsky BASICS Project

⁷"Diphtheria Control in the Russian Federation: Lessons Learned and Current Issues," Conference, Novgorod, June 4-6, 1997



from July 1994 through July 1996, and then was later extended through December 1997 (\$6,760,609, of which \$1,743,040 was for Russia)

First CDC PASA, 1992-1993

The first CDC PASA provided technical assistance over a period of 7 months to assess and assist existing surveillance systems in three republics (Russia, Kyrgyzstan, and Uzbekistan) to identify emerging public health problems and initiate responses. CDC efforts focused on three activities. First, the existing epidemiologic surveillance system was evaluated, recommendations to strengthen it were formulated, and the EPI-INFO software package was translated into Russian. Second, a monthly epidemiologic bulletin was inaugurated, with computers and software provided for its production. Third, an international conference, "Public Health Surveillance and Information," was organized in Moscow in May 1993 for 150 health officials from Russia and four other NIS countries. The conference introduced methods used for epidemiologic surveillance in the United States. The notion that local health workers could be trained in field epidemiology as in the United States was accepted by the central health authorities.

Between the first and second PASAs, there was no formal agreement with CDC, but negotiations with SCSES continued, and CDC personnel collaborated on an almost weekly basis with their Russian colleagues. An example is the preparation of a comparative analysis of baseline health statistics entitled, *Vital and Health Statistics Russian Federation and United States, Selected Years 1980-1993*.

Second CDC PASA, 1994-1997

One of the four components of the second USAID/CDC PASA, as amended in October 1994, targeted the Russian Federation. It provided CDC assistance for the prevention and control of communicable diseases and the strengthening of the public health surveillance system. The five objectives specified were to 1) evaluate and monitor existing surveillance systems with particular attention to key indicators, 2) introduce modern epidemiology and surveillance methods for disease monitoring, investigation, and control, 3) train a group of national epidemiologists to continue the process of modernizing surveillance systems, 4) train a team of public health officials in the regular production and distribution of health bulletins, and, 5) establish warning systems that bring an appropriate response to emergency health problems.

A Memorandum of Understanding signed in October 1995 by the MOHMI and USAID/Moscow specifically addressed the reduction of diphtheria morbidity and mortality in Russia. It aimed to improve existing diphtheria control and prevention strategies by means of case

studies and epidemiologic investigation as well as improved vaccination coverage through campaigns to educate the public in general and health service providers in particular

CDC efforts to strengthen national and local epidemiologic surveillance capability were concentrated in the areas of training in applied epidemiology, data collection and analysis, and control and prevention of diseases of public health importance, such as diphtheria. In addition to working at the national level, CDC worked at oblast and raion levels to concentrate its efforts where the infectious disease problem was developing and where the information collected could be used most effectively to make appropriate decisions concerning local interventions. Although resident CDC advisers were eventually placed in the Caucasus and the CAR, USAID/Moscow determined that an adviser was neither necessary nor affordable in Russia. CDC therefore used short-term visits to work there.

CDC activities in Russia in the area of infectious diseases can be grouped into the following five categories:

- 1 evaluation and support for surveillance systems,
- 2 introduction of epidemiologic and surveillance techniques,
- 3 training of national epidemiologists,
- 4 training of public health personnel in the production and distribution of a health bulletin, and,
- 5 establishment of emergency response systems

Specific activities carried out in each area are summarized in exhibit 4 on the following page.

In response to the increase of NIS diphtheria cases from 839 in 1989 to 50,000 five years later, a national diphtheria control program was established in collaboration with WHO, UNICEF, the European community, and CDC.⁸ At its first meeting, a program was adopted to include the following:

- target 95 percent vaccination coverage with four doses of DPT for children under 2 years of age at district level in each country concerned,
- target 95 percent vaccination coverage with a booster dose of DT for all children aged 2–6 years and not already immunized with three doses of DPT,
- find and revaccinate all children who had received Td rather than DPT or DT in their primary vaccination series, and,

⁸Ibid



Exhibit 4
Summary of CDC Infectious Disease Activities in Russia, 1993–1997

<p align="center">Evaluate and support surveillance systems</p>	<ul style="list-style-type: none"> ▪ Efficacy of epidemiologic training of 30 Russians trained at CDC (Atlanta) was evaluated in the field in order to revise the courses offered use of these courses at oblast level was proposed ▪ CDC worked with epidemiologists at oblast and central levels (MOHMI SCSES Gabrichevsky Institute) to analyze the diphtheria epidemic and vaccination coverage in 3 oblasts ▪ Analysis of data collected in 3 pilot oblasts confirmed Russians findings of susceptible adults and the high degree of protection provided by one booster to adults and a complete series to children One lab expert was trained in CDC diphtheria labs for 6 months Computers and lab equipment were donated to Gabrichevsky Institute
<p align="center">Introduce epidemiologic and surveillance techniques</p>	<ul style="list-style-type: none"> ▪ EPI-INFO and EPI-MAP were translated into Russian with wide distribution ▪ Surveillance and epidemiology training materials including CDC's principal epidemiology training document <i>Principles and Practices of Public Health Surveillance</i> Teutsch and Churchill eds as well as articles on nosocomial infections were translated and distributed to SCSES epidemiologists ▪ Ten new computers with accessories were provided to SCSES for use at the national level and for training in 3 pilot oblasts
<p align="center">Train national epidemiologists</p>	<ul style="list-style-type: none"> ▪ Russian training sessions were conducted on "Epidemiology Biostatistics and Scientific Communication" for 48 epidemiologists from SCSES the MOHMI and training institutions Courses covered 1) descriptive/analytic epidemiology and prevention programs 2) introduction to computerized methods 3) observation visit to a state health department and 4) development of institutional linkages ▪ Training was conducted of oblast level epidemiologists in Moscow (May 1996) and Perm (June 1996) in applied epidemiology and biostatistics by Russians previously trained at CDC ▪ Training was conducted in Almaty in 1995 of 1 Russian among approximately 60 NIS public health professionals at an "Information for Action Workshop on Case-Based Surveillance" and included practice with EPI-INFO and EPI-MAP ▪ Training of MOHMI trainers in nosocomial infections was delivered in St Petersburg January 1997
<p align="center">Train to produce and distribute health publications</p>	<ul style="list-style-type: none"> ▪ Training was conducted in general scientific communication and publications ▪ Assistance was provided in publishing and distributing health bulletins Now published regularly by Russia the first edition of the new "Health and Population and the Environment" bulletin was published in April 1993 and discussed the role of health communications and the subject of diphtheria Six Russian scientists examined subjects such as vaccine efficacy Two courses in the management of publication were provided to SCSES as well ▪ Since 1993 communications modules have been an integral part of CDC's "Epidemiology Biostatistics and Scientific Communications" course for practicing epidemiologists In addition NIS public health officials with an interest in health communications were trained in publications management ▪ "A Profile of Infectious Diseases Russia and the United States" (1994) was produced in Russian and English and distributed at the January 1996 Gore-Chernomyrdin Commission meeting as well as generally
<p align="center">Establish emergency response systems</p>	<ul style="list-style-type: none"> ▪ Within the context of the Gore-Chernomyrdin Commission CDC's Division of Tuberculosis Elimination has worked with Russian authorities Tuberculosis incidence has increased 40 percent over the past 3 years and multidrug resistance has begun to appear Collaboration with Russian authorities has demonstrated the feasibility of short-course ambulatory treatment which is being piloted in dispensaries of Moscow and 3 oblasts under the supervision of the Russian Research Institute of Phthisiopulmonology Scientific exchange visits and discussions between that institute and CDC have opened the possibility of collaboration in tuberculosis control partly within the context of USAID support for CDC ▪ Three officials of CDC's National Center for Environmental Health have collaborated with their Russian counterparts in planning studies of water contamination



- immunize with a single Td booster all school children, adolescents, and adults to age 60 living in high-risk areas

CDC engaged in other infectious disease work in Russia outside the PASA with USAID's ENI Bureau. Under the terms of the Gore-Chernomyrdin Commission, a health committee was created in 1994, and CDC was given responsibility for three of the eight technical areas—diabetes, prevention and control of infectious diseases, and tuberculosis. Under this financing, CDC evaluated the tuberculosis situation in Russia. It has also been active in environmental health and health promotion. In all areas where CDC has been active, it has attempted to expand its scope from narrowly defined infectious disease control to the application of epidemiologic methods to the management of other programs, including chronic diseases and environmental health.

Additional USAID Responses to Support Immunization

In early 1992, members of a WHO/UNICEF review team reported that the incidence of vaccine preventable diseases such as diphtheria, measles, and pertussis was on the rise and directly associated with the breakup of the former Soviet Union. Production of vaccines was disrupted, quality control was compromised, overall costs increased in a free market setting, and, the timely distribution of vaccines suffered. Nearly all vaccines used in the NIS had been produced in Russia, with some raw materials imported from surrounding nations. Lacking foreign exchange to purchase raw materials, Russian manufacturers were unable to provide the quantities of vaccine needed by the NIS. Because the vaccine testing standards employed by Russian vaccine producers differ markedly from those of the West, the quality of the vaccine produced was also in question. All these conditions led to a decrease in vaccination coverage and antibody levels in the community, leading to concerns that severe outbreaks of vaccine preventable diseases could be anticipated in the 1990's.

USAID/Food and Drug Administration (FDA) PASA (March 1992–1996)

As a result of a USAID-sponsored assessment visit to the NIS in 1992, the need for substantial improvement in vaccine quality control and manufacturing standards was identified as a key issue. Through a PASA between USAID and the Public Health Services, the FDA provided training in regulation, quality control, and monitoring of vaccine production. Intended to create an organization to function as a counterpart to the FDA, the initial 2-year program (with funding of \$900,000) provided three types of support—workshops on regulatory reform, specific assistance to the Tarasevitch Institute (Russia's principal vaccine testing authority), and specific assistance to the Poliomyelitis Institute, Biomed, and the D. Mazai Joint Stock Company. Subsequent amendments to the PASA in 1995 and 1996 provided additional funding (\$300,000 and \$1.6 million, respectively) to ensure vaccine production and continued quality. The terms of the agreement appear to have been fulfilled and no additional



information was acquired during the site visits except to confirm that vaccine production continues. The FDA perception is that the PASA worked out well in providing information to Russian medical counterparts on adopting market health practices as well as training FDA staff to be sensitive to regulation differences between the two systems⁹

FDA Technical Assistance Training

Three workshops were held: 1) a regulatory reform workshop in Moscow presented the role of a government regulatory authority in a market economy, 2) a “Good Manufacturing Practices” workshop was held at the Tarasevitch Institute to cover vaccine batch control monitoring, and 3) a “Good Clinical Practices” workshop, conducted with the help of U.S. industry and nongovernmental clinical research organizations and attended by regulators and clinical investigators, addressed drug development, clinical trials, the role of government, the role of the company, the role of the investigator, and the rights of the patient.

The Tarasevitch Institute was provided with the scientific journals, supplies, and equipment needed to maintain vaccine quality control testing. Twenty-three scientists received FDA training in the United States, in subjects that included vaccine and biological products, manufacturer site visits, mock inspections, adverse reaction monitoring, test kit safety, purity, and potency, and, other quality control tests. This effort was directed towards upgrading the capabilities of the Tarasevitch Institute to ensure that vaccines produced in the NIS meet international standards for safety and efficacy. In addition, officials (one from each) of the three vaccine manufacturers (the Poliomyelitis Institute for polio vaccine, D. Mazai for measles vaccine, and Biomed for DPT vaccine) were provided with 3 months of observation and training in vaccine quality control at FDA headquarters.

FDA-Sponsored Information Exchange on Drugs and Biological Products

The FDA, the Ministry of Public Health, the Administration for the Introduction of New Drugs and Pharmaceutical Quality, and other agencies, with the cooperation of agencies throughout the NIS (with the exception of Kazakhstan which was deleted as the result of a rescission) reached an agreement on the issue of information exchange on drugs and biological products with the following goals:

- exchange information on regulatory practices including drug development, manufacturing quality control, product registration for drug and biological products, and related public health issues, and,

⁹Phil Budashewitz, personal communication, March 16, 1998, FDA, Technical Assistance to Russia and the Ukraine Program



- facilitate the development of the health sector by establishing a streamlined registration procedure for drugs and biological products that are produced in the United States and that the FDA permits to be marketed within the NIS

The FDA–Russia Drug and Biological Memorandum of Understanding (MOU) was signed in June 1994, and the MOU for the Ukraine was signed in August 1994. Both activities were expected to be completed by May 1995. Two pharmaceutical companies (American–Cyanamid/Lederle–Praxis and Merck and Company) were awarded grants to provide the training and the commodities needed by the Russian and Ukrainian governments.

American–Cyanamid/Lederle–Praxis

Existing documentation at USAID/Washington indicates that Lederle–Praxis Biologicals received a grant of \$818,880 from USAID (October 1992–November 1994) to provide raw materials, supplies, equipment, and training to the Russian Poliomyelitis Institute and Biomed Institute to restore production of polio and DPT vaccines. It was reported by Russian officials that a portion of the commodities expected in July 1993, was not received until 5 months later, and a significant proportion of the commodities was inappropriate and unusable. A February 1994 audit found that Lederle–Praxis had not provided the training anticipated, however, it was later determined that Lederle-funded business visits to U S vaccine producers by four directors from the Poliomyelitis Institute and the Immunology Institute could be construed as meeting the requirement for training in U S good manufacturing practices. During this assessment, Russian officials of the institutes were interviewed. It was ascertained that vaccine production continues. (Further details of the grant in question were not provided and institute officials were unwilling to discuss the details.) A final report on these activities was completed in December 1993 and was submitted to USAID/Washington.¹⁰

Merck and Company

A grant agreement between Merck and Company (October 1992–March 1994) supported the provision of commodities, equipment, and training to help restore vaccine production. Of the \$770,745 obligated, \$571,947 was spent to provide the promised commodities and to support observational training in U S good manufacturing practices for five executives from the D Mazai Joint Stock Company (Moscow) and N P O Vector (Novosibirsk). Available documentation demonstrates that the requirements of the agreement were fulfilled. Commodities and improved training assured that vaccine production did continue. The overall

¹⁰*NIS Feasibility Study: Manufacturing Facility for Diphtheria, Tetanus and Pertussis (DPT) Vaccine and Oral Polio Vaccine (OPV)* Lederle–Praxis Biologicals, December 1993



feasibility and costs of improving and expanding vaccine production were documented in Merck's final grant report to USAID ¹¹

World Health Organization (WHO)

The World Health Organization, serving the NIS through its European office, has come to play a central role in standardizing public health policies in many, if not all, NIS countries. In Russia, this role was not clear. Elsewhere, however, international programs such as the Expanded Programme on Immunization (EPI), control of diarrheal disease (CDD), acute respiratory infection (ARI), and now tuberculosis control, are measured against WHO standards and many employ WHO indicators, targets, and teaching modules.

USAID and the government of Japan were instrumental in establishing the Interagency Immunization Coordinating Committee (IICC) to coordinate donor agency support during the years of the diphtheria epidemic. WHO provided the Secretariat staff and a coordinating function. The IICC continues to coordinate immunization program support, having expanded its original focus to include measles and polio vaccination as well. Current topics of interest at IICC meetings, which take place three or four times a year, include vaccine self-sufficiency and the effects of privatization and health sector reform.

Little awareness of IICC at operational levels was found within the NIS countries. From their perspective, international coordination happens smoothly in the background, and they are able to address more immediate operational issues. The clearinghouse function was also not visible and seems to have played a minor role.

The international effort to ensure adequate vaccine supplies has been successful. In fact, the organization was discussing a "massive oversupply of primary vaccines" by 1996 ¹². Confirming the impact of greatly improved diphtheria vaccination coverage rates, the committee reported that diphtheria incidence decreased by 60 percent from 1995 to 1996 and by another 60 percent in early 1997. Polio surveillance suggests that natural transmission in the area has ceased and that countries are working to document their transmission-free status. In the CAR, for example, WHO is supporting this effort by coordinating enhanced surveillance of acute flaccid paralysis (AFP) through a combination of active surveillance, case investigation, laboratory confirmation, training, and communications.

¹¹Russia Vaccine Production Feasibility Study Project, Merck and Company, March 1993, revised February 1994.

¹²IICC, *Executive Summary, Report of the Sixth Meeting of the IICC*.



UKRAINE

Following early humanitarian assistance, USAID infectious disease activities in the Ukraine have been largely in response to the rise of diphtheria following the collapse of the Soviet Union. In 1990, 109 cases were reported—an increase of 33 percent over the average of the four previous years. By 1994, there were 2,990 reported cases for the year, in 1995, the numbers rose again. In response to this situation, USAID invited CDC assistance and signed a cooperative agreement with the Program for Appropriate Technology in Health (PATH) to strengthen the vaccination system. BASICS did not participate in USAID activities in the Ukraine until the current health initiative. In 1998, USAID/Kyiv continues to target support for infectious disease control as part of its strategic objective 3.1 “Reduce human suffering and negative consequences of crises.” A 3-year program, outlined in exhibit 5, will combine the efforts of CDC, BASICS, and PATH in health information systems and management reform.

Exhibit 5
USAID/Kyiv Ukraine Infectious Disease Program
Health Information Systems (HIS) and Management Reform

“[The Program] will provide assistance to the GOU to strengthen its management of infectious disease prevention and control efforts by improving access to and utilization of accurate, appropriate, and timely health and management information. The program will focus on infectious disease priorities as determined by the oblasts. However, to address the major deficiency of vaccine supply management revealed during USAID’s assistance to the GOU during the diphtheria epidemic and to address the Mission’s concern about a re-emergence of vaccine preventable diseases owing to the GOU’s weakened capacity for funding disease prevention and control activities, the program will include the management of vaccine preventable diseases. Changes will be developed through a model process involving local assessment of needs and priorities followed by methods development, technical training, and local introduction of reforms. Because the program will address information quality and information-based management practices, the strategy focuses on these areas, rather than the introduction of computer-based data processing, which is also frequently associated with HIS reform. In fact, the need to focus on reforms that are independent of computerization is a central strategic decision of USAID in consultation with the program design team.”

SOURCE: Executive Summary

CDC Activities in the Ukraine

CDC activities in the Ukraine began in response to the country’s request for emergency vaccine supplies in 1993. A rapid assessment of the growing diphtheria epidemic demonstrated the need for a study of vaccine efficacy, the results from which were reported in July 1993 in St. Petersburg. Technical assistance was subsequently provided in diphtheria



surveillance and control methods. Five Ukrainian epidemiologists were trained in September 1993 with funding from the NIS Exchanges and Training Project. CDC assistance since then has focused on either surveillance and control of diphtheria or on epidemiologic training.

In 1994, CDC assisted the Ministry of Health to adopt a diphtheria control strategy that proposed to vaccinate all adults aged 16–59 with a single dose of Td. When follow-up studies demonstrated that a significant proportion of adults, particularly those over 40 years of age, were failing to develop an adequate immune response, CDC officials assisted the MOH in designing a national mass vaccination strategy that added a second and third dose of Td to the adult series. After introduction of the mass strategy, diphtheria incidence began to drop in 1996. The rate continues to decline, and the epidemic appears to be under control.

To improve health program management in the Ukraine and other NIS countries, CDC developed a U.S.-based Russian-language course in applied epidemiology entitled, “Epidemiology, Biostatistics, and Scientific Communication.” Courses are conducted for 2–6 weeks and focus on the management of high-priority, public-health programs, such as vaccine preventable diseases. Currently, the course forms part of a USAID/Kyiv-sponsored health information systems and management reform program. Twenty-one Ukrainian health officials were trained in a November 1997 course.

CDC is also collaborating with the Republic Sanitary-Epidemiology Service (SES), BASICS, and PATH to develop a strategy and program framework to improve surveillance of infectious diseases through the improvement of the HIS. For example, CDC assessed the cost of terminal disinfection of homes and workplaces and found that 30 percent of the budget of the SES reportedly is used to support the practice of terminal disinfection¹³. This information should be valuable to MOH officials as they seek to maximize the use of scarce resources.

PATH Activities in the Ukraine

PATH was a participant in USAID’s Ukraine Humanitarian Health Assistance Activity of the NIS Special Initiatives Project, authorized in January 1992. In May 1994, a cooperative agreement (CA) was signed with USAID to provide additional humanitarian assistance to the Ukraine in addressing three important health problems—the diphtheria epidemic, childhood diabetes, and transmission of hepatitis B among health workers. The completion date of the original Memorandum of Understanding with the MOH (April 30, 1996) was later amended to October 31, 1997. The original CA was funded with an award of \$11.3 million, with two cost extensions: one for \$1.965 million for increased doses of diphtheria vaccine (July 1, 1995

¹³Terry Chorba, personal communication, CDC, Division of International Health, Epidemiologic Programs, Atlanta, Georgia



to October 31, 1996), and the second for \$95,270 for technical training in vaccine procurement (September 30 1996 through October 31, 1997) Total funding for the CA was \$13.4 million. PATH has been the principal implementing agency for USAID infectious disease interventions in the Ukraine.

The goal of the diphtheria control component was to assist the Ukraine in arresting the epidemic then in progress. To accomplish this goal, PATH developed a partnership with the MOH and worked closely with CDC to provide technical assistance for epidemiologic surveillance. PATH also developed ties with WHO, the Canadian government, and the European community via the Finnish Red Cross. The following four objectives were identified for PATH's diphtheria control elements:

- 1 To deliver, distribute, and evaluate the provision of Td vaccine and diphtheria antitoxin to the Ukraine, and to support cold chain maintenance and social mobilization,
- 2 To encourage the adoption of standardized methods to diagnose and treat diphtheria, following WHO guidelines,
- 3 To improve patient treatment through the supply of diphtheria antitoxin for treatment of cases and antibiotics for the prophylactic treatment of case contacts, and,
- 4 To strengthen surveillance systems and determine the impact of vaccination on the epidemic.

The MOH diphtheria vaccination strategy, influenced by continuing diphtheria and the recommendations of WHO, UNICEF, and CDC consultants, evolved during the period of PATH activity in the Ukraine. Originally targeting complete vaccination of children and adults at risk, the strategy by March 1995 included all adults aged 17–59, regardless of vaccination history, with an additional dose for those aged 30–49. This strategy, unique to the Ukraine, proved difficult to implement.

To meet these objectives, 22 million doses of Td vaccine were procured by December 1995, and an additional 10 million were obtained by May 1996 for mass campaign use¹⁴. The doses were inventoried and their distribution monitored. A system to monitor vaccine temperature was established, workers in all 27 oblasts were trained during 1994 to monitor temperatures and send the recordings once a month to Ukrvaccina. Quantitative research

¹⁴ David Mercer, personal communication, PATH Ukraine Humanitarian Health Assistance Project Final Report, December 1997.



methods were introduced to officials responsible for IEC and social mobilization through a series of four conferences in 1996. Laboratory protocols following international standards were written, and laboratory supplies were identified, ordered, and delivered. Laboratory workers were trained and antitoxin was procured. The request for antibiotics was withdrawn and its funds were reallocated to the mass campaign. Reports on investigations, surveillance, vaccination coverage, and case control studies were produced. Since September 1995, 16 surveillance meetings have been held with the MOH, 10 oblasts were visited to recommend operational changes, and interagency meetings were organized with the MOH at Pushcha Vodytsa (March 1995) and Pushcha Ozernaya (March 1996).

A second infectious disease component that was included in the PATH cooperative agreement was aimed at reducing the exposure of Ukraine health care workers to bloodborne infections. Because providing vaccine was not feasible, PATH provided assistance to improve control of all bloodborne infections in the health care setting by using a comprehensive approach to lessen exposure to diseases for which there are no vaccines. To introduce research methods for monitoring blood exposure among health workers, four studies were carried out in two hospital demonstration sites and their results presented at meetings. To improve health worker training in this area, PATH produced a monograph, a brochure, a poster, and slide presentations. To address the problem of the availability of barrier materials to limit bloodborne infection transmission, supply systems were studied, additional sources were identified, business plans were prepared for local production of barrier materials, costing methods were demonstrated and production was inaugurated. Fabric and sewing equipment were provided for the demonstration areas. A final report summarizing the effort was the subject of conferences that suggested that the MOH replicate these practices in other hospitals.

PATH directed other efforts toward strengthening the sustainability of Ukrainian public health capacity, including conducting IEC regional seminars (which introduced a curriculum translated into Ukrainian and was used to train more than 75 trainers and health educators), providing diphtheria diagnostic laboratory supplies for toxigenicity testing, providing cold chain monitoring electronic equipment to the central and all oblast vaccine cold stores, assessing a vaccine facility in Kharkiv, and, providing vaccine procurement training for 63 central and oblast procurement managers and 13 vaccine specialists.

An evaluation of the PATH cooperative agreement found that its roles and responsibilities had expanded well beyond those originally envisioned. In general, it found that PATH had met or exceeded the expectations of the CA.¹⁵ USAID, over the life of the project, has received complete reports, both technical and financial, on a regular basis.

¹⁵“Humanitarian Assistance in Ukraine: A Mid-Course Review,” USAID/ENI/HR/HP, August 1995.



Results from Responding to the Diphtheria Epidemic

The accelerating rise in the numbers of diphtheria cases was halted by the mass vaccination campaigns, the epidemic at its peak never reached the level of the Russian epidemic. The mass campaigns to vaccinate adults against diphtheria, a novel approach to diphtheria control, succeeded in reaching approximately 85 percent of the adult population with at least three doses of vaccine. This was the only time that universal adult immunization had been used to contain an epidemic already in progress. Over an 18-month period, campaigns were conducted in all 27 oblasts and administrative regions of the country. In all but one oblast, the incidence of diphtheria decreased from 1995 to 1996 across all age groups. This trend continued in 1997.¹⁶ However, problems in vaccine stock management remain. To avoid vaccine shortages, some oblast program managers are requesting twice their actual needs or are underreporting by half their stock on hand. Some oblast officials have no idea how much vaccine may be in stock at the raion level in the oblast.

MOLDOVA

USAID support for infectious disease programs in Moldova began in 1993 when the REACH project (precursor to BASICS) sent a specialist in cold chain equipment and stock control to the country to coordinate the distribution and installation of massive emergency supplies provided by the U.S. and Japanese governments (see annex F). This effort was followed by continuing technical assistance in infant and child immunization policy review, strategic planning, and implementation. A \$600,000 USAID grant was provided to UNICEF to support the 1995 national campaign against diphtheria as well.

