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RESOURCES  
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**MEETINGS ON IMMUNIZATION  
POLICIES, PRACTICES AND POLICY-SETTING  
IN THE REPUBLICS OF UZBEKISTAN AND  
KYRGYZSTAN**

**December 1992**



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**MEETINGS ON IMMUNIZATION POLICIES, PRACTICES  
AND POLICY-SETTING IN THE REPUBLICS  
OF UZBEKISTAN AND KYRGYZSTAN**

**December 1992**

**by  
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## ACRONYMS

AAP	American Academy of Pediatrics
ACIP	Advisory Committee on Immunization Practices
AID	Agency for International Development
BCG	Bacillus, Calmette, and Guerin Vaccine (against tuberculosis)
BCG-M	Bacillus, Calmette, and Guerin (Modified)
CAR	Central Asian Republics
CDC	Centers for Disease Control
DPT	Diphtheria, Pertussis, Tetanus Vaccine
DT	Diphtheria, Tetanus Vaccine
DT-M	Diphtheria, Tetanus Vaccine (Modified)
EPI	Expanded Program on Immunization
FAP	Feldsher Obstetrician (Health) Post
FSU	Former Soviet Union
HBV	Hepatitis B Vaccine
IPV	Inactivated Polio Vaccine
MOH	Ministry of Health
MMR	Measles, Mumps and Rubella Vaccine
NIS	Newly Independent States
OPV	Oral Polio Vaccine
REACH	Resources for Child Health
SES	Sanitary and Epidemiology Station
TB	Tuberculosis
Td	Tetanus, Diphtheria Vaccine (for older children and adults)
TT	Tetanus Toxoid Vaccine
UK	United Kingdom
UN	United Nations
UNICEF	United Nations Children's Fund
USA	United States of America
USAID	United States Agency for International Development
WHO	World Health Organization

**A SERIES OF MEETINGS AND SEMINARS ON IMMUNIZATION POLICIES,  
PRACTICES AND POLICY-SETTING IN THE REPUBLICS OF UZBEKISTAN  
AND KYRGYZSTAN**

**7 - 18 DECEMBER 1992**

**I. EXECUTIVE SUMMARY**

The Ministries of Health (MOHs) in two Central Asian Republics (CAR) of the former Soviet Union, Kyrgyzstan and Uzbekistan, requested technical assistance from the USA for their immunization programs. With independence, the Ministries have become interested in examining and possibly revising their current child immunization policies, disease control strategies and practices, and in developing their own mechanisms for periodic policy review and revision. However, they have no experience in setting their own policies, as they had been the passive recipients of standard policies formulated in Moscow.

Through its REACH Project (John Snow, Inc.), which has been providing technical assistance on immunization in the CAR since March 1992, the U.S. Agency for International Development (AID) made available the technical services of international authorities on child immunization. These experts participated in a series of first-ever meetings with the leading pediatricians, epidemiologists, immunologists, and infectious disease control specialists in Uzbekistan and Kyrgyzstan and in a national seminar in Kyrgyzstan. Ideas and experiences were exchanged on such topics as immunization schedules, contraindications to immunization, and disease control strategies.

Until recent supply shortages, the health systems in these countries were capable of achieving high immunization coverage levels. However, the health authorities realize that they have been isolated from the mainstream of scientific thought on immunization and disease control and are genuinely eager to profit from appropriate international experience. The Soviet-based immunization schedule has an unusually high number of routine contacts. As an example, the routine pediatric course for polio vaccination is nine doses. Pediatricians are extremely conservative and quick to find contraindications to vaccination. The official policy on contraindications includes a very long list covering many pages. For example, there is great reluctance to give a child more than one live viral vaccine on the same visit.

The four members of the international technical team came from a variety of disciplines including epidemiology, immunology, pediatrics, and public health practice (Annex 1). Their current and recent affiliations include the World Health Organization, USA Centers for Disease Control, Save the Children Fund (UK), London School of Hygiene and Tropical Medicine, Rhode Island Hospital, Brown University School of Medicine (Pediatrics), the American Academy of Pediatrics' Committee on Infectious Diseases, Advisory Committee on Immunization Practices, National Vaccine Advisory Committee of the National Vaccine Program, AID, REACH (John Snow, Inc.), and others.

The international Team was requested by the MOHs to examine their current child immunization policies, practices and disease control strategies and to identify problems amenable to policy

formulation. (See Section IV for the complete report of the international technical team to the MOH in Uzbekistan. The report was translated into Russian for the authorities in Uzbekistan and is available from REACH.)

Uzbekistan and Kyrgyzstan perceive themselves to be at a crossroads with many difficult choices and new opportunities ahead. With independence has come a determination to identify their own problems, arrive at their own solutions, and re-examine current immunization policies in light of epidemiological need and operational realities.

Major findings presented by the international Team to the MOHs are:

- The MOHs need to identify optimal mechanisms and processes by which to review and update policies periodically in the future. One way would be to form a small consultative group of representatives from the same disciplines represented at the meetings so as to enrich future dialogue and lead to a broader consensus and implementation of any revised policies.
- The MOHs need to prepare a national immunization plan, which will facilitate the organization of services in these changing times and help to attract and coordinate support from donors.
- The existing routine child immunization schedule (Table 1) needs revision to reduce the required number of contacts to allow children to start and complete their primary immunization schedule as early in life as possible. A comparison of the number of diseases prevented by the vaccination schedules recommended by the USA, England, former Soviet Union, and WHO, and the number of visits required to complete the vaccination schedules before 36 months of age appears in Table 2.

**Table 1**

**Current routine child immunization schedule\***

Age	Vaccination
3-5 days	BCG 1
3 months	OPV 1    DPT 1
4.5 months	OPV 2    DPT 2
6 months	OPV 3    DPT 3
12 months	Measles 1
12-23 months	OPV 4    OPV 5
15-18 months	Mumps
2 years	DPT 4

Age	Vaccination
24-35 months	OPV 6      OPV 7
6 years	Measles 2
7 years	OPV 8      BCG 2
9 years	Td
10 years	BCG 3
15 years	Td              OPV 9
16 years	BCG 4

slight variations in the age of booster vaccinations exist in the immunization schedules by republic

**Table 2**

**Number of diseases prevented by various vaccination schedules and number of visits required to complete vaccination schedule before 36 months of age**

	WHO	ENGLAND	USA	FSU
No. of diseases prevented	6	8	9	7
No. of contacts required to complete vaccination schedule	5	4	5-7	10

- The Team proposed a routine child immunization schedule, including a birth dose of oral polio vaccine, simultaneous administration of all vaccines, shorter intervals between successive doses in the multi-dose series, measles vaccination at 9 months of age, and a much shortened and simplified list of contraindications. (See page 10) The introduction of hepatitis B vaccine should be a priority once an affordable and continuous source of vaccine is located.
- The Team discouraged the MOHs from their current over-reliance on serological testing as a means of routine program monitoring and vaccine quality assurance.
- The Team highlighted the need for training in cold chain, vaccine logistics, and repair and maintenance of equipment.
- The Team supported the MOH plans to provide routine feedback of epidemiological surveillance data to all levels of the health system.

- As the changing economic and political circumstances may make it more difficult to sustain public interest and confidence in immunization, the Team encouraged the MOHs to formulate a plan for individual and mass health education in order to maintain achievements.

The MOHs indicated their intention to continue the dialogue begun during the meetings between national epidemiologists and pediatricians who rarely meet together. The MOHs will convene small working groups to identify how future policies could be set, with early attention being directed to revising their immunization schedules and lists of contraindications. Kyrgyzstan's MOH announced its intention to prepare its first national immunization plan. The national participants were provided with individual sets of some 350 pages of key documents, which REACH had translated into Russian prior to the meetings (Annex 2).

## **II. OBJECTIVES AND DESIRED OUTCOME OF THE MEETINGS AND SEMINAR**

The objectives and desired outcome of the meetings and seminar were to:

- improve understanding of international immunization policies and practices
- identify problems amenable to policy reformulation
- improve understanding of policy-setting mechanisms utilized in the West
- identify possible policy-setting process at national level
- forge linkages between home institutions and those in the CAR which could lead to partnerships
- inform about role played by international community in support of immunization.

## **III. ORGANIZATION OF THE MEETINGS AND SEMINAR**

The meeting in Uzbekistan lasted three days and aimed to be as informal as possible to stimulate active exchange of information. The discussion was attended by a group of 35 influential national participants (Annex 3). In Kyrgyzstan, the discussion lasted two days and was attended by 23 persons (Annex 4).

An agenda which was prepared beforehand with the participation of a Steering Group in each country was followed with some modifications in Uzbekistan (Annex 5) and in Kyrgyzstan (Annex 6). Short plenary presentations by both national and international experts were followed by questions and answers and discussion.

The seminar in Kyrgyzstan lasted one day and served to disseminate more widely the ideas presented during the two-day meeting. Approximately 240 persons attended, with representation from each oblast in the country, including the chief pediatricians, epidemiologists, infectious disease control specialists and immunologists from each level of the health system. Following an agenda designed with input from a Steering Group (Annex 7), formal presentations from both external and national participants were followed by questions and answers.

Materials in Russian were distributed to the participants, in some cases before the start of the meetings. A fluent interpreter was assigned to each non-Russian speaking external resource person. Sequential interpretation was utilized during the meetings and seminar.

The scope of work for the external expert consultants was to:

- read documents and training materials on immunization policies, guidelines, disease control strategies in force in international and domestic settings
- participate in an internal team planning meeting to reach consensus on outcome, products, and group norms
- serve as resource persons to the MOH to share knowledge and experience
- give short presentations on assigned topics and lead informal discussions with key decision makers
- present more formal assigned lecture(s) in wider seminar
- assist nationals to define implementation plan for establishing mechanism for periodic policy review and formulation
- identify appropriate follow-up activities, timetable and process for continued policy dialogue with the CAR, such as identifying possible partnerships, including between their home institutions and those in the CAR.
- contribute to final report.

#### **IV. REPORT OF THE INTERNATIONAL TECHNICAL TEAM TO THE MOH, UZBEKISTAN**

The international team was requested by Dr. T.I. Iskandarov, Deputy Minister of Public Health in Uzbekistan, to prepare a report of their findings, which follows in its entirety:

The Uzbekistan Ministry of Health (MOH) invited an international team of immunization and disease control specialists to participate in a Meeting with the country's leading epidemiologists, pediatricians, immunologists, and infectious disease control specialists. A principal purpose of the Meeting was to exchange technical information and jointly to examine current child immunization guidelines, practices and disease control strategies in Uzbekistan. The Team was requested by the Chairman of the Meeting, Dr. T.I. Iskandarov (Deputy Minister of Public Health), to prepare closing remarks. This report represents the consensus of the Team and reflects the further discussions of the Team after the Meeting.

The Team sensed that the MOH of the newly independent Republic of Uzbekistan perceives itself to be at a crossroads with many difficult choices and new opportunities ahead. The Team was impressed with the existing system of immunization services which are available free of charge. The Team appreciates that the MOH has been able to achieve high immunization coverage levels among eligible children and is interested in further strengthening its national immunization program by studying and profiting from appropriate international experience.

##### **Establishing immunization guidelines**

With independence has come a determination by the MOH to identify their own problems, arrive at their own solutions, and re-examine current immunization guidelines in light of the epidemiological need and operational realities -- all of which the Team encourages.

The Team was impressed by the involvement, enthusiasm and diversity of knowledgeable participants at the Meeting, including epidemiologists, pediatricians, immunologists, infectious disease specialists and scientific investigators. The MOH needs to identify the optimal mechanism and process by which to review and update guidelines in the future. One way would be to form a small consultative group of representatives from the same disciplines so as to enrich future dialogue and lead to broader consensus and implementation of any revised guidelines.

The Team appreciated receiving the Chairman's written report on "Immunization and Its Organization in Uzbekistan", which listed achievements and frankly outlined the remaining problems. The Team suggests that the MOH use the information in their report to expand their immunization plan, to create a document which includes the following components: objectives, coverage and disease reduction targets, guidelines (on immunization schedule, contraindications, etc.), strategies (e.g. use of polyclinics, defaulter tracing, outreach, special strategies for polio eradication, cold chain system, etc.), activities, responsibilities of different sectors and disciplines, time frames for achieving targets and completing activities, evaluation schemes, and resource and vaccine requirements. This plan will facilitate organization of services in the changing circumstances of independent Uzbekistan and will also help to attract and coordinate support from donors.