Since the summer of 1995, the majority of USAID support has been through the BASICS project. It has focused on the development and strengthening of a sustainable immunization program, including equipment, program management systems, monitoring and evaluation of resource use, policy review, and disease surveillance and control. A special effort addressed control of the diphtheria epidemic that reached Moldova in 1994. Many of the BASICS activities were designed to contribute to the dual objectives of diphtheria control and development of an effective, sustainable immunization program. The effectiveness of the diphtheria control measures selected is reflected in the rapidity with which the epidemic was brought under control, largely during 1995, by a policy of vaccinating all eligible persons (not just high risk individuals) and treating primary contacts prophylactically with antibiotics.

¹⁶PATH Project Final Report, p. 11

The BASICS Program in Moldova

Beginning with the delivery, storage, and distribution of emergency vaccine supplies in 1993, the REACH/BASICS program has expanded to include almost all elements of the vaccination program in Moldova. The local partners involved in building health capacity in the public and private sectors are listed in exhibit 6. The program is discussed in the following five categories:

- 1 Local and international program coordination
- 2 Emergency response
- 3 Policy review and development
- 4 Capacity building
- 5 Response to the diphtheria epidemic

(Exhibit 7 on the following page presents a chronology of USAID's primary infectious disease interventions carried out and projected in Moldova.)

Program Coordination

Assistance to Moldova's National Immunization Program has come from numerous sources, most notably USAID, the government of Japan, and UNICEF. Collaboration among these organizations appears to have been effective and is continuing. An early REACH activity in 1993-1994 was to coordinate the provision and distribution of vaccines and cold chain equipment (financed mainly by the Japanese government). In 1993, project staff helped to coordinate the timely arrival of appropriate vaccines when the previous vaccination system had largely collapsed. In 1995-96, BASICS collaborated with UNICEF, WHO, and the government of Japan in the procurement and distribution of vaccine and equipment for disease control. An immunization cost-effectiveness study (Summer 1996) carried out with Moldova epidemiologists and pediatricians provides information to guide policy review and revision.

Exhibit 6 BASICS Partners in Moldova

- Ministry of Health
- Republic Sanitary-Epidemiology Service
- UNICEF
- Centers for Disease Control and Prevention
- World Bank
- TACIS
- Government of Japan
- Caritas
- Hospice Fund
- Save the Children
- Arson-injured Children's Assistance Fund
- Association Narcologia
- 'Help the Elderly, Solitary, Poor, and Sick
- "Vita-M'
- Association Against Epileptic Diseases
- Association of Morphopathologists
- Volunteers of Moldova for the Protection of the Rights of the Elderly and Invalids'
- Association of Kidney Diseases
- Association of Medical Workers N I Pirogov
- Bulgarian Fund of the Republic of Moldova for Charity and Health
- Family Planning Society (Beltsy)
- Fund for the Protection of Handicapped Children
- Fund for Assistance to People with Heart Disease
- Medical Fund of Moldova
- Moldova Society Chornobyl'
- Moldova Society of Traumatologists and Orthopedists
- Red Cross of the Republic of Moldova
- Republic of Moldova Foundation for Assistance to Children
- Republic Society 'AKME
- Republic Health of Mother and Child Fund
- Society of People Sick with Diabetes (Beltsy)
- Society of the Republic of Moldova for Bioelectronic Therapy and Diagnosis
- Trade Union of Public Health Workers



Exhibit 7

Chronology of USAID's Major Infectious Disease Interventions in Moldova

1993 (REACH)

- Conducted rapid assessment of vaccine and cold chain needs and coordination of international emergency donations
- Organized seminar on immunization norms that reduced contraindications and set new, WHO-type schedule
- Assisted Moldova health officers to create a plan of operations and first national immunization plan

1994 (REACH)

- Assisted in the receipt and distribution of cold chain equipment in Moldova

1995 (BASICS)

- Developed vaccine stock management system (stock control cards software training)
- Assisted in management of diphtheria control efforts (surveillance computers mass campaign logistics monitoring)
- Developed health communications skills and materials for diphtheria control mounted mass-media campaign
- Held first discussions with Kishinev refrigerator factory regarding manufacture of EPI cold chain equipment

1996 (BASICS)

- Continued improving vaccine stock control (training, new forms tracking systems, vaccine vial monitors)
- Initiated field research on immunization program costs
- Provided extended training in vaccine finance and procurement, leading to first international tender produced manual
- Provided technical assistance in implementation of National Immunization Days (for polio)
- Studied cost-effectiveness of the immunization program with assistance of Moldova health officials
- Sponsored participation of Chief Pediatrician in Novgorod seminar resulting in medical curriculum changes

1997 (BASICS)

- Assisted in analyzing diphtheria control prepared a journal article on the Moldova experience
- Reviewed system of vaccine stock management and cold chain equipment maintenance continued discussions with Kishinev refrigerator factory
- Planned with other donors for program sustainability when BASICS support ends
- Identified polio eradication diphtheria containment as future infectious disease targets

1998 (BASICS)—projected

- Introduce and train for stock card use at central and district levels
- Complete installation of new cold room at central level (government of Japan funding)
- Hold seminar to use findings of cost-effectiveness of immunization study to review plan of operations

In addition to its ongoing collaboration with health officials, BASICS financed a series of meetings and studies with officials of the Kishinev refrigerator factory to explore the possibility of producing cold chain equipment. The factory has the estimated capacity to produce 240,000 refrigerators and freezers per year, but its current production is only about 2,000 units per year¹⁷. Financial and technical feasibility studies were carried out by BASICS and PATH. Although the sample freezer tested by WHO's vaccination equipment testing program failed to meet certain standards, the factory is willing to make the necessary modifications, however, its business viability is in doubt because of high debts and the lack of assistance in debt relief from the government of Moldova.

Emergency Response

REACH provided emergency assistance from 1993 through 1994, which included emergency vaccine supplies to permit the continued vaccination of children, the replacement of approximately 20 percent of health facility vaccine refrigerators and freezers, the provision of vaccine carriers and transport boxes, and training in the use of new equipment. An additional emergency response was the provision of diphtheria vaccine during the epidemic.

Policy Review and Development

REACH and BASICS assisted in a number of studies and meetings that resulted in policy and operational changes in the Moldovan vaccination program. A REACH staff member contributed to the elaboration of a plan of operations for the national EPI in 1993. The cost-effectiveness study carried out in mid-1996 is expected to contribute to its revision when the results are reviewed in 1998. The study identified operational practices which can reduce program costs while improving immunization coverage and program performance. A separate study focused on winter vaccine storage problems. Translation into Russian of scientific documents from WHO, CDC, and elsewhere relating to vaccine preventable diseases, policy development, and program management permitted Moldovan officials to review and revise their own program. The list of contraindications was reduced from that of the complicated former immunization policy so that fewer doses were required, resulting in substantial cost savings. Annual savings that could be realized by revising the vaccination schedule were estimated at 33 percent.

Capacity Building

In addition to its original focus on vaccine supply, cold storage, and delivery, BASICS contributed to capacity building of Moldova's National Immunization Program in the areas of skill development, management information systems, and IEC. A large proportion of the

¹⁷Technical Assistance for Strengthening EPI in Moldova. S. Spanner, BASICS, 1997.



BASICS effort in Moldova has addressed the need for a reliable system for the procurement, storage, transport, and use of vaccines and related equipment and supplies. This began with the replacement and provision of cold chain equipment (described under the section on emergency response) and culminated in the installation of a modern cold room in the National Vaccine Stores, scheduled for completion in January 1998. A cold chain survey produced an inventory of current equipment and needs in 1996.

Managers at various levels of the immunization system have been trained in the use of the new equipment and in vaccine handling. A stock control and management system has been introduced for vaccines, supplies, and equipment, and personnel have been trained in the use of that system as well. A model for vaccine quantity estimation, requirement forecasting, budgeting, and procurement was developed to assist ministry officials to prepare their first international tender for vaccines in 1996. The manual produced for that exercise has subsequently been used in other NIS countries.

In addition to the information systems developed for vaccine management, improved immunization reporting forms were developed. Five computers were provided for use at the national level and in pilot districts. Russian-language EPI-INFO and EPI-MAP software were introduced along with preliminary training. The Commodities Logistics Management software package (in Russian with a manual in Russian as well) was introduced for managing the vaccine stock.

In the area of health communications, activities to promote public acceptance of vaccination were developed to support control of the diphtheria epidemic, and Moldovan officials were trained in modern methods of health communications.

Response to Diphtheria Epidemic

Many of the activities described above were prompted largely by a diphtheria epidemic that ravaged Moldova between 1993 and 1997, and for which the health authorities had no prepared response. Working with other donor organizations, BASICS assisted the Ministry of Health in implementing a mass immunization campaign supplemented by social mobilization, outbreak surveillance, and the identification and treatment of both cases and contacts. Coordination with other donors secured vaccines and supplies, antibiotics, and diphtheria antitoxin. BASICS worked with district doctors and epidemiologists to demonstrate the effectiveness of reducing transmission by treating primary contacts. The result was a much more rapid decrease in diphtheria incidence than that seen in surrounding areas, such as the Ukraine. Moldova now boasts diphtheria vaccination coverage of approximately 98 percent in children and 95 percent in adults.



CDC Activities in Moldova

Alarmed by finding that 10 percent of the population of Moldova are carriers of the hepatitis B virus, the Ministry of Health appealed to international organizations in 1992 and 1993 for technical assistance to react to this serious public health problem. CDC responded by sending an official who drew up protocols for a hepatitis B study. Three Moldovan officials were provided with 2 weeks of training in vaccine preventable diseases at CDC. Upon their return, they initiated the hepatitis B transmission studies.

During 1994 and 1995, blood samples were collected to study nosocomial hepatitis B transmission (n≈600). Samples from 340 newborns and 1,100 pregnant women were also collected. Information concerning possible modes of transmission was collected from cases and controls. The samples were sent to CDC for analysis, in 1997, one of the Moldovan researchers returned to CDC to help analyze the findings. The results were presented at a professional meeting in San Francisco and in Moldova during the Fourth Congress on Epidemiology, held in September 1997, in Chisinau. As of November 1997, the Moldovan researchers were planning to publish the results in their local medical journal, including recommended procedures for local health workers and laboratories.

Grant to the United Nations Children's Fund (UNICEF)

UNICEF was the recipient of a USAID contribution of \$600,000 for the 1995 national campaign against diphtheria which aimed to increase immunity levels in the population, prevent transmission by tracing and treating contacts, and prevent complications and deaths by ensuring early diagnosis and treatment. The grant was used to provide diphtheria vaccine, syringes, needles, and antitoxin. A course for raion epidemiologists improved their skills in cold chain, storage and use of vaccines, planning, and decision-making. Intensified IEC and special efforts to reach the entire population were implemented late in 1995, and the diphtheria incidence began to fall.

KAZAKSTAN

As in other NIS countries, health services and indicators of infectious disease morbidity and mortality have declined in Kazakstan since the collapse of the Soviet system of public health. Numerous efforts have been launched (USAID programs among them) to reverse the decline and to address infant and maternal deaths, most of which are preventable. Other infectious diseases that have been inadequately addressed to date are tuberculosis and sexually transmitted diseases. At present, Kazakstan public health officials are particularly concerned about hepatitis A and tuberculosis.



The health system inherited from the Soviet era is intact but deteriorating. A worrisome sign to health personnel is the recent incorporation of the Ministry of Health into the Ministry of Education, Culture, and Health, in which health is merely a committee. Aside from focused efforts such as *ZdravReform*, the system continues much as before and is characterized by a top-heavy, duplicative hospital system, nearly universal access to large numbers of health workers who are limited by specialty and widely dispersed, idiosyncratic treatment policies with costly, excess hospitalization, inadequate drugs, equipment, and supplies, and, underutilization of the well-distributed primary health care system. Policy review to rationalize treatment approaches has begun for a limited range of conditions, including some infectious diseases.

Health care policy is centrally directed, as under the Soviet system, leaving little opportunity for policy dialogue or local adaptation. Treatment regimens are often costly and unsupported scientifically (e.g., tuberculosis control and hospitalization, excess use of antibiotics, excess contraindications to vaccination). Responsibility for health rests with medical personnel, it is only beginning to be shared with the family and the individual. A sign of change is EPI's plan to begin issuing patient-retained vaccination cards in 1998.

Despite resource limitations and insecurity, the basic system of peripheral feldsher-accoucheuse posts (FAP) supported by polyclinics and hospitals continues to function. The system of sanitary and epidemiology services (SES) oversees infectious disease prevention and control. It relies on a laborious, manual health statistics system—as distinguished from an automated health information system (HIS)—that functions with minimal computerization. Most Kazakstan health authorities continue to view health data not as information directly available to program managers at different levels that can help them make appropriate decisions, but as information for epidemiologists (present at raion, oblast, and national levels) to process and analyze so that complete statistics are available and errors and deficiencies can be corrected.

Surveillance is based on the collection and analysis of massive quantities of routine data, supplemented by immediate notification to higher authorities of every case of public health importance, such as communicable diseases. Investigation of the individual cases follows. USAID-supported surveillance and HIS initiatives have only begun to suggest alternative approaches.

USAID in Kazakstan

Beginning from concern for the diphtheria epidemic, USAID's infectious disease programs in Kazakstan have concentrated on controlling and monitoring the vaccine preventable diseases and more recently, the control of diarrheal disease (CDD) and acute lower respiratory infections (ARI) in children. There has also been support for review of tuberculosis control.



policies and help to commit to a directly observed therapy, short course (DOTS) program. An important parallel USAID program, targeting reform of health care delivery and financing, is the *ZdravReform* project. The present programs are currently being combined to incorporate reform elements, continued surveillance, support for selected child survival elements, and the development of an effective new tuberculosis program. It has been decided that the current BASICS project will be allowed to terminate, and selected elements will be continued by the new omnibus program. Plans for future USAID programs can be seen in annex G.

The tuberculosis control elements of the new program will build on the policy changes that resulted from an interagency conference on tuberculosis, at which CDC and other U.S. agencies played key roles, as well as the impressive groundwork of Project HOPE in Atyrau oblast of western Kazakhstan (see annex H). Financed principally by Chevron Munaigas, the local Chevron affiliate, Project HOPE was able to demonstrate the efficacy of the modern DOTS treatment approach. Because of the impressive results, Project HOPE was permitted to expand the initial effort within the past year by operating a mobile tuberculosis clinic and training unit in Almaty oblast and city and opening an office in the national headquarters of the National Tuberculosis Institute. The Lutheran Ministries will upgrade the Institute's laboratories, in addition, the Institute is now testing whether the WHO approach will work elsewhere in the country.

Exhibit 8
Project HOPE in Kazakhstan

USAID's new support for tuberculosis control in Kazakhstan illustrates how policy change can come from various sources. The program began when Chevron Oil Company, in collaboration with its local partner, decided to provide social sector assistance to the local population in the area of its operations on the eastern shore of the Caspian Sea. When tuberculosis was identified as a serious local problem that was not being addressed, Project HOPE was engaged to develop a modern tuberculosis program based on current WHO recommendations, including diagnosis and follow up by laboratory sputum examination and treatment with a four-drug combination as specified by the protocol for DOTS.

Permission to use the WHO approach was initially refused by the National Tuberculosis Institute, a powerful organization largely independent of the rest of health services that is responsible for tuberculosis and the general health care of people with the disease. When Chevron insisted that DOTS was the only approach to be used or it would not contribute to tuberculosis control, it was agreed that Project HOPE could demonstrate the new protocol on a selected list of patients, most of whom had proved refractory to previous care. Surprised by the effectiveness of DOTS in "curing" a high proportion of these chronic patients, additional patients were authorized for DOTS treatment. More than 90 percent responded within the 6 months of treatment by converting from sputum positive to negative, meaning that they were no longer a source of tuberculosis transmission to others. DOTS became the standard treatment in the Atyrau oblast. Early in 1997, Project HOPE was invited to try to demonstrate the same effect in the Almaty area, and an office was established at the National Tuberculosis Institute to train personnel in the approach.

BASICS in Kazakstan

BASICS maintains a regional office for CAR in Almaty and hired an expatriate regional adviser during 1996–97. Currently, its Kazakstan activities fall into two categories, each managed by a national technical officer. The longer running program, support for EPI, grew out of diphtheria control efforts and is national in scope. Major activities in 1997 included a regional seminar on vaccine procurement and quality assurance and a seminar reviewing diphtheria control and EPI monitoring and reporting.

The second area of BASICS concentration in Kazakstan is the strengthening of ARI and CDD in Zhambul oblast, one of the three oblasts in CAR that were selected for the Central Asia Infectious Disease Program (CAIDP) (see annex I), a program implemented jointly by BASICS, CDC, and the Rational Pharmaceuticals Management (RPM) project.¹⁸ CAIDP in Kazakstan was intended to focus on CDD, ARI, and tuberculosis. Work in Zhambul has concentrated on policy review followed by extensive health worker training in CDD during the summer months and ARI during the winter. Exhibit 9 highlights a particularly interesting activity.¹⁹

Particularly as part of CAIDP, BASICS has introduced improved methods to train and supervise midlevel and peripheral health personnel. These methods have been recognized by national authorities as revolutionary, and as a model to be implemented widely. One of the most respected professors of pediatrics in Kazakstan, Dr. Apuyova participated in these training sessions. Ministry officials have requested assistance from BASICS in obtaining

Exhibit 9 CAIDP Health Facility Assessments

As part of the CAIDP program, BASICS carried out a rapid integrated health facility assessment in three targeted oblasts—Osh in the Kyrgyz Republic, Zhambul in Kazakstan, and Ferghana in Uzbekistan. The objective was to provide health officials with a method by which they could assess periodically current maternal and child health knowledge and practices, training and supervision, and equipment and supply of front line health care workers and facilities.

The Rational Pharmaceuticals Management Project collaborated on drug availability questions. Survey instruments were developed for use in Russian and local languages. The findings present a richly textured view of health care for children, family and health worker knowledge and behavior, supervision and support, and areas of immediate need. Based on the findings, officials requested help to develop checklists to monitor and supervise CDD and ARI case management. As the author of the BASICS report points out: "This survey provides the oblast governments with a low cost tool to quickly assess their health facilities for major problems and decide on how to address them and monitor improvement."

¹⁸This project appears to have carried out an early assessment, is no longer active in Kazakstan, and was not included in the current assessment.

¹⁹"Health Facility Assessment: Zhambul-Kazakhstan, Osh-Kyrgyzstan, Ferghana, Uzbekistan." Paul Ickx, BASICS, November 1996.



videotapes of her participation in the sessions for use in health worker training throughout the country

BASICS work in Kazakstan has been carried out in collaboration with other organizations, beginning with joint efforts to control diphtheria. Interventions employed included mass vaccination, revision of the list of acceptable contraindications, and intensified case surveillance. Diphtheria has now receded to its former level of endemicity and is under routine surveillance.

Recent examples of collaboration include seminars and workshops that convinced national authorities to question and ultimately replace existing vaccination policies that required that excessive immunization be given to most people while too many others were exempted by reason of unfounded contraindications. In 1997, BASICS, PATH, CDC, Abt Associates (*ZdravReform*), WHO, and UNICEF worked together to arrange a seminar on vaccine procurement to demonstrate in a practical way how to organize and carry out that process. This exercise led to the preparation of the country's first tender for vaccines, a major achievement for EPI in Kazakstan.

Among the health officials encountered during the assessment, the highest profile USAID health program in Kazakstan has been BASICS. While there is some uncertainty in their minds about what USAID is, they were clear about BASICS and the role it has had in advancing their EPI, CDD, and ARI programs. BASICS established itself very securely within maternal and child health (MCH) services at the national level and in those districts where its programs were implemented. For the most part, its program strategies are identified with WHO, now recognized as the international arbiter of appropriate programs. BASICS is viewed as a source of invaluable assistance in introducing and implementing the changes required.

The effectiveness of EPI activities is reflected in the increase in vaccination coverage by age 2, an indicator selected for monitoring progress on strategic objective 4.1, USAID's infectious disease earmark. Table 3 on the following page shows that progress through 1996.

CDC in Kazakstan

CDC has posted personnel to Almaty to serve the CAR region. The largest share of the work has been in Kazakstan, where a special advisory relationship with USAID has developed. As noted above, CDC contributed to convincing the nation's officials to institute vaccination policy changes that eventually brought the diphtheria epidemic under control. In assisting health officials to revise public health policies—most notably as a result of a June 1997 seminar featuring presentations by native Russian speakers, CDC has facilitated important cost savings for the health sector. Removing the previous requirement that all cases of hepatitis A be

hospitalized, usually for 2–4 weeks, resulted in savings estimated at \$2.6 million per year. Other cost-saving revisions included the outpatient DOTS as the preferred approach to tuberculosis treatment and the cessation of terminal disinfection by SES squads (formerly about 30 percent of the SES operating budget) of the homes of infectious disease patients.

Table 3
IMMUNIZATION COVERAGE REPORTED BY MOH/KAZAKSTAN
 (Percent of children fully immunized by 2 years of age)

	1993	1994	1995	1996
BCG (immunization for TB)	93	86	90	98
Diphtheria	92	85	93	95
Measles	91	72	95	96.6
Pertussis	76	80	91	94.1
Poliomyelitis	69	75	94	97.8
Tetanus	92	85	93	95
SOURCE: BASICS				

Other policy changes facilitated by CDC in Kazakhstan include a decision to introduce hepatitis B vaccination (albeit with a less costly vaccine than that ordered by the government), the adoption of WHO protocols for CDD and ARI, the reduction of BCG vaccination from four to two doses, and cessation of annual Mantoux testing of children aged 3–12. CDC is collaborating with WHO and the Kazakhstan health authorities in the surveillance of acute flaccid paralysis (AFP), required to be certified as having eradicated polio, a Kazakhstan goal for the year 2000. CDC coordinated the establishment of an index laboratory for polio eradication in Almaty to serve Kazakhstan and the Kyrgyz Republic. The laboratory collects stool samples and serum from AFP patients, tests for polio antibodies, cultures stool for virus identification, and sends any viruses found to Moscow for typing.

In a demonstration of focused surveillance within the context of the CAIDP program, CDC supported a year-long study of all deaths occurring in children under the age of 5 years in Zhambul oblast. This identified points at which procedural interventions could prevent deaths. The study collected its final field data and the results have been presented to the respective Ministries of Health in Kazakhstan and the Kyrgyz Republic, the USAID Global Bureau, and the USAID Central Asian Mission. In fact, the survey has served as a health intervention with the MOH and oblast health infrastructure mobilizing around these issues. There appears to

be a significant reduction in infant deaths in Zhambul oblast when one compares the months of November 1997 to March 1998 with the same 5-month timeframes in each of the preceding three years ²⁰

With assistance from CDC, Kazakstan developed a bulletin of infectious diseases and control that is modeled on the Morbidity and Mortality Weekly Report (MMWR). To date, it is appearing irregularly, but continues to be published without outside support. Surplus computers were donated by CDC. EPI-INFO and EPI-MAP locally tend to be used only for the applications that were created and taught as part of the vaccine preventable diseases workshops in Kazakstan and Uzbekistan, that is, for diphtheria and AFP surveillance.

Health Management Information Systems (HMIS) in Kazakstan

Given the importance to public health management of surveillance and operational data and the interest on the part of USAID-supported programs in these areas, a special effort was made to assess current systems, both manual and automated, for the collection and use of health data. The systems of both the SES and the MOH were reviewed. Collection forms were examined, data paths were traced, and the use of data at different levels and computerization efforts and desires were explored.

The old information collecting, recording, and reporting system persists virtually unchanged except that the data are sent to headquarters in Almaty rather than Moscow. Because the system is almost entirely manual at present, significant redundancy of collection, recording, transcription, storage, and reporting threatens its operation, cost-effectiveness, and viability. Much of the laboriously hand-copied information is never used. A system using computers to support the national HIS exists, however, the system is disconnected and, more significantly, essentially follows the Soviet model—it is characterized by redundancy, overlap, and duplication of data collection, processing, and reporting. On the programmatic level, computer use in Kazakstan is fragmented and has minimal support.

²⁰Findings of this survey indicate that the majority of infant deaths among children older than 7 days of age are due to diarrheal disease, not 15 percent as commonly believed based on death certificate data. Many of the deaths occur after the third day of hospitalization, suggesting that rehydration interventions merit emphasis. The true infant mortality rate at least doubles the 26 per 1,000 reported from death certificates, far exceeding the 40 per 1,000 estimated in the Demographic and Health Survey. This reflects the fact that the local case definition for a live birth in this region generally excludes all children born weighing less than 1,000 g, children born prior to 28 weeks of gestation, and children born who are not breathing, unless the child lives past day 7. (Terry Chorba, personal communication, June 1998)



Other Infectious Disease Activities in Kazakhstan

UNICEF supports a wide range of programs relating to maternal and child health in Kazakhstan. Its major intervention is now the "Aral Sea Project for Environmental and Regional Assistance," which helps families in that area cope with the increasing health risks stemming from the increasing desiccation and pollution of the lake area. To date, UNICEF activities in Kazakhstan and Central Asia have been coordinated by the regional office in Islamabad, Pakistan. In 1998, however, the regional office is scheduled to relocate to Almaty. This will improve access to UNICEF assistance throughout the CAR.

Kazakhstan has been selected as a pilot country for introducing and testing WHO's new Integrated Management of Childhood Illness (IMCI) protocols, important parts of which BASICS developed. The program will have to be adapted to local conditions, for example, by reducing the section on malaria, because that is not a real problem in Kazakhstan. Inasmuch as the training efforts already introduced in Zhambul use training modules that will be part of the IMCI training package, they take on added significance.

KYRGYZ REPUBLIC

The health system of the Kyrgyz Republic shares the problem of the other former Soviet countries: health indicators are declining, infectious diseases are increasing, and most infant and maternal deaths are due to preventable causes. The health system of the Soviet era is deteriorating, but reform is occurring. Until USAID's projects assisted EPI in reviewing and revising its policies, widespread coverage was significantly inhibited by idiosyncratic contraindications policies.

The system of sanitary-epidemiology surveillance continues to oversee infectious diseases, monitoring disease patterns with the laborious, old manual system of statistics that are analyzed by epidemiologists at central levels to correct "errors." Health systems information is not designed for program managers to monitor and guide their decisions. Surveillance consists of analyzing large quantities of routine data and immediate notification for follow up of individual cases of targeted diseases. Special surveys or other research methods are not generally used at the local community/oblast level.

Perhaps because of its relative poverty, combined with a greater willingness to collaborate with international donors, the Kyrgyz Republic has attracted more international assistance than most of its neighbors. Most significant has been World Bank assistance which culminated in the MANAS program that began with a thorough assessment of the health system and is implementing a three-phase development program. The findings and conclusions of the needs assessment and identification of priorities are contained in the document, *MANAS National Programme on Health Care Reforms (1996-2006)*, published in Bishkek in 1996, which



constitutes an excellent framework for reform into which the activities of USAID and other international donors can be fitted. For the short term, the emphasis is on reform and revitalization of services concerned with the health of women and children, the control of infectious diseases, and the prevention of cardiovascular disease. Improvement of these programs requires drugs and supplies, inservice training of health personnel, and health education of the public.

USAID in the Kyrgyz Republic

USAID support to date has emphasized infectious diseases (immunoprophylaxis of vaccine preventable diseases, improved treatment of diarrhea and ARI, and surveillance of diphtheria, polio, and childhood mortality), review and redefinition of health policies and practices (vaccination policy, *ZdravReform* in Issyk-kul oblast), and the retraining of health personnel. USAID/CAR plans to continue to support *ZdravReform*, strengthen disease surveillance, and provide training for child survival interventions. As in Kazakhstan, there is considerable concern among public health officials about the impending loss of BASICS and little understanding of future USAID interests or programs.

BASICS in the Kyrgyz Republic

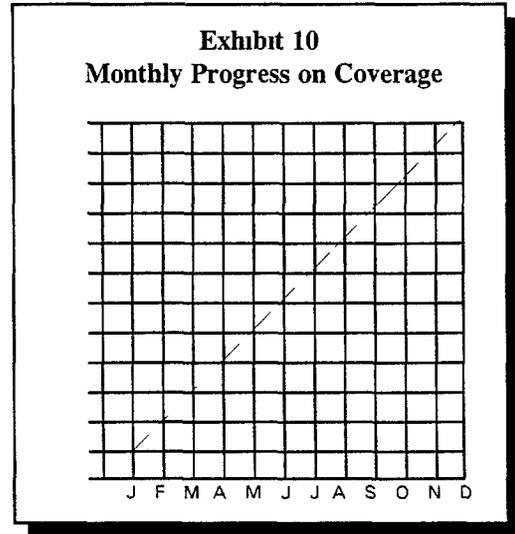
As in Kazakhstan, BASICS in the Kyrgyz Republic has provided long-term assistance to EPI and more recent CAIDP assistance to a pilot oblast. EPI efforts have been tested in Almadun raion, on the outskirts of Bishkek, where changes in the information system were piloted. ARI and CDD interventions have been concentrated in Osh oblast. (Both pilot areas were visited during this assessment.)

The programs introduced and supported by BASICS are the best known and best integrated of the USAID-supported infectious disease activities. It is generally considered that the project follows the WHO recommendations that are now being incorporated into the Kyrgyz health system. BASICS is credited with having added these special elements: superior training and supervision methods, support for review and revision of EPI indicators, provision of miscellaneous funding and resources for the programs with which they work, and units on supervision and breastfeeding to the child survival training program.

BASICS activities in the Kyrgyz Republic have been managed by incountry staff who report directly to BASICS headquarters personnel with little involvement of USAID either in Bishkek or from the regional Mission in Almaty. Because of this situation, there has been relatively little direct communication with USAID by either local BASICS personnel or by their counterparts in the Ministry of Health.

Immunoprophylaxis Management Information System (IMIS) Revisions

In response to the need among EPI program managers to monitor progress on vaccination coverage by local area, BASICS assisted in the development of a new form, adaptable for use at all levels, to plot the cumulative numbers of vaccinations given each month against the expected target. Excellent existing data on dates of birth and where each child should be vaccinated permit quite accurate definition of the monthly targets. When graphed, month by month and quarterly, program managers at the health facility, raion, oblast, and national level can easily see which areas are meeting their targets and which are not. Areas in which coverage is faltering can then be visited by supervisors to help solve local problems. The diagonal line in exhibit 10 represents the coverage target (actually 96 percent). In the system, the horizontal axis is labeled with the months and the vertical axis is labeled with the cumulative number of vaccinations given.



A second problem for program managers was knowing whether the directive to remove unnecessary contraindications was being respected. It was decided that the proportion of children presenting at each facility during a given month who are turned away because of contraindications should be monitored. Locations where this proportion exceeds a threshold of 5 percent can then be contacted or visited to reinforce the need to vaccinate as many children as possible.

BASICS worked with health personnel of Alamadun raion to test these two indicators. National officials were so impressed by their utility that they were added to the program throughout the country. It is actually a modification of the old system that improves management through decentralization of coverage information and a warning system which signals when the expected target or range is not being achieved and supervisory assistance or further investigation may be needed. Perhaps most importantly, it demonstrates that immunization officials can now develop their own management tools. Officials from Uzbekistan and Kazakstan have come to observe the new system and have shown interest in developing similar tools for their programs. A similar coverage graph has been developed by EPI officials in Kazakstan. Table 4 demonstrates the effectiveness of EPI efforts to improve vaccination coverage of children.

Table 4
IMMUNIZATION COVERAGE REPORTED BY MOH/KYRGYZ REPUBLIC
 (Percent of children fully immunized by 2 years of age)

	1993	1994	1995	1996
BCG (immunization against TB)	95	98	96	97 3
Diphtheria	64	85	93	97 7
Measles	93	89	97	98
Pertussis	60	83	92	97 2
Polomyelitis	69	85	96	94 2
Tetanus	64	85	93	97 7
SOURCE BASICS				

Inservice Training for Control of Diarrheal Disease (CDD) and Acute Respiratory Infection (ARI)

In Osh oblast, the most populous province in the Kyrgyz Republic, BASICS has developed an ongoing inservice training program for front-line health workers on CDD during the summer months, when diarrhea tends to be a problem, and on ARI during the winter months. Two such training sessions of feldshers were conducted by their supervisors in Russian and local languages were observed. Each student had his or her own written materials and reported on the clinical case he or she had managed in the morning. This effective, participatory, clinically oriented training model is credited to BASICS by local authorities. The training modules used were developed by WHO, BASICS has reportedly added a section on breastfeeding to the CDD module.

CDC in the Kyrgyz Republic

As in Kazakstan, CDC in the Kyrgyz Republic has contributed frequently to policy review and revision. The less conspicuous role of CDC in the Kyrgyz Republic than in Kazakstan can be explained by the relatively greater presence of international donors and the fact that CDC has no permanent representation in the country. CDC is viewed as an organization that periodically has helped to provide training in policy change as well as technical assistance.



concerning specific disease control problems²¹ CDC has recently received a request from the MOH to help establish sentinel surveillance for hepatitis and will assist in this effort throughout the next fiscal year CDC has had limited funding for work in the Kyrgyz Republic but has conducted extensive training in culturing and identification of respiratory tract pathogens for surveillance purposes and has computerized Issyk-kul oblast down to the raion level In addition, CDC has provided the MOH with the appropriate wording for cost-effective prikazi for hepatitis, ARI, diarrheal disease, diphtheria, and polio surveillance CDC also has been working with the Tuberculosis Institute in Bishkek to improve the microscopic identification of acid-fast bacillus for surveillance for tuberculosis, continued work in this area and in the computerization of data with respect to the diagnosis and treatment of individual cases of tuberculosis will occur in the next fiscal year As elsewhere, an epidemiologic bulletin modeled on the MMWR and concentrating on infectious diseases has been initiated and is published monthly According to the officials in charge, it is now published without outside assistance

The computers provided to the health services through USAID and distributed on the basis of discrete tasks rather than as part of an integrated system are essentially inoperable at this time Local maintenance has not been possible Although there is serious interest in computerization as evidenced by preliminary plans for the central SES to use an "Asia Info" electronic mail system to transmit data and information regarding infectious diseases, use of CDC's EPI-INFO and EPI-MAP software programs was not apparent at the time of this assessment

Computerization and Health Management Information Systems in the Kyrgyz Republic

As part of its review of the HMIS function in the CAR, computer applications in the Kyrgyz system were assessed In general, it was found to be poorly supported and used in a fragmented fashion As discussed above, the IMIS is a procedural improvement which results in the reporting of additional data of a segment of the immunization reporting system Although it is significant as an effort pioneering the introduction of change from the previous system, it has much potential for improvement from the information systems perspective The "Asia-Info" electronic mail system is used to transmit infectious disease information by the SES which demonstrates the potential for system improvement

Other Infectious Disease Activities in the Kyrgyz Republic

The Kyrgyz Republic has attracted considerable donor assistance The World Bank plays a dominant role through its funding of the broadly focused MANAS program WHO is a

²¹As in Kazakstan CDC has emphasized in its training the importance of applied epidemiology, stressing the need to adopt the approach as policy AFP is now being reported as a routine statistic



resource for technical expertise and for tested public health programs and protocols. UNICEF provides immediate support for a variety of programs affecting child health with a particular focus in Naryn and Talas oblasts where it provides support for CDD and ARI programs similar to that provided by BASICS in Osh oblast. Other donors are present and eager to participate in key programs, often working in a defined geographic area. The MOH considers donor coordination to be its responsibility. Uncertainty about sources of future assistance, however, was expressed by numerous officials.

UZBEKISTAN, TURKMENISTAN, AND TAJIKISTAN

The countries of Uzbekistan, Turkmenistan, and Tajikistan were not visited because of a lack of time and Mission clearance. Inasmuch as USAID-supported infectious disease programs have been coordinated by USAID and CDC personnel in Almaty, information was obtained about some of the activities carried out in these countries. Because national health officials were not interviewed, however, it was not possible to determine the results of USAID-supported interventions on local public health services. Annex J provides a brief overview, based on secondary information, of some of the activities carried out in these countries.

BASICS and CDC have undertaken activities in Uzbekistan, Tajikistan, and Turkmenistan that resemble those of Kazakhstan and the Kyrgyz Republic. EPI programs have been strengthened in all countries and epidemiologic bulletins have been established. Ferghana oblast in Uzbekistan has served as the third pilot site for CAIDP activities that included CDD and ARI.

CDC surveillance efforts have addressed different problems in these countries because of dissimilar patterns of infectious disease. Malaria, which rebounded following the relaxation of vector control programs and the return of soldiers from Afghanistan, was studied in Tajikistan.²² More important in Tajikistan is Dushanbe's typhoid outbreak which began in the winter of 1996-97, it was the largest typhoid outbreak ever identified in a modern city—more than 6,000 cases occurred in a 3-month period. A team of experts from CDC (sent by USAID) traced the cause of the outbreak to contaminated municipal water as it was carried through the distribution network, which resulted from a lack of chlorine in the drinking water, frequent leaks in the pipes, and a lack of water pressure brought on by a high level of water wastage. To address the problem, USAID funded the Federation of the Red Cross and Red Crescent Societies to assist local officials to follow CDC recommendations to prevent typhoid. These efforts have been highly successful and the incidence of typhoid this year has decreased by more than 90 percent. In the year following the initial CDC assessment, the water conservation campaign has cut water wastage in half which has permitted a large portion of

²²Epidemic Malaria—Tajikistan, 1995. *Morbidity and Mortality Weekly Report*, 1996, 45:513-515.

the population to be provided with water from the cleaner and safer groundwater sources²³ In Turkmenistan and elsewhere, hepatitis A outbreaks constitute another serious problem that is the subject of ongoing studies by the CDC

The new health program of USAID/CAR includes continued support for surveillance and applied epidemiology throughout these countries, but the focus of each country will depend on local epidemiologic patterns In Kazakstan, the Kyrgyz Republic, and Uzbekistan, tuberculosis is expected to be the focus, based upon the demonstrated success of directly observed therapy approaches to the control and eradication of this disease In Tajikistan, typhoid is the priority, which reflects the concomitant concern of the MOH regarding the quality of water supplies and environmental health and sanitation In Turkmenistan, developing highly effective programs for dealing with water-borne diseases is the primary public health issue

THE CAUCASUS

This region, named after the Caucasus Mountains, represents a geographic and historical crossroads between South Asia and Eastern Europe Three former Soviet republics now are the independent nations of Armenia, Azerbaijan, and Georgia USAID began providing emergency technical support for childhood immunizations throughout Central Asia through its REACH program from 1992-93 Since 1994 BASICS has worked in the region to develop vaccine security, immunization policy, and IEC efforts in support of mass diphtheria immunization campaigns

As the disintegration of the Soviet Union began, ethnic conflicts emerged The economic disruption caused by internal warfare and independence from the Soviets in December 1991 was mirrored by the collapse of the existing health systems in Armenia, Azerbaijan, and to a lesser extent, Georgia Exacerbated by the ravages of war and the internal movement of refugees, the Caucasus began experiencing severe outbreaks of typhoid, diphtheria, tuberculosis, and measles by the end of 1991 This was an early indication of how quickly public health systems could become dysfunctional, as each newly independent republic had to create its own health system

Prior to independence, the Soviet Union had maintained a reliable public health system, with high levels of immunization for children as well as adults from a reliable vaccine supply produced in Russian and distributed to the republics Virtually overnight, independence forced the advent of new banking and financial systems, currency shortages, and shortages of imports based on hard currency exchanges including vaccines In recognition of the overall threat to

²³ Water Conservation in Dushanbe, Tajikistan Averts Typhoid Epidemic USAID/CAR ENI Weekly-FY Week 30, For the Week of April 26 1998

health and regional destabilization posed by the lack of vaccines, USAID launched an emergency support program in early 1992. Diphtheria vaccine and cold chain equipment were delivered to administer immunization for an estimated 1 million children²⁴. It was evident, however, that such aid was a short-term solution to a long-term endemic problem.

USAID, in concert with CDC, sent assessment teams in 1992 to determine how to design and provide humanitarian assistance in a timely fashion²⁵. The team also urged the implementation of an emergency surveillance system via a long-term agreement for USAID/CDC cooperation to develop a sustainable health information system. REACH also conducted rapid assessments in the beginning of 1993 of vaccine needs in four CAR countries, Moldova, and Georgia—noting that the vaccine stocks in Georgia were very precarious²⁶. To control the diphtheria epidemic in the three Caucasus countries, USAID contributed \$3 million through UNICEF for vaccines, needles, syringes, antibiotics, antitoxin, cold chain equipment, and logistical support (see annex J). In July 1994, USAID entered into a PASA with CDC for providing technical assistance in developing monitoring and surveillance health systems in the NIS, noting the considerable needs of the Caucasus and the CAR. Resident CDC advisers were posted in Yerevan (Armenia), Tbilisi (Georgia), and Almaty (Kazakhstan). These advisers have been instrumental in assisting the respective MOHs in Armenia and Georgia to develop their health surveillance systems²⁷.

A review of UNICEF, CDC, and nongovernmental organizations to control the diphtheria epidemic in the Caucasus determined that the efforts of these agencies had been largely successful in controlling the epidemic. The review also concluded that each country in the Caucasus faces long-term obstacles for implementing diphtheria control methods, ongoing potential political unrest, limited resources to provide adequate health care, and the need for training health workers. Mass polio immunization campaigns in 1995 demonstrated that, at least in the short term, national health campaigns can be carried out successfully²⁸. Despite many obstacles, effective public health surveillance systems are now in place in Armenia and

²⁴REACH, "Reflections on REACH Immunization Program Assistance to the Former Soviet Union 1992–93. January 1994. Robert Steinglass.

²⁵Scott McNabb, personal communication. CDC, Chief of Capacity Development, Division of International Health Epidemiology Programs, Atlanta, Georgia.

²⁶REACH, "Emergency Immunization Support Program: Assessment of 1993 Vaccine Needs in Six Newly Independent States," (February 22–March 20, 1993), p. 10.

²⁷Scott McNabb, personal communication.

²⁸BASICS, "Diphtheria Control in Armenia, Azerbaijan, and Georgia," August 1995, Technical Directive 000NS 01 021 (Mark Weeks).



Georgia They are maintained by the MOHs without external support and are now capable of detecting new disease outbreaks ²⁹

²⁹Scott McNabb, personal communication



IV CONCLUSIONS AND RECOMMENDATIONS, BY COUNTRY

RUSSIA

USAID should support the ongoing translation and distribution of major documents of public health importance into Russian for use in the NIS

USAID programs have contributed significantly to the vaccination programs. CDC and BASICS have collaborated well in diphtheria prevention and control in the Russian Federation, demonstrating important lessons in vaccination policy, outbreak response strategy, refresher training of health workers, and public awareness. To control epidemic diphtheria, the strategy to re-immunize in the shortest possible time all pre-school children, school children, adolescents, and adults regardless of immunization history (usually not known in adults) proved effective in Russia. Russia has made significant strides in the immunization of children as well as adults. Important changes in vaccination policy have been put into place with USAID-supported activities contributing to that achievement.

Modern information, education, and communications (IEC) methods were demonstrated. BASICS demonstrated the efficacy of modern health communications approaches and strengthened the capacity of Russian health services to carry them out at central and peripheral levels. At this time, "Medicine for You" appears to have the lead role in producing media programs for the MOHMI and SCSES and is ready to work with the emerging health insurance system in disease prevention and health promotion. In addition, "Medicine for You" may become a primary conduit for providing health information to the public.

Inadequate funding remains a problem. The Russian health institutes have been seriously weakened by the lack of funding. The expertise they retain will diminish if financial support is not forthcoming. Certain of the USAID-supported interventions reflect this problem. For example, the "Bulletin of Environment and Health Population" was intended to be published weekly, but for reasons of funding, it has become monthly and will eventually become a quarterly publication. Although increased funding support is recommended, this is not a role for USAID.

There is a need for international health literature. Currently, there is a great need in Russia for access to technical literature, the purchase of which had been stopped because of MOH financial constraints. Russian health sector leaders need to be brought up to date on many subjects to facilitate the dissemination of new information to health workers at all levels. Up-to-date scientific literature in Russian is scanty, much of it dating from the 1960's. The MOHMI has not been able to produce any new books or operational guidelines itself, and the language barrier is a major problem. CDC has translated its "Principles of Epidemiology" lecture notes, exercises, and its EPI-INFO and EPI-MAP software packages, but the quality

of translation has not always been first rate and much more information is needed. Financial constraints and antiquated computer equipment make international communication concerning surveillance problematic. Access to international conferences for young scientists and improved access to international scientific information would strengthen the Russian infectious disease infrastructure. Russian officials also need additional Internet connections to improve access to international health information and discussions. Given the poor quality of telephone lines in some areas, not all oblasts could be connected at this point, but the major centers could certainly be served.

USAID should support CDC efforts to institutionalize training in applied epidemiology for assessing and monitoring health problems, including infectious diseases, in the Russian Federation

Infectious diseases remain a public health threat in Russia. Control efforts are critical. Current infectious diseases of concern to authorities in the Russian Federation include hepatitis B, STDs (including AIDS), tuberculosis, nosocomial (in-hospital) infections, and newly emerging diseases. Tuberculosis is already a problem, and hepatitis B and C are growing. Surveillance is needed of newly emerging and re-emerging diseases to protect the Russian population from unexpected developments, but recently the country has not been able to afford to participate in such efforts. Diseases of an unhealthy life style such as drug addiction and alcoholism are also high priority health problems in Russia. In addition, difficulties with domestic food production may be threatening general nutrition, particularly vitamin and mineral levels. A determination is needed of which health problems take precedence. Russian epidemiologists would welcome USAID support to the development of their own programs to analyze and follow disease patterns and epidemics. EPI-INFO is being used until their own system, which has been developing for years but has not been introduced for financial reasons, can be put into effect.

USAID should encourage key Russian health officials to visit integrated health systems and should promote greater participation of Russian scientists at international public health meetings.

A training program resembling the Field Epidemiology Training Program would be useful. One mechanism that deserves consideration is the establishment in the Russian Federation of an applied epidemiology and public health program management training course such as the Field Epidemiology Training Program that CDC operates in several other countries. The program should be operated largely in Russian, with at least half the staff from the NIS. Epidemiologists and program managers would come from all countries of the NIS. To take advantage of the natural leadership role of Russian public health officials in the NIS, the program should be located, if at all possible, within Russia.

The Russian health sector is hampered by excessive segmentation To assist Russian health officials, it is essential to develop a broader vision than they now have of public health. The strict separation of curative and preventive services in the past has created confusion and inefficiencies. Effective interventions require the efforts not only of the MOH, but of the full range of institutions concerned with health, not only at central levels. Clinicians focused on hospital care in the old Soviet model need to be convinced of the importance of prevention and their role. Public health concepts need to be introduced into the medical curricula. A major lesson learned from the June 1997 diphtheria conference is the need to bring together academic professors and operational officials to develop a common, concrete understanding of public health and its strategies.

USAID should be sensitive to the Russian fear of the aid recipient stigma and should structure future health sector activities as collaboration with Russian counterparts, not as assistance

Russia is uncomfortable as a USAID recipient The state of public health services is a sensitive issue in Russia. Opponents of the current regime are trying to exploit the health care situation as a political issue. However, health officials do not want to receive aid from the United States, they want to collaborate as equals in finding public health solutions. The Russian officials encountered during the assessment were aware that most USAID activities are in developing countries, and they resent being considered in that category. Moreover, many USAID program professionals obtained much of their experience in Africa, experience which Russians do not consider relevant to the unique needs of Russia. Collaboration between CDC and Russian health officials will only be possible if approached in the spirit of partnership. If such a partnership can be established, a major area for collaboration is the retraining of health workers. Russian officials would prefer that this be accomplished through a training of Russian trainers (perhaps 10–15 trained in the United States for up to a year) rather than through the use of foreign trainers. Pilot oblasts (a concept which the Russians do not like) such as the three selected for diphtheria control in 1994 and subsequent BASICS work would not be necessary. If the stigma of being an aid recipient cannot be avoided, it is questionable whether USAID activities are the proper vehicle for infectious diseases activities.

Grants should be avoided as a mechanism for funding health interventions unless clear evaluation and reporting requirements are enforced.

Discrete USAID grants are difficult to trace in the field Funds granted for specific purposes in the early years of USAID support for infectious disease control in Russia could not be explained. Information available from USAID is limited, and local officials proved either unable or unwilling to provide useful information. There were suggestions that the chemicals and biologicals provided were not always what was needed, but this was not documented. It could not be determined if such grants, released with little control in a



constantly changing, unstable environment, provided any significant assistance to the vaccination system. USAID should not waste further resources accounting for small grants in the past.

UKRAINE

USAID should support the review and revision of Ukraine's vaccine procurement and management system

Diphtheria control, including adult mass vaccination, was effective in the Ukraine. Epidemiologic data demonstrate that the mass vaccination campaigns against diphtheria that USAID supported in the Ukraine were effective. While the natural course of a diphtheria epidemic can only be estimated, it is apparent that the epidemic declined most rapidly in those regions where mass vaccination was carried out, and incidence rates never reached those of neighboring Russia. Vaccination coverage of adults with three doses reached 85 percent, the other 15 percent included those with contraindications.

PATH was effective, but problems of vaccine distribution persist. Based on the excellent documentation of PATH's work in the Ukraine, combined with observations of officials there, it is concluded that the expectations of the USAID/PATH cooperative agreement were fully met. The success of the work to date constitutes a good foundation for additional activities, some areas appear to deserve attention, such as the vaccine procurement and distribution system. It was reported that oblast health budgets have decreased by 40 percent over the past five years, and that some health officials have begun to double their actual vaccine demands or to underreport their actual stocks. As long as the sense of vaccine shortage persists and no better planning method exists, inequitable distribution is likely.

USAID should support the Ukraine health information system and management reform activity that builds on previous USAID-sponsored work and should guide program managers in making effective and efficient decisions.

The cost-effectiveness of adult mass vaccination needs to be demonstrated. Mass vaccination of infants has been shown to be cost-effective. Although mass vaccination of adults proved to be effective in the Ukraine, its cost-effectiveness has never been documented. It is suggested that the epidemiologic data collected in the course of the activities be supplemented with cost studies to determine the economic implications of this strategy. While not the highest priority, such an additional study would nevertheless be useful.

HMIS and surveillance reform are needed. For the Ukraine MOH, vaccine preventable diseases remain a priority, particularly tuberculosis, hepatitis B, and nosocomial infections. The success of diphtheria control presents an opportunity to develop an effective HIS and



epidemiologic surveillance system. The usefulness of a good surveillance system has been demonstrated, even if some national officials are not yet convinced. This momentum should not be lost. The new CDC/BASICS/ PATH project targeting information systems and management reform will correspond perfectly with the current needs of the country for infectious disease control. It also fits with USAID/Kyiv's strategic objective 3.1 which seeks to reduce human suffering and the negative consequences of crises via interventions to protect the population from emergency health problems, including epidemics, and through strengthening of management and surveillance systems.

MOLDOVA

USAID should accelerate the introduction of hepatitis B vaccination in Moldova.

Moldova needs continuing EPI assistance. USAID has contributed in a major way to the rehabilitation of the vaccination system in Moldova through the BASICS project. Some of the continuing needs are clear. According to officials, nearly 60 percent of aging cold chain equipment needs to be replaced. The plan of operations will need to be reviewed and revised in 1998 in light of the cost-effectiveness study. USAID support in that area is well targeted. If BASICS were to continue its operations in Moldova, clearly defined results would be needed. The results package is too vague for planning and monitoring purposes. In addition to clearly defined indicators, sources of data as well as frequency, methods, and responsibility for data collection are needed.

Hepatitis B is a special concern in Moldova. CDC's role in Moldova has been limited to occasional individual contacts and support for hepatitis B studies, but more work could be done. The 400,000 hepatitis B carriers in Moldova (an estimated 10 percent of the population) constitute a serious public health risk. Strengthened surveillance and laboratory diagnosis are both needed. In particular, a reference laboratory and a network of sentinel laboratories are needed to monitor the epidemic. The early introduction of hepatitis B vaccination, vaccinating a new cohort every year, is an important potential intervention. Because of the importance of nosocomial transmission, medical personnel should be vaccinated the first year and the children of chronic carriers should be vaccinated next.

USAID should offer to assist Moldova in the reorganization of health services and financing.

The Moldova HMIS needs revision. Other current needs concern the HIS system and bringing the knowledge and skills up to date through the provision of training and new information. All parties agree that the HIS should be simplified, computerized as feasible, and rendered easier to use and more appropriate than it now is. Particularly at district and peripheral levels, this would reduce redundant recording and reporting and result in cost

savings. There is also a need for additional translated materials relating to infectious diseases and their control in medical curricula, health worker training, and inservice training. To the extent that it has the capacity to respond to some of these needs, USAID assistance would be appropriate.

Moldova health officials are interested in management and financial reform

Although Moldova health officials are concerned about infectious diseases, their greatest expressed need is to develop a financially sustainable system that does not rely so heavily on donor assistance. Areas of future USAID support in Moldova were not clear. Also, it was not clear to what extent health systems reform has been considered. On the part of health officials, however, questions of how to restructure and finance health services appeared to be of the highest priority. The following questions were noted during the assessment:

- Which health services should be publicly funded, and which should be private?
- What is the appropriate level of funding for the national health care system?
- How should the necessary rationing of health care services be managed in light of the current combination of health care reform and financial restraint?
- At what point does the existence of parallel, privately funded services affect the integrity of publicly funded health care?
- Should individuals have the choice of purchasing health services in a private system rather than relying exclusively on the public system?