#### Revising the immunization schedule

Emphasis needs to be given to achieving and sustaining high immunization coverage. The Team proposes that a 90% immunization coverage target for each vaccine would be a reasonable goal in the near term. The existing immunization schedule should be revised to reduce the required number of contacts and to allow the primary series of immunizations to be started and completed as early in life as possible. The routine child immunization schedule proposed by the Team is attached. [See page 10.]

Since poliomyelitis has not yet been eliminated, a dose of trivalent oral polio vaccine (OPV) should be offered at birth as part of a four-dose routine primary immunization schedule. However, to reach the goal of elimination of poliomyelitis by the Year 2000, routine immunization with OPV may need to be supplemented with special immunization activities, such as rational immunization days or mopping-up operations.

The inclusion of so many booster doses, particularly OPV and BCG, should be reconsidered. Beyond a primary series of four doses of OPV in the first year of life, one booster dose at 15 months and one more at school entry (on the same visit as Td and BCG) should be sufficient. The effectiveness of booster doses of BCG has not been demonstrated in studies in any country, and the number of booster doses of BCG should be reduced to a single booster for Mantoux-negative children at the time of school entry.

The MOH should adopt guidelines on routine simultaneous administration of all standard vaccines for which a child is eligible. This practice is recommended and occurs in the USA and throughout the world. It has been proved to be safe, immunologically effective, efficient in reducing missed immunization opportunities, and economical in eliminating the need for multiple contacts with the health services.

There are substantial numbers of measles cases among children under two years of age and incidence rates are highest in this age group. Details on the age in months of measles in younger infants are not available; however, a vaccine trial conducted in Tashkent in 1990 found that at 6 months and 9 months of age, only 12% and 2% of infants, respectively, had maternal measles antibody. Seroconversion after Leningrad 16 measles vaccine (titer  $4 \log_{10} = 10,000$  units per dose) at 9 months of age was 95% among the 137 children studied, and persistence of antibody was excellent up to one year after immunization. Uzbekistan should consider changing the age for primary measles immunization to 9 months.

The Team did not have the opportunity to review data on measles epidemiology in Uzbekistan in depth. It is therefore difficult to comment on the importance of a second dose of measles vaccine. For measles control, a single dose at nine months may be sufficient. For measles elimination, an additional dose would probably be required, although this could be given either in a one-time mass campaign or as a routine second dose. If the MOH does wish to continue with a two-dose schedule, however, the Team is to protect children who did not seroconvert to the first dose. However, the Team recommends a review of measles epidemiology to determine optimal strategies if the MOH decides to aim for measles elimination.

The immunization schedule can be streamlined in the second year of life by permitting a primary dose of mumps vaccine and booster doses of measles (if considered a priority), DPT and OPV vaccines to be offered to the child during a single visit at 15 months of age. This one visit would take the place of the four separate visits currently required in the second year of life. The booster dose of measles vaccine at 15 months of age could take the place of the booster at 6 years.

#### Reducing contraindications for immunization

The Team believes on the basis of international studies and program experience in other countries that there are few true contraindications to immunization and that more than 95% of children can be offered immunization. The current list of contraindications should be shortened, clarified and made more specific. The Team recommends that, in establishing their own guidelines on contraindications, the MOH be guided by the list formulated in 1988 in Budapest by the European Program Managers on Immunization (Weekly Epidemiological Record. 37: 1988), which is summarized by major category below:

- severe adverse reaction to the prior dose of the same vaccine
- severe acute illness
- clinically-significant immune deficiency (for live vaccines)
- hypersensitivity to vaccine components
- progressive neurological disorder (for pertussis component).

The benefits of immunization for the individual, relative to the small risk, should be emphasized. The Team is concerned that the difference in primary immunization coverage levels against diphtheria as compared to pertussis have been getting greater due to the increasing use of DT for infants rather than DPT and could lead to an outbreak of pertussis in the next 3-5 years.

Furthermore, excessive contraindications lead to delays in immunization which allow cases of poliomyelitis, measles and pertussis to continue among young infants. Reducing this list of contraindications would permit high immunization coverage to be attained at the earliest possible age.

### Hepatitis B immunization

There is much interest in introducing hepatitis B immunization and offering the first dose on the day of birth. Introduction of hepatitis B immunization should be a priority and is likely to be a highly cost-effective intervention in Uzbekistan. However, sustained resources must be found. One way to reduce the costs of the current program and perhaps to permit introduction of hepatitis B is to reduce the number of booster doses of other vaccines. Also, as mumps may not be a major public health problem, mumps immunization is not as high a priority as hepatitis B immunization. The MOH should discuss these and other potential ways in which adequate finance for hepatitis B immunization can be assured.

### Measuring immunization coverage

The MOH has a well-defined registration system for recording a child's immunizations, tracking drop-outs, and determining vaccine requirements. The system is also used to monitor coverage. Simpler methods of monitoring and validating immunization coverage, including both routine and survey methods, should be reviewed for appropriateness. In any case, coverage by 12 months of age (by 23 months of age in the case of measles under the current schedule) should be the prime indicator of program output

### Serological testing

Serological testing is being excessively relied upon as a means of routine program monitoring and to assure vaccine quality. Given the cost and the staff time required, serological testing should be reserved as a tool for specially-designed studies of specific issues. Occasional serosurveys can be helpful, for example, to identify gaps in immunity in certain age groups, which may indicate the need for catch-up immunization in these groups. For example a serosurvey of school age children could lead to mass re-immunization of these children if a large proportion were seronegative for measles.

### Cold chain

To help assure vaccine quality, the Team encourages the MOH at all levels to implement the cold chain system, which should include not only the equipment to store and transport vaccine at appropriate temperatures, but also the staff to manage the vaccine and equipment. The recent sizeable donations of cold chain equipment from the USA have highlighted the need for training in cold chain, vaccine logistics, and repair and maintenance of equipment. The Team encourages implementation of WHO recommendations that OPV and measles vaccines at higher levels of the cold chain should be kept frozen at -20 degrees C if use is not imminent.

## Surveillance

Disease surveillance consisting of the collection, analysis, use and feedback of epidemiological data is critical to continually guide immunization efforts. The MOH already collects impressive quantities of data and is encouraged to develop the other elements of an effective surveillance system, especially feedback to all levels of the health system and to all sectors of the health services including pediatricians. Surveillance for adverse reactions would be useful to continually monitor the safety of vaccines and to substantiate the guidelines on contraindications.

## Training

The MOH is encouraged to invest in basic training in immunization as part of the core curriculum in medical and nursing schools. Additionally, in-service training for staff of polyclinics and other sites should be provided for current staff. The MOH should consider using some of the training courses which are expected to become available during 1993, including a WHO Mid level Managers course, which have been adapted for use in the newly independent countries of the former Soviet Union.

## Health education

Uzbekistan has achieved high immunization coverage and the population is likely to be aware of the importance of immunization. However, the changing economic and political circumstances may make it more difficult to sustain public interest and confidence in immunization. The MOH should formulate a plan for individual and mass health education, which would include an explanation of any changes in the immunization schedule, in order to sustain achievements. Simplifying the immunization schedule will help to simplify the messages given to parents about childhood immunization. Teaching on immunization could be incorporated into school curriculae, if not already included.

The **international Team** was composed of the following individuals:

Mr. Robert Steinglass, Technical Director, U.S. Agency for International Development/REACH (John Snow, Inc.), Arlington, Va. (Team leader)

Dr. Artur Galazka, WHO Medical Officer, Expanded Program on Immunization, Geneva

Dr. Georges Peter, Professor of Pediatrics, Brown University School of Medicine and Director of Division of Pediatric Infectious Diseases, Rhode Island Hospital; and representative of the American Academy of Pediatrics

Dr. Felicity Cutts, Senior Lecturer in Communicable Disease Epidemiology, London School of Hygiene and Tropical Medicine

Dr. Sergei Litvinov, Chief, Laboratory for Coordination and External Relations, Central Research Institute of Epidemiology, Moscow (special advisor to the Team).

**MINISTRY OF HEALTH OF THE REPUBLIC OF UZBEKISTAN  
UNITED STATES AGENCY FOR INTERNATIONAL DEVELOPMENT/  
REACH PROJECT**

**MEETING TO IMPROVE THE IMMUNIZATION PROGRAM IN THE REPUBLIC OF  
UZBEKISTAN**

**8 - 10 DECEMBER 1992**

**ROUTINE CHILD IMMUNIZATION SCHEDULE PROPOSED BY THE INTERNATIONAL  
TEAM<sup>(1)</sup>**

AGE	VACCINE
BIRTH:	
0 DAY	HBV
3-5 DAYS	OPV, BCG
2 MONTHS	OPV, DPT, HBV
3 MONTHS	OPV, DPT
4 MONTHS	OPV, DPT
9 MONTHS	MEASLES, HBV
15 MONTHS	OPV, DPT, MEASLES*, MUMPS*
7 YEARS	OPV, Td, BCG
16 YEARS	Td

(1) The Team acknowledges that this proposal was made after only a brief visit to Uzbekistan and is based on international experience and the limited overview of the epidemiology of the target diseases in Uzbekistan. For specific disease control programs such as polio and measles elimination, a more in-depth assessment of potential schedules and strategies would be ideal. The schedule proposed here, however, appears to the Team to be a good starting point to provide protection to most children at the earliest possible age.

\* The MOH should reassess the priority to give the second dose of measles and the mumps vaccine in light of the resources available. Introduction of hepatitis B vaccine may be a higher priority.

## **V. PRESENTATIONS**

Short synopses of the oral presentations were prepared by the individual speakers and appear in this section. Because the agenda of the various meetings and seminar were very similar, presentations by the same individual did not vary greatly; therefore, the written synopses appear below only once by topic. Starting first with the international technical team members and then the national speakers in Uzbekistan followed by Kyrgyzstan, the contributions below are organized by speaker, regardless of the order in which the presentations appeared on the agenda. Some of the discussion which followed individual presentations appears after the relevant synopses.

### **Expanded Program on Immunization: Global Perspective (Galazka)**

The history, goals, policies, strategies and approaches of the EPI were presented. The global achievement of the 1990's target of 80% immunization coverage among infants world wide with BCG and measles vaccines, and the third dose of DPT and of oral poliomyelitis vaccines represents a milestone on the way to universal childhood immunization. This progress in global immunization is directly attributable to the efforts of national governments, WHO, UNICEF and other bodies of the UN system, bilateral development agencies, and non-governmental organizations. Differences in immunization coverage levels exist between various countries and areas and reflect the varied development of the primary health care infrastructure. It was emphasized that the achieved successes of immunization programs must be sustained and will require continuing intense efforts for the foreseeable future to avoid a resurgence of vaccine-preventable diseases. It was stressed that the global achievement of major EPI objectives (maintenance of a high level of immunization coverage, 95% reduction of measles deaths, 90% reduction of measles cases, elimination of neonatal tetanus and eradication of poliomyelitis) will need further efforts from the individual countries as well as more concentrated cooperation between countries and international organizations.

#### **Discussion**

The topics which were discussed by the participants concerned reasons for failure to achieve the EPI targets by 1990 in some countries, cold chain management especially in tropical countries, contraindications, the role of vaccine quality control within the EPI country programs, new vaccine developments, relative merits of OPV and IPV and their respective roles during mass campaigns in interrupting circulation of wild polio virus, missed opportunities for immunization, possible interference of various vaccines, etc.

### **Immunization Schedules in the EPI (Galazka)**

The immunization schedule recommended by the EPI/WHO was presented. Differences between immunization schedules used in various countries were discussed with special emphasis on the need to tailor the immunization schedule to conditions prevailing in a particular country. It was stressed that the first priority for routine immunization programs is to ensure that infants are completely immunized against target diseases with the appropriate primary immunization at the youngest age possible. Countries considering doses of vaccines beyond the primary series should evaluate the

potential impact of such doses on target diseases, additional resources required, likelihood of continued availability of these resources, cost-benefit, and any potential negative impact on sustaining high coverage in infants prior to implementing such a schedule. Immunization schedules in Uzbekistan and Kyrgyzstan were compared with those used in other countries in terms of the need for simplifying the schedule so that primary immunization can be started and completed as early in life as possible and with fewer booster doses.

#### EPI Policy on Contraindications to Immunization (Galazka)

A review of adverse reactions following immunization was presented with the distinction between reactions caused by programmatic error (fault of administration of the vaccine) and by the intrinsic nature of the vaccine. The estimated rates of different reactions were presented. It was stressed that genuine contraindications to immunization are few and the number of individuals to which they apply are also small. It was shown that the current lists of contraindications used in Uzbekistan and Kyrgyzstan are too long and should be shortened, clarified and made more specific. It was recommended that in revising contraindication policy, the national authorities should be guided by the policy formulated by the European Program Managers on Immunization at their meeting in Budapest in 1988.