KAZAKSTAN

USAID should monitor the success of the Kazakstan health system in sustaining and extending the EPI, CDD, and ARI innovations already introduced.

USAID programs have improved health services in Kazakstan. The infectious disease programs sponsored to date by USAID in Kazakstan have been responsive both to health needs and to the program priorities of the health authorities. Building on the foundation inherited from the REACH project, BASICS has had a dramatic impact on midlevel and peripheral health worker training and supervision in the areas of child survival and MCH. The emphasis on participatory, hands-on training has changed the way key trainers conduct inservice training in Zhambul oblast, and similar changes are being introduced elsewhere. CDC has had a major impact on infectious disease control policies and communication of those policies to dispersed health workers. CDC is recognized as a contributor to surveillance, as a force behind medical conferences and workshops, and for its interest in upgrading laboratory capabilities.



New USAID programs will combine successful approaches USAID-supported technical assistance has contributed to the reform debate and related planning efforts in Kazakhstan—primarily through the Abt Associates *ZdravReform* project. This is an essential continuing contribution. An important health sector innovation that started in the private sector is the tuberculosis initiative undertaken by Project HOPE. It constitutes a promising entry point for the development of a new DOTS strategy for tuberculosis control in Kazakhstan and is a model for all of central Asia. The USAID/Almaty decision to use this approach as part of its continuing support for infectious disease control will take advantage of a good opportunity.

Donor coordination remains uncertain in Kazakhstan According to USAID/Almaty, the child survival interventions have been successfully introduced, it is time for public health authorities to implement them everywhere, with reduced USAID assistance. With UNICEF, WHO, and others watching over those programs, USAID can refocus on neglected areas, particularly control of tuberculosis and STDs. This is a useful strategy, as long as current momentum is not lost. It is recommended that increased attention be paid to donor coordination, a system that seems rather diffuse at present.

Kazakhstan is becoming a demonstration site for child survival programs WHO has come to be recognized as setting the standards for effective disease control strategies in Kazakhstan. It has supplanted the health authorities in Moscow who have little visible role at present. The selection of Kazakhstan as the Central Asian site for testing the Integrated Management of Childhood Illness (IMCI) is a sign of confidence in the current direction of child survival programs in Kazakhstan. For this, USAID, and BASICS in particular, can be proud to have established a foundation within Zhambul oblast and with the national authorities. Until IMCI becomes operational, it is important to maintain the momentum generated with BASICS support in Zhambul. When UNICEF relocates its regional office to Almaty, the importance of Kazakhstan in demonstrating new approaches will increase.

USAID should develop and implement a short-term strategy to smooth the transition from BASICS to new sources of support in Kazakhstan

Health officials are worried about the departure of BASICS The transition from the current BASICS program to future USAID directions, with provision for continued support where needed—such as training—has not been communicated well to health officials in Kazakhstan. Alarm that BASICS support is ending is combined with uncertainty about where such support will come from in the future. It should be possible to clear up the confusion and allay the misconceptions. Support functions critical to the institutionalization and growth of child survival services (e.g., supportive supervision and participatory training) should be identified, along with sources for that support from within the official health system or elsewhere (UNICEF, WHO, other donors). Areas in which USAID will continue to provide



support through new program vehicles should be clarified and be accompanied by an explanation of the evolution of USAID infectious disease support from child survival to broader areas with a description of the new program as well as procedures for monitoring the continuity of changes introduced and to ensure their sustainability. The short-term strategy should include a plan for disseminating this information and a means to check that it has been communicated effectively to key MOH collaborators.

BASICS has employed national professional staff with great effectiveness. The incountry office established by BASICS and the employment of extremely capable national professional staff have resulted in high recognition, high impact, and accessibility—in terms of language as much as logistics—that has been greatly valued by Kazakstan health officials. Perhaps the strategy to use full-time local employees, supported via periodic visits by technical staff, can explain the close relations that are evident between BASICS and the ministry officials. Key USAID programs in the future should consider establishing, whenever possible, similar incountry offices staffed by host country professionals to facilitate program introduction and integration.

USAID should support the development of a comprehensive HMIS

The HMIS is resistant to change. In spite of a professed interest in surveillance and information systems, USAID-supported projects have made few inroads in these areas in Kazakstan. The current system was designed for an organizational and management environment that no longer exists, with the result that significant resources are dedicated to collecting data and performing procedures for functions and activities which became moribund with the collapse of the Soviet structure. Unfortunately, the rigidity of the former structure tends to support continuation of the now obsolete procedures.

Automation of information systems has been marginal. Except where they have become part of an ongoing activity supervised by American staff (as, for example, in the childhood mortality survey supervised by CDC in Zhambul oblast), the provision of computers has not been effective. Training has not been followed by continuing access to expertise that can encourage computer familiarity and application to new uses. New users have been hesitant to try anything new and have been frustrated by their unfamiliarity with the technology.

Computerization is desirable. While the introduction of computer technology into the Kazakstan health system could improve its efficiency enormously, efforts to date have been inadequate and generally ineffective in the absence of a support system. Greater attention to hardware setup and maintenance and to computer familiarity and use is clearly needed. There is interest and willingness on the recipient side, but a systemic introduction of computer technology is needed. Efficiencies could be realized if the existing system were reviewed and streamlined through a redesign and optimization process. It is apparent that a superficial

automation will only produce minor gains. An indepth study of the system is needed as well as a redesign at the functional, or procedural, level. In the context of this analysis and where appropriate, computerization should be introduced to improve the efficiency of the HIS. However, the principal increase in efficiency, productivity, and cost avoidance will accrue from the system redesign to eliminate the unneeded overhead apparatus with which it is burdened. Although computerization of this system would benefit programs at all levels, it is not critical to the process.

New tuberculosis programs will require HMIS revision. Reform of the tuberculosis program in Kazakstan will necessitate significant new data sets and monitoring capacity. This is already reported to be within the responsibilities of CDC in the new program, CDC is reportedly developing software for the purpose. USAID/CAR's commitment to give high priority to the development and implementation of a tuberculosis-specific, computer-based monitoring and reporting system is supported. The system should initially serve the pilot area of Almaty oblast and connect it with the National Tuberculosis Research Institute. It will have cost savings over the current tuberculosis reporting system and will serve to demonstrate that DOTS is effective.

U S software has had a very limited impact. USAID-supported efforts have resulted in the development or improvement of a few HIS forms. These have been integrated into the existing system and are generally regarded as functional, albeit laborious and redundant. Although the innovations of recent U S programs are appreciated as additions to the system, a desire for new methods of surveillance or reported information does not appear to be present. The old systems are extremely detailed and usable, even if they are considered to be excessive and time-wasting. Even CDC's very useful EPI-INFO and EPI-MAP software programs, translated into Russian, do not seem to have captured much interest among health officials. In general, Kazakstan officials would like to see their own software developed, the CDC programs are a short-term solution until that can be accomplished. Until local officials are convinced that a streamlined system is not only feasible but needed, however, these are unlikely to be promising areas for USAID support.

A comprehensive effort to rationalize the national HIS on a sustainable, cost-effective basis is needed. This should include an analysis of the existing system and the development of a national strategy to support evolutionary system development. Although the goal would be an integrated HIS rather than a fragmented system assembled piecemeal from random interventions, the system could be developed in stages. Among the first sectors addressed should be immunoprophylaxis and infectious diseases (including tuberculosis). The process should begin with a requirements analysis and system design study beginning at the feldsher-accoucheuse post (FAP) and progressing towards the center of the reporting system. Subsequent iterations would include other aspects of the HIS. A strategy for HMIS redesign



and implementation is presented for Kazakhstan in annex K. A similar approach would be recommended for the Kyrgyz Republic.

KYRGYZ REPUBLIC

USAID should continue to structure its interventions in the Kyrgyz Republic within the framework of the MANAS program

There is a climate of reform in the Kyrgyz Republic. Kyrgyz health officials are serious about reforming their system, both to realize cost savings and to implement internationally recognized program strategies. WHO programs have replaced those of Moscow as the standard, and health officials are eager to implement them. Examples include polio eradication by the year 2000, readiness to adopt a WHO-recommended DOTS program for tuberculosis treatment, and preparations for WHO's new IMCI program.

USAID programs are on target. The activities supported by USAID to date in the area of infectious disease control in the Kyrgyz Republic have been appropriate from a public health perspective and the priorities of the national health system. The new package of programs of USAID/CAR is reasonably on target with respect to the need for reform of medical practice and financing as well as for control of tuberculosis and STDs. The USAID program's intentions with respect to surveillance and health information systems remain to be defined for the Kyrgyz Republic. USAID is encouraged to proceed cautiously in this area, to be sure there is willingness to replace a functioning, if clumsy, existing system.

USAID should develop and implement a short-term strategy for the close-out of BASICS support in the Kyrgyz Republic and the transfer of support for key elements to other organizations

BASICS has become a key player and will be missed. BASICS has had a dramatic impact on midlevel and peripheral-level health worker training and supervision. Its participatory, hands-on training has changed training methods in Osh oblast, and national leaders will introduce similar methods elsewhere. BASICS assistance in revising the EPI HIS resulted in two new indicators that facilitate decentralized management. In more general terms, BASICS has helped health managers to begin to use reported data as a management tool and to design their own modifications according to their management needs. The recognition that such tools can be redesigned to meet management needs is an important advance in a system where direction has always come from the top levels. There is confusion, however, concerning the close-out of BASICS activities in the Kyrgyz Republic and the continuation of certain functions through the new project.



The transition from BASICS is not clear Functions critical to the institutionalization of child survival services should be identified, along with specific sources of continuing support. Areas which USAID will continue to support should be specified and communicated to the MOH and other organizations involved in child survival programs. This should be accompanied by an explanation of the evolution of USAID infectious disease programs from child survival to a broader focus, a description of the new program, and methods to monitor and promote the sustainability of changes introduced. Because of uncertainty and confusion about the end of BASICS support in the near future, the short-term strategy should also include a plan for dissemination of this information and a means to confirm that it has been understood by MOH collaborators.

Reform of health information systems in the Kyrgyz Republic, along with computerization when it can be supported effectively, should be a USAID objective

The current HMIS is inefficient and needs to be reformed The Soviet-era system for collecting, processing, storing, and reporting immunization information starts at the FAP level in the field, continues to the polyclinic levels and secondary facilities, and terminates with summary and detailed reports to the MOH and SES headquarters. Essentially similar systems are in place throughout the CAR. Based on a cursory review of the system, it appears to be characterized by duplication, redundancy, and overlap of functions and data collection and processing on a significant scale.

Efforts to date to improve the HMIS of the Kyrgyz EPI have resulted in a new IMIS which, while an improvement on the old system, revises only a small portion of the manual HIS. When national public health officials are ready, a comprehensive effort should be undertaken. The goal would be an integrated HIS rather than a system pieced together from fragmentary innovations. The system could be developed in stages, with the first areas to be addressed to be immunoprophylaxis and infectious diseases (including tuberculosis).

The Kyrgyz Republic is an appropriate site for HMIS redesign A project to redesign completely one subsystem of the HIS would serve as a model for other parts of the system as well as for other countries in the region. In this context, the immunization data collection and reporting system of the Kyrgyz Republic is an appropriate test site for three reasons: the responsive, generally forward-looking perspective of Kyrgyz health officials provides the essential positive management climate for undertaking an MIS study, the new IMIS effort is a positive first step that can be incorporated into the new system, and, the personnel of the Kyrgyz MOH have already been exposed to a systems study with positive results.

A redesigned HIS could initially serve pilot areas such as Issyk-kul oblast where Abt Associates will be responsible for the development of the new program. Later iterations could involve other aspects of the HIS. Efforts to introduce computer technology to date have been



hampered by the absence of an effective support system for maintenance and continued training. These deficiencies should be corrected when additional efforts to introduce computer technology are attempted.



V LESSONS LEARNED

This assessment was, on the surface, a review of a number of infectious disease initiatives and support programs carried out with USAID support in a homogeneous region of the world. In fact, the NIS programs were complex, presenting unique problems and opportunities. This section describes some of these complexities, reflects on the extent to which USAID programs to date have worked with them, and makes some general recommendations.

The public health culture of the NIS differs from that of the West

Because of the wealth and general technological development of the NIS area, it is easy to overlook the great differences between the Soviet era and the modern international public health world and the difficulties involved in the transition from one to the other. Largely isolated from the rest of the world for decades, the Soviet system developed its own approaches to organizing and managing public health care. The Soviet system operated very distinct preventive and curative services. Large numbers of professionals were trained and widely distributed to carry out quite narrow functions. Targets were set centrally, and a complex information system served to ensure that the system functioned. The State took seriously the responsibility to provide for the health of every individual, and little was required or expected of the individual except to comply. Health care was guaranteed and not subject to questions of affordability, and great inefficiencies were tolerated in the name of public health. These approaches were inherited by the countries of the NIS when the Soviet Union collapsed, and they continue to form the foundation of health services. Moreover, in spite of the general acceptance of WHO policy leadership, the health ministers of the NIS countries continue to meet periodically. They remain very interested in each other's reform experiences and are hesitant about reforms that have not been demonstrated in the NIS environment.

The evolution of NIS health services during this decade has been complicated not only by seriously reduced financing. Impediments to working together are more than just differing systems and languages—serious problems in themselves, as the programs assessed have demonstrated. The health system has had to adjust to an entirely different set of expectations—the modern international health culture. From the current international public health perspective, the right to health services is no longer taken for granted, and the efficient use of resources is a concern. Preventive and curative services are complementary and often combined. Health workers are expected to have a wider perspective that embraces the entire health of the individual, not just a specific aspect. Program management is most effective if the people for whom the health services are designed participate in decisions that concern them. The individual is responsible for his or her own well-being. These notions, central to the thinking of Western health professionals and Western society, influence one's views of how to organize and manage public health services. Now the peoples of the NIS are being asked to accept those views and to adjust their health services accordingly. Whether or not it is correct, and whether or not it is wise, this evolution is occurring and forms a backdrop



to USAID health sector interventions in the region. An appreciation of this cultural divide and transition is essential to effective programming and development/reform work in the NIS to help explain some of the anomalies and systems.

The diphtheria epidemic is under control and USAID health programs are evolving

Most of the activities reviewed during this assessment were initiated when the diphtheria epidemic was raging, and they reflected concern for that emergency. The epidemic occurred when, with endemic cases still present to seed transmission, immunity levels in the population declined for a variety of reasons including vaccine shortages, ineffective vaccines used for children, and excessive contraindications limiting population coverage. The programs instituted in the various NIS countries differed from country to country, but they were effective. Now, diphtheria has returned to endemic levels. It was difficult to disentangle the efforts to control that epidemic from the management of ongoing health services. Institutions and interventions established in the face of the epidemic, such as the IICC and strengthened surveillance, are now looking at additional concerns, such as polio eradication.

CDC and WHO experts believe that diphtheria outbreaks will be controlled by normal EPI programs accompanied by surveillance that permits rapid intervention if localized epidemics recur. USAID is therefore encouraged to support the broad programs. The summary of the NIS diphtheria experience that has been prepared for publication in the *Journal of Infectious Diseases* should be widely distributed so that its lessons learned are not forgotten.

The activities reviewed reflect conditions at the time of start-up much better than they do the conditions of today. As the diphtheria epidemic was brought under control and vaccination supplies replenished, the major activities began to address the management of a variety of priority programs. EPI is now just one aspect of the programs which address methods of policy review, health worker responsibilities and training, decentralized management, community participation, surveillance and information systems, and performance monitoring and evaluation. The original, proximate objectives have been largely met and attention is now addressed to the improvement and sustainability of long-term public health services. This is reflected in the latest USAID programs in the region. Although this evolution is commended, it may be too early to assume that changes have been institutionalized. USAID should continue to monitor progress in areas such as vaccination even as the major focus shifts to surveillance and other infectious diseases.

NIS immunization policies are being revised, country by country

The scope of work for this assessment noted that there has been continuing debate over vaccination policy issues. This is one reflection of the separate cultures mentioned above. The vaccination program of the Soviet system differed in many ways from generally agreed-



upon international policies. Some of these limited its effectiveness, others were merely different. There is now general agreement that too many irrelevant contraindications were recognized in the past. Unlike most EPI programs, it is still necessary for vaccinations to be specifically prescribed by a doctor. Active interest in reviewing and revising such policy issues was noted. WHO is accepted as providing general guidelines, and the EPI programs of the NIS are moving, policy by policy, in that direction.

Similar policy review/revision is occurring in other areas of infectious disease control. The possibility of treating tuberculosis patients on an outpatient basis with DOTS therapy is now being tested, if not fully accepted. Too many patients are still hospitalized for excessive lengths of time, but these policies are being revised, also.

CDC and other international experts (WHO, UNICEF) on infectious disease control policy have made great progress in establishing mechanisms to review policies so that they can be revised if needed. USAID is urged to continue to support that review process by supporting expert technical assistance, conference participation, and the translation and dissemination of critical international scientific literature.

Improved, decentralized health program management is now the infectious disease program focus

USAID's ongoing infectious disease programs in the NIS are evolving from responding to specific disease entities to strengthening public health systems so that they can monitor and control infectious diseases on a sustainable basis. Many changes are needed to conserve resources, human as well as material and financial. Health authorities need to have accurately and carefully analyzed information at the decentralized as well as at the national level. Spending on public health will compete with other public goods and services at every level, and private spending is increasing as well.

The decentralization of responsibility for health care services takes many forms. Moscow no longer gives orders. Each country makes its own policy and funding decisions, and oblast and raion resources are important to sustaining public services. Within these services, the formerly large numbers of health workers cannot be supported, and attrition is accompanied by fewer workers broadening their skills and responsibilities. The existing preventive/curative dichotomy in health services is inefficient. The need to retrain health workers is clear, as is the need to provide them with effective supervision and support.

The most important contributions that USAID interventions have made to public health in the NIS are improvements in program management. Policy review has resulted in cost efficiencies in EPI and other programs. Support for surveillance, a continuing USAID commitment, is fundamentally a management intervention to ensure that decision-makers have



the best information on hand when they need to decide how to use the limited resources available. Gradual computerization of the information function will eventually facilitate access to data for decision-making. Improved methods of training and supervision are a management effort to improve the functioning of the front-line health workers at the periphery of the system. New methods of IEC share responsibility with the family, the individual, and the community for behaviors that can prevent disease and promote health. Careful management of vaccine stocks and systematic procurement methods have resulted in financial savings and avoided interruptions of ongoing immunization programs. In all of these areas, USAID continues to make important contributions.

As the transition continues, needs may change, and repeated review and revision will be essential to ensure that public health programs, including those targeting infectious diseases, continue to be both effective and efficient. USAID is now well placed to contribute to that process by supporting a variety of activities that build management capacity.

Country-specific programs are more appropriate than regional programs

With the evolution of the various programs of the countries visited, differences are beginning to appear in needs (both perceived and documented), resources, and sources of support (international as well as domestic). Programs are beginning to differ in consequence. This is natural and healthy as young nations, proud of their new independence, want to mold programs to their unique circumstances. They want to design their own program innovations. USAID programming should be country-specific in the NIS region. Managerial efficiencies result from regional programming, but the need for individual countries to define their own activities should take priority. What is gained through institutionalization of sustainable, locally appropriate programs more than makes up for the costs in efficiency. However, certain program elements, such as infectious control policies and surveillance methodologies, can often be standardized. Translation of information can serve a number of countries. Limited resources such as CDC expertise will probably have to continue to be shared, but USAID should make efforts to find mechanisms that keep them readily available to each country.

The NIS countries are still learning to work with donor organizations

Many of the mechanisms of collaboration with international donor organizations such as USAID are very new to NIS health officials. This is likely to be their first experience with USAID, its policies, and its decision-making mechanisms. They do not know what to expect when a project is scheduled to end or be rebid. They are accustomed to programs that rarely change. They are not necessarily familiar with standard international health policies, and they have not had access, in Russian, to information concerning those policies.



In the CAR, an unfortunate situation that is probably due to a simple cultural misunderstanding occurred. Despite a remarkably effective presence at the Ministry and in local areas, BASICS operations were seen as distant and standoffish by the local USAID office. This was reportedly one of the reasons for discontinuing BASICS programs at this point. USAID personnel fault BASICS for operating independently, without duly acknowledging USAID support. Local BASICS personnel, hired locally and following traditional NIS bureaucratic rules, believed direct interaction with USAID was improper and let their supervisors in Washington, D C , interact with USAID. The result was limited local communications and little sense of working together. Relations with projects having local American staff are reportedly good.

USAID is encouraged to increase its efforts to avoid misunderstandings that result from cultural differences, language, or lack of experience with the international donor milieu. Local staff can be particularly effective in providing cultural and linguistic liaison with the health services and the local bureaucratic culture. Other measures to bridge this gap include providing translation into Russian of important documents, arranging for participation of national health officials in international conferences, and training in English, the international language for scientific publication.

SUMMARY

The efforts of USAID to address a range of issues for eradicating and controlling infectious diseases throughout the NIS represent a true success story. Epidemic outbreaks of diphtheria, malaria, and typhoid were successfully addressed. Each of these epidemics, through a variety of intervention strategies, were reduced to manageable levels comparable to those of the Soviet period. In fact, ongoing epidemiologic surveillance indicates that these diseases are falling to levels comparable to other eastern European nations. Technical assistance was provided by USAID-supported efforts (e.g., CDC, FDA, UNICEF, and PATH) to prevent further outbreaks by providing public health training and establishing detection surveillance systems.

There is evidence suggesting new public health programs in the NIS will be capable of sustaining themselves. Based on the numerous interviews conducted with technical assistance providers and the recipients of this assistance in the countries visited, most of the changes promoted by the health care improvement efforts of USAID should continue unabated although shifts in emphasis and direction are likely in different national settings. For example, in Tajikistan and Georgia, continued and expanded emphasis is being focused on combatting malaria. In the Ukraine, Moldova, and Azerbaijan, the MOHs continue to immunize their populations against the spread of diphtheria. Health programs, designed to identify and control tuberculosis, are being expanded in Kazakstan. Notwithstanding the lack of reliable baseline data and time-series data collection procedures, health experts (from the United States and the NIS) believe that the delivery of health services in this region is now more efficient.



and effective than before USAID-supported interventions. Each country in the NIS is continuing to improve and expand its health surveillance activities to avoid any new outbreaks of disease. Moreover, the NIS is also involved in developing health care finance reforms consistent with their nascent democratic social structures.

In addition, USAID accomplished seven other objectives which are the foundation of successful health programs: coordination among donors, partnerships with host countries, a long-term public health focus, capacity-building, public/private initiatives, cross-fertilization among donors and host countries, and generating data for decision-making at both the community and national levels.

Coordination among Donors

To confront the diphtheria epidemic, considerable coordination was required with other international agencies. The emergence of the IICC to coordinate available resources and health policy is an example of the cooperation needed to confront a widespread health problem.

Partnerships with Host Countries

USAID worked at all governmental levels, from national to regional to oblast, with both public and private organizations. USAID developed different strategies and subsequently varied partnerships to address the needs of individual countries. In Russia, the emphasis was on providing technical assistance to improve and expand vaccine production whereas in the Ukraine, PATH worked with all phases of diphtheria control through national and local health departments to national MOHs as well as to local health officials at the oblast level. FDA developed workshops on regulatory reform and provided specific skills to Russian vaccine testing and production organizations, both public and private (e.g., Tarasevitch Institute, Poliomyelitis Institute, Biomed, and D. Mazai Joint Stock Company). Private firms such as Merck and Company and Lederle-Praxis worked closely with Russian counterparts to improve vaccine production through the introduction of good management practices. In Russia, CDC worked with epidemiologists at oblast and central levels (MOH, SCSES, Gabrichevsky Institute) to analyze the diphtheria epidemic and vaccination coverage in three oblasts. Three officials of CDC's National Center for Environmental Health have collaborated with their Russian counterparts in planning studies of water contamination. CDC worked with the Tuberculosis Institute in Bishkek in the Kyrgyz Republic, to improve microscopic identification of acid-fast bacillus for surveillance for tuberculosis. REACH assisted Moldova Health officials to create a plan of operations and a first national immunization plan.



A Long-term Public Health Focus

The implementation of modern EPI and HMIS was a primary concern of USAID, CDC, and UNICEF. While the immediate impetus for USAID's involvement was to fight short-term epidemics of diphtheria, malaria, and typhoid in the NIS, the overarching strategy was to develop and improve the public health systems of each NIS country.

Capacity-building

In addressing the immediate problems, USAID also assisted the MOHs to evolve to the point where they had the capacity to continue the efforts of the providing partner. Many of the management changes introduced to Kazakhstan by BASICS have now been institutionalized into the MOH. Moreover, the introduction of applied epidemiology techniques by CDC in Kazakhstan and the Kyrgyz Republic are now being emulated in many oblasts through each country. CAIDP and *ZdravReform* pilot efforts are being expanded throughout the CAR.

Public/Private Initiatives

Successful initiatives were devised by USAID to address both the quality and quantity of the vaccine supply in Russia through grants provided to private pharmaceutical companies. In Kazakhstan, Project HOPE, with funding from Chevron, has been working with the Tuberculosis Institute to introduce DOTS protocols and training in Atyrau and Almaty oblasts.

Cross-fertilization among donors and host countries

As noted above, many of the health care management techniques introduced by BASICS have diffused to the other CAR MOHs. Improved health surveillance efforts supported by CDC and enhanced with microcomputer programs are becoming common throughout the NIS. The DOTS efforts, as supported by WHO and USAID, are currently being adopted in the NIS where serious problems with tuberculosis are in evidence.

Generating data for decision-making at both the community and national levels

One of the fundamental changes occurring in the NIS public health systems is the extent to which data are now not only being collected at the oblast level but are also being used to address local health issues. Formerly, under the Soviet system, all data were forwarded to the central MOH in Moscow where decisions were made regarding health policy and actions to be taken. As local public health surveillance systems are being improved, local officials are becoming more involved in health policy, planning, and action programs which are influencing decisions made at the oblast and national levels.



ANNEXES

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ANNEX A
SCOPE OF WORK
(from USAID)

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1 1 BACKGROUND

Health status in the New Independent States (NIS) presents a complex pattern which varies according to country and region. Unlike almost any other area of the world, impressive gains in health through most of the 1960s and 1970s have been followed by stagnation and even decline in the 1980s and 1990s. Communicable disease patterns are comparable to those in advanced developing countries, although the pattern is far worse in such areas as the Central Asian Republics (CAR), in war-affected regions and in certain communities seriously affected by environmental contamination. Alarming, there has been a resurgence of vaccine preventable disease, including measles, tuberculosis, polio and diphtheria and an increase in other infectious disease such as sexually transmitted diseases (STDs) and HIV/AIDS.