#### Global Polio Eradication Strategies (Galazka)

The status of poliomyelitis in the world was presented. Activities were discussed which should be undertaken by all countries that endorsed the goal of eradication of poliomyelitis by the year 2000. It was stressed that there is the need for enhancing immunization coverage by routine immunization and by supplementary immunization activities, such as mass campaigns or mopping-up activities. The primary series of routine immunization should consist of 4 doses during the first year of life. Strengthening disease surveillance and establishing a laboratory support network play an important role in eradication. Achievement of poliomyelitis eradication is threatened by a shortage of funds to purchase vaccine. Assuring the availability of the necessary resources is of utmost priority.

#### Control of Diphtheria: The International Perspective (Galazka)

The introduction of mass immunization against diphtheria resulted in changes in diphtheria incidence and immunity patterns. At present, the age-specific immune profile in developed countries differs considerably from that in developing countries. In Uzbekistan and Kyrgyzstan, the age-distribution of diphtheria incidence is typical for developing countries. The alarming resurgence of diphtheria in Russia and Ukraine was reviewed and activities needed for diphtheria control were discussed.

#### Stability of Vaccines (Galazka)

Data were presented on the varying stability of different EPI vaccines. EPI vaccines were ranked from the most resistant to heat (toxoids, hepatitis B vaccine) to the most labile vaccine (OPV). The

practical implications of the different heat-stability characteristics were discussed. The results of various studies were presented which showed that freezing and thawing of oral poliomyelitis vaccine does not affect potency even when repeated enough times to represent the most unfavorable conditions of storage.

### The Immunization Program and Schedule in the USA (Peter)

The program in the United States is a "mixed" interactive system involving the public and private sectors of medicine for the delivery of recommended vaccines to children and adults. The nation's objectives are established by the U.S. Public Health Service and include both disease reduction goals and high immunization rates (90% by age 2 years old). Surveillance for disease, immunization rates, and severe vaccine-associated adverse events is implemented by state and local health departments and coordinated by the national Centers for Disease Control (CDC). Policies and strategies for immunization are developed by CDC, utilizing its national advisory committee (ACIP) which is composed of experts in infectious diseases, pediatrics, epidemiology and public health. Immunization guidelines, including the vaccine schedule, are reviewed and revised periodically by the CDC's advisory committee and by the American Academy of Pediatrics (AAP), a large private professional organization of pediatricians. The AAP recommendations are developed by its advisory committee on infectious diseases which also publishes every 2-3 years a widely distributed manual on prevention, control and management of infectious diseases (known as the Red Book). The AAP and CDC committees collaborate on the development of these immunization guidelines.

Routine childhood immunization currently is given against nine diseases (diphtheria, tetanus, pertussis, polio, Hemophilus influenzae type B, hepatitis B, measles, mumps and rubella) Major changes in the schedule have been made in the past five years and include the addition of universally recommended immunization against H. influenzae and hepatitis B. High immunization rates at school entry (>95%) have been achieved as the result of school entry requirements but remain a challenge in children in the first two years of life. Relatively low rates in heavily populated inner cities explain the recent outbreaks of measles. Reasons for these rates are multiple and include missed opportunities and inappropriate contra-indications. A national campaign to achieve 90% immunization rates by age two years is in progress.

The goals of the national immunization program in the 1990's are given in the Year 2000 Health Objectives and will be guided by a National Vaccine Plan which will be completed in the near future.

### **Discussion**

In the subsequent discussion in Uzbekistan, many questions were asked about the roles of the public and private sectors, advantages and disadvantages of the public/private system, details of the complex USA immunization schedule, and the new vaccines that have been recently recommended (especially hepatitis B vaccine). The questions raised during the discussion in Kyrgyzstan concerned the USA immunization schedule; targets of the program and constraints in achieving them; the role of state and private sectors in planning, surveillance and evaluation of program activities; incidence of childhood diseases among immunized children, etc. Participants were particularly interested in hepatitis B and its control and in hemophilus influenzae B. Indeed, the majority of participants were unfamiliar with the latter organism.

## Policies on Contraindications to Immunization in the USA (Peter)

Vaccine contraindications are established as part of the initial federal government product licensing and are included in the guidelines for each recommended vaccine issued by the two major immunization committees (of CDC and AAP). These contraindications and precautions are based on the assessment of benefits, possible adverse reactions and resulting risks. Data on these risks are obtained from on-going surveillance by CDC and scientific studies to determine incidence and causal association. The current list of contraindications is composed of six categories, which were reviewed at the meeting and are similar to those of the EPI.

Establishment of scientifically valid contraindications and precautions is essential to the success of immunization programs, both for the protection of each child and for the maximum benefit. False contraindications and misconceptions result in unnecessary deferment or denial of vaccines and compromise the success of vaccines in the prevention of childhood infections. According to current recommendations, specific vaccines are contra-indicated in a small number of children and ultimately can be given safely to nearly all of these children.

### **Discussion**

Questions concerned clarification of USA contraindications, comparisons with those of the EPI, and administration of vaccines to infants with neurological disorders (e.g., "encephalopathy") and to premature infants. The simultaneous use of all vaccines on the same visit is important to achieve early protection and high coverage. Some matters concerning the immune response to simultaneous administration of vaccines were intensively discussed.

## Safety of Simultaneous Administration of Vaccines, Including Live-Virus Vaccines (Peter)

In the USA, both the CDC and AAP advisory committees recommend that most childhood vaccines should be given simultaneously when feasible. Substantial evidence indicates that simultaneous administration is safe and effective. Some of the evidence, particularly concerning live-virus vaccines (against measles, mumps, rubella and polio), was reviewed in the presentation. The recommendation for simultaneous administration is an important strategy for ensuring that vaccinations are received at the scheduled age and has recently been adopted in the national standards for pediatric immunization practice.

### **Discussion**

In the discussion, questions particularly concerned immunological responses when vaccines were given simultaneously. The safety of simultaneous administration appeared to be readily accepted.

## The Immunization Program in England (Cutts)

The presentation focussed on aspects of the UK immunization program which might be most relevant to Uzbekistan. These included:

- a. **Organization of services:** all vaccines are provided in the public sector free of charge. After birth, each family is visited by a health visitor who provides written and verbal information about immunization, obtains consent for the immunization series, and gives an appointment for the first vaccinations. Children who miss their appointment are followed-up by health visitors.
- b. **The schedule has recently been simplified:** in the primary series, three doses of DPT-OPV are given at 2, 3 and 4 months of age (and since October 1992, Hib conjugate vaccine is given simultaneously at these ages); MMR vaccine is given at 12-18 months of age. Booster doses of DT and OPV are given at school entry, and TT and OPV at school leaving. BCG is given to 10-14 year old tuberculin negative children, and rubella to girls of this age. The advantages of the new schedule are that it is easy for parents and health workers to remember, provides early protection, and helps to reduce dropout rates.
- c. **A national study of factors associated with low immunization coverage in the UK highlighted the importance of missed immunization opportunities, poor physician knowledge of contraindications, and poor clinic organization in reducing the coverage achieved.**
- d. **Immunization coverage for all vaccines has increased to over 90% nationwide by 2 years of age in recent years because of a series of actions taken by the Department of Health, including monitoring coverage through a national computer registry and publishing coverage figures of each district; distributing clear guidelines on the schedule, contraindications, and use of each vaccine, and providing incentives to physicians to reach 90% coverage.**
- e. **The history of pertussis control in England was reviewed briefly to demonstrate the pertussis epidemics which occurred after publicity about adverse events attributed to pertussis vaccine.**

### **Discussion**

Much of the discussion in Uzbekistan focused on the way in which England monitors coverage and the use of incentives to providers. It was emphasized that incentives were only one component of the program, and that coverage was increasing before they were introduced. Improved provider education about contraindications has been a major factor in increasing coverage. In Kyrgyzstan, questions were raised regarding the incentives being offered to practitioners in the United Kingdom to reach immunization targets, provision of vaccine and related supplies in the public sector, and the degree of computerization in the disease surveillance system.

## Measles Control: International Perspective (Cutts)

The presentation summarized the main points about measles control:

- a. The high infectivity of measles means that universally high coverage must be achieved.
- b. The age at onset depends on the rate of maternal antibody loss and population density. Measles is most severe in young infants so it is essential to vaccinate as early as possible.
- c. The experience of measles control in the USA has also shown the need for timely vaccination and the need to reach high risk groups. It has also shown that outbreaks can occur among vaccinated populations (school outbreaks) even when vaccine efficacy is high. The relationship between vaccine coverage and the proportion of cases which occur in vaccinated individuals, at a given vaccine efficacy, was described.
- d. Issues to consider when high measles incidence continues in areas with high vaccine coverage were outlined:
  - is the information on coverage accurate?
  - are certain population groups unvaccinated or vaccinated late?
  - is the cold chain maintained adequately?
  - is vaccine efficacy within the expected range?
  - what age groups have highest incidence rates?
  - if incidence rates are high in young infants, can vaccine be given earlier? (conduct special studies on maternal antibody loss and seroconversion at a younger age)
  - if incidence rates are higher in older children, are other strategies needed, such as catch-up vaccination of unvaccinated children, mass campaigns irrespective of prior vaccination, or introduction of a routine second dose.

### **Discussion**

The discussion focused on the age for measles vaccination in Uzbekistan. Results from a recent study of different measles vaccines at different ages in Tashkent by Bolotovskiy et al, in collaboration with CDC and WHO, were presented to the participants. These results showed that 95% of children seroconverted after receipt of Leningrad-16 or Schwarz vaccines at age 9 months in Tashkent. In conjunction with data presented from Uzbekistan on the age-distribution of measles cases, these data led the team to recommend measles vaccination at age 9 months in Uzbekistan.

## International Perspectives on Measuring Immunization Coverage (Cutts)

The uses of coverage data at national, regional and local level were outlined, to emphasize its importance as a tool to improve program performance. The advantages of using coverage data, rather than relying on serological surveys, to monitor the immunization program were stressed. The following methods of collecting coverage data were described: national computerized registries; routine summary activity reports and estimation of coverage by the "administrative" method; cluster sample surveys; and clinic audits. An example of a monthly vaccination report was shown, with explanation of how these simple data could be used in Uzbekistan to estimate coverage. The importance of calculating coverage for the priority age groups was also stressed.

## **Discussion**

Because of time constraints, there was little discussion of this presentation, but earlier in the seminar there had been substantial discussion of the methods used in Uzbekistan. There was clearly confusion about what the numerators and denominators were (eg. some participants stated that children whose vaccinations had been delayed because of "contraindications" were excluded from the denominator).

### **Why the Standard EPI Cluster Survey for Measuring Immunization Coverage Is Not Appropriate in the NIS (Cutts)**

1. The EPI method is most accurate when there are home-based vaccination records. These do not exist in the NIS. The schedule is too complex to expect mothers to be able to remember which vaccines the child has received. To obtain data on vaccinations, it would be necessary to go to clinics and look for the record. This would not be feasible for migrant families, who are the very families which might be missed by relying upon routine data already collected.
2. Even if community surveys were considered, more precise estimates would be required than those obtained from the usual EPI method. A classical cluster sample would probably be possible in these republics which have detailed information on households, with random selection of households at the second stage. The sample sites would need to be increased to obtain the desired precision.
3. One of the concerns about the vaccination data obtained routinely is the potential to miss children who never visit a polyclinic. This question could be addressed directly by conducting house-to-house searches in areas most likely to have non-attenders, in a sample of clinic catchment areas.
4. One of the most relevant potential uses of coverage assessment in the NIS is to determine rates of non-simultaneous administration and of missed opportunities. This can be more easily accomplished by clinic audits than by community surveys. The NIS should be encouraged to use the WHO protocol for clinic-based missed opportunity surveys, which can be conducted regularly at the local level.
5. There may be inaccuracies in the coverage data obtained through the current system. However, coverage appears to be high, as evidenced by the impact on disease occurrence. Resources would be best invested in improving the use of data already available and on improving disease surveillance. The NIS conducts case investigations of every case of infectious disease, yet there appears to be suboptimal use of this information. Efforts should be invested into training peripheral personnel to use this information to identify high risk groups, sites and patterns of transmission, and into using this information to guide their program.

### **Assuring Vaccine Quality: The Cold Chain (Steinglass)**

The cold chain consists of the equipment, people and procedures required to store, handle and transport vaccines at the appropriate temperatures. The arrival of donated cold chain equipment from

the USA has helped to strengthen the cold chain down to some of the rayons, but training in its appropriate use, maintenance and repair is required. The cold chain is not yet complete at all levels.