Poor health conditions impede the ability of adults to produce and participate in society. Healthy NIS populations are critical to the sustainability of democratic societies and free-market economies. Consequently, the U.S. Government is committed to carefully monitoring health issues and to helping to sustain healthy populations during the transition period.

As part of its overall assistance to the health sector, since late 1992, USAID has supported a range of infectious disease-related programs in the NIS. Many of these have been "humanitarian" programs focusing simply on procurement and delivery of critically needed vaccines and pharmaceuticals. Technical assistance has been a cornerstone of USAID vaccine security and infectious disease control and prevention activities in the NIS. The major implementors have been Basic Support for Institutionalizing Child Survival (BASICS), the Center for Disease Control and Prevention (CDC), and the Program for Appropriate Technology in Health (PATH). Other USAID-supported activities have promoted the local production, trade, procurement, management and utilization of vaccines and pharmaceuticals, the essential armaments in any battle against infectious disease, but these activities will not be included in the assessment.

The major activities covered by this assessment embrace significant capacity-building components which have promoted such objectives as Helping Russian vaccine producers to get back into production,

Helping to strengthen immunization planning and management to assure that children receive their basic immunization series, especially to control the diphtheria epidemic, and eradicate polio.

Financing technical assistance and commodities assisting several countries in the region to combat the diphtheria epidemic and to eradicate polio, and

Helping the World Health Organization (WHO) mobilize and coordinate the immunization related resources of other donors.

As illustrated in Attachment 1, from the NIS Health Care Improvement Project (110-0004) approximately \$30 million dollars has been obligated to date for activities with those objectives. Additional obligations for infectious disease related activities are currently being programmed for FY97. As necessary and effective as these the implementation of the programs also have suggested to NIS officials, USAID and its collaborators a number of systemic limitations resulting in a growing awareness that sustainable progress in some of the activities may be unlikely until those limitations are addressed.

1 1 (Continued)

The systemic limitations may include preventative care out-of-date, inefficient, ineffective, costly and difficult to sustain within the new economic environment

1 2 TITLE

Title Infectious Disease Evaluation

1 3 OBJECTIVE

The overall objectives of the assessment will seek to

Identify, describe and quantify to the extent possible, the results of USAID-funded infectious disease assistance in the NIS to date, including success stories and lessons learned,

Provide recommendations for the direction of future USAID-funded assistance, if any,

Present the experience, findings, conclusions, and recommendations to infectious disease specialists and decision makers in the NIS, so that they may replicate the successes elsewhere,

To the extent possible, involve and/or enable concerned NIS officials and infectious disease experts to assist in identifying and analyzing lessons learned (problems, successes) which might be applied to future infectious disease activities in the area (whether or not USAID-funded),

The products expected from this work include an assessment of results to date, a synthesis of lessons learned, a synthesis/summary of the diphtheria efforts in Russia, Ukraine, Moldova, and the five Central Asian Republics (this component may summarize, but should not duplicate activities and reports already planned by CDC), a summary of systemic infectious disease issues/problems facing the region, and a set of recommendations for the NIS countries and donor community, specifically based on the experience of implementing these USAID-funded activities

It is germane to note at the outset that many of the grants or contracts to be examined through this task order were signed at a time when the magnitude scope of the health situation in the NIS was beginning to be recognized and when the problems, priorities, institutional capabilities or commitment to remediation still needed clarification. USAID was in fact discouraged from undertaking the detailed analyses upon which USAID projects are traditionally designed. Some of the activities were intended to be demand driven and responsive and initially may have lacked clear statements of intended objectives or results

In addition, several separate efforts are already underway to examine certain aspects of individual activities. These may include a CDC/BASICS workshop on diphtheria, planned for Russia in May 1997,

a Global bureau management review of the worldwide BASICS contract (CAR and Russia were countries visited by an evaluation team),

a CDC retrospective on the NIS diphtheria epidemic to be submitted in Summer 1997 for publication as a supplement to the Journal of Infectious Disease, and

1 3 (Continued)

a BASICS regional seminar on "Lessons Learned in Five Years Immunization Assistance in Central Asia" scheduled for summer 1997, and other proposed activities. The contractor is encouraged to maximize its use of these activities in carrying out this assessment.

1 4 STATEMENT OF WORK

INFECTIOUS DISEASE REGIONAL ASSESSMENT
STATEMENT OF WORK

The assessment will represent a review of USAID funded activities focused on infectious disease control and prevention in the NIS. It will include a summary review of five grants and a more detailed review of the activities of three principal implementors.

A Summary Reviews

Five grants which had little technical assistance associated with them will be reviewed in a summary manner, to ascertain and/or confirm the results of the activities, to assure appropriate accountability for USAID funding, and to prepare brief "end of activity" reports. The contractor will identify and review the grant agreements and any periodic or special reports available in Washington or from the Missions in Moscow or Kiev and prepare brief "close-out" or progress reports covering the following information. Should the contractor discover that adequate reports already exist, there is no need to duplicate them. Such reports can merely be appended to the assessment or identified in the text of the assessment. These activities include:

1 American-Cyanamid/Lederle-Praxis. Except for October 1993 "NIS Feasibility Study" by Lederle-Praxis Biologicals, ENI/DGSR/HRHA has no final report for this grant. The "NIS Feasibility Study" restricts itself exclusively to the prospects for future investment and production in Russia, but also states:

"In addition, Lederle-Praxis Biologicals received a grant of \$818,880 from AID to support vaccine production programs. The short and medium term needs are to provide essential supplies and equipment to sustain the current manufacture of vaccines in existing institutes and provide programs for Russian scientists.

The raw materials, supplies, and equipment were shipped to the Russian Institutes late July 1993." (pg 1v)

What was the final accounting of raw materials delivered to the Polio-Institute and Biomed in order to restore production of Polio and DPT vaccines? What technical assistance and training was provided? What were the results of this assistance (i.e. was production restored? Is it continuing?)

2 Merck & Co. ENI/DGSR/HRHA has no final report for this grant. What was the final accounting of raw materials delivered to the D. Mazai Joint Stock Company in order to restore production of measles vaccines? What technical assistance and training in Good Manufacturing Practices (GMP) was provided? What were the results of this assistance (i.e. was production restored? Is it continuing?)

1 4 (Continued)

3 FDA Review activities associated with the Participating Agency Services Agreement (PASA) with the Food and Drug Administration (FDA) in the NIS which most directly related to infectious disease Specifically, these include the training technical assistance, equipment and supplies provided to the Tarasevich Institute and local vaccine manufacturers, What was the final accounting of equipment and materials delivered to the Tarasevich Institute (and others)? What technical assistance and training was provided? What were the results of this assistance?

4 UNICEF Review the grants to UNICEF for Td vaccine, related commodities and expenses for several countries in the NIS What was the final accounting vaccine and related supplies delivered for the diphtheria control program those countries receiving these UNICEF-provided commodities? What were the results of this assistance?

5 WHO-Donor Coordination - Immunization Interagency Coordinating Committee (IICC) Review two grants to the World Health Organization (WHO) for donor coordination related to immunizations in the NIS - the Immunization Interagency Coordinating Committee On the basis of the secondary information available, assess WHO's progress in meeting the objectives of its grant agreements, and offer suggestions for increasing its effectiveness over the remaining life of the current grant

B Detailed Reviews

The three activities which are the primary focus of this assessment are

Activities associated with Basic Support for Institutionalizing Child Survival (BASICS) in the NIS,

Activities associated with the Participating Agency Services Agreement (PASA) with Center for Disease Control and Prevention (CDC) dealing with health monitoring and surveillance in the NIS, and

Activities associated with the Program for Appropriate Technology in Health (PATH) efforts to combat diphtheria in Ukraine

In collaboration with ENI/DGSR/HRHA, G/PHN, appropriate ENI Missions and appropriate NIS organizations, specific tasks of the detailed review of the activities of the above named implementors include

1 Collect and review the contract, PASA and cooperative agreement noted above

2 Building upon Lotus table U \HRPUB\123DATA\IDEVAL WK4, Attachment 1, which summarizes information contained in the bullets below Confirm the obligated, Specify the objectives and indicators contained in the contract, CA or PASA to the extent possible Why did USAID undertake each activity? (note documents and page numbers) In some cases, the contractor may find an absence of indicators, or that there has been little systemic performance monitoring In such situations, objectives and indicators may need to be determined retroactively by the assessment team on the basis of documentation and interviews, Specify the NIS countries where project activities have been implemented, Was an evaluation/review required? (note documents, page numbers and details), Confirm expenditures to date, Note any follow-on activities currently planned,

1 4 (Continued)

3 Locate and review the "R4 Strategic Objectives (SOs) for Russia, Ukraine, Moldova, and the five Central Asian Republics For each country, specify the SO, intermediate objectives, and indicators which are most closely related to infectious disease Please note that some countries did not create results, targets and indicators for infectious disease activities, since extensions were not anticipated

4 Collect and review the major period and special reports, action plans, etc prepared by BASICS, CDC, PATH, the Missions and USAID/Washington

5 Carry out the field work in collaboration with BASICS, CDC, PATH and USAID Missions This will involve

Identifying (hiring if necessary) and coordinating with NIS participate professionals participating in the assessment,

Collect the names and conduct information on stakeholders who will participate in informal interviews and/or focus groups This group should include USAID bureaus and field missions, counterparts in the NIS (host country and NGO officials), participants and trainees, and other key beneficiaries and stakeholders,

Develop/finalize key questions and guidelines for interviews and/or focus groups and identify any additional information which may be needed to achieve the objectives of this assessment,

Schedule and conduct site visits, interviews and/or focus groups in the 3-4 designated countries This includes financing and providing the logistics for the site visits, interviews and/or focus groups, attending previously planned workshops or conferences on the "primary focus" activities,

6 Analyze the information collected, including the development of clear and specific findings, conclusions lessons learned and recommendations,

7 Write the draft and final assessment reports

8 As appropriate, and consistent with the interest of NIS countries and organizations, help NIS professionals identified as key stakeholders to organize and present a workshop/symposium in the NIS for concerned NIS officials and infectious disease experts Such a workshop/symposium would present the experience, findings, conclusions, lessons learned and assessment (Given that related workshops and conferences are already planned, the contractor should undertake this additional component, only if there is demonstrated interest and if the stakeholders can agree on a clear set of worthwhile and attainable objectives)

To the extent possible, the contractor will include as a part of the team, the participation of NIS professionals who may be in a position to influence and sustain future infectious disease related activities in the NIS

The contractor is responsible for the results of this assessment including any need to modify the assessment design which may emerge once the task order has begun The contractor will assure that USAID/Washington and field missions agree with any significant changes in this scope of work Of course no change in the overall level of effort or task order total is possible without the written concurrence of the Contracting Officer

1 4 (Continued)

C Other

Key principles utilization of existing (secondary) documentation, maximizing use of local NIS people (to promote collaboration, participation/ownership by NIS professionals and other stakeholders)

Data Source and Methodology secondary project information, data, studies, project documents, special interviews of key project and USAID interviews of NIS participants/trainees/beneficiaries It is assumed that the contractor will use E-mail and phone conversations whenever they can substitute for travel It is further assumed that a local hire agent will be used in place of a U S contractor wherever feasible For example, on the summary reviews the contractor will engage a local hire agent in Moscow to discuss results and impact with Polio-Institute, Biomed, etc

D Mazai and the Tarasevitch Institute Primary audience Host country officials and decision makers, program implementors, USAID Missions and AID/W Secondary audience implementing organizations, Congress, other donors

The contractor will be fully self-sufficient for all logistical or support services, such as travel, communications, translation or interpreting services, scheduling, etc USAID officer will of course cooperate fully with the assessment and assist in identifying and providing appropriate documentation

II TIME FRAME It is suggested to hire a U S based facilitator as soon as possible to begin the summary reviews and document search, and plan and organize site visits, interviews and focus groups Hopefully those tasks can be completed and site visits/interviews/focus group plans in place within suggested that the site visits interviews and focus group work would run from late-September through mid-November and that draft reports would be available o/a December 15, 1997 The NIS infectious disease conference, if funding allows, would be held in spring 1998

III REPORTS

The contractor will be required to maintain regular contact with field Missions, USAID/Washington, and PATH, BASICS and CDC during the planning and execution of the assessment Before beginning the field visits and interviews, it will prepare and submit on progress update which will include the full field schedule and a preliminary report outline Two copies of the draft assessment will be submitted to ENI/DGSR/HRHA within two weeks of receiving comments from USAID and other stakeholders Ten copies of the final report will be submitted to ENI/DGSR/HRHA (together with a diskette in Wordperfect 5.1 or 5.2) The final report will include a concise executive summary and will not exceed 50 pages In addition copies of prior or existing evaluations may be submitted with the draft and final reports

IV QUALIFICATIONS

U S Team Leaders MD, MPH or other specialty related to infectious disease Experience with designing and implementing complex evaluations and with team facilitation Some familiarity with the region Good Russian language skills

Others The contractor will provide such other people as necessary to carry out this assessment They will have appropriate training, background and

1 4 (Continued)

experience directly related to infectious disease, e g epidemiology, immunization programs, vaccine production or quality control, information and communications, evaluations, etc Such people need to demonstrate a willingness and ability to work as team members and with other nationalities

VI OTHER

The team will conduct its assessment under the technical guidance of ENI/DGSR/HRHA, and is requested to keep ENI/DGSR/HRHA fully apprised of progress The contractor also needs to be sensitive to the range of stakeholders in this assessment including host country ministries and institutions, USAID Missions and other USAID bureaus or offices, the contractor and participating agencies This assessment is intended to be forward thinking, constructive and collaborative While assuring confidentiality when appropriate, the contractor is requested to keep the lines of communication open and candid

PATH, BASICS and CDC may be planning summation or review conferences or meetings which directly touch on the objectives of this assessment The contractor is expected to coordinate closely with PATH, BASICS and CDC on any and all such meetings

ANNEX
ILLUSTRATIVE QUESTIONS AND INDICATORS

Why did USAID undertake these activities? To change policies? To enhance capacity? To respond to specific urgent needs?

How many and how well? Did the activities accomplish what they expected to accomplish? The answer may include process information such as numbers trained, vaccinated, exchanged, produced, etc While the assessment is not a management review, comments and/or recommendations regarding program implementation are appreciated These process questions are of general interest, but not the focus of the evaluation

What individual or organizational behaviors/policies in the NIS have changed, in part due to USAID supported interventions? What is different? What is the evidence? How sustainable are the changes? Why or why not? How might the sustainability be enhanced?

Given anticipated continuing declines for USAID funding for infectious disease related activities in the NIS, what are the contractor's recommendations for the most cost-effective ways to pursue program objectives?

What sort of issues and problems have emerged over the course of program implementation?

Are there certain types of activities which could be more reasonably attacked from a regional (or bilateral basis)?

Throughout, the implementation of these activities has been surrounded by controversy regarding such topics as contraindications, immunization calendar, simultaneous administration of vaccines, vaccine efficacy, vaccine contamination, and herd immunity To what extent have PATH, CDC BASICS, WHO, etc made progress in putting some of these concerns to rest?

ILLUSTRATIVE RESULTS

*Reduced incidence of X by Y date

*Selected systems (name) in place by ____

*Reduced list of contraindications to ____

1 4 (Continued)

- *Modified treatment protocols
- *Improved surveillance and/or response system with ____ capabilities (e g reporting common or unusual clinical events, specimen collection, diagnosis, epidemiological investigation, analysis, instituting control mechanisms, feedback, etc)
- *Improved laboratory capabilities in ____
- *Improved linkages to regional "reference" laboratory and other regional epidemiological services (networking and sharing of services)
- *Strengthened regional disease surveillance and response networks
- *Strengthened capabilities for planning and management, procurement, distribution and cold chain, other logistics, IE&C and mobilization, reporting and communications
- *Documentation/information distributed, timely, used, etc
- *Increased self-sufficiency for production, QA, procurement and distribution of _____

1 5 ACCOUNTING AND APPROPRIATION DATA

Organization	10211
Request ID	00000398
Resource Code	251390
Activity	Infectious Disease Evaluation
Account	NI96/97WNI697
Amount Obligated	\$91,500
Activity	Infectious Disease Evaluation
Account	NI97/98WNI797
Amount Obligated	\$41,435
Total Amount Obligated	\$132,935 00

1 6 TECHNICAL DIRECTIONS

Technical Directions during the performance of this delivery order shall be provided by the Technical Officer as stated in Block 5 of the cover page pursuant to Section F of the contract

1 7 TERM OF PERFORMANCE

- a Work shall commence on the date noted in Block 7 of the cover page The estimated completion date is reflected in Block 8 of the cover page
- b Subject to the ceiling price of this delivery order and the prior written approval of the Technical Officer (see Block No 5 on the Cover Page), the contractor may extend the estimated completion date, provided that the extension does not cause

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the elapsed time for completion of the work, including the furnishing of all deliverables, to extend beyond 30 calendar days from the original estimated completion date. Prior to the original estimated completion date, the contractor shall provide a copy of the Technical Officer's written approval for any extension of the term of this delivery order to the Contracting Officer, in addition, the contractor shall attach a copy of the Technical Officer's approval to the final voucher submitted for payment.

- c It is the contractor's responsibility to ensure that the Technical Officer-approved adjustments to the original estimated completion date do not result in costs incurred that exceed the ceiling price of this delivery order. Under no circumstances shall such adjustments authorize the contractor to be paid any sum in excess of the delivery order.
- d Adjustments that will cause the elapsed time for completion of the work to exceed the original estimated completion date by more than 30 calendar days must be approved in advance by the Contracting Officer.

1 8 WORKDAYS ORDERED

a Functional Labor Category & Specialist	Workdays Ordered	Burdened Daily Rate	Fixed Total
Performance Management Mid-Level Dr Vladimir Suvorov	35 0	\$686 00	\$24,010 00
Performance Management Senior Level Dr Alain Lafevre	30 0	\$923 00	\$27,690 00
MIS & Information Science Senior Level Dr Herb Koudry	30 0	\$703 00	\$21,090 00
Program & Policy Analysis Senior Level Dr Diaa Hammamy	30 0	\$829 00	\$24,870 00
Total	125 0		\$97,660 00

- b The individuals identified above are designated as key personnel pursuant to Section F 11 of the contract.
- c Subject to the ceiling price established in this delivery order and the prior written approval of the Technical Officer, the contractor may adjust the number of workdays actually employed in the performance of the work by each position specified in this order. The contractor shall attach a copy of the Technical Officer's approval to the final voucher submitted for payment.
- d It is the contractor's responsibility to ensure that the Technical Officer-approved adjustments to the workdays ordered for each functional labor specialist do not result in costs incurred which exceed the ceiling price of this delivery order. Under no circumstances shall such adjustments authorize the contractor to be paid any sum in excess of the ceiling price.

1 9 CEILING PRICE

For Workdays Ordered	\$97,660 00
For Other Direct Costs	\$35,275 00
Ceiling Price	<u>\$132,935 00</u>

The contractor will not be paid any sum in excess of the ceiling price

1 10 USE OF GOVERNMENT FACILITIES AND PERSONNEL

- (a) The contractor and any employee or consultant of the contractor is prohibited from using U S Government facilities (such as office space or equipment), or U S Government clerical or technical personnel in the performance of the services specified in the delivery order, unless the use of Government facilities or personnel is authorized in advance, in writing, by the Contracting Officer
- (b) If at any time it is determined that the contractor, or any of its employees or consultants, have used U S Government facilities or personnel either in performance of the contract itself, or in advance, without authorization in in writing by the Contracting Officer, then the amount payable under the contract shall be reduced by an amount equal to the value of the U S Government facilities or personnel used by the contractor, as determined by the contracting officer
- (c) If the parties fail to agree on an adjustment made pursuant to this clause it shall be considered a "dispute" and shall be dealt with under the terms of the "Disputes" clauses of the contract

1 11 DUTY POST

The Duty Post for this delivery order is New Independent States

1 12 ACCESS TO CLASSIFIED INFORMATION

The contractor will not have access to classified information

1 13 LOGISTIC SUPPORT

The contractor shall be responsible for all logistic support needed to successfully complete the contract

1 14 WORKWEEK

The contractor is authorized up to a six-day workweek in the field with no premium pay

1 15 AUTHORIZED GEOGRAPHIC CODE

The authorized geographic code for procurement of goods and services under this order is 000



ANNEX B
INTERVIEW GUIDE



ANNEX B

INTERVIEW GUIDE

ENI/DGSR/HRHA MANAGEMENT TEAM

- 1 How does this effort (i.e., the infectious disease regional assessment) fit with USAID's ongoing strategic planning for the NIS?
- 2 What does USAID consider to be the most critical questions that the assessment team should investigate during the site visits?
- 3 How are the assessment outcomes expected to fit into USAID's "results framework"?
- 4 It would be useful to hear the managers' thoughts about the current and pending status of the health programs throughout the NIS. How are they currently being sorted in terms of closeout, continuation, and/or expansion?
- 5 To what extent does the proposed effort fit with other evaluation and planning activities of USAID? Does this effort complement or even duplicate separate evaluation efforts already carried out on other health programs in the region?
- 6 As managers, what topical areas do you consider most important to be covered in the final report? Who are the intended recipients of the report? How does your office expect to use this report?

HEALTH PROGRAM MANAGERS

(Each interview will last 50–60 minutes)

Background Issues

- 1 Describe the background of the health program you are managing or in which you are participating
 - a What was the name of the program and your role in it?
 - b What were the goals and objectives of the program?
- 2 Cite the activities carried out under the auspices of the program and the expectations associated with these activities



- 3 Why did USAID undertake these activities? What identified or perceived issues motivated the undertaking of this program?
- 4 Describe the current status of the program

Program Design and Implementation

- 1 How was the program designed?
 - a Who are the primary and secondary stakeholders of the program?
 - b To what extent were the intended beneficiaries involved in the design process?
- 2 Were any major problems encountered during implementation?
- 3 If so, what steps were taken to mitigate or overcome these problems?

Performance and Outcomes

- 1 What performance indicators or measures of success were used to assess program effectiveness?
 - a Describe the nature of these indicators
 - b Who collected these data and how frequently?
 - c Were these data considered reliable?
- 2 Was (is) the program considered successful?
 - a Can “successful” be validated by quantitative data as well as qualitative views on the program?
 - b What policies or behaviors were changed as a result of the program?
 - c Can these changes be attributed to the program intervention(s)?
- 3 Is there local support to replicate the successes of this program?
- 4 Is this program sustainable once outside resources are depleted?

Conclusions and Recommendations

Probes What worked best in this program? What was less successful? What did the program teach USAID? Could the program have been designed or implemented differently? What “next steps” are suggested for future endeavors of this type?



ANNEX C
TRAVEL ITINERARIES



ANNEX C

TRAVEL ITINERARIES

Team 1 Russia, Ukraine, Moldova (Lefèvre and Pop)

Washington, D C	November 12-19, 1997
Moscow, Russia	November 20-27, 1997
St Petersburg, Russia	November 27-28, 1997
Novgorod, Russia	November 28-29, 1997
St Petersburg, Russia	November 29-30, 1997
Kyiv, Ukraine	November 30-December 3, 1997
Chisinau, Moldova	December 3-6, 1997
Moscow, Russia	December 6-18, 1997

Team 2 Kazakstan and Kyrgyz Republic (Sonnemann and Koudry)

Washington, D C	November 12-17, 1997
Almaty, Kazakstan	December 4-10, 1997
Taraz, Kazakstan	December 10-12, 1997
Bishkek, Kyrgyz Republic	December 14-18, 1997
Osh, Kyrgyz Republic	December 17, 1997
Almaty, Kazakstan	December 18-21 1997



ANNEX D
PERSONS CONTACTED



ANNEX D

PERSONS CONTACTED

RUSSIA

Mikhail S Balayan, M D , Deputy Director, Institute of Poliomyelitis and Viral Encephalitis, Russian Academy of Medical Sciences (RAMS), Moscow

Tagir A Bektimirov, Corresponding Member of PANS, Professor, D Sci (Med), Deputy Director, L A Tarasevich State Research Institute for Standardization and Control of Medical Biological Preparations, Moscow

E N Belyaev, Chief Inspector, Deputy Chief Sanitary Inspector of the Russian Federation, D Sci (Med), Ministry of Health (MOH) of the Russian Federation, State Federal Centre for Sanitary and Epidemic Control, Moscow

Victor Boguslavsky, M D , Regional Director Russia, Georgia, Armenia, American International Health Alliance, Inc , Moscow

Fatima Dzhatdoyeva, Federal Research Institute for Health Education and Health Promotion

Alexander Ginsburg, Deputy Director, Gamaleya Institute of Epidemiology and Microbiology, RAMS, Moscow

Avtandil Ilydzhiev, Deputy of General Director for Production, Biomed Stock Company, Moscow Region

Yuri I E Jakushevich, General Manager, Biomed Stock Company, Moscow

Solotnikova Larissa, Oblast Medical Doctor, Epidemiologist, Novgorod

Nicolai V Medunitsin, Director, L A Tarasevich State Research Institute for Standardization and Control of Medical Biological Preparations, Moscow

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Dimitry A Orlov, M D , Ph.D , Chief, Department of International Scientific Relations, RAMS, Moscow

George Oswald, USAID/Moscow, Medical Technology Transfer Program

Valentin I Pokrovsky, Professor, President, Full Member of RAMS, Moscow

Vladimir A. Polessky, Ph.D , M D , Director, Federal Institute for Health Education and Health Promotion, MOH

Ludmilla Prodonova, Deputy Chief State Sanitary Inspector of Russian Federation, Moscow

Alexi Savinykh, Deputy Director, Public Health Research Institute of Medical Sociology

Sadovnikova Valentina, M D , Chief, Unit Epidemiological Surveillance

Dr Irena Vilessova, Chief of Quality Control Department, Mechnikov Biomed Stock Company, Moscow Region

Natalia V. Vozuanova, Project Management Specialist, Health Division, USAID, Russia

Dr David Wu, Medical Affairs, Lederle-Praxis Laboratories

Dagobert A Zakgem, Cand Sc. (Med), Chief Technologist, Biomed Stock Company, Moscow

Alexander Zhiljakov, Oblast Chief Epidemiologist, Novgorod

UKRAINE

Dr Nina Borisenko, Epidemiological Division, Ukrvaccina, Kyiv

Georgiy F Bruu, General Director, MOH of Ukraine State Enterprise Ukrvaccina Kyiv

Prof Chudnaja, Chief Scientist, The L V Gromachevskyi Scientific and Research Institute of Epidemiology and Infectious Diseases, Kyiv

Katherine Fischer, M P H , Health Program Adviser, U S Embassy, USAID/Ukraine, Moldova, and Belarus, Kyiv

A handwritten signature or mark in the bottom right corner of the page.