With the cancellation of flights due to shortages of aviation fuel, vaccines will henceforth be delivered from the manufacturers direct to Tashkent, rather than to the oblast centers as in the past. This accelerates the need for improvements in cold storage, stock control, and vaccine handling practices in Tashkent and at lower levels. The donation of freezers enables ice to be manufactured for the first time for vaccine transport and permits the appropriate storage of measles and polio vaccines, when their use is not imminent.

With all the attention paid to such topics as improving vaccine formulations and monitoring the quality of vaccine by means of pervasive serological testing of children, it seems strange that relatively so little attention has been directed at solving the very practical and immediate problems of vaccine storage and handling. Regrettably, current efforts which are being undertaken by the MOH to improve the cold chain throughout Uzbekistan are undermined by the continuation of old unsound practices. For example, vaccines are still despatched from the manufacturers in the former Soviet Union in ordinary wooden boxes without insulation or icepacks. Vaccine consignments often arrive from Russia without advance notification and can frequently take up to one week or more in transit. It is rare anywhere in the world for such neglect to persist at these high levels of the cold chain, through which every vial of vaccine must pass.

### **Discussion**

Some participants expressed doubt concerning the stability of polio vaccine after repeated freezing and thawing.

### **Developing a Plan for a National Immunization Program (Steinglass)**

An immunization plan, developed by consensus with the involvement of diverse groups within the MOH, is a road map which states briefly where you are coming from, and in detail where you are going and how you intend to get there. A comprehensive plan would have multiple uses by: facilitating the organization of services during the present period of changing circumstances; delineating roles and responsibilities; helping to set targets and monitor progress; and helping to coordinate and attract donor inputs. A plan is considerably more than a list of persons to be immunized or of commodities required.

An immunization plan would at a minimum include objectives, targets for vaccination coverage and disease reduction, policies regarding immunization schedules and contraindications, strategies for delivering services and maintaining the cold chain, planned activities with time frames for starting and completion, responsibilities of each type of health worker and health institution for implementation, plans and indicators for evaluation (including disease surveillance) and research, and requirements for resources. Examples of what was meant generally by a plan and specifically by the above components of a plan were presented in the form of questions, the answers to which could form the beginnings of a national immunization plan.

### Social Mobilization (Steinglass)

The people of Kyrgyzstan are facing a difficult present and an uncertain future. The changing economic and political circumstances may make it more difficult to sustain public confidence and interest in immunization. Already there is evidence that the social norm in favor of immunization is deteriorating. The trend over the past few years has been for vaccination coverage rates to remain stagnant or decline. As the risk of infectious disease has decreased due to past high levels of vaccination coverage, some outspoken providers and members of the public have questioned the safety of and need for vaccination. Vaccination coverage among infants against diphtheria is higher than against pertussis, indicating that many persons are opting to receive DT rather than DPT -- possibly out of fear of the pertussis component. Primary immunization coverage with DPT is less than with polio vaccine.

Despite the compulsory nature of the immunization system, people may begin to perceive that they have a choice as to whether or not to seek immunizations. It is timely for the MOH to begin to formulate a plan for individual and mass health education to sustain past achievements. Several suggestions were offered:

The excellent system for tracking individual children can be systematically used to motivate parents to begin and complete their children's immunization series.

Although access to services is already high, the MOH can make it easier for people to get vaccinated by reducing the number of contacts which are presently required for full immunization (eg., 10 contacts from 0-35 months of age are presently required versus 4-8 contacts in most other countries).

Beliefs and doubts about vaccination and the target diseases in the population and among health care providers could be studied to identify measures and messages needed to increase acceptance.

As the health sector may not be able to succeed entirely on its own to reverse declining coverage rates, other sectors could be enlisted to mobilize the population.

### Immunization and its organization in Uzbekistan (Iskandarov)

A detailed and comprehensive written report on the immunization program in Uzbekistan was handed to the Team and subsequently translated into English. (The report is available from REACH.) The speaker set the tone of the meeting by challenging the group to identify both the positive aspects of the current immunization program which were worth preserving and the drawbacks which required attention. The main objective of the meeting was to generate suggestions for strengthening the national immunization program.

The following aspects were listed on the positive side:

- immunization is compulsory, and parents are aware of this

- immunization is free of charge
- screening for immunization occurs frequently
- mass and widespread availability of immunization
- the immunization system is run by the State with defined guidelines for clinical practice and epidemiological services
- immunization is organized through a centralized system within the SES (Sanitary and Epidemiological Stations)
- reductions in morbidity and mortality have been achieved
- use of a common immunization schedule
- only children with definite contraindications are not immunized
- vaccine quality is controlled by potency testing
- quality control of immunization by antibody testing and re-vaccination, if indicated
- organization of epidemiological surveillance for vaccine-preventable infections
- information system includes characteristics of the diseases - management of the cold chain system
- obligatory medical examination prior to immunization and appropriate medical action for each weak child prior to immunization
- use of only disposable syringes for immunization.

Significant drawbacks and inadequacies were frankly acknowledged as follows:

In achieving high levels of immunization coverage:

- inadequate planning of vaccinations and insufficient analysis on the reasons for not reaching planned targets
- pediatricians do not study the dynamics of the condition of children vaccinated against diphtheria, measles, poliomyelitis
- administration of incorrectly stored and expired vaccines
- falsified data on immunization
- setting of groundless contraindications, absence of sanitary measures before vaccinating weak children and those who missed vaccination
- deficiencies at the immunization centers and in the centralized card index
- shortage of immunologists and nurses
- improper material and technical basis for studies of pre-immunity status and of collective immunity
- inadequate health information provided to the population on the value of immunization for disease prevention
- insufficient training of the cadre responsible for vaccination and absence of legal responsibility for violations of the immunization schedule.

In establishing an effective system of vaccine transport and storage:

- vaccine delivery from manufacturers without insulated containers and thermo-indicators
- absence of direct flights to some regional centers
- lack of refrigerated transport from airports within Uzbekistan to regional SES and beyond
- absence of refrigerators in sufficient quantities and lack of their maintenance in the health facilities.

In supply, production and quality control of vaccines:

- untimely delivery and short supply of BCG, measles, and DPT
- absence of manufacturer of DPT, measles and polio vaccines in Uzbekistan
- incorrect control of local BCG manufacture due to the lack of a republican control laboratory
- inadequate technical equipment and material at NPO "Vaccina" to permit production of vaccines and toxoids
- insufficient financing for cold chain and vaccine purchase.

In the system of epidemiological surveillance over preventable infections:

- inadequacies in the information system
- improvements needed in the system of laboratory surveillance and diagnostics
- need for computerized techniques, means of communications, and laboratory equipment.

In training of staff:

- need for special pre-service and in-service training programs and curriculum on immunization.

The written report also provides a wealth of information and epidemiological data on the vaccine-preventable diseases. Since the introduction of immunization, incidence rates fell 318 times in the case of diphtheria, 25 times for pertussis, 47 times for poliomyelitis, and 45 times for measles. Incidence data are presented by year, by geographic region, by age-specific occurrence, by virus type in the case of poliomyelitis, and in some cases by immunization status. The case fatality rates for 1990 and 1991, respectively, of diphtheria (25% and 8.3%), measles (0.89% and 0.36%), pertussis (0.7% and 0.66%), and tetanus (100% and 50%) are given. Results of serological studies of immunity against diphtheria, polio and measles also appear in the report. Immunization coverage is provided by vaccine, year, age, and geographic area. The list of contraindications is included. Requirements for cold chain equipment are listed.

Age-specific incidence data for selected diseases in 1991 were summarized by a member of the international team from the crude data in the report and appear in Table 3:

**Table 3**

**Age-specific incidence of selected vaccine-preventable diseases, Uzbekistan, 1991**

	<1	1	2	3-4	5-6	7-13	>14	Total
Diphtheria	2	3	-	2	0	3	6	16
Polio	7	10	3	-	-	-	-	20
Measles	1706			663		1095	406	3870
Pertussis	553			205		137	13	908

### The Immunization Program in Uzbekistan (Maxumov)

The National Program on Immunization was elaborated at the time that the public health services of Uzbekistan needed to combat poliomyelitis by mass application of OPV. Gradually the immunization network was established with laboratory support and based on immunization services provided within the framework of polyclinics. The cold chain system was developed and an immunization schedule formulated. Serological monitoring of the immunological status of the population was improved. Taking into consideration achievements in decreasing morbidity and mortality rates caused by preventable diseases, the country plans to eradicate poliomyelitis, achieve further decrease in measles incidence, and reduce diphtheria and tetanus to rare cases only.

#### **Discussion**

Discussion centered around the statistical data presented by the speaker. Some questioned the immunization coverage rates, which seemed to be overestimated. Differences of opinion were expressed as to whether or not the denominator for calculating coverage excluded children with contraindications. A 10% lower coverage against pertussis relative to diphtheria was noted with concern. Cases of neonatal tetanus might still be observed in some remote areas of the country.

### Immunization Schedule in Uzbekistan (Mukhamedjanov)

Immunization in Uzbekistan is being accomplished in accordance with the immunization schedule adopted by all the countries of NIS. Routine vaccinations were started in this country in 1942 against tuberculosis, in 1959 against poliomyelitis, in 1958-1959 against diphtheria, pertussis and tetanus, and in 1968 against measles. Since that time until the present, the immunization schedule has undergone four changes.

The author proposed further changes in the schedule, canceling booster doses of polio at the age of 15-16, against measles at the age of 6, and revaccination against diphtheria at the age of 46 and 56. The proposal was also made to accelerate implementation of the acellular vaccine against pertussis, either as a monovalent preparation or as a component of DPT.

#### **Discussion**

It was pointed out that the design of an immunization schedule usually depends on both epidemiological and immunological data. The discussion on the justification of serological testing of all children 6 years of age, just before the measles booster dose, took some time. The high cost of such an activity created a great concern. Concrete proposals for the modification of the existing schedule were made in connection with practically each antigen. The relatively high measles morbidity in infants was noted. Inclusion of rubella and hepatitis B vaccines into the national schedule was considered. Any change in the schedule is the responsibility of national authorities only.

### Obstacles and Difficulties in the Immunization Program in Uzbekistan (Stupnikova)

Planned immunization in the Republic of Uzbekistan has led to a considerable decrease in morbidity rates of preventable diseases. The immunization services were to secure 80-90% coverage of children under 12 months of age, as well as those under 24 months. However, during recent years, some districts of the country have been unstable, especially in rural areas. Some of the failures in immunization work can be attributed to social and economic problems. The major failures could be summed up as follows:

- insufficient degree of immunization coverage;
- cold chain problems;
- a number of complexities in vaccine production, supply and quality control;
- failures of the surveillance system;
- problems in training and re-training personnel.

### **Discussion**

The report raised questions concerning the reporting system used in Uzbekistan and authenticity of routinely collected data. Although this system was considered by most participants as adequate, some proposed introduction of coverage surveys to validate coverage and program implementation. The problem of responsibility for epidemiological and pediatric services in regard to immunization activities was also considered.

### Contraindications to Immunization in Uzbekistan (Makhmudov)

The problem of medical contraindications has a complicated basis: on the one hand, only a healthy child must be vaccinated; on the other, weakened children have an urgent need for protection against infections.

The system of contraindications practiced by us at present is different from the one suggested by the experts from WHO. It is too overloaded and detailed. The list of contraindications is the same for all the NIS: acute diseases (infectious and non-infectious), active tuberculosis, blood diseases, diabetes, acute diseases of liver and kidneys, rheumatism in acute and moderate forms, cardiovascular diseases in the state of decompensation, allergic disease, acute psychiatric diseases, etc. Many contraindications, however, are temporary and after recovery these children can be vaccinated. While these contraindications do not cause a significant decrease in coverage, they explain the fact that 304 children are getting delayed immunization.

According to the data obtained from the Tashkent polyclinics, the number of long-term medical delays constitutes on average 12%. Seventy two percent of the delays are connected with neurological status (48.4% - pathological deliveries, 34.6% - perinatal encephalopathy, 7.8% - convulsive syndrome, 9.1% - delay in physical development). Nine percent of the delays were due to endocrinological and immunological status and 6% to hepatitis A and B.

Considering purely pediatric aspects, without touching upon the immunogenicity of vaccines and the condition of the cold chain system, we can conclude that reduction of the list of contraindications will lead to an increase of coverage and efficacy of immunization.

### **Discussion**

There was widespread agreement that contraindications are one of the most important obstacles for increasing immunization coverage and that the national list of contraindications should be reviewed. It was recognized that a decision on contraindications is an important one which will require the special attention of the responsible person in charge.