Tatjana Gluskovna, Chief, Microbiological Laboratory, Ukraine Centre, Sanitary Epidemiology Service (SES)

Podchenko Gregorivitch, Deputy Chief State Sanitary Inspector of the Ukraine

Oxana Homenka, Chief Inspector, Human Resources, Ukrvaccina, Kyiv

Elena Kononova, Office Manager, PATH, Kyiv

Anton P Luchitsky, M D , Field Coordinator, Program for Appropriate Technology in Health (PATH), Kyiv

Victor F Marievskyi, M D , Deputy Director of Scientific Research, The L V Gromachevskyi Scientific and Research Institute of Epidemiology and Infectious Diseases, Kyiv

Victor Olncuk, Laboratory of Children's Infections, Kyiv Epidemiological Institute

Elena Poljaschuk, Chief Scientist, Microbiological Laboratory, L V Gromachevskyi Scientific and Research Institute of Epidemiology and Infectious Diseases, Kyiv

Aleksei Savchenko, Deputy General Director, Ukrvaccina, MOH of Ukraine State Enterprise, Kyiv

Olga P Selnikova, D Sci (Med) , Chief of the Committee of Immunobiological Drugs Control MOH, Kyiv

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Alexander A Volkov, Finance Officer, PATH

MOLDOVA

Dr. Oleg Benesh, Medical Epidemiologist, National Center of Scientific and Applied Hygiene and Epidemiology, MOH, Chisinau

Octavian Bivol, Health Officer, United Nations Children's Fund (UNICEF), Moldova

Dr Valeriu Chicu, Deputy Minister of Health, State Sanitary Inspector, MOH, Chisinau



Jan Drobeniuc, M D , Ph D , National Center for Scientific and Applied Hygiene and Epidemiology, Laboratory Epi Viral Hepatitis, Chisinau

Valentina Eliseeva, Deputy Chief of the Department of Women's Medical Health, MOH, Moldova

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Dr Anatole Melnik, National Center for Scientific and Applied Hygiene and Epidemiology, Chisinau

Stefan Carlos Toma, Resident Programme Officer, UNICEF, Chisinau

Maria Ziruch, Deputy Minister of Health Moldova

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Albert M. Askarov, Chief of the Central Board of the SCSES, Deputy Chief State Sanitary Doctor of the Republic of Kazakstan, Almaty

Sofia Ayupova, Chief Pediatrician, MOH, Almaty

Michael Borowitz, M.D , Ph.D , Regional Director, *ZdravReform* Regional Office for Central Asia and Kazakstan, Almaty

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Sergei Deshevoi, WHO Regional Adviser, Almaty

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Stéfane Guichard, EPI Officer, UNICEF Area Office for the Central Asian Republics and Kazakstan, Islamabad, Pakistan

Grace Hafner, R Ph , M P.H , Pharmacy/Public Health Consultant, *ZdravReform*, Almaty

Natasha Ibraeva, National Administrative and Financial Manager, BASICS

Gulfia Izmailova, Chief Oblast Pediatrician, Zhambul, Taraz

Violetta Kapasekalis, Chief of Management and Methodologic Work, SES, Zhambul Oblast, Taraz

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Saltanat Omarbekova, HIS Unit, Zhambul Oblast, Taraz

Bruce Ross, Regional Public Health Adviser, Almaty

Marilyn Schmidt, Director Office of Social Transition, USAID/CAR Almaty

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Tatiana Smitsina, CDC Project Coordinator, Taraz

Mourat Ussataev, M D , National Professional Officer, WHO Liaison Office, Almaty



Svetlana Zhakisheva, National ARI/CDD Coordinator, MOH, Almaty

Bakhtali Zhetibaev, Chief of Oblast Epidemiology Department, Zhambul, Taraz

Aitekova Zukhra, Chief Physician, Baizakski Raion, Zhambul Oblast

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Dr Shvets, Epidemiologist, Alamadun Raion SES

Eduard Sogomonyan, Head of Epidemiology Department, Kyrgyz Research Institute of Medical Ecology and Prophylaxis, Bishkek

Pearl Watts, Program Assistant USAID/CAR/Kyrgyz Republic, Bishkek

Ludmila Zemlyanakhina, Head of the National ARI/CDD Training Center, Bishkek

UNITED STATES

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Phil Budashewitz, Food and Drug Administration (FDA), Technical Assistance to Russia and the Ukraine Program, Washington

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ANNEX E

CDC RESPONSE TO DIPHTHERIA EPIDEMIC, SUMMARY 1996

(from CDC)

CDC's Collaboration in the New Independent States

**RESPONSE TO THE DIPHTHERIA EPIDEMIC IN
THE NEW INDEPENDENT STATES**

April 1996

**International Health Program Office
Centers for Disease Control and Prevention
Public Health Service
U S Department of Health and Human Services**



The Nation's Prevention Agency



Centers for Disease Control and Prevention

Response to the Diphtheria Epidemic in the New Independent States

The Issue

The diphtheria epidemic, which the World Health Organization (WHO) considers an international health emergency began in 1990 in the Russian Federation spread to Ukraine in 1991 and has now spread to all of the New Independent States (NIS) of the former Soviet Union. The primary reason for the epidemic is thought to be reintroduction of toxigenic strains of *Corynebacterium diphtheriae* into a population with many susceptible individuals, especially adults. Large-scale population movements, including persons displaced by civil disturbances have contributed to the epidemic's continuing spread. Neither low childhood vaccination coverage nor reduced efficacy of diphtheria toxoid appear to be major causative factors. In most affected countries the incidence rate of reported diphtheria has increased twofold to 10-fold each year. In 1994 alone a total of 1746 persons died in the NIS and case-fatality rates ranged from 2.8% (Russian Federation) to 23.0% (Turkmenistan).

Studies of previous epidemics show the potential for continued increases in the magnitude of the epidemic. The potential also exists for the epidemic to spread to neighboring countries. In 1994 at least 20 imported cases of diphtheria were reported in countries in Europe, including Bulgaria, Finland, Germany, Norway and Poland. Although no cases have been directly imported into the United States, two cases of diphtheria among U.S. citizens who live in or who traveled to the NIS have been reported, and the Centers for Disease Control and Prevention (CDC) considers the epidemic a risk for importation into the United States.

CDC's Response

From 1992 through 1994 CDC's National Immunization Program (NIP), with funding from the U.S. Agency for International Development (USAID) and CDC (NIP), conducted a series of emergency assessments and studies, resulting in specific recommendations for increasing and targeting diphtheria control efforts. In 1993 the National Center for Infectious Diseases (NCID) initiated laboratory studies of the molecular epidemiology of the diphtheria epidemic.

Since 1994, CDC's International Health Program Office (IHPO) has collaborated on diphtheria control with CDC's NIP, Epidemiology Program Office (EPO), and NCID, with funding provided through IHPO's Participating Agency Services Agreement (PASA) with USAID. CDC has also collaborated with other U.S. Government-funded organizations and private partners including Basic Support for Institutionalizing Child Survival (BASICS) and Program for Appropriate Technology in Health (PATH) and international governmental and nongovernmental organizations such as WHO and UNICEF.

CDC has used three major strategies in working with host country counterparts to improve local diphtheria surveillance and strengthen outbreak response capacity among local NIS health officials:

- NIP epidemiologists have helped strengthen host country capacity through collaboration on epidemiologic research (including studies to assess vaccine efficacy, immunogenicity,

and coverage and to identify high-risk target groups for intervention) and on the development of diphtheria control plans. NIP has performed epidemiologic assessments in Georgia, Russia, Tajikistan and Ukraine. Vaccine efficacy studies in Ukraine and Moscow provided strong evidence that three or more doses of diphtheria toxoid were highly effective in prevention of disease in children. Immunogenicity studies performed in Ukraine demonstrated that most adults developed protective levels of diphtheria antibody in response to a single dose of diphtheria toxoid. These studies were critical in development of the WHO diphtheria control strategy. NIP performed coverage surveys after a mass vaccination campaign in Ukraine. Currently a case-control study of risk factors for diphtheria is under way in Georgia. NIP also participated in and provided technical assistance in the development of diphtheria control plans in Georgia, Kazakstan, Kyrgystan, Turkmenistan and Uzbekistan. Efforts to develop and implement optimal diphtheria control strategies at the state level are ongoing in the Russian Federation.

The Diphtheria Laboratory, NCID, in collaboration with microbiologists in the NIS, has developed molecular epidemiologic methods that have allowed identification of specific epidemic clones in Russia and Ukraine. Although studies are still in progress on isolates from other countries in the NIS, it appears that different epidemic strains have emerged in different geographic areas, suggesting that the epidemic is not due to the emergence of a single, highly transmissible strain of *C. diphtheriae*.

- IHPO posted four resident advisors in Armenia, Georgia, and Kazakstan to provide on-site technical assistance with prevention and control of high-priority diseases, including diphtheria. The advisors, with close guidance from CDC/Atlanta technical and management staff, have supported local production of public health bulletins to disseminate critical surveillance data on diphtheria and other diseases.
- Staff of IHPO, EPO, NIP, and other CDC units conducted six multi-week courses (five in Atlanta, one in Yerevan, Armenia) to train public health staff in basic applied epidemiology, biostatistics, and scientific communication, with a strong emphasis on diphtheria and other vaccine-preventable diseases. In addition, a workshop, held in Almaty, Kazakstan, trained over 60 participants (from the republics of Armenia, Georgia, Kazakstan, Kyrgystan, Russian Federation, Tajikistan, Turkmenistan, Ukraine, and Uzbekistan) in diphtheria and polio surveillance and case management. The workshop provided practical hands-on training in effective surveillance methods (including the use of the software package Epi Info), technical updates on control efforts, and planning strategies for effective diphtheria control throughout the NIS.

Proposed Next Steps

IHPO will continue its collaboration with other CDC units, international organizations, and host countries to improve local responses to the diphtheria epidemic. CDC epidemiologists supported through the PASA will continue a variety of studies in the Caucasus and Russian Federation to further characterize the epidemic and recommend and help implement prevention

and control measures IHPO staff will coordinate additional epidemiology and surveillance training courses in Atlanta and Uzbekistan, provide follow-up "mentorship" to course graduates conducting their own diphtheria-control research, and explore ways to disseminate research findings and recommendations through conferences and meetings With USAID PASA funding ending in August 1996, IHPO will actively seek new partnerships to support CDC's diphtheria control assistance in the NIS





ANNEX F

**USAID-SUPPORTED INFECTIOUS DISEASE RELATED ACTIVITIES
IN THE NEWLY INDEPENDENT STATES**

**ANNEX F
USAID-SUPPORTED INFECTIOUS DISEASE RELATED ACTIVITIES IN THE NEWLY INDEPENDENT STATES**

ACTIVITY	Cost in U S Dollars	Beginning/Ending Dates	Unspent Balance	Target Country*											
				RS	KZ	KG	UZ	TK	TJ	UK	MD	AM	GA	AZ	NIS
<u>Early Efforts FY1992</u>															
A Children s Vaccine Initiative	\$ 2 000 000	3/92- 6/93	0			X	X	X	X						
B CDC (PASA)	\$ 924 813	10/92- 5/93	0	X		X	X					X			
<u>Health Care Improvement Project FY1993</u>															
C Food and Drug Administration (PASA) ¹	\$ 2 800 000	10/92- 4/98	20 000 ²	X											
D Merck and Company	\$ 770 745	10/92- 3/94	0	X											
E American-Cynamid/Lederle-Praxis	\$ 818 880	10/92-11/94	-0	X											X
F U S -Japan Immunization Initiative ³	\$ 2 250 000	6/93- 3/94	0-			X		X			X		X		
<u>Health Care Improvement Project FY1994</u>															
G BASICS Project ⁴	\$ 7 858 000	10/93- 6/98	0		X	X	X	X	X	X	X	X	X	X	X
H CDC (PASA)	\$ 6 760 609	7/94- 7/97	0	X	X	X	X	X	X			X	X	X	
I World Health Organization (IICC)	\$ 700 000	11/94-11/96	0-												
J PATH/PVO Humanitarian Assistance ⁵	\$13 400 270	5/94-10/97	6 707							X					X
<u>Health Care Improvement Project FY1995</u>															
K BASICS Project (Russia)	\$ 1 468 000	6/95- 6/96	0-	X											
L UNICEF Interagency Appeal ⁶	\$ 3 180 000	6/95- 5/96	0						X			X	X	X	
M UNICEF Diphtheria Effort (Moldova)	\$ 600 000	5/95- 5/96	0								X				
<u>Health Care Improvement Project FY1996</u>															
N CDC (PASA)	\$1 108 475	8/97- 6/98	0		X	X	X	X	X						X
TOTAL	\$44 639 792														

*Target Countries RS = Russia KZ =Kazakstan KG = Kyrgyz Republic UZ = Uzbekistan TK = Turkmenistan TJ = Tajikistan UK = Ukraine MD= Moldova AM = Armenia GA=Georgia AZ= Azerbaijan NIS= NIS Region

¹FDA under its PASA initiatives received \$900 000 with supplemental increases of \$300 000 (1995) and \$1 6 million (1996)

²Less final invoices which are still pending

³U S -Japan Immunization Initiative This represented a joint U S -Japan collaborative effort in which the Japanese government provided approximately \$2 million for the purchase of vaccines and cold chain equipment

⁴Total funding \$ 9 326 000 less Russia \$1 468 million = \$7 858 000 Program categories Immunization \$6 million CAIDP \$1 438 million Moldova Disease Control \$100 000 Armenia \$30 000 and Ukraine \$668 752

⁵PATH received \$11 3 million in the original cooperative agreement (5/94-4/96) and supplemental increases of \$1 965 million (7/95-10/96) and \$95 270 (9/96-10/97)

⁶UNICEF Consolidated Interagency Appeal In response to the UNICEF Appeal USAID is supporting diphtheria control efforts in Tajikistan (\$180 000) Armenia (\$700 000) Georgia (\$1 100 000) and Azerbaijan (\$1 200 000)

USAID-SUPPORTED INFECTIOUS DISEASE RELATED ACTIVITIES IN THE NEWLY INDEPENDENT STATES (continued)

PRIMARY OBJECTIVES OF THE PASA, COOPERATIVE AGREEMENT OR CONTRACT	Funding Mechanism				Evaluation Plan?	Report(s) Available
	GRANT	CA*	PASA	CONTRACT		
<u>Early Efforts FY1992</u>						
A Provide vaccines and cold chain support and technical assistance through the USAID REACH project				X	No	Yes ¹
B Implement emergency public health surveillance systems			X		No	Yes ²
<u>Health Care Improvement Project FY1993</u>						
C Provide training to improve good management practices and quality control at Tarasevitch Institute				X	No	Yes ³
D Restore measles vaccine production and training conduct feasibility study			X		No	Yes ⁴
E Restore DPT and polio vaccine production and training conduct feasibility study	X				No	Yes ⁵
F Provide technical assistance and limited cold chain through the USAID REACH project	X				No	No ⁶
<u>Health Care Improvement Project FY1994</u>						
G Provide technical assistance to develop sustainable immunization systems				X	Yes	Many ⁷
H Provide technical assistance to improve health surveillance and disease control			X		No	Many ⁸
I Support for donor coordination activities of the Secretariat of the IICC (WHO)	X				No	No
J Facilitate U S export of FDA-approved vaccines and pharmaceuticals and provide vaccine and commodity support for diphtheria control throughout the Ukraine		X			Yes	Yes ⁹
<u>Health Care Improvement Project FY1995</u>						
K Technical assistance in social mobilization and immunization delivery systems	X			X	No	Yes ¹⁰
L/M Support vaccine commodity and technical assistance for diphtheria control	X				No	Yes ¹¹
<u>Health Care Improvement Project FY1996</u>						
N Technical assistance to improve health surveillance etc (incremental funding)				X	No	Yes ¹²

* CA = Cooperative Agreement

¹ Reflections on REACH Immunization Program Assistance to the Former Soviet Union 1992-93 REACH January 1994

² Evolution of CDC Activities in the New Independent States CDC Atlanta GA April 1994

³ Technical Assistance to Russia and Ukraine Program FDA Washington D C March 1998 Final report pending

⁴ Russia Vaccine Production Feasibility Study Project Merck and Company March 1993 Revised April 1994

⁵ NIS Feasibility Study Manufacturing Facility for Diphtheria Tetanus and Pertussis (DPT) Vaccine and Oral Polio Vaccine (OPV) Lederle-Praxis Biologicals December 1993

⁶ Diphtheria Control in Armenia Azerbaijan and Georgia BASICS August 1995

⁷ Final report pending submission November/December 1998

⁸ See List of NIS-Related Publications Authored or Co authored by CDC Staff CDC Atlanta GA April 1996 Final report expected August/September 1998

⁹ Ukraine Humanitarian Health Assistance Final Report PATH December 1997

¹⁰ Interim Evaluation of the BASICS Project HTS Project No 936 6006 April 1997 and U S -Russian Collaboration in Public Health Communication 1995-97 Overview of Achievements BASICS January 1998

¹¹ Grant reports were completed on applicable countries

¹² Final report pending submission August/September 1998



ANNEX G

**USAID/CAR PLANS· INFECTIOUS DISEASE INTERVENTIONS AND
*ZDRAVREFORM***

USAID/Almaty FY97-98 Infectious Disease Program
Scope of Work Draft April 17, 1997

I INTRODUCTION

The economic upheaval of the transition from a centrally planned to a market economy in Central Asia has highlights significant hardships, especially among the most vulnerable groups whose health and welfare have been negatively affected. Given this situation, a key determinant of the overall success of the economic and political liberalization process in the Central Asian Republics (CAR), will be the ability of the government (NGOs and the private commercial sectors) to develop efficient delivery systems of basic social services, and to cushion the negative short term efforts of economic transition on income and employment levels.

The major emphasis of the Mission's program in the CAR is to demonstrate that health services can be made available on a cost-effective basis within a market-oriented economy. To do so, the mission supports alternative health financing schemes that contribute to long term sustainability, assists in restructuring service providers in the government in privatizing the health services and strengthening primary and preventive health care, and helps improve the efficiency of health facilities. Specifically in infectious diseases, USAID/CAR's activities have focused on the prevention and control of vaccine preventable disease, increasing capacity and reforming clinical practices of health care providers to improve case management of the two main contributors to child mortality (pneumonia and diarrheal diseases), building capacity to improve prevention, treatment and control measures of tuberculosis, and improving disease surveillance systems and the use of data for decision making, through the dissemination of health information.

Continuing these efforts, in FY97-98, the strategy underlying the infectious disease earmark is to focus on tuberculosis and other priority infectious diseases such as STD's, and to continue support for case base surveillance and dissemination of health information. The infectious disease earmark totaling \$1,350,000 will be programmed to implement the above strategy. In addition there is additional \$1,418,430 of "parking fines" which are for Turkmenistan and Tajikistan and will focus on prevention and control of infectious disease epidemics such as typhoid, diphtheria, malaria, and others.

The following briefly highlights the accomplishments under the current infectious disease program, outlines the proposed objectives and activities to be supported by FY97 funding, and provides suggestions for follow-on activities to be supported by FY98 funding, should it be available. Since there are multiple implementing partners, each will be responsible for developing a detailed work plan within the framework and funding levels described below. These individual work plans will contain further background information and justification, a detailed scope of work including timelines and budgets, and an evaluation plan and will be included as an addendum to this document upon their completion.

I BACKGROUND

The activities implemented under the FY 1996 infectious disease earmarks were integrated within the Mission's Strategic Objective 3.2 Improved sustainability of social benefits related to health, housing and the needs of selected vulnerable groups. However, the results for the infectious disease

program for the 1997 will be reported under SO 4.1 special initiatives. The Central Asia Infectious Disease Program (CAIDP) currently being implemented by BASICS and CDC has two main objectives: (1) to increase capacity and reform the clinical practices of practitioners and other health care providers to improve case management of the two main contributors to child mortality - pneumonia and diarrheal disease, and (2) to increase capacity and reform the management and control of tuberculosis, another health priority, through policy revisions, strengthening laboratory diagnostics and improving surveillance and the use of data for decision-making. The current program is being implemented in three target oblasts of Zhambyl - Kazakstan, Osh - Kyrgyzstan, and Fergana - Uzbekistan.

Many lessons have been learned from ongoing infectious disease programs under different mechanisms which are relevant to the development of future activities:

- ▶ an analysis was conducted to show that potential savings between the current traditional ARI treatment (\$5.00/child) as compared to WHO standard protocols (\$1.1/child) shows that illustrating a tremendous potential for savings,
- ▶ BASICS has assessed the current knowledge and practices of health care workers and identified barriers to effective clinical practices, all which have been used to adapt training materials,
- ▶ BASICS has established ARI/diarrheal disease training "units" within hospitals and other health care facilities and to date, a total of 179 health care professionals have received training, with an additional 200 scheduled to be trained this summer,
- ▶ CDC has conducted a cost comparison of current tuberculosis treatment practices (\$500 / patient cured) and WHO's TB-DOTS regimen (\$220/patient cured) illustrating a potential cost-savings of greater than 50% per treatment,
- ▶ CDC and BASICS have held several discussions with policy makers at the national level to illustrate potential cost savings of more than \$2 million annually by revising national policies to eliminate unnecessary annual Mantoux testing and reduce the number of annual vaccinations given to children,

In addition, USAID-funded resident advisors under the ENI/CDC PASA are working to improve health surveillance and introduce more effective, efficient and less costly health surveillance measures. BASICS has strengthened national immunization systems through the revision of national policies which now support immunization schedules consistent to WHO recommendations and the reduction of contraindications, improved cold chain management and vaccine logistics, created systems to improve the management and use of information in programing resources and assisted MOHs with the control of diphtheria, a problem of epidemic proportions after the fall of the Soviet Union, and the eradication of polio. BASICS is in the process of conducting a vaccine procurement workshop aimed at building capacity to ensure a sustainable supply of vaccines essential to successful prevention efforts.

Complementing these USAID/CAR-supported activities, UNICEF, WHO and the World Bank have been implementing related activities to reduce morbidity and mortality due to ARI and diarrheal

diseases WHO has set up tuberculosis treatment demonstration projects in two rayons in Issykul-Oblast and Kyrgyzstan is currently considering expanding this program to a national level through the World Bank More recently Project Hope has introduced the WHO tuberculosis treatment program in Atyrau Oblast of Kazakstan curing over 93% of TB patients and has begun to implement a similar program in Almaty Oblast through a private-public partnership with Chevron Munaigas, Inc

II FY97-98 INFECTIOUS DISEASE PROGRAM OBJECTIVES & ACTIVITIES

The FY97-98 infectious disease program will have two components The first component, funded by an FY97 Infectious Disease Earmark of \$1,350,000, will build upon the accomplishments and lessons learned from the current infectious disease activities and shift emphasis to tuberculosis where major savings can be achieved by introducing new methods of treatment USAID/CAR proposes to increase it's efforts in tuberculosis prevention, treatment and control by coordinating with and leveraging other donor partner activities within the CAR region, assessing the impact of the ARI/diarrheal disease clinical practices reform and integrate these efforts into the Abt Associates health systems reform activities, and continue to strengthen case-based disease surveillance systems This first component involves multiple implementing partners and each will be responsible for developing a specific work plan within the framework and funding levels described below At the direction of the USAID/CAR, individual work plans will contain further background information and justification, a detailed scope of work including indicators, time-lines, budgets, and an evaluation plan

Objective 1 To reduce costs of treatment of tuberculosis by introducing short course therapy and improved laboratory diagnostics This will result in budgetary savings to the amount of

Building upon the achievements and lessons learned from previous CAIDP and other related activities, under this objective, USAID/CAR proposes to focus on three activities (1) strengthening laboratory diagnostics, (2) improving clinical practices of practitioners and other health care providers in the appropriate treatment of tuberculosis, and (3) carry-out cost effectiveness analysis to demonstrate actual savings It is proposed that the activities under this objective would be carried out jointly by Project Hope, CDC and ABT Associates as follows - the program will be designed for two years with incremental funding

- ▶ CDC will focus on activities related to improving laboratory diagnostics and cost-effectiveness analysis
- ▶ Project Hope will focus on reform of clinical practices in the treatment of tuberculosis in addition to leveraging funds from the private sector to procure drugs and other needed lab equipment and supplies not able to be covered by the FY97 funds
- ▶ Abt will work with both CDC and Project Hope to integrate activities into existing health reform activities assist with the collection and evaluation of data and provide logistical support

During FY97-98, activities under this objective will be implemented first in Zhezkazgan - Kazakstan and pending available FY98 funds, activities will be extended to Semipalatinsk -

Kazakhstan TB activities in Kyrgyzstan will be coordinated with the TB activities of the World Bank. As additional funds are available in FY1998, the products will be shared with Uzbekistan and Turkmenistan. Additional FY98-supported activities should include reinforcing previously implemented prevention measures, such as national policies reducing unnecessary BCG vaccination and elimination of Mantoux testing in children. Most importantly, it is recognized that a sustainable drug supply is necessary to achieve true sustainability of any TB prevention and control program, therefore, FY98-funded activities should most definitely focus on developing capacity to ensure a sustainable drug supply.

Objective 2 Strengthening case - based surveillance systems - to improve national level reporting on all diseases

USAID proposes to augment its surveillance efforts to date by working closely with the respective Ministries of Health and Sanitary and Epidemiological Services (at Republican and Oblast-levels) to determine the obstacles in wide-spread adoption in the use of analytical software and the computerization and representational techniques. The focus in 1997 work plan will be on tuberculosis. The following activities are to be carried out by CDC in all five Central Asian Republics:

- ▶ removing barriers to wide-spread use, more training and hands-on exposure for the computer operators and epidemiologist involved
- ▶ introduction of new case-based surveillance data-entry screens (like those used for diphtheria and polio) will serve as a teaching tool and participants will be asked to create others as part of the training experience throughout Central Asia
- ▶ efforts will be made to cease reporting aggregate data in numerical formats seeking instead to use graphical (pie charts, bar graphs and trend lines) to improve the use of these data by decision-makers

It is anticipated that there may be remaining funds in the CDC/Global PASA at the end of FY97. Therefore, it has been agreed upon between USAID/CAR and Global that any remaining funds will be carried over into the next year and be used (until depleted) to fund some of these CDC disease surveillance activities and production and dissemination of the health bulletins.

Objective 3 Increase efficiency and cost savings in health reform oblasts through introducing modern protocols for prevention and treatment of infectious disease. As a result a larger percentage of health providers will be using new treatments regimens.