### **Poliomyelitis Eradication Strategies in Uzbekistan** (Maxumov)

The first mass vaccination campaign against poliomyelitis was carried out in 1959 against the background of a major epidemic in Uzbekistan. The campaign achieved a coverage of greater than 96% of the population with OPV vaccination. Immunization strategies have been altered over time to keep pace with a changing epidemiological situation.

Since the occurrence of polio virus type III is currently being observed, monovalent type III vaccine has been additionally introduced into the immunization schedule.

### **Discussion**

National participants expressed their commitment to eliminate poliomyelitis in Uzbekistan. One participant stated that polio cases were under-reported. The immediate introduction of a birth dose of OPV into the national schedule was considered an important proposal.

### **Diphtheria Control in Uzbekistan** (Yuldashev)

A detailed analysis of diphtheria morbidity in the Republic of Uzbekistan (dynamics of incidence, the age structure) was presented. Negative aspects of immunization common to the whole set of antigens that are administered in Uzbekistan were analyzed. Particular attention has been drawn to epidemiological surveillance in Uzbekistan as there are many weak points in need of correction. A number of recommendations based on the presented data regarding the improvement of the immunization conditions in Uzbekistan were proposed.

### **Measles Control in Uzbekistan** (Shavakhabov)

During the pre-vaccination period, measles incidence in Uzbekistan ranged between 850 and 1350 per 100,000 population. Measles incidence peaked in winter/spring and had a 2-5 year epidemic cycle. Incidence was highest among young children.

Implementation of routine immunization has led to a considerable decrease in morbidity and changed the dynamics of measles epidemiology: incidence has been reduced 31.4 times and peaks in incidence now occur in cycles of 4-5 (and even 6-8) years.

Adequate quality control of measles vaccine has been established in the country: from 1983 to 1992, 144 vaccine lots were tested; in 43.8% the vaccine was rejected.

The system of epidemiological surveillance over measles has been well elaborated.

Revision of the immunization schedule in the Republic is anticipated.

### **Discussion**

In the answers given by the speakers (Cutts and Shavakhabov), it was pointed out that due to its high cost, serological control as a routine method should be limited. The explanation was also given that the efficacy of measles vaccine is only 95% but this cannot be considered as a failure of immunization. Participants were informed of the results of a comparative study of various measles vaccines given at different ages: at the age of 6 months AIK-C vaccine was most immunogenic (83% seroconversion) and at the age of 9 months Leningrad-16 permitted the highest seroconversion (95%). The strategy of immunization in the case of epidemics was discussed and the conclusion that the first dose of measles vaccine should be given at 6 months of age was offered.

### **Measuring Immunization Coverage in Uzbekistan (Sharipov)**

The Republic of Uzbekistan belongs to the set of countries in which the immunization coverage of children between 0 and 2 years of age used to be higher (approximately 90%) during the last decade. However, the figures do not reflect true protection. Serological analysis shows a level of protection which is considerably lower: 57.8% for measles, 78.2% for poliomyelitis, and 67.4% for diphtheria.

Low levels of protection result mainly from unsatisfactory storage conditions of the vaccine and from deficient immune response to vaccination attributed to the adverse medical conditions of children.

### **Discussion**

The general opinion was that a more appropriate method of measuring vaccine coverage is needed.

### **Immunization Program in Kyrgyzstan (Shapiro)**

Compulsory immunization is one of the most important strategic public health tasks in our republic. We perform over 2 million child immunizations in the republic annually. More than 80% of children receive vaccinations in different regions of the republic in conformity with the norms of the immunization schedule.

Immunization against diphtheria, tetanus, measles, polio, pertussis and TB has been demonstrated to be effective. Nevertheless, some outbreaks of these diseases are still registered in the republic, especially beginning with 1977.

Some of the areas of concern in the field of immunological prophylaxis are as follows:

1. quality and effectiveness of standard vaccines;
2. storage and transport of vaccines at proper temperatures (I should express my gratitude to the USA Government for the assistance with the donated "cold chain" equipment);
3. delivery of vaccines from manufacturers in the former Soviet Union to the republic;
4. refrigerators at the level of FAPs should be changed;
5. staff training at all the levels;
6. establishment of a national laboratory for quality control of vaccines and serological studies;
7. need for separation between the practical implementation of immunization and disease surveillance.

It is necessary to charge pediatricians with responsibility for immunization practice and epidemiologists with responsibility for surveillance and monitoring.

The community studies which have been performed to determine the level of collective immunity show that 10% of the population do not have immunity to polio virus, up to 20% of the people examined by 1991 in different regions in the republic did not have immunity to diphtheria, and 6-32% of the people did not have immunity to measles.

We are rather concerned about the status of immunological prophylaxis against diphtheria and tetanus among adults. In spite of the fact that immunization norms are available in all regions of the republic, adults are not immunized properly. Hyperimmunization with highly allergenic components (tetanus anti-toxin and especially anti-tetanus serum), which are injected in traumas, has been one result. Another concern is the epidemic trend of diphtheria.

We have overestimated the extent of medical contraindications and, despite our efforts, pediatricians are still too cautious about vaccinating. It is necessary to increase the level of knowledge regarding immunological prophylaxis. Secondly, when deciding whether or not to immunize a child, both pediatrician and epidemiologist are to take part. Thirdly, there have been some recent publications about severe complications after immunization and more and more parents tend to refuse immunization. That is why social mobilization for immunization, including propaganda by means of TV programs, radio, and other mass media, is very important.

We think that it is now time to review our immunization schedule, but to do so we need much scientific information, data, and recommendations from WHO. We must develop criteria which should take into consideration the current epidemiological situation, immunological response, and immunization status of children.

We must study and work out the issue of simultaneous administration of vaccines and preferable anatomical site for injections.

### Immunization Schedule in Kyrgyzstan (Kushbakeeva)

The immunization schedule in the Republic of Kyrgyzstan corresponds to the one which was adopted by the Ministry of Health of the former Soviet Union (Decree #50, January 14, 1980).

According to the schedule, vaccination against TB is given to children soon after birth (4-7 days) in the maternity home. The first revaccination is given at the age of seven years, the second revaccination is given at the age of 11-12 years, and the third one at 16-17. The next revaccination of non-infected individuals is given up to the age of 30 with an interval of 5-7 years.

Polio vaccination begins at three months of age with an interval of 1.5 months between each of the first three doses. Two doses with an interval of 1.5 months are given to children during both the second and third years of life. A single dose is given at the completion of 7 and 15 years of age.

Vaccination against diphtheria, pertussis and tetanus (DPT) is given to children at 3 months of age with an interval of 1.5 months between each of the first three doses. Revaccination is given one time, 1.5 to 2 years after the complete primary vaccination. DPT vaccine is given simultaneously with polio. Booster doses of vaccine against diphtheria and tetanus are given to children at the age of 9 and 16 years using a reduced formulation (DT-m). Cases of diphtheria continue to occur (4-10 cases every year). There are many cases among adults; the cases of diphtheria in the military are registered. Since there are many cases of diphtheria in Russia, booster doses continue to be needed.

Vaccination against mumps is given one time at the age of 15-18 months. Measles vaccine is given at the age of 12 months but can be given simultaneously with mumps vaccine. Measles revaccination is at the age of 6-7 years at school entry.

### Problems and Difficulties in Organization of High Immunization Coverage in Kyrgyzstan (Rozhkova)

Much was said about effectiveness of implementation of immunization against diphtheria, pertussis, tetanus, measles, polio. Nevertheless, outbreaks of measles, pertussis, and diphtheria occur, with cases also occurring in previously immunized children. That is why there is a need to develop scientific means of increasing the effectiveness of immunological prophylaxis based on the reasons for vaccine failures.

The first and foremost component of immunological prophylaxis is effective standard vaccine. However, data from many experiments show that the quality of different locally-manufactured vaccines does not meet WHO requirements. Thus, in 1989, 20% of BCG vaccine was withdrawn and in 1991 manufacture of BCG vaccine was terminated. In 1988 manufacture of measles vaccine was stopped, which resulted in a 75% decrease in quantities delivered. This year we have the same situation; instead of 330,000 doses, we received funds for only 67,000 doses of measles vaccine. There is an acute shortage of mumps vaccine, as well.

Secondly, for effective immuno-prophylaxis vaccines must be stored and transported at all stages, at appropriate temperatures. It is necessary to organize staff training in this connection. Also, it is important to establish a laboratory for controlling the immunological activity and quality of vaccines.

A special issue is medical contraindications; we consider the list to be too long, which can be explained by insufficient knowledge on the part of pediatricians. Too many young children are "released" from immunization. Medical contraindications are found by neuropathologists, allergists, and endocrinologists, who are sometimes unaware of the details of immuno-prophylaxis.

A tendency of increasing parental refusal to immunize children has been noted. It is necessary to review and develop work on hygiene and sanitary education and to charge pediatricians with this task. We will make the heads of different health care establishments responsible for the creation of proper conditions for immunization and propaganda of prophylaxis. And we may regard implementation of immunization activities as the main criteria to judge the performance of pediatricians.

Our immunization schedule is to be reconsidered too. But here we need a serious scientific foundation, taking into account the epidemiological situation and sero-response of children.

#### Policy on Contraindications to Immunization in Kyrgyzstan (Kudayarov)

Immunization is very effective in the fight against infections in children. Insufficient immunization coverage inevitably leads to the onset and spread of infectious diseases. Infectious diseases are responsible for considerable morbidity and mortality in Kyrgyzstan. The high incidence of infectious diseases recorded among reproductive-aged women, especially among pregnant women, adversely affects their children's health.

A large proportion of weak children, who are often ill with malnutrition, anemia and rickets, are less than two years of age. A high incidence of intestinal infections, acute respiratory diseases, and viral hepatitis is observed. High morbidity of infants is registered.

The number of births in the republic was 125,000 in 1991. In 1991 for Kyrgyzstan as a whole, the per cent of children 0-11 months of age and 12-23 months of age with malnutrition was 21.5% and 39% respectively; with anemia, 18.5% and 45.4%, respectively; and with rickets 7.9% and 14.7% respectively (see Tables 4 and 5).

Immunization coverage in the republic in the age group under 1 year was 78.5% against diphtheria; 86.6% against polio; and 91.1% against measles by 2 years of age.

A long list of temporary and long-term (prolonged) medical contraindications contributes to low coverage (Table 6). Thirty percent of infants had temporary medical contraindications to immunization. The cause of these temporary medical contraindications were: acute respiratory virus infections (from 25% to 35% depending on the age group); rickets, anemia and malnutrition (from 15% to 35%); quarantine (from 25% to 35%); and other reasons (from 14.4% to 20.1%). Children

Table 4: Nutritional Status (%) of children under one year old, Kyrgyzstan, 1989-91.

Place	Rickets			Malnutrition			Anemia		
	1989	1990	1991	1989	1990	1991	1989	1990	1991
Bishkek	2.6	0.5	3.2	4.9	6.3	5.8	3.7	3.3	3.8
Chuis	5.5	6.4	6.8	12.9	13.1	14.4	9.3	10.9	11.6
Issyk-kul	7.2	8.0	8.4	9.0	9.2	9.0	12.4	14.1	14.6
Osh	9.1	8.6	8.1	28.4	29.1	29.3	23.8	23.0	24.9
Talas	8.0	8.2	8.6	14.2	15.3	15.5	6.8	7.1	7.3
Naryn	17.0	18.4	19.6	21.1	22.0	22.0	26.9	27.0	27.1
Djalal-Abad	4.9	5.8	6.1	22.8	22.9	23.6	14.2	18.5	19.7
<b>TOTAL</b>	<b>8.7</b>	<b>8.4</b>	<b>7.9</b>	<b>24.6</b>	<b>26.3</b>	<b>21.5</b>	<b>19.3</b>	<b>18.9</b>	<b>18.5</b>

Table 5: Nutritional Status (%) of children in second year, Kyrgyzstan, 1989-91.

Place	Rickets			Malnutrition			Anemia		
	1989	1990	1991	1989	1990	1991	1989	1990	1991
Bishkek	-	--	--	5.9	15.4	50.0	5.9	15.4	50.0
Chuis	5.1	1.2	14.3	8.2	8.5	57.1	10.2	6.1	28.6
Issyk-kul	15.9	9.4	25.0	21.9	16.5	12.5	23.8	19.4	62.5
Osh	16.4	12.0	15.0	28.9	26.2	44.7	28.6	25.8	39.7
Tatas	7.8	8.2	8.3	40.2	41.4	41.7	49.2	50.1	50.0
Naryn	15.7	17.3	17.9	26.9	28.4	28.6	52.4	53.3	53.6
Djalal-Abad	10.6	11.0	11.4	34.8	35.1	35.2	53.2	53.1	53.4
<b>TOTAL</b>	<b>15.1</b>	<b>10.5</b>	<b>14.7</b>	<b>25.9</b>	<b>23.0</b>	<b>39.8</b>	<b>26.1</b>	<b>22.5</b>	<b>45.4</b>

Table 6: Principal medical contraindications to immunization in Kyrgyzstau (in percentages).

Age	Short-term medical contraindications					Long-term medical contraindications				
	Total affected	Reasons:				Total affected	Reasons:			
		Acute resp. virus infections	Rickets /anemia /malnutrition	Quarantine	Other		Neurological disease	Allergic diseases	Weakness	Reaction to prior immun.
< 1 year	29.9	25	35.4	25	16.6	14.8	35	34	20	11
1-2 yrs	15.1	32	18.9	29	20.1	12.5	34	36	21	9
2-3 yrs	9.6	35	15.6	35	14.4	11.5	33	39	22	6

Reasons for long-term medical contraindications due to neurological diseases, Kyrgyzstan

	TERM OF MEDICAL CONTRAINDICATIONS	PERCENT
Perinatal encephalopathy	from 3 months to 1 year	70
Birth traumas	up to 1 year	18
Minor cerebral dysfunctions	from 6 months to 1 year	12

Reasons for long-term medical contraindications due to allergic diseases, Kyrgyzstan

	TERM OF MEDICAL CONTRAINDICATIONS	PERCENT
Hay fever, neurodermatitis, eczema, food allergy	from 1 to 3 years	18-20%
Immunodeficient status: thymomegaly	up to 3 years	20-30%

with long-term medical contraindications (Table 6) include those with various impairments of the central nervous system (from 33% to 35%); those with allergic reactions (from 34% to 39%); those with "weakness" (from 20% to 22%); and those with adverse response to previous vaccination (6% to 11%).

#### Strategies for Eliminating Poliomyelitis in Kyrgyzstan (Ankundinova)

Kyrgyzstan is endemic as far as poliomyelitis is concerned. OPV administration since 1959 has led to a reduction in polio incidence rates to the present level of sporadic cases. In spite of the fact that 90% of children were administered OPV, 7.2% - 16.5% of children in the republic (and up to 50% in some areas) had no antibodies to all three types of polio virus and with titres 1:4. Such a weak immunological response is related to faults in the cold chain during transportation, storage and handling. From 1979 to 1992 there were 53 cases of paralytic poliomyelitis, with 85% occurring in children in the age group from 10 months to 2 years (17% unvaccinated; 20.7% with complete course of vaccination; 20.7% with partial vaccination; 35.8% with 1 and 2 doses of revaccination; no data for 5.8%). Unfortunately, there is no record on other causes of paralysis. The republic has an inadequate network of virological laboratories.

Water sampled from different reservoirs from 1987 to 1990 contained strains of polio virus on 93 occasions. Wild strains (differentiation in the laboratory of Anton Van Loon, Netherlands) in drinking water amounted to 11%, in open reservoirs 29% and in waste water systems 25%. Type I (50%) and Type III (25%) of polio virus dominated among those ill; Type I (30%) and Type II (36%) dominated in the environmental samples, while the simultaneous discovery of all types constituted 30% of the positive samples.

Further strategy and tactics in tackling poliomyelitis will be determined with the help of WHO recommendations targeted for Group B countries.

#### Immunological Surveillance of Vaccine-Preventable Infections as Part of Epidemiological Surveillance in Kyrgyzstan (Aminova, Pokrovskaya)

Use of measles vaccine led to a 10-fold decrease in pneumonia morbidity and mortality. The vaccination coverage rate determines the disease incidence rates, which have fallen dramatically. (Table 7, 8) The incidence rate for pertussis exceeds that for diphtheria by 10 times, while the respective vaccination coverage among children is 75% and 83%. (Table 9) Immunization coverage rates for Bishkek City appear in Table 10; tuberculosis and diphtheria incidence rates since the 1950's appear in Table 11 and Figure 1, respectively.

Serological surveys of children measuring diphtheria, tetanus, measles and neutralization of hemagglutination tests (poliomyelitis) allow a determination of the efficacy of diphtheria vaccine (from 5.5% to 23% of children are not vaccinated) and circulation of bacteria in the population. These surveys and tests have determined the size of the refractory group: the absence of specific antibodies in vaccinated children is 5.1%-23% for diphtheria, 8%-26% for poliomyelitis. And the presence and intensity of immunity has been documented: 20%-40% of the adults are not protected

against diphtheria (30% have revaccination in a 10 year time with DT-M), 13%-30% against measles, and 12%-50% against poliomyelitis. The serological surveys and tests permit prediction of incidence rates (95% of the population are immune to diphtheria in 31% of settlements and 97% in 23% of the settlements; 90% of the population are immune to poliomyelitis in 44% of the settlements.) The efficacy of vaccines and mass immunization has been estimated: there has been a 10-fold decrease in the number of people lacking measles antibodies and a 8 to 15-fold increase in the number of people with protective titres against polioviruses.

We have established: the absence of antibodies to measles virus in 80% of children who reach the age of 12 months; high incidence rates of measles in children 6-12 months of age; and the efficacy of a second dose of measles vaccine for children initially immunized at 10-12 months of age, with an 18 and 145-fold decrease in measles incidence compared, respectively, to the children vaccinated once at 12-24 months of age and those unvaccinated.

**Table 7**

**Pre and post vaccination era incidence rates for selected vaccine-preventable diseases, Kyrgyzstan**

Disease	Pre-vaccination era				Post-vaccination era				Incidence in 1989 - 1991 as percent of 1959 - 1961
	1959	1960	1961	average	1989	1990	1991	average	
Diphtheria	68.0	46.6	34.0	49.5	0.09	0.1	0.2	0.13	0.26%
Pertussis	284.8	271.8	309.1	288.5	4.3	5.4	4.3	4.6	1.6%
Measles	591.0	1747.7	1192.0	1176.6	1.4	13.5	19.5	11.5	1.0%
Polio	7.8	2.9	2.1	4.2	0.1	0.02	0.09	0.07	1.7%

**Table 8****Measles incidence in Kyrgyzstan, 1959 - 1991 (per 100,000).**

YEAR	Measles incidence per 100,000
1959	591.0
1960	1747.7
1961	1192.0
1962	933.4
1963	592.8
1964	758.6
1965	873.3
1966	815.8
1967	564.9
1968	499.3
1969	80.1
1970	147.8
1971	361.1
1972	146.6
1973	23.6
1974	24.4
1975	209.7

YEAR	Measles incidence per 100,000
1976	286.0
1977	19.3
1978	52.6
1979	273.6
1980	169.7
1981	64.1
1982	139.1
1983	204.9
1984	21.7
1985	30.1
1986	134.3
1987	227.4
1988	14.7
1989	1.3
1990	13.3
1991	19.5

**Table 9****Immunization coverage (%) of children and adolescents, Kyrgyzstan, 1989-1991**

AGE	TYPE OF IMMUNIZATION	1989	1990	1991
	<b>Diphtheria</b>			
1 year	Vaccination	78.3	80.5	83.9
3 years	Revaccination I	90.4	92.6	90.3
10 years	Revaccination II	95.0	95.4	93.8
16 years	Revaccination III	96.1	96.1	86.2
	<b>Pertussis</b>			
1 year	Vaccination	75.7	78.7	75.9
3 years	Revaccination	88.6	90.7	89.1
	<b>Polio</b>			
1 year	Vaccination	84.6	84.9	86.6
2 years	Revaccination I	93.8	95.5	95.0
3 years	Revaccination II	93.7	96.1	94.5
8 years	Revaccination III	98.2	99.0	95.1
16 years	Revaccination IV	96.5	94.7	93.5
	<b>Measles</b>			
2 years	Vaccination	93.6	95.5	94.3
7 years	Revaccination	35.8	90.3	76.5
	<b>Mumps</b>			
2 years	Vaccination	84.6	87.4	86.4
	<b>TB</b>			
newborns	Vaccination	--	--	95.8
7 years	Revaccination I	--	--	42.1
12 years	Revaccination II	--	--	28.8
17 years	Revaccination III	--	--	51.1

-- data not provided

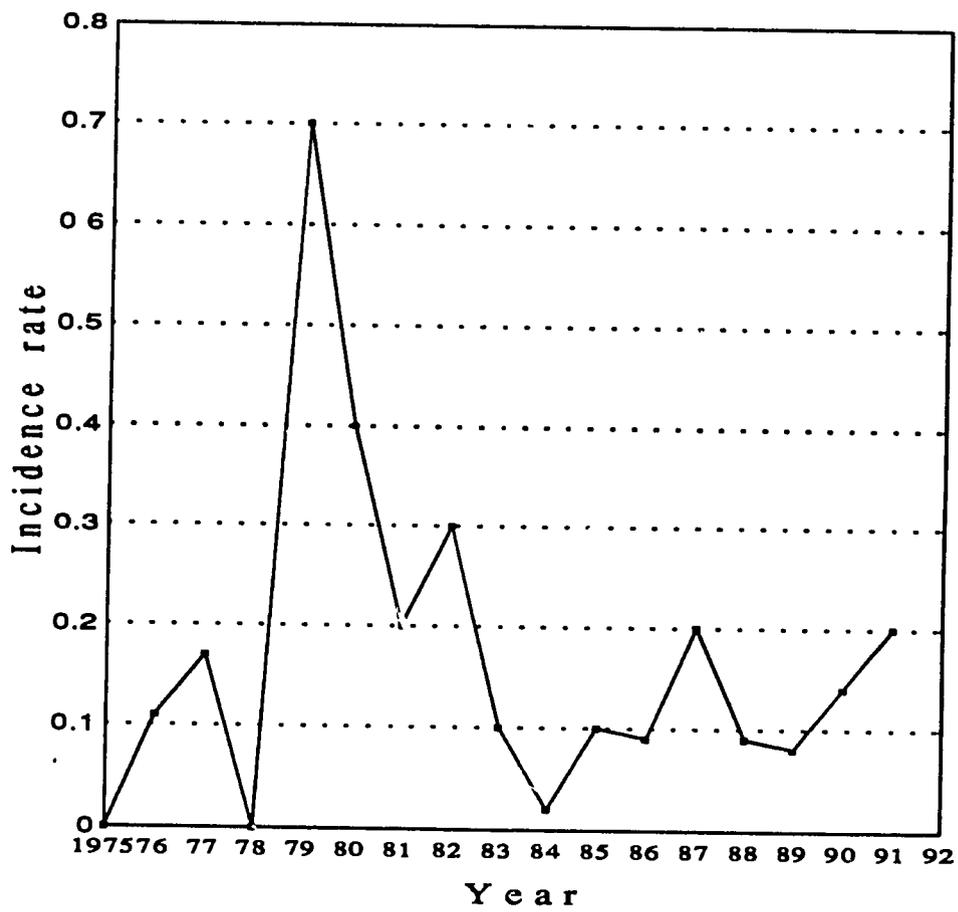
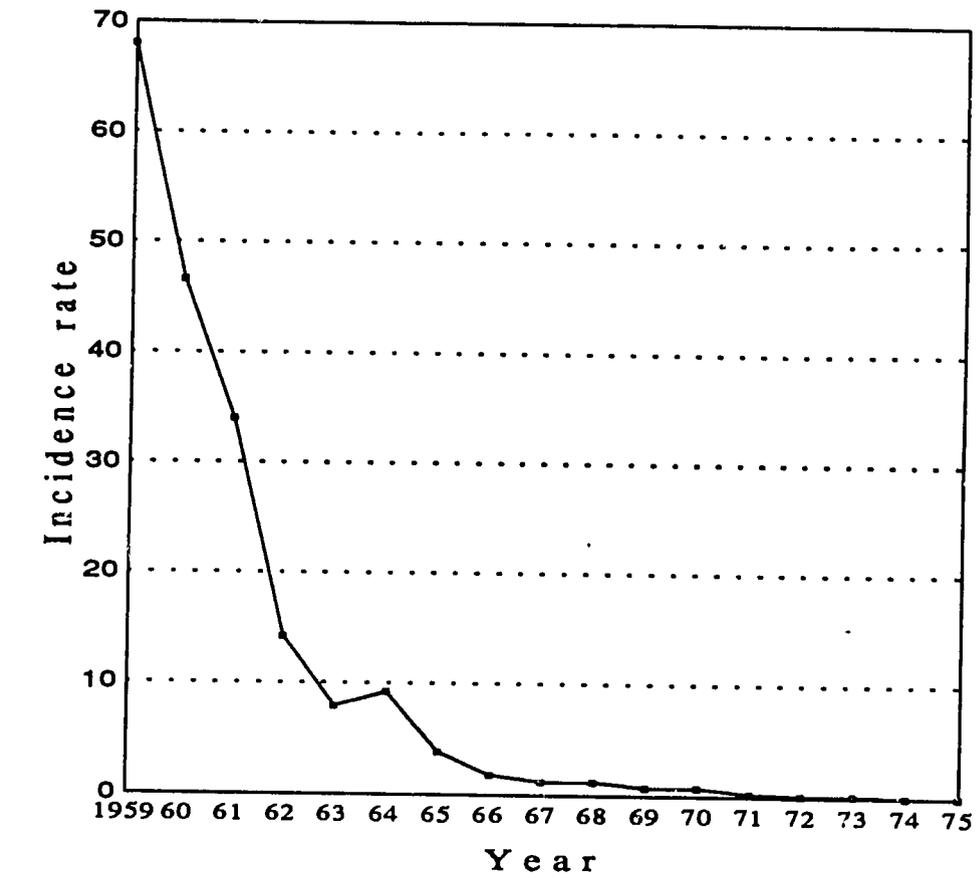
**Table 10****Immunization coverage (%) of children and adolescents, Bishkek City, 1989-1991**