Building upon the achievements and lessons learned from previous CAIDP and other related activities, under this objective, USAID/CAR proposes to focus on three activities: (1) dissemination of training materials to health reform and other oblasts (as requested by MOHs) and integrating the ARI/diarrheal disease clinical practices training into those oblasts that currently have health systems reform activities, and (2) conduct a follow-up health facility survey to assess the impact on child mortality due to improved performance of practitioner and other health care providers in ARI/diarrheal disease case management, and (3) conduct a cost-effectiveness analysis based on the impact of the ARI/diarrheal disease training. It is proposed that the activities under this objective would be carried out jointly by CDC, BASICS and ABT Associates as follows:

- ▶ Abt Associates, using materials developed under the current CAIDP, will integrate clinical practices training materials into the following health reform oblasts Zhezkazgan - Kazakstan, Semipalatinsk - Kazakstan, and Issy-kul-Kyrgyzstan,
- ▶ CDC in collaboration with Abt Associates will conduct the cost-effectiveness analysis,
- ▶ If funds are available, BASICS will conduct the follow-on health facility in the spring of 1998 using the locally trained staff (currently carrying out the training) in the current CAIDP target oblasts (Zhambyl - Kazakstan, Osh - Kyrgyzstan, and Fergana - Uzbekistan) As discussed this is a "one shot" activity to assess impact of clinical training on child mortality

In all of these activities, an emphasis will be placed on using the local staff already trained under CAIDP (i.e. National Training Officers, and Master Trainers) as well as the local staff hired by Abt Associates who participated in this training

The **second component** of the FY97-98 Infectious Disease Program will address the current typhoid outbreaks in Tajikistan and Turkmenistan and those in other republics (although the 1997 funds are only available for Tajikistan and Turkmenistan) as well as combat other infectious disease epidemics such as hepatitis, diphtheria, tuberculosis, malaria, and others. Tajikistan has the weakest institutional capabilities to prevent and control infectious disease epidemics. Shortages of trained staff, medicines, and equipment have seriously hampered the ability on the part of these two governments to have a surveillance system in place which provides the data for monitoring and decision-making purposes, nor do they have adequate technology and staff to control epidemics. Tajikistan alone has had three infectious disease epidemics of major proportion. Activities under this last objective will be focus on prevention measures and emergency epidemic assistance. Activities will be funded by \$1,418,430 of "parking fines" money (\$1,000,000 for Tajikistan and \$418,430 for Turkmenistan) and allocated to SO 4.1 'Special Initiatives'

Objective 4 Build capacity to improve infectious disease control and prevention measures and provide emergency epidemic assistance. As a result of this capacity will exist in Tajikistan to diagnose and monitor and treat disease incidences more effectively

- ▶ strengthen existing surveillance systems and laboratory diagnostic through training aimed at building local capacity to prevent, control and respond appropriately to epidemics related to infectious diseases such as Typhoid, Hepatitis, Diphtheria, Tuberculosis, Malaria, and others
- ▶ provide technical assistance and commodities as needed, in response to emergency epidemics

Technical assistance for the prevention-focused activities will be implemented by CDC, and emergency assistance activities will be programmed separately through another mechanism which permits quick response for controlling of epidemic

VI Management Mechanisms / Field Staffing

A Management Mechanisms

FY97 funding and the "Parking Fines" funding will need to be obligated prior to June 30, 1997. The following mechanisms will be used or established to manage the activities proposed in this document.

A new ENI/CDC PASA will be established by the ENI Bureau to manage all of the proposed activities to be carried out by the CDC. The mechanism should be for a minimum of 3 years and put into place prior to the June 30, 1997 expiration of the existing CDC/ENI. Should the establishment of a new ENI/CDC PASA not be possible, an alternative mechanism to use may be the Inter-Agency Agreement (IAA) between the ENI Bureau and HHS. Bonnie O'Hri, ENI Bureau Project Officer for the current ENI/CDC PASA, will be responsible for investigating these options and establishing a mechanism. Management responsibilities will be shared between the USAID/CAR and the ENI Bureau.

An agreement with **Project Hope**, either a letter grant, sole-source agreement or other mechanism, will be established between the ENI Bureau and Project Hope. Bonnie O'Hri, ENI Bureau Project Officer, with assistance from Paul Holmes, ENI Health Advisor, will be responsible for investigating these options and establishing the most appropriate mechanism. Management responsibilities will be shared between USAID/CAR and the ENI Bureau.

Activities to be carried-out by **Abt Associates** will be funded through the existing Abt Associates two-year contract extension. Tina Cleland, ENI Bureau Project Officer for the Abt Associates contract, will be responsible for obligating the funds into this mechanism. Management responsibilities will be shared between USAID/CAR and the ENI Bureau.

The remaining **BASICS** activities to be funded by FY97 funds will be obligated by Murray Trostle, Global Bureau Senior Health and Child Survival Technical Advisor, into the BASICS contract. Management responsibilities will be under Murray Trostle with input from USAID/CAR. As of September 30, 1997, any remaining funds in the **CDC/Global PASA** will be carried over into the new CDC/Global PASA mechanism and will be used (until depleted) to fund the proposed disease surveillance activities by CDC within this scope of work.

B Field Staffing

To carry out the activities proposed in this work plan, we are requesting to have in the field two CDC resident advisors (a Public Health Advisor and a Technical Advisor) who will maintain the current CDC office and local hires to coordinate activities on the ground. Although we recognize that Project Hope has an established office here in Almaty, funding for Project Hope will be used primarily to fund the programmatic activities described in this scope of work. As of June 30, 1997, BASICS will no longer have a resident advisor in Almaty and activities will be coordinated out of BASICS office in the Washington, D.C. BASICS involvement in these infectious disease activities after September 1997 will be minimal and will only involve the remaining CAIDP activities proposed in this scope of work as well as the remaining immunization activities.

Abt Associates, Inc /ZdravReform
INFECTIOUS DISEASE PROGRAM, 1997
Kazakhstan/Kyrgyzstan

Grace Hafner
Abt Associates Inc

I ACUTE RESPIRATORY INFECTION (ARI) and CHILDHOOD DIARRHEAL DISEASES (CDD) PROGRAM

Purpose

The formation of family group practices in Zhezkazgan, Kazakstan, and Issyk-kul oblast Kyrgyzstan has created the opportunity to introduce modern clinical practices for the treatment of infectious diseases in an integrated setting of comprehensive primary care. Infectious diseases in children, particularly acute respiratory infections (ARI) and diarrheal diseases (CDD), are responsible for a significant proportion in the overall burden of diseases and are the primary causes of death in children under the age of five. Modern treatment protocols have been developed for ARI/CDD in Zhambul Oblast and will be rolled out to Zhezkazgan region/Karaganda oblast, and to Issyk-Kul oblast

The training will be directed primarily towards family group practioners, thus moving from a vertical program to a comprehensive program of primary care. Decreasing referrals to the hospitals will generate cost savings. This training can result in further cost efficiencies by using clinically based diagnosis based on an inexpensive physical assessment of the patient, compared to the more expensive traditional fluoroscopy method. There is also cost savings which can be achieved by properly prescribing simple basic antibiotics and oral rehydration salts. In contrast the current tendency is to use of expensive broad spectrum antibiotics and to prescribe multiple antibiotics often at considerable unnecessary cost.

The training will use master trainers who have been trained through the BASICS project. The BASICS program has the following major components: a) Train using small group, b) Give participant manual to take home, c) Provide appropriate leaflets to mother, d) Provide adequate supervision of workers by supervisors, e) Provide assessment of facility, f) Have commitment by Department of Health, g) Emphasis on Clinical training.

Considerations which need to be taken into account are the seasonality of these infectious diseases which will affect the time of the trainings. CDD season generally is from July through September. ARI season generally is from October through March.

Particular attention will be placed on close collaboration with the Ministry of Health's Maternal Child Health Department, the National Coordinators, and the local Department of Health which need to be the responsible for the sustainability of the ARI/CDD program. Other donor/collaborators include UNICEF, WHO, CDC, BASICS, World Bank and the Manas Project.

ZdravReform will provide support by helping select and set-up training sites, and in supporting the training of a Master Trainer for each oblast. Further assistance in

designing the training roll-out and in financial support for the roll-out seminars will be provided as funding permits

Indicators, Goals Strategies

IR 3.2.2.1 Modern management techniques and clinical practices introduced

Indicator 1: Increase in number of providers using modern management techniques and clinical practices

Definition Providers using modern treatment protocols for infectious diseases, defined as Kazakstan Number of family doctors trained/Total number of family doctors in Zhezkazgan city and Satpaeva, Kyrgyzstan Number of family doctors trained/Total number of family doctors in Issyk-Kul oblasts

Output goal 20% by March 1998

The ZdravReform Program Plan for ARI/CDD

(note same trainers will be used for both ARI/CDD)

Karaganda Oblast, (which includes Zhezkazgan rayon)

Activity 1: Designation and Training of Oblast Master Trainer

Natalia Ivanovna Dyusembaeva was designated as Trainer of Trainers and coordinator of the Karaganda training program. She is a pediatrician, has been working at the Oral Rehydration Center, is enthusiastic and motivated. The Chief Pediatrician, Nadezhda Dais will provide support and assistance as needed. Dr Dyusembaeva will go to the BASICS Training of Masters in Diarrheal Case Management program in Fergana, Uzbekistan, July 23-July 31, 1997. She will then be certified. She will also attend the Training for Supervisors workshop which will immediately follow. Abt's role is selection of trainer, in conjunction with local authorities, and logistics and financial support for the Master Trainer.

Activity 2: Selection and outfitting of Training Site

A training site will be set up at the Oblast Clinical Infectious Diseases Hospital. At the training site, the following program will take place. Room will be designated and outfitted with simple training supplies (slide projector, flip chart, training literature from BASICS, video and TV). Local polyclinics will be used as for the clinical part of the training. Abt's role is selection of training site, in conjunction with local authorities, and financial support for training site.

Activity 3: Detailed training scheme

A detailed training scheme will be designed in collaboration with the Ministry of Health's Dr Ivasef, the National Training Coordinator for ARI/CDD, Svetlana Zhakishева, the new ARI/CDD coordinator for Karaganda oblast Natlva Dvusembaeva, Chief Pediatrician Nadezhda Dais, and with input from Grace Hafner, Abt Associates, Inc.

Activity 4) Procurement of Training materials,

Abt will ensure that the training site is equipped with Facilitator (Master Trainer) manuals, slides, videos, and participant manuals from BASICS, which will be reproduced for distribution to the trainees. This material will be the same as used by BASICS, WHO and UNICEF

Activity 5) Roll-out of trainings

Regional master trainers will be trained. Four doctors, representing 4 different regions will be invited to Karaganda city. Zhezkazgan city will be included in the first training of regional master trainers, thus ensuring that the family doctors from that area will be trained. These steps will continue until there are sufficient trainers for all available outlying areas.

Activity 6) Training of all family doctors

Regional master trainers will train in the outlying regions, ensuring total coverage. Note: This step will become the responsibility of the Ministry of Health.

Supervision of the entire project will be under Natalya Dyusembaeva, and Svetlana Zhakisheva (Oblast and National Coordinators for ARI/CDD)

ARI Season This program will be duplicated during ARI season, using the above basic program

Karakol/Issyk Kul

Basic Program format

(note same trainers will be used for both ARI/CDD)

Activity 1) Designation of Oblast Master Trainer

Pediatric Trainer at the Center of Excellence in Karakol will be selected as Oblast Master Trainer, (pending approval by Chief Pediatrician of Oblast, and National Training Coordinator). Assistance will be provided by Dr. Nazar Usupaliev. Abt's role is selection of trainer, in conjunction with local authorities, and logistics and financial support for the Master Trainer.

Activity 2) Selection and outfitting of Training Site

A training site will be set up at the Karakol Center of Excellence. At the training site, the following program will take place. Room will be designated and outfitted with simple training supplies (slide projector, flip chart, training literature from BASICS video and TV). Local polyclinics will be used as part of the training. Abt's role is selection of training site, in conjunction with local authorities, and financial support for training site.

Activity 3) Detailed training scheme

Detailed training scheme will be designed in collaboration with the Ministry of Health's, National Training Coordinator for ARI/CDD Dr. Ludmilla Zemlyanukhina, the training coordinator for the Family Practice Association of IssykKul, Dr. Usupaliev, the Chief

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Pediatrician of Oblast, the designated Oblast trainer, with input from Grace Hafner, Abt Associates, Inc. This training scheme will be top-down, with the Master trainer training a cadre of regional trainers

Activity 4) Procurement of Training materials,

Abt will ensure that the training site is equipped with Facilitator (Master Trainer) manuals, slides, videos, and participant manuals from BASICS, which will be reproduced for distribution to the trainees. This material will be the same as used by BASICS, WHO and UNICEF

Activity 5) Roll-out of trainings

Master Regional trainers will be trained. Four doctors, representing 4 different regions will be invited to Karakol city. These steps will continue until there are sufficient trainers for all available outlying areas

Activity 6) Training of all family doctors

Master regional trainers will train in the outlying regions, ensuring total coverage. Note: this step will be the responsibility of the Ministry of Health

Basic program format, Acute Respiratory Infection

This program will be duplicated during ARI season, using the above basic program. Trainer of trainers will cover both ARI and CDD. Same training sites will be used

II. TUBERCULOSIS PROGRAM

Purpose

Tuberculosis (TB) is on the increase in Kazakstan and Kyrgyzstan, with this growing epidemic being a threat to the public health in the region. The current structure for TB diagnosis and treatment is based on costly and inefficient Soviet protocols, based on long hospitalization (often one or two years) and a costly and inefficient dispensarization system for outpatient follow-up.

In collaboration with Project HOPE, CDC and WHO, Abt Associates' *ZdravReform* program is working with the leading Kazakstan and Kyrgyz infectious disease authorities, on increasing use and acceptance of the modern treatment method, the World Health Organization's Directly Observed Therapy Protocol (DOTS)

The DOTS program is primarily an outpatient program, which will decrease expensive hospitalizations from one to two years down to two months. A short outpatient component of four to six months, of Directly Observed therapy follows. This could ideally occur in the primary care sector, rather than the current dispensaries.

In addition, more cost efficient diagnosis methods based on laboratory techniques can decrease the current dependence on expensive and inefficient fluoroscopy methods. The result will be downsizing of the tuberculosis dispensaries and hospitals, and overall cost-savings for the health sector.

ZdravReform will work with the CDC to refine the cost-effectiveness analysis of DOTS The analysis will be used to illustrate to the government that the new treatment protocol is not only more efficacious, but results in overall savings in the health sector. The second goal is to integrate tuberculosis treatment with primary care. After the patient's new reduced mandatory hospitalization (approximately two months, using the DOTS therapy), the patient should be returned to the care of the primary care provider who will continue to monitor the outpatient therapy. ZdravReform will work with Project HOP E and CDC in integrating DOT therapy with primary care providers.

Indicators/Goals and Strategies

3 2 2 1 2 Modern management techniques and clinical practices introduced

Indicator 1 Increase in number of facilities using modern management techniques and clinical practices

Definition Providers using modern treatment protocols for infectious diseases

Activity summary

Based on the plan developed by USAID and CDC, incorporate work on infectious diseases into the comprehensive health reform model, provide logistical support for infectious disease reform pilots, and collect and evaluate data in Almaty City Oblast

Activities

1 Purchase computer and printer for use in Tuberculosis Monitoring Center to be located at the Republican Tuberculosis Institute in Kazakhstan and a designated site in Kyrgyzstan

2 Provide computer technical support in designing a data base for collection of required data for CDC/Project HOPE work. The data base will be used to provide detailed data needed to carry out a cost-effectiveness analysis of DOTS

3 In collaboration with CDC carry out a cost-effectiveness analysis of DOTS versus current long-term hospitalization/dispensary system (one to two years). ZdravReform will carry out step-down cost accounting of the demonstration tuberculosis dispensaries which will provide information on the current cost per case

4 Provide support in fostering open procurement policies for anti-tuberculosis medications

III OTHER WORK IN INFECTIOUS DISEASE.

Abt Associates/ZdravReform participates with other donors in infectious disease issues that have applicability to primary health care and economic reform. Procurement of vaccines and issues in managing the logistics of drug supply are areas of overlap.

ZdravReform will lend support to other infectious disease work done by other donors which leads to improvements in health care in Kazakhstan, Kyrgyzstan and Uzbekistan.

Collaboration 1

International Practices of Vaccine Procurement and Organization of Quality Assurance
Seminar, June 30, - July 2, 1997, Almaty Kazakstan
sponsored by USAID/BASICS, in cooperation with the MOH/Kazakstan, and technical
support from WHO, UNICEF, and Abt Associates
"Pharmaceutical Management Considerations in Vaccine Procurement"
Presented by Grace Hafner, B S Pharm, M P H



ANNEX H

**PROJECT HOPE TUBERCULOSIS PROGRAM
(from CDC)**



Tuberculosis Programs In Kazakhstan

Introduction

According to the World Health Organization (WHO), approximately one third of the world's population is infected with tuberculosis (TB). Although TB is a curable disease, world health officials predict that 30 million people could die from it over the next decade due to inadequate TB treatment programs.

In the former Soviet Union, TB rates have increased dramatically over the past five years, in part due to worsening living conditions and widespread malnutrition, as well as interrupted supplies of anti-tuberculosis drugs. The situation in Central Asia is particularly serious.

According to the National Tuberculosis Institute In Kazakhstan, over 13,000 new cases of TB were reported in the country this year. In addition to these newly identified cases, there are another 50,000 cases which have been identified in the past, but have not been cured. The incidence rate of TB in Kazakhstan is currently estimated at 82.5 cases per 100,000 population (ten times higher than that in the United States), and the mortality rate from tuberculosis continues to rise each year.

The deterioration of the health care system contributes to the increasing problem TB poses to the general public. The intermittent drug supply has led to patients receiving only partial treatment, and as a consequence, developing drug-resistant strains of TB which are even more expensive and difficult to treat. Insufficient and outmoded lab facilities make the accurate diagnosis of TB extremely difficult. In addition, the structure through which TB is currently managed relies on Soviet protocols which are much more costly than those used in the West. By introducing short course drug therapy and improved laboratory procedures, more patients can be identified and completely cured, at a lower per patient cost than the current system allows. Only by lowering costs can a new TB program have a chance of being sustained by local health institutions into the future.

Project HOPE's Program in Atyrau Oblast

In 1994, Project HOPE, with funding from the Tengizchevroil Bonus Fund, began to introduce to the Atyrau Oblast the WHO's Directly Observed Therapy, Short Course (DOTS) treatment protocol for TB and new diagnostic techniques, as recommended by the United States Centers for Disease Control and Prevention (CDC). Local doctors were trained in the DOTS protocol and the laboratory at the Atyrau Oblast TB Hospital was supplied with training as well as new equipment and supplies to improve local capabilities to perform concentration and digestion of sputum samples, direct smear microscopy, cultures, and drug sensitivity testing. As a result of these efforts, more than 2,000 TB patients in the oblast have been identified and treated according to DOTS, with a cure rate of over 90%. All patients diagnosed with TB in the Atyrau Oblast (population 400,000) are currently covered by Project HOPE's program.

Project HOPE's Program in Almaty Oblast

Following on the success of the Atyrau program, Chevron Munaigas, Inc. donated funds to Project HOPE in late 1996 to address the growing problem of tuberculosis in eastern Kazakhstan through the use of a new mobile clinic and training programs for Kazakhstani health care providers in improved diagnosis and treatment of TB.

With the overall goal to reduce the incidence of active TB in Kazakhstan, the principal objectives of this program are to

- Operate the mobile TB clinic in the Almaty oblast to diagnose patients with TB
- Train local health professionals to treat new patients according to WHO DOTS
- Provide patient and community education

The mobile clinic will serve initially in the Almaty Oblast, and perhaps in other oblasts in subsequent years. Project HOPE staff and consultants will train Kazakhstani doctors in new laboratory techniques and the WHO DOTS treatment program, and purchase approximately \$25,000 worth of anti-TB drugs each year for patients diagnosed through the mobile clinic. In addition, Project HOPE will work with local counterparts to develop general health education materials for TB patients and the general public on the consequences of tuberculosis, its modes of transmission, and how it is treated. The mobile clinic will be used as a vehicle to distribute these materials throughout targeted oblasts. Implementing partners for this program are the Kazakh Ministry of Education, Culture and Health, the Almaty Oblast Health Department and the National Tuberculosis Institute in Almaty. It is anticipated that the mobile clinic diagnosis, treatment and training program will continue for three to five years, after which it will be turned over to local health institutions.

The Lutheran Ministries have also donated funds through Project HOPE to assist in improving laboratory capabilities at the National Tuberculosis Institute by providing new equipment and training lab personnel in smear microscopy, culture techniques and drug sensitivity testing. More accurate laboratory work will help ensure that patients receive appropriate treatment.

Future Plans

Project HOPE has recently received funding from the U.S. Agency for International Development to conduct a joint demonstration project in cooperation with the U.S. Centers for Disease Control and Prevention and Abt Associates. This project is designed to provide training to medical personnel in WHO-recommended laboratory and treatment techniques and expand the use of these protocols to more patients in Almaty City and Almaty Oblast. In addition, a cost-effectiveness analysis will be conducted to compare WHO methods with traditional ones. It is anticipated that this project will demonstrate the cost savings which can be effected by following WHO guidelines and inform future policy decisions about TB reform throughout Central Asia.



ANNEX I

**THE CENTRAL ASIAN INFECTIOUS DISEASES PROGRAM (CAIDP)
INITIATIVE**

(from BASICS)

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to improve the existing child mortality surveillance system and, 3) to validate the concordance between biological cause(s) of childhood deaths and death certificate reporting

Another goal of CAIDP has also been to improve the cost-effectiveness of the management of CDD and ARI. These two diseases are the leading reasons for outpatient visits and hospitalizations in the Central Asian Republics (CAR). Treatment methods based on outmoded Soviet models which include polypharmacy, excessive culturing and prolonged hospitalization are grossly inefficient. A study by RPM under CAIDP showed that current medication costs for ARI in the CAR is \$5.00 per case versus the WHO standard regimen which costs \$1.11. In Kazakhstan alone using the WHO regimen would save an estimated \$11,695,000 just in reduced medication costs.

II Proposed CAIDP Follow-on Activities

A) Implement a low-cost evaluation of the effectiveness of CAIDP in mortality reduction and improved case management

1 Health Facility Survey To demonstrate the results of CAIDP's efforts measurement of the appropriate indicators will rely heavily on a health facilities assessment or survey (HFS) the first iteration of which was implemented by BASICS at the beginning of the CAIDP program. There is still a need for a planned follow-up of the health facilities assessment (see USAID/BASICS Central Asia Infectious Disease Program FY98 Workplan) to be conducted by BASICS in March 1998, focusing on assessing the overall changes in treatment practices and cost-of-treatment. Teams comprised of CDD/ARI National Coordinators, senior oblast-level trainers and CAIDP National Training Officers will plan and coordinate evaluation activities in Kazakhstan, Kyrgyzstan and Uzbekistan, supervised by BASICS with collaborative input from CDC, to obtain results and impact indicators allowing USAID to evaluate the efforts of CAIDP activities. These activities currently fall under the USAID/CAR S O 4.0 "Special Initiatives" however these efforts also support the Mission S O IR 3.2.2.1.3 "Modern management techniques and clinical practices introduced."

2 Evaluation of the effectiveness of CAIDP in mortality reduction The cost-effectiveness evaluation will include an evaluation of the effectiveness of the CAIDP interventions, evaluating changes in mortality and hospitalization rates, compared with changes in birth rates, and using the follow-up health facilities assessment planned by BASICS to evaluate the impact of the revised case-management training. CDC will do a low-cost evaluation of the cost-effectiveness of revised ARI and CDD case management protocols to demonstrate to the respective Ministries of Health the value of pursuing the WHO regimen, and to supply an important impact indicator of these USAID-funded efforts. Optimally, the evaluation will be conducted by assessing the case management performance of three groups of health-care workers: 1) workers who have not been trained by BASICS, 2) workers who have been trained for a single season/session by BASICS and 3) workers who have been trained by BASICS, with subsequent training reinforced through follow-on training and supervision. As stated in the PASA, for CDC to be able to conduct this evaluation, it will be necessary for CDC to have full participation in the design phase of the follow-up health facilities assessment being planned by BASICS.

B) Strengthen laboratory capacity CDC will perform an assessment of the laboratories in

Zhambyl and Osh Oblasts to determine if the laboratory practices and specimen tracking procedures taught in the laboratory consultancy(s) of the CAIDP have been implemented. CDC will provide laboratory training at the national level in Uzbekistan with respect to the isolation and identification of diarrheal disease pathogens and in assaying enteric cultures for antibiotic resistance.

C) Communicate the results of the CDC, BASICS and RPM activities and develop with counterparts and assist in implementation of comprehensive locally sound interventions on child health

1 The May Conference On Child Health CDC will assemble a compendium of results from CAIDP activities, translate them into Russian, and conduct a conference in May/June, in conjunction with BASICS. The Conference will take place in Zhambyl Oblast with two observers per the other CAR countries attending. It will have wide array of representatives (mothers, children, health workers from all levels), basically child health decision makers of the oblast. By presenting all the facts and lessons learned to counterparts, the aim is to force counterparts to develop, by the end of the conference, locally-sound comprehensive interventions to reduce childhood mortality to which they will commit resources to. Information from the Childhood Death Survey and BASICS's, RPM's and CDC's work on ARI/CDD including prikazi developments, antimicrobial resistance data, cost-effectiveness data especially in regard to antibiotics prescribing and hospitalization practices, data on training and supervision will be presented at the multi-country conference. The preparation of the community, health workers and medical establishment is crucial for the conference to succeed. The process (preparation) culminating in the Conference include 1) completing data collection (end of December), 2) analyzing data and identify predictors of childhood mortality, 3) organizing local panel of experts and/or Committee on Child Health which includes community members to review currently available data, to participate in analysis and to develop interventions, 4) obtaining project reports from interviewers and supervisors (from their experiences working with mothers, feldschers and other health workers) regarding problems leading to and solutions to prevent childhood mortality.

2 The Book on Child Health Putting together data from CAIDP activities and lessons learned, the aim is to serve public health professional working in the NIS by providing an overview of cultural, political, and historical factors affecting child health, current baseline data on childhood morbidity and mortality and an epidemiologic approach to public health problems and policy making. The book will, therefore, contain information on epidemiologic methods [needs assessment, hypotheses generation, qualitative and quantitative (case-control) studies, Epi Info, SAS, regression modeling], hard facts (caretakers' beliefs and practices, risk factors related home, hospital and perinatal deaths, modern and traditional medical care, mortality surveillance, death certificate reporting, the economics of care, organism resistance and choices of antibiotics] recommendations and appendices (prikazs, mortality surveillance instruments). The efforts expended in analyzing and writing up of data, the May conference and final CAIDP reports will all feed into the making of the book.