By AGE	TYPE OF IMMUNIZATION	1989	1990	1991
	<b>Diphtheria</b>			
1 year	Vaccination	76.4	76.5	78.5
3 years	Revaccination I	80.1	81.2	82.2
10 years	Revaccination II	86.1	86.3	88.7
14 years	Revaccination III	91.7	92.3	93.9
16 years	Revaccination IV	92.8	93.2	94.2
	<b>Pertussis</b>			
1 year	Vaccination	71.4	71.7	72.8
3 years	Revaccination	75.8	76.4	76.5
	<b>Polio</b>			
1 year	Vaccination	85.8	86.3	86.6
2 years	Revaccination I	88.3	88.8	89.7
3 years	Revaccination II	90.1	90.3	91.2
8 years	Revaccination III	96.3	96.4	97.2
14 years	Revaccination IV	98.0	98.1	98.2
16 years	Revaccination V	88.4	88.6	90.4
	<b>Measles</b>			
2 years	Vaccination	90.2	90.3	91.1
7 years	Revaccination	73.2	71.4	70.5
	<b>Mumps</b>			
2 years	Vaccination	70.6	71.4	69.0
	<b>BCG</b>			
newborns	Vaccination	96.2	96.3	96.8
7 years	Revaccination I	37.7	37.1	38.1
12 years	Revaccination II	14.5	14.7	14.6
17 years	Revaccination III	15.4	15.3	15.7

**Table 11****Tuberculosis incidence rates in children and adolescents, Kyrgyzstan, 1956-1991  
(per 100,000 children)**

Year	Children (0-14)	Adolescents (15-17)
1956	217	286
1957	218	280
1958	208	267
1959	210	262
1960	203	234
1961	136	153
1962	112	224
1963	131	181
1964	109	168
1965	85	158
1970	42	97
1975	26	61
1980	15	36
1985	18.7	30.2
1990	21.2	37.9
1991	23.2	38.2

Figure 1  
Diphtheria incidence rates in Kyrgyzstan, 1959-91  
(per 100,000)



### Strengthening Epidemiological Surveillance in Kyrgyzstan: The CDC (Bennett)

The purpose of the USAID-sponsored project between the CDC and the Ministry of Health in Kyrgyzstan is to strengthen the existing public health surveillance system in this time of rapid economic and political changes and, in particular, to help set up an epidemiologic bulletin to help disseminate information quickly to many people. The assessment of the current surveillance system, Phase I of the project, indicates that: the system is very complex and highly structured; is inefficient in many ways; has limited analysis of data; uses physician diagnosis instead of standard case definitions as the basis for reporting; and has very limited or no feedback and dissemination of data and results of analysis to primary health care providers, polyclinics, and hospitals, as well as to neighboring oblasts and regions.

### Summary of Next Steps (Shapiro)

In his closing remarks, Dr. Shapiro announced his intention to establish in Bishkek a Republican Center for Immuno-Prophylaxis for strengthened epidemiological and immunological collaboration on service delivery, training and research. Furthermore, a working group consisting of pediatricians and epidemiologists would examine the current immunization schedule and prepare a joint document on their findings. It was important to start and complete the immunization schedule earlier with shorter intervals between doses. A review of medical contraindications was also needed.

The validity of immunization coverage data was questioned and a review of indicators for measuring coverage was in order.

The meeting had been successful in improving understanding and establishing dialogue between pediatricians and epidemiologists.

**ANNEXES**

## **Annex 1**

### **TEAM COMPOSITION**

Experts in epidemiology, immunology, pediatrics and public health practice from outside the former Soviet Union joined their counterparts from within the CAR. The external team for the consultations was composed of the following individuals:

Dr. Artur Galazka, WHO Medical Officer, Expanded Program on Immunization, Geneva

Dr. Georges Peter, Professor of Pediatrics, Brown University School of Medicine and Director of Division of Pediatric Infectious Diseases, Rhode Island Hospital (and representative of the American Academy of Pediatrics)

Dr. Felicity Cutts, Senior Lecturer in Communicable Disease Epidemiology, London School of Hygiene and Tropical Medicine

Mr. Robert Steinglass, Technical Director, U.S. Agency for International Development/REACH (John Snow, Inc.), Arlington, Va. (Team Leader)

Additional technical advice to the team was provided in Uzbekistan by Dr. Sergei Litvinov, Central Research Institute of Epidemiology, Moscow, and in Kyrgyzstan by Dr. Sergei Deshevoi, Pasteur Institute, St. Petersburg.

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## Annex 2

### TRAINING MATERIALS

Many key documents and articles were translated by REACH into Russian in preparation for these sessions. A set of documents, each consisting of some 350 pages, was prepared for each participant at the meetings and additional copies were provided to the MOH's for oblast authorities.

The documents distributed in Russian to the participants included:

- 1) WHO/EPI. Stability of oral polio vaccine after repeated freezing and thawing. Weekly Epidemiological Record. 6 July 1990 (no. 27).
- 2) WHO/EPI. The effects of freezing on the appearance, potency and toxicity of adsorbed and unadsorbed DPT vaccines. Weekly Epidemiological Record. 12 December 1980. (no. 50).
- 3) McBean, AM, Gateff, C, Manclark, CR, Foster, SO. Simultaneous administration of live attenuated measles vaccine with DTP vaccine. Pediatrics. 1978. (62,3): 288-93.
- 4) Contraindications for vaccines used in EPI (Europe). Weekly Epidemiological Record. 9 September 1988. (no. 37).
- 5) Galazka, AM, Lauer, BA, Henderson, RH, Keja, J. Indications and contraindications for vaccines used in the EPI. Bulletin of the World Health Organization. 1984. (62,3): 357-365.
- 6) U.S. Department of Health and Human Services. Centers for Disease Control. Standards for pediatric immunization practices. May 11, 1992. (forthcoming in the Journal of the American Medical Association.)
- 7) WHO/EPI. Immunization policy. WHO EPI/GEN/86.7REV1.
- 8) Litvinov, SK, Bolotovskii, VM, Kosenko EV. The cold chain: Its role and significance in fighting infections controllable by specific prophylactic agents (in Russian). Zh Mikrobiol Epidemiol Immunobiol. 1989. (11): 88-95
- 9) WHO/EPI. Outbreak of Diphtheria, USSR. Weekly Epidemiological Record. 21 June 1991 (no. 66).
- 10) Galazka, A. Stability of Vaccines. WHO/EPI. (WHO/EPI/GEN/89.8).
- 10a) WHO/EPI. Stability of vaccines. Weekly Epidemiological Record. 27 July 1990. (no. 30).
- 11) Litvinov, SK, Lobanov, AV, Peregudov, AN. The cluster method in conducting epidemiological research. (in Russian) Zh Mikrobiol Epidemiol Immunobiol. 1986. (11): 78-84.
- 12) Beasley, RP. Hepatitis B immunization strategies. WHO/EPI. (WHO/EPI/GEN/88.5).

13) Galazka, A. Contraindications to immunization. Presented at Training Course at the Russian Informative-Analytical Centre, Moscow. 8 April 1992.

14) Galazka, A. Booster dose policy. EPI/Global Advisory Group. World Health Organization (EPI/GAG/92/WP.10).

15) Galazka, A. Diphtheria in Russia: why so long? Presented at Training Course at the Russian Informative-Analytical Centre, Moscow. 13 April 1992.

16) WHO/EPI. Global poliomyelitis eradication by the year 2000: Plan of Action (Revised 1992). EPI/GAG/92/WP.11. (19 pages of text only are translated.)

17) Henderson, RH, Keja, J, Hayden, G, Galazka, A, Clements, J, Chan, C. Immunizing the children of the world: Progress and prospects. Bulletin of the World Health Organization. 1988. (66,5): 535-43.

18) Expanded Programme on Immunization: Progress report by the Director General. 11 December 1991. (EB89/17).

All the documents listed above, with the exception of numbers 8, 11, 17, and 18, were translated into Russian by REACH in preparation for this assignment.

### Annex 3

REPUBLIC OF UZBEKISTAN  
UNITED STATES AGENCY FOR INTERNATIONAL DEVELOPMENT/REACH PROJECT

MEETING TO IMPROVE THE IMMUNIZATION PROGRAM IN  
THE REPUBLIC OF UZBEKISTAN

TASHKENT, UZBEKISTAN

8 - 10 DECEMBER 1992

#### NATIONAL PARTICIPANTS

- Iskandarov - Chief State Sanitary Doctor of the Republic of Uzbekistan. Doctor of Medical Science, Prof., Member-Correspondent of the Academy of Sciences of Uzbekistan.
- Makhmudov - Doctor of Medical Science, Prof., the Director of the Pediatric Research Institute.
- Shavakhabov - Director of Epidemiology, Microbiology and Infectious Diseases Research Institute.
- Kholmetov - Director of Sanitary, Hygiene and Disease Prophylactics Research Institute, Uzbekistan MOH.
- Kasymov - Chief of the Sanitary Epidemiology Department of Uzbekistan MOH
- Andrianov - Chief Doctor of the Uzbekistan Republican SES.
- Mirtajiev - Chief Doctor of Tashkent City SES.
- Masharipov - Chief Doctor of Tashkent Oblast SES.
- Maxumov - Chief of the Laboratory of the Epidemiology, Microbiology and Infectious Diseases Research Institute, Prof.
- Musabaev - Deputy Director of Epidemiology, Microbiology and Infectious Diseases Research Institute.
- Menlikulov - Chief of Maternity, Children and Nutrition Care Department of Uzbekistan MOH.
- Juraev - Deputy Chief of Sanitary Epidemiology Department of Uzbekistan MOH.
- Sharipov - Chief Pediatrician of MOH.

- Yuldashev** - Chief Epidemiologist of MOH.
- Gulamov** - Chief of the Laboratory of the Epidemiology, Microbiology and Infectious Diseases Research Institute of the MOH.
- Akhmedov** - Deputy Director of Pediatrics Research Institute of the MOH.
- Makhmudova** - Chief of the Laboratory of Immunology Prophylactics of the Pediatrics Research Institute.
- Askarova** - Scientific worker of Pediatrics Research.
- Tursunova** - Specialist for Sanitary Epidemiology Department of the MOH.
- Lyuster** - Specialist for Maternity, Children and Nutrition Care Department of the MOH.
- Mustafaev** - Deputy Chief Doctor, Republican SES, Epidemiologist.
- Stupnikova** - Chief Doctor, Republican SES, Epidemiologist.
- Mukhamedjanov** - Epidemiologist for Republican SES.
- Camalova** - Director of the "Vaccine Producing Venture".
- Tajibaev** - Deputy Chief Doctor, Tashkent City SES.
- Yeliseyeva** - Chief of Epidemiology Department for Tashkent City SES.
- Israilova** - Deputy Chief of Maternity and Children's Care Affairs of the City Medical Department of the Mayor's office.
- Mukhamadalieva** - Chief Pediatrician of the Medical Department of the Mayor's office.
- Lykyamova** - Chief Pediatrician of the Mayor's office.
- Baymetova** - Deputy Chief of the Tashkent Oblast SES, Epidemiologist.
- Kim** - Immunologist of Tashkent Oblast SES.
- Bannikova** - Bacteriologist of Tashkent City SES.
- Fayziev** - Chief Doctor of Syzdaria Oblast SES.
- Rajabov** - Chief Doctor of Jizac Oblast.

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**Annex 4**

**REPUBLIC OF KYRGYZSTAN  
UNITED STATES AGENCY FOR INTERNATIONAL DEVELOPMENT/REACH PROJECT**

**MEETING ON CHILD IMMUNIZATION POLICIES,  
PRACTICES, AND POLICY-SETTING**

**BISHKEK, KYRGYZSTAN**

**15-16 DECEMBER 1992**

**NATIONAL PARTICIPANTS**

<b>Shapiro B.M.</b>	<b>First Deputy Minister of Health</b>
<b>Firsova S.N.</b>	<b>Chief, Sanitary and Epidemiological-Department, Ministry of Health</b>
<b>Doskeeva J.A.</b>	<b>Chief, Department of Maternal and Child Health, Ministry of Health</b>
<b>Kudayarov D.K.</b>	<b>Director, Kyrgyz Research Institute of Obstetrics and Pediatrics</b>
<b>Rozhkova L.V.</b>	<b>Chief Epidemiologist, Ministry of Health</b>
<b>Kushbakeeva A.K.</b>	<b>Chief Pediatrician, Ministry of Health</b>
<b>Pokrovskaya T.I.</b>	<b>Professor, Propediatric Department, Kyrgyz Medical Institute</b>
<b>Aminova M.G.</b>	<b>Chief, Epidemiological Department, Kyrgyz Anti-Plague Center</b>
<b>Sagomonyan, E.A.</b>	<b>Epidemiologist, Sanitary and Epidemiological Station, Bishkek City</b>
<b>Bure A.A.</b>	<b>Chief, Child Polyclinic No. 2, Bishkek City</b>
<b>Topchubekov T.T.</b>	<b>Chief, Pediatric Department, Faculty of Advanced Medical Studies, Kyrgyz Medical Institute</b>
<b>Omuraliev K.T.</b>	<b>Chief Physician, Republican Sanitary and Epidemiological Station</b>

<b>Turgunbayev, O.T.</b>	<b>Director, Kyrgyz Research Institute of Prophylaxis and Medical Ecology</b>
<b>Kozhonazarov K.K.</b>	<b>Chief, Propediatric Department, Kyrgyz Medical Institute</b>
<b>Khamzamulin R.O.</b>	<b>Deputy Director, Kyrgyz Research Institute of Prophylaxis and Medical Ecology</b>
<b>Glinenko V.M.</b>	<b>Chief Physician, Chu Oblast Sanitary and Epidemiological Station</b>
<b>Kudryakova R.A.</b>	<b>Deputy Chief Physician, Republican Sanitary and Epidemiological Station</b>
<b>Penner Y.D.</b>	<b>Chief, Department of Pediatric Infection, Kyrgyz State Medical Institute</b>
<b>Ankudinova L.A.</b>	<b>Chief, Virological Laboratory, Kyrgyz Research Institute of Prophylaxis and Medical Ecology</b>

**Annex 5**

**MINISTRY OF HEALTH OF THE REPUBLIC OF UZBEKISTAN  
UNITED STATES AGENCY FOR INTERNATIONAL DEVELOPMENT/  
REACH PROJECT**

**MEETING TO IMPROVE THE IMMUNIZATION PROGRAM  
IN THE REPUBLIC OF UZBEKISTAN**

**TASHKENT, UZBEKISTAN**

**8-10 DECEMBER, 1992**

Tuesday 8 December 1992

09.00

1. Opening Speech - 1st Deputy Minister Iskandarov - The Chairman  
His Excellency the United States Ambassador to the Republic of Uzbekistan
- 1.2. Overview of the Meeting
- 1.3. Objectives
- 1.4. The expected outcome of the discussions
- 1.5. Timetable
- 1.6. The agenda
- 1.7. Organizational issues

09.45

2. The Program for Immunization
  - 2.1. The immunization program in Uzbekistan (Maksumov)
    - 2.1.1. Disease control objectives
    - 2.1.2. Immunization schedule
    - 2.1.3. Immunization strategy
    - 2.1.4. Immunization coverage
    - 2.1.5. Disease incidence

10.30

Discussion

11.00 - 11.15 Coffee

11.15

- 2.2. The Global Immunization Program (Galazka)
  - 2.2.1 Disease control objectives
  - 2.2.2 Immunization schedule
  - 2.2.3. Immunization strategy

- 2.2.4. Immunization coverage
- 2.2.5. Disease incidence

12.00

Discussion

13.00 - 14.00 LUNCH

14.00

- 2.3 Immunization Program in the USA
  - 2.3.1. Disease control objectives
  - 2.3.2. Immunization schedule
  - 2.3.3. Immunization strategy
  - 2.3.4. Immunization coverage
  - 2.3.5. Disease incidence

14.45

Discussion

15.00

- 2.4. Comments on the Immunization Program in the UK (Cutts)

15.30 - 15.45 Coffee

15.45

Discussion

16.15

- 2.5. Obstacles to high immunization coverage and the control of vaccine preventable diseases in the Republic of Uzbekistan

17.00 Close of the day's session

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Wednesday 9 December 1992

09.00

- 3. Policy on Immunization Schedule (Vaccination and Revaccination)
  - 3.1. International perspective (Galazka)
  - 3.2. USA perspective (Peter)
  - 3.3. Immunization schedule in Uzbekistan (Mukhamedjanov)
- Discussion

11.00 Coffee

- 4. Policy on Contra-indications
  - 4.1. International perspective (Galazka)
  - 4.2. USA perspective (Peter)
  - 4.3. Obstacles, difficulties and perspectives to solve the problem of contra-indications in the Republic of Uzbekistan (Makhmudova)  
Discussion

13.00 - 14.00 LUNCH

14.00

- 5. Evidence of Safety of Simultaneous Immunization (Peter)  
Discussion

15.00

- 6. Poliomyelitis
  - 6.1. Global Polio eradication strategies
  - 6.2. Polio eradication strategy in Uzbekistan (Maximov)  
Discussion

17.00 Close of the day's session

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Thursday 10 December 1992

09.00

- 7. Diphtheria
  - 7.1. Diphtheria outbreak Investigation and recommendations (Galazka)
  - 7.2. Diphtheria control in Uzbekistan (Yuldashev)  
Discussion

10.00

- 8. Measles
  - 8.1. Global measles control strategies (Cutts)
  - 8.2. Measles control in Uzbekistan (Shavahabov)  
Discussion

11.00 - 11.20 Coffee

11.20

- 9. Assuring Vaccine Quality
- 9.1. Vaccine stability (Galazka)
- 9.2. Freezing and thawing of live viral vaccines (Galazka)
- 9.3. Regulating mechanisms (Galazka)
- 9.4. Field methods (Steinglass)  
Discussion

13.00 - 14.00 LUNCH

14.00

- 10. Measuring and Validating reported Immunization Coverage
- 10.1. International perspective (Cutts)
- 10.2. Republic of Uzbekistan perspective (Sharipov)  
Discussion

15.00

- 11. Setting Immunization Policy
- 11.1. Remarks on the present policies in Uzbekistan (Steinglass)  
Discussion

16.00

- 12. Discussion - The role of the International Community

16.30

Closing · (Steinglass)  
(Chairman)

**Annex 6**

**MINISTRY OF HEALTH OF THE REPUBLIC OF KYRGYZSTAN  
UNITED STATES AGENCY FOR INTERNATIONAL DEVELOPMENT/  
REACH PROJECT**

**MEETING ON CHILD IMMUNIZATION POLICIES,  
PRACTICES, AND POLICY-SETTING**

**BISHKEK, KYRGYZSTAN**

**December 15-16, 1992**

**15 DECEMBER**

9:00	I.	Opening and Welcome	Shapiro (1st Deputy Minister of Public Health)
9:15		Participant Introductions	Shapiro (Chair)
9:20		Overview of the Meeting Objectives Anticipated Outcomes Process Agenda Administrative Announcements	Shapiro (Chair) and Steinglass
9:25	II.	Background Information	Shapiro (Chair)
9:30		Immunization Program in Kyrgyzstan disease control objectives immunization schedule immunization strategies immunization coverage disease incidence	Aminova
9:50		The Global Immunization Program disease control objectives immunization schedule immunization strategies immunization coverage disease incidence	Galazka
10:10		Immunization Program in the USA disease control objectives immunization schedule immunization strategies	Peter

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immunization coverage  
disease incidence

10:30	Comments on the Immunization Program in Great Britain	Cutts
10:45 BREAK		
11:05	Obstacles to High Immunization Coverage and to Control of Vaccine-Preventable Diseases in Kyrgyzstan	Rozhkova
11:25	III. Special Technical Topics  Immunization Schedule (Primary and Booster) Kyrgyzstan Perspective USA Perspective International Perspective	Shapiro (Chair) and Galazka Shapiro (Chair) Kushbakeeva Peter Galazka
12:20 LUNCH		
1:20	Policies on Contraindications Kyrgyzstan Perspective USA Perspective International Perspective	Shapiro (Chair) Kudayarov Peter Galazka
2:00	Evidence of Safety of Simultaneous Immunization of Live Viral Vaccines	Shapiro (Chair) Peter
2:30	Polio Eradication Strategies Kyrgyzstan Activities International Strategies	Shapiro (Chair) Ankudinova Galazka
2:55 BREAK		
3:15	Measles Control Strategies Kyrgyzstan Perspective International Perspective	Shapiro (Chair) Omuraliev Cutts
3:30	Diphtheria Control Strategies Kyrgyzstan Activities Recommendations from an Investigation	Shapiro (Chair) Kudryakova Galazka
3:45	Principles of Surveillance for Disease Control	Shapiro (Chair) Deshevoi Bennett

**16 DECEMBER**

9:00	Ensuring Vaccine Quality	Shapiro (Chair)
9:05	Vaccine Stability	Galazka
	Freezing/Thawing of Live Viral Vaccines	Galazka
	Regulatory Mechanisms	Galazka
	Field Methods	Steinglass
10:00	Measuring Immunization Coverage	Shapiro (Chair)
	International Perspective	Cutts
	Kyrgyzstan Perspective	Sagomonyan
10:40	BREAK	
11:00	IV. Policy Environment for Immunization	Shapiro (Chair)
11:00	Policy-Setting Process in Kyrgyzstan	Shapiro
11:05	Policy-Setting Process in the USA	Peter
11:25	V. Exploring Policy Options and Program Linkages	
11:45	Selection of Immunization Policy Issues to Pursue in Kyrgyzstan	Shapiro (Chair)
12:00	LUNCH	
1:00	Exchange Requests for Technical Information and Research Needs	Shapiro (Chair)
1:20	Identify Potential Partnerships and Linkages Nationally, Regionally and Internationally	Firsova
1:40	Summary of Next Steps	Shapiro (Chair)
2:00	VI. Closing	Shapiro (Chair)

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**Annex 7**

**MINISTRY OF HEALTH OF THE REPUBLIC OF KYRGYZSTAN  
UNITED STATES AGENCY FOR INTERNATIONAL DEVELOPMENT/  
REACH PROJECT**

**NATIONAL SEMINAR ON STRENGTHENING  
CHILD IMMUNIZATION PRACTICES**

**BISHKEK, KYRGYZSTAN**

**17 December 1992**

8:00	Registration	
9:00	Opening and Welcome	Kasiev (Minister of Health)
9:15	The USA Emergency Child Immunization Support Program in Kyrgyzstan	Hurwitz (USA Ambassador)
9:30	Immunization Policies in Kyrgyzstan	Shapiro (Chairman)
10:00	The Global Immunization Program	Galazka
	Immunological Basis of EPI Vaccines	Galazka
	Contraindications to Immunization: True and False	Galazka
	Adverse Reactions Following Immunization	Galazka
11:00	BREAK	
11:20	The Immunization Program in the USA	Peter
	Contraindications to Immunization in the USA	Peter
	Evidence of Safety of Simultaneous Immunization	Peter
12:00	Global Eradication of Poliomyelitis	Galazka

12:20	Measles Control Strategies	Cutts
	Problem of Nosocomial Measles Infection	Cutts
1:00	LUNCH	
2:00	Potential of Epidemiological Surveillance in Support of Disease Control	Deshevoi Bennett
2:30	Diphtheria Control: Recommendations from an Investigation	Galazka
	Ensuring Vaccine Quality	Galazka
3:00	Standards for Pediatric Immunization Practice in the USA	Peter
3:15	Validation of Reported Immunization Coverage by Routine and Survey Methods	Cutts
3:45	Developing a Plan for a National Immunization Program	Steinglass
	Methods of Social Mobilization for Immunization	Steinglass
4:30	Suggestions for Strengthening Immunization Services in Kyrgyzstan	Bure
5:00	Creating a Team Approach: The Role of the Pediatrician, Epidemiologist and Immunologist	Shapiro
5:10	Closing Remarks	Shapiro