D) Assist the Ministry of Health in formulation and implementation of public health policies CDC will assist the Ministry of Health in formulation of public health policies subsequent to the conference, with development of communication strategies including community health education and in developing ways in which to monitor and evaluate the

interventions. Most of the investment (financial, manpower) needed to advocate for changes in child care has already been made. We have, however, to continue these types of maintenance activities in order to make sure that the transformation occurs. Establishment of community organizations around child survival activities headed by the interviewers and supervisors of the Childhood Death Survey should be considered. These individuals are maternal figures who reside in the different raions where they conducted interviews of mothers.

E) Enhance the usefulness, specificity, and sensitivity of the existing child mortality case-based surveillance systems. Continuous identification of the *determinants* of deaths (factors that contribute and lead to the development of illnesses and deaths respectively) via mortality surveillance help identify the biological, socio-cultural and medical care-related predictors, ascertain the extent of preventable deaths, direct data-based health policy making and document progress in childhood survival initiatives. Surveillance is particularly important in these oblasts because of the need to prioritize health interventions resulting from economic constraints. Based on information obtained from evaluation of the existing mortality surveillance and childhood death investigation systems, death certificate validation study and risk factors identified from the Childhood Death Survey, a reform strategy will be proposed for discussion and adaptation at the May conference. The process involves 1) evaluating the existing mortality surveillance system (done), 2) identifying the biological, socio-cultural and medical care-related predictors of childhood deaths, 3) presenting the findings and adapting intervention strategies at multi-country conference in May, 4) developing a simple surveillance tool to be used for on-going mortality surveillance based on the result of the evaluation, identified predictors and adapted intervention strategies.

F) Enhance the accuracy of death certificate reporting. Inaccurate reporting of causes-of-death impedes the assessment of the burden of disease and thus development of appropriate public health interventions. Improving death certificate reporting will involve 1) collecting information on childhood deaths from maternal interviews and medical records abstractions, 2) abstracting death certificate data for children in the Childhood Death Survey (done), 3) assigning diagnosis to records collected, 4) comparing diagnoses arrived via examination of maternal interviews and medical records abstractions with death certificate diagnoses, 5) based on the result of comparison, identifying areas for system reform, 6) presenting findings at the May conference and developing strategies for reform, 7) assisting in instituting changes in the surveillance system.

G) Continue developing local manpower capacity. Every encounter with counterparts has been used to transfer knowledge, i.e., to empower local health practitioner so they will gradually take over and run CAIDP-types of initiatives and activities. For instance, during the upcoming December consultancy, counterparts will be taught basic descriptive epidemiology and how to use the EpiInfo software in performing basic analyses. The Head of Maternal and Child Health at the Ministry of Health, the local CDC technical assistant working at CDC Almaty office and the coordinator of the Childhood Death Survey who is also the Chief Pediatrician of Zhambyl Oblast will receive six weeks of epidemiology training at CDC in Atlanta. These transfers are essential to make all outside efforts sustainable.

H) **Continue the role of Zhambyl Oblast as a pilot oblast** Zhambyl Oblast is the oblast where we have learned the most and have the most political support and thus the easiest to transform. It could potentially continue to serve as a pilot oblast where health reforms could be instituted and changes could be evaluated. It is hoped that once an oblast is transformed, the country and then the region will follow.

Budget The estimated overall budget will be \$275,000 to cover the 3 countries.

The projected budget - time line is as follows:

FY 98 - \$175,000 to include logistical support (organization and financial payments) to perform the cost-effectiveness evaluation in 3 countries (\$60,000), two site visits from CDC/Atlanta staff to monitor laboratory surveillance progress and to conduct training in Tashkent with respect to diarrheal disease pathogens (\$100,000), advocacy and follow-up in adoption of ARI/CDD case-management materials and methodologies, including costs of the May conference (\$100,000) and of negotiations with WHO, UNICEF, or other donors to assure adoption occurs. Much of these costs will be covered by monies remaining in the Global PASA.

Summary of needs

1) Support for a statistician (\$5 - 10,000) to help analyze the huge amount of data, 2) Support to put on the conference, 3) Three facilitators from CDC for the conference x 3-4 weeks each, 4) One communication expert to help in the development of the communication strategy x 3 weeks, 5) A CDC surveillance/ICD coding expert to help institute changes in mortality surveillance and the recommendations to death certificate reporting x 3 weeks, 6) Consider supporting a social scientist to help organize community organization around child survival x 3 weeks 5) A computer/data management expert to institute the mortality surveillance system X 2 weeks, 6) A CDC expert to do follow-up on the recommended interventions, institute a monitoring system and evaluate effectiveness of interventions x 3 weeks



ANNEX J

**USAID EFFORTS COMBATING INFECTIOUS DISEASES IN
CENTRAL ASIA AND THE CAUCASUS**



ANNEX J

USAID EFFORTS COMBATTING INFECTIOUS DISEASES IN CENTRAL ASIA AND THE CAUCASUS

OVERVIEW

The dissolution of the Soviet Union in the late 1980's greatly affected the political landscape of Eastern Europe and Central Asia, initiating unanticipated consequences in areas far removed from politics, especially in the area of public health. Prior to the collapse of Soviet authority, the central Ministry of Health (MOH) was responsible for health care, responding to health emergencies, and maintaining a reliable surveillance system capable of detecting threats to the health of its inhabitants. Democratic and economic reforms meant that each newly independent state (NIS) had to develop its own public health system.

The Soviet socioeconomic system had operated as a centrally controlled command structure assigning each Soviet republic specialized functions (e.g., providing raw materials for medicines, medical equipment and/or vaccine manufacture, scientific research) while creating dependency among the republics. Many of these former republics depended upon substantial subsidies from the central government to maintain health and safety programs. After independence, the health status of the NIS populations was adversely affected during the transition to democratic capitalism. During this period of chaotic economic reform, even the health system of the Russian Federation experienced serious declines in terms of readiness for responding to health emergencies.

By the early 1990's, a region-wide health emergency was in evidence for most of the NIS. Russian health experts (as well as their Western counterparts) had noticed sudden increases in the reported incidence of diphtheria by the end of the 1980's. Described as an epidemic, diphtheria re-emerged in the NIS to become an international health emergency¹ and continued to spread in the NIS in the first four years of the decade—afflicting adults as well as children. The highest incidence rates occurred in Russia and the Ukraine (probably due to large urban populations). The Caucasus region² and the Central Asian Republics (CAR)³ also showed

¹Nor was this limited to just diphtheria. The NIS region experienced outbreaks of measles and polio as well as increased rates of hepatitis and tuberculosis. The first three diseases were associated with a decline in the availability of reliable immunological procedures (e.g., surveillance and vaccination) while the latter two were correlated directly with degrading environmental health conditions and increasing poverty levels.

²The Caucasus refers to a region of the former Soviet Union adjacent to the Caucasus Mountains between the Black Sea and the Caspian Sea. Three newly independent republics are now recognized in this region—Armenia, Azerbaijan, and Georgia.

³The CAR consists of five nations, all former Soviet republics. They are Kazakhstan, the Kyrgyz Republic, Uzbekistan, Turkmenistan, and Tajikistan.



dramatic increases. The map at the end of this annex displays the reported incidence rate of diphtheria in the NIS as of 1994.

The resurgence of diphtheria in the NIS was attributed to a variety of reasons:

- low immunization coverage rates for infants and children (a legacy of Soviet medical practices),
- failure to maintain immunity in the adult population with booster immunizations,
- vaccine shortages due to a breakdown in production, distribution, and payment mechanisms, and,
- poor public health surveillance techniques and public information campaigns.

To address these and other health issues, a regional strategy was needed. Meeting in Berlin in 1994, a group of international agencies—the World Health Organization (WHO), the United Nations Children’s Fund (UNICEF), the Red Cross, the United States Agency for International Development (USAID), and the Centers for Disease Control and Prevention (CDC)—devised a plan for controlling the epidemic. The plan called for mass immunization: all individuals between the ages of 7 and 50 would receive 1 dose of diphtheria vaccine; all children by the age of 2 years would receive 4 doses of combined diphtheria/pertussis/tetanus (DPT) vaccine, and all children by 6 years of age would receive a booster of diphtheria/tetanus (DT) vaccine. It was further agreed that efforts be made to rapidly identify cases for providing prompt treatment of all suspected diphtheria cases—in essence, re-establishing effective public health surveillance systems.

DONOR RESPONSE STRATEGY

Because the incidence of diphtheria cases in the NIS increased from 839 in 1989 to 50,000 in only five years, a national diphtheria control program was prepared in 1994 with technical assistance from UNICEF, WHO, CDC, and European countries. The beneficiary countries adopted a program strategy to help reduce the incidence of diphtheria in their countries. The goals were to immunize 95 percent of the children in each country up to 2 years of age with 4 doses of DPT, immunize 95 percent of the children 2–6 years of age with one booster of DT (unimmunized children with 3 doses), actively trace and re-immunize children who received Td vaccines instead of DPT or DT in the primary series, and, immunize school children,



adolescents and adults up to 60 years of age, living in areas at risk, with one booster of Td ⁴ It was left to each beneficiary country to devise a diphtheria strategy through its respective Ministry of Health (MOH)

USAID's RESPONSE

USAID was involved from the onset of the epidemic in attempting to control the outbreaks in the NIS. As early as 1992, emergency funds had been authorized for immunizing children in the most affected countries (e.g., the Caucasus and Tajikistan). The Resources for Child Health (REACH) project and CDC experts assessed the overall immunization needs in these countries. By 1994, an integrated and coordinated strategy had evolved to combat the diphtheria epidemics now spreading to other countries in the NIS (e.g., Russia, Ukraine, Moldova).

In October of 1993, the Basic Support for Institutionalizing Child Survival (BASICS) project, the successor of REACH, had the broad mandate of developing national immunization plans for most of the NIS countries along with devising vaccination schedules and contraindications policy. A joint program, the Central Asia Infectious Disease Program (CAIDP), with CDC also was developed to coordinate infectious disease efforts throughout the CAR. USAID also provided direct grants to UNICEF in 1995 to supply vaccine and commodity support to the Caucasus and other countries most severely affected by the diphtheria epidemic.

In July 1994, CDC entered into a two-year Participating Agency Service Agreement (PASA) with USAID through the Bureau for Europe and the NIS (ENI) to promote and improve public health surveillance activities in the NIS ⁵. This agreement called for directing CDC technical assistance to bring about sustainable improvements to public health surveillance systems, epidemiological practices, and disease prevention and control to the region. The general objectives of the CDC PASA were as follows:

- Assess and monitor the existing surveillance systems with particular attention to important health indicators,
- Introduce up-to-date epidemiology and surveillance techniques for disease monitoring, investigating, and control,

⁴U.S. - Russian Cooperation with Health Communication Campaigns in Three Russian Oblasts 1995-1997
Paul Olkhovsky, BASICS project

⁵This was the second interagency agreement with CDC for dealing with infectious disease outbreaks in the NIS. An earlier PASA in 1992 was provided on an emergency basis to assist the Caucasus and parts of the CAR to confront outbreaks of diphtheria.



- Train a core cadre of incountry epidemiologists to continue the process of modernizing the surveillance systems,
- Train appropriate public health staff to regularly produce and disseminate bulletins, and,

- Establish systems and mechanisms for alerting the public of health emergencies and appropriate responses

CENTRAL ASIAN REPUBLICS (CAR)

BASICS and CDC conducted health intervention activities in all of the CAR—ranging from improving health management procedures, introducing applied epidemiology techniques, and providing the necessary expertise to confront situations unique to each country. Moreover, EPI programs have been strengthened in all countries and epidemiologic bulletins established. CDC surveillance efforts have addressed different problems in the various countries because of differing patterns of infectious disease. Malaria, which rebounded following the relaxation of vector control programs and the return of soldiers from Afghanistan, was studied in Tajikistan. Serious outbreaks of typhoid were in evidence in the capital city of Dushanbe. In Turkmenistan and elsewhere, hepatitis A outbreaks, a serious problem, are the subject of ongoing studies by CDC.

The new health program of USAID/CAR includes continued support for surveillance and applied epidemiology throughout these countries, but the focus in each country will depend on local epidemiologic patterns. In Kazakhstan, the Kyrgyz Republic, and Uzbekistan, tuberculosis is expected to be the primary health focus—drawing upon the demonstrated success of directly observed therapy, short course (DOTS) approaches to the control and eradication of this disease.

THE CAUCASUS

Exacerbated by the ravages of internal conflict and the movement of refugees, the Caucasus began experiencing severe outbreaks of typhoid, diphtheria, tuberculosis, and measles by late 1991. In recognition of the overall threat to health and regional destabilization posed by the lack of vaccines, USAID launched an emergency support program in early 1992 to immunize 50,000 children in the NIS starting in the areas of greatest need—Armenia and Georgia. In 1992 and 1993, USAID also initiated emergency technical support for childhood immunizations throughout Central Asia through REACH. In 1994, BASICS continued working in the region to develop vaccine security and immunization policies for supporting diphtheria immunization campaigns. CDC also sent teams in late 1992 to assess need and to design a plan and provide humanitarian assistance in a timely fashion.



In July 1994, USAID entered into a PASA with CDC for providing technical assistance in developing monitoring and surveillance health systems in the NIS with particular emphasis on the considerable needs of the Caucasus and the CAR. Resident CDC advisers were posted in Yerevan (Armenia), Tbilisi (Georgia), and Almaty (Kazakhstan). To further address the diphtheria epidemic in the three Caucasus countries, USAID contributed \$3 million through UNICEF for vaccines, needles and syringes, antibiotics, antitoxin, cold chain equipment, and logistical support.

INTERVENTION RESULTS BY COUNTRY

A review of BASICS, CDC, and UNICEF reports determined that the efforts of these agencies had been largely successful in controlling the diphtheria epidemic as well as addressing other health issues.⁶ Summaries of the major results achieved are provided in the following sections for each country.

Armenia

- A diphtheria eradication plan was developed by the MOH and experts from UNICEF and CDC (along with other childhood diseases)
- Two and a half million doses of diphtheria toxin were delivered, 2.2 million children and adults were vaccinated against diphtheria, and, a cold chain system was rebuilt to sustain vaccination coverage for children
- Support was provided by two CDC advisers who rendered technical assistance throughout the region, computers were provided to the MOH to improve disease surveillance and control efforts
- Comprehensive and persuasive print and audiovisual material on diphtheria were produced and distributed to medical authorities, health personnel, and the general public
- Effective public health surveillance systems are now in place in Armenia and Georgia, are maintained by the MOHs without external support, and are now capable of detecting new disease outbreaks

⁶Results were derived from UNICEF final country reports (1996) and interim/midterm reports for BASICS and CDC



Azerbaijan

- A national immunization campaign was carried out by the MOH with UNICEF and Red Cross assistance, training in cold chain management was provided to MOH personnel, and, information leaflets on diphtheria prevention were developed and distributed throughout the country as well as to internally displaced persons
- The campaign enabled adults throughout the country to receive one dose of Td vaccine for the first time, school children aged 7 to 16 were given a second dose
- Five and a half million people aged 2 months to 55 years received the diphtheria vaccine, a 95 percent vaccination coverage rate was achieved
- Training activities for pediatricians on immunization and diphtheria control were carried out in all areas of the country

Georgia

- A national diphtheria control program was prepared by the MOH with technical assistance from UNICEF, WHO, CDC, and REACH
- A 95 percent vaccination coverage rate was achieved
- Cold chain management training was provided and informational pamphlets were distributed to public health personnel
- Working relationships were established with local medical nongovernmental organizations to continue monitoring immunization activities which will also be coordinated with CDC advisers, a diphtheria prevention guide was also developed by CDC for use in clinical settings
- CDC completed a diphtheria serologic survey to assist in guiding Georgian national vaccine policy on immunization frequency and distribution, BASICS advisers continued assisting on social mobilization issues

Kazakhstan

- Initially through the auspices of REACH emergency immunization assistance was provided for procuring vaccines, later, BASICS provided program design and planning support to the MOH to develop national immunization plans including vaccination schedules, contraindications policy, and training in immunization practices, resulting in



- ▶ an extensively revised immunization policy,
 - ▶ an assessment of cold chain needs and provision of training in vaccine procurement,
 - ▶ a planning conference for national immunization day, and,
 - ▶ a field guide for polio immunization which was distributed to 19 oblasts
- Assistance was provided by CDC to the MOH for assessing the health surveillance systems in place and which elements require attention
 - A CDC adviser continues efforts to assist the MOH in the development of modern epidemiologic techniques and in the regular publication of public health statistics by the MOH
 - Computers were provided by CDC to assist in health surveillance and data management

Kyrgyz Republic

- Assistance was provided by CDC to the MOH for assessing the health surveillance systems in place and which elements require attention
- REACH provided emergency immunization assistance for procuring vaccines, later, BASICS provided program design and planning support to the MOH to develop national immunization plans including vaccination schedules, contraindications policy, and training in immunization practices, resulting in
 - ▶ an immunization center (immunoprophylaxis) being established along with the MIS,
 - ▶ immunization efforts to arrest the spread of diphtheria and polio, and,
 - ▶ an expanded information, education, and communications (IEC) program in place to inform the public on immunization efforts
- A CDC adviser continues efforts to assist the MOH in the development of modern epidemiologic techniques and in the regular publication of public health statistics by the MOH
- Surplus computers were provided by CDC to assist in health surveillance and data management at the oblast level

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Tajikistan

- The MOH designed a diphtheria control program working with UNICEF, REACH, BASICS, and CDC personnel, attention was also given to the cholera outbreak in 1993
- BASICS provided program design and planning support to the MOH to develop national immunization plans including vaccination schedules, contraindications policy, and training in immunization practices Results to date include
 - ▶ a national immunization plan being developed and adopted,
 - ▶ expanded capacity for IEC programs (especially against diphtheria), and
 - ▶ successful campaigns against diphtheria and polio were implemented
- A diphtheria immunization mass campaign targeted at people 3–50 years of age (4.4 million people) in 1995–96 was implemented, high vaccination rates were demonstrated in the first three districts targeted (e.g., Dushanbe 99 percent, dependent districts 92 percent, and Khatlon 74 percent)
- The MOH adopted a crisis management style for managing and sharing all aspects of health information affecting the nation, a CDC adviser continues efforts to assist the MOH in the development of modern epidemiologic techniques, and, computers were provided by CDC to assist in health surveillance and data management
- Efforts by the MOH to monitor EPI continued, along with improving access to vaccines via Tashkent and distribution to remote regions of the nation
- A CDC adviser continues efforts to assist the MOH in the development of modern epidemiologic techniques, attention has been addressed to documenting malaria in the southern region of the country, and, efforts continue on providing regular publication of public health statistics by the MOH
- The typhoid outbreak in Dushanbe has been arrested following CDC recommendations

Turkmenistan

- REACH provided emergency immunization assistance for procuring vaccines BASICS assisted the MOH in designing programs to ensure that
 - ▶ a national immunization plan was developed and adopted,
 - ▶ vaccine procurement training was provided as well as inventory control,

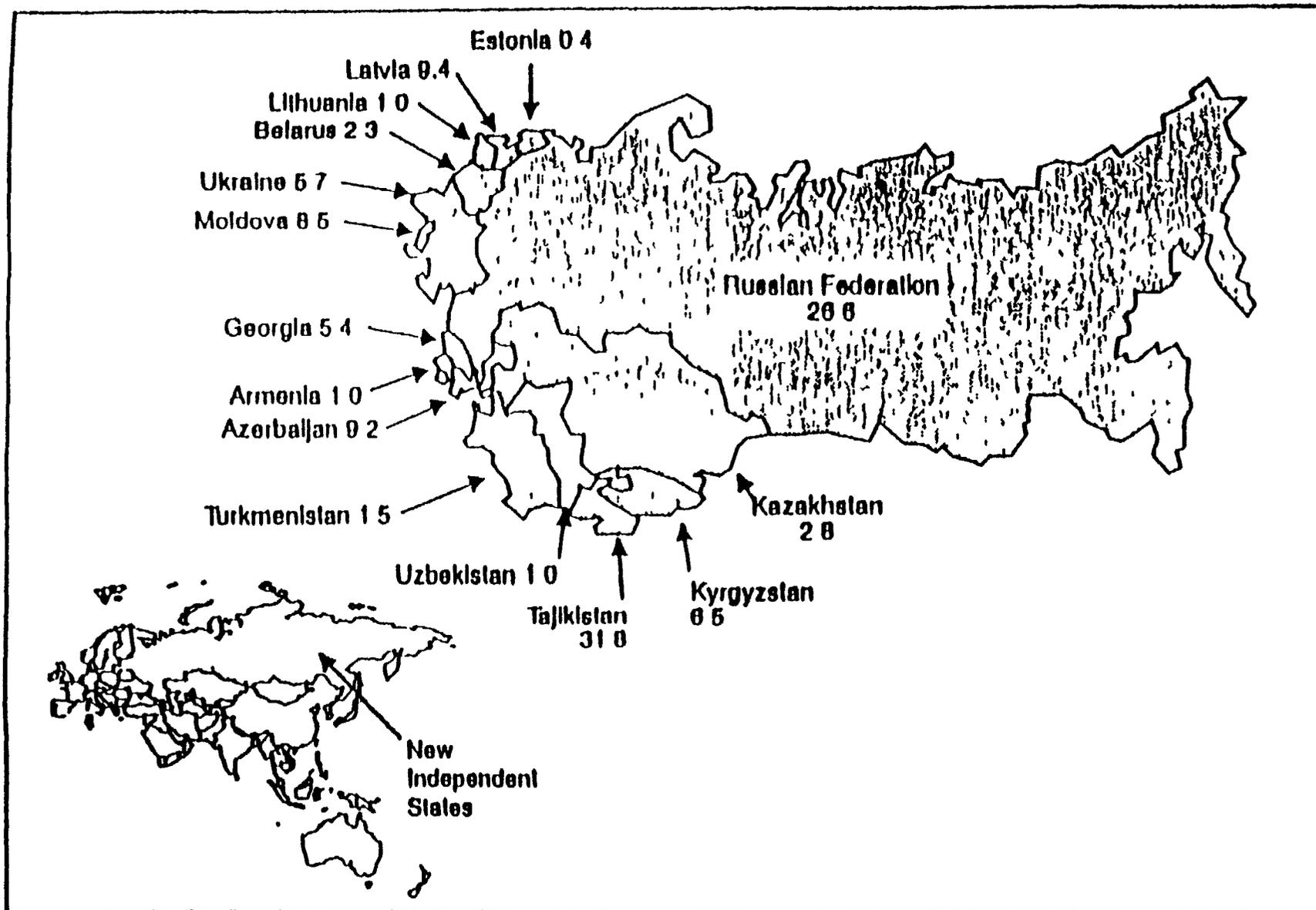


- ▶ cold chain equipment from REACH was still in place and operational, and
- ▶ polio/diphtheria immunization was extended to 95 percent of the population
- CDC assisted the MOH in assessing the health surveillance systems in place and which elements require attention
- CDC has worked hard at developing improved disease prevention and control activities with respect to diphtheria, polio, and hepatitis B
- A CDC adviser continues efforts to assist the MOH in the development of modern epidemiologic techniques and in the regular publication of public health statistics by the MOH, computers were provided by CDC to assist in health surveillance and data management

Uzbekistan

- Technical assistance was provided by CDC to the MOH for improving EPI programs and establishing epidemiologic bulletins
- When the diphtheria epidemic developed, REACH provided emergency immunization assistance for procuring vaccines, BASICS has provided technical assistance in program design and planning support to the MOH which has resulted in
 - ▶ a national immunization plan being developed,
 - ▶ widespread diphtheria immunizations with a decline in diphtheria incidence,
 - ▶ a national program being established to provide polio immunization, and
 - ▶ cold chain equipment maintenance and repair training being provided
- The Ferghana oblast was being used as the third site to pilot test CAIDP activities
- A CDC adviser continues efforts to assist the MOH in the development of modern epidemiologic techniques and the regular publication of public health statistics by the MOH

Reported incidence rate* of diphtheria — New Independent States
of the former Soviet Union, 1994



* Per 100,000 population.



ANNEX K

**HEALTH MANAGEMENT INFORMATION SYSTEM (HMIS) REDESIGN IN
CENTRAL ASIA**



ANNEX K

HEALTH MANAGEMENT INFORMATION SYSTEM (HMIS) REDESIGN IN CENTRAL ASIA

RATIONALE

As a component of the assessment of the Central Asian Republics (CAR) public health programs supported by the United States Agency for International Development (USAID), the health information systems (HIS), both manual and automated, were investigated during this assessment. While time constraints precluded an in-depth study, general conclusions and requirements were developed in the course of the overview of systems serving the Sanitary Epidemiology Service (SES) as well as the Ministry of Health (MOH). The assessment indicated that the potential exists for the development of more effective HISs on a highly cost-effective basis.

It is recommended that USAID consider a project to redesign one subsystem of the HIS which can also serve as a model for other countries within the CAR. In this context, the immunization data collection and reporting system of the Kyrgyz Republic is recommended as the testing site for such a project.

WORK PLAN

A senior professional, within a 6-month timeframe, should be able to document, analyze, and synthesize a new system for collecting, processing, and reporting immunization information. The development of computer programs or adaptation of packages to further increase the efficiency of the new system would probably require another 6 months. This requirement can be more specifically defined when the new system design has been completed. Because the process is sequential, the programmer would begin work only after the new system has been designed and specifications prepared. The tendency to simply automate the manual system should be avoided.

METHODOLOGY

The choice of CASE, 4GL languages, structured analysis, or prototyping is inconsequential. The key underlying requirement is for a methodical study which includes documentation and analysis of data collection, data processing, and reporting activities relating to immunizations, beginning at the feldsher level. It is critical that health workers participate actively in the study and that the new system be accepted by the client as it is being developed.



PROCEDURE

- 1 Initially, a preliminary study of 3-4 weeks duration would be undertaken to determine key elements of the study and to prepare a project plan. This plan should include a schedule, scope of work, constraints, level of effort estimate, and a general definition of the system that is the subject of the study.
- 2 Review and approval of the plan by project management would initiate the next phase, the detail study.
- 3 Regardless of the methodological tools used for carrying out the detail study, the result should be a detailed, systematic documentation, analysis, and redesign of the existing system. Based on the findings and conclusions of the analysis, and in conjunction with counterpart personnel and program management, the system should be reconfigured into a functional entity that meets current requirements.
- 4 Review and approval of the design will lead into the development stage, both in terms of procedural design and implementation as well as computerization.
- 5 Computer programs will be developed, tested, and corrected for support functions indicated for automation in the system design.
- 6 Computer equipment requirements will be determined as a result of the study.
- 7 User manuals and program documentation will be prepared.
- 8 Follow-up reviews will be conducted subsequent to implementation.