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EMERGENCY CHILDHOOD IMMUNIZATION SUPPORT PROGRAM: KYRGYZSTAN

JSI JOHN SNOW, INCORPORATED, 1616 N. FORT MYER DRIVE, ELEVENTH FLOOR, ARLINGTON, VIRGINIA 22209 USA
TEL: (703) 528-7474 • TELEX: 272896 JSIWUR • FAX: (703) 528-7480

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KYRGYZSTAN

On behalf of:

United States Agency for International Development
Office of Foreign Disaster Assistance
Bureau of Research and Development (Office of Health)

15 - 20 March 1992

Report of a Visit by

Robert Steinglass
REACH Technical Director

REACH AID contract no.: DPE-5982-Z-00-9034-00
REACH Project no.: 936-5982
REACH Activity no.: 1717-041

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ACRONYMS

A.I.D.	Agency for International Development
ARI	Acute Respiratory Infections
BCG	Bacillus, Calmette, and Guerin
CIS	Commonwealth of Independent States
CDC	Centers for Disease Control
DPT	Diphtheria, Pertussis, Tetanus
EPI	Expanded Program on Immunization
FAP	Feldsher Obstetrician Post
MOH	Ministry of Health
MMR	measles-mumps-rubella
NIS	Newly Independent States
OFDA	Office of Foreign Disaster Assistance
OPV	Oral Polio Vaccine
SES	Sanitary and Epidemiology Station
TT	Tetanus Toxoid
UNICEF	United Nation Children's Fund
WHO	World Health Organization

EXECUTIVE SUMMARY

As part of the United States emergency humanitarian assistance to the Newly Independent States, funds have been allocated by the Agency for International Development for an Emergency Childhood Immunization Support Program in three targeted areas. Implementation of this support is the responsibility of two AID offices: the Office of Foreign Disaster Assistance and the Bureau of Research and Development/Office of Health. The objective of this effort is to ensure that children under the age of two years old are protected against the common vaccine-preventable diseases.

The purpose of this consultancy was to explore with the relevant authorities in Kyrgyzstan the need for and interest in an emergency immunization effort, which could begin as early as late April or May and would last through the coming winter. Support for childhood immunization services has been identified as a high priority by government officials throughout the former Soviet Union and by various teams that have carried out assessment visits in other newly independent states.

The consultant visited Ministry of Health (MOH) offices in Bishkek and Osh and health facilities in Osh and Oshskaya oblast and believes that assistance to Kyrgyzstan is needed and likely to be successful. Officials uniformly acknowledged the needs and expressed keen interest in the emergency immunization support program, shared data freely, and demonstrated a willingness to explore varied approaches for possible short-term materiel and technical assistance.

Immunization coverage levels have declined in recent years and the prospect for disease outbreaks remains high in the near future, particularly due to measles owing to vaccine stock-out beginning late 1991 at all levels. The MOH is willing to target emergency vaccine supplies through normal delivery services to children less than 2 years old. The geographic focus for the effort will be the entire country, as a more limited focus is not operationally, epidemiologically or politically feasible.

Measles vaccine and possibly polio vaccine will be immediately supplied through this initiative. A severe measles vaccine shortage has persisted since late 1991. Polio vaccine stocks are critically low. A recent arrival of measles vaccine from UNICEF will be exhausted within the next three months. Stocks of other vaccines are adequate as Kyrgyzstan has introduced an effective system of contracting with vaccine manufacturers in Russia.

The MOH is prepared for a wholesale return to a reusable syringe policy due to a 15-fold increase in the cost of disposable syringes during the past year and due also to the unacceptable prospect of reliance on donor supplies which can not be sustained. This consultant suggests an emergency procurement of disposable syringes and procurement of small steam sterilizers which use plastic sterilizable syringes.

Serious cold chain deficiencies persist at surprisingly high levels which are relatively easy and most important to remedy in order for the donated vaccine to be effectively used. The MOH has requested a TDY by a two-person team (one EPI generalist/health planner and one cold chain expert) for 3 weeks beginning in April 1992 in order to precisely determine the emergency cold chain needs, begin procurement, monitor the arrival of the first batch of vaccines, prepare a detailed emergency plan of action for immunization assistance through winter.

The United States Embassy and the MOH are pleased with the prospect of Kyrgyzstan's selection for an urgent procurement of needed vaccines, supplies and equipment. Start-up with United States-donated vaccine is expected to begin in late April. Close coordination with other donors will be essential to ensure that the needs are met in a complementary way without duplication.

A. BACKGROUND

Kyrgyzstan covers an area of approximately 199,000 square kilometers and has a population of 4.4 million. There are six oblasts in the country, the largest of which has 1.3 million persons (Oshskaya) and the smallest .2 million persons (Talaskaya).

Kyrgyzstan's population density is about 22 per square kilometer, fourth lowest in the former Soviet Union. Some 54% of the total population is Kyrgyz, 22% Russian, 13% Uzbek, and 11% other.

The economy is based primarily on sheep and goat herding, wool production, fruits, vegetables and sugar. In terms of the share of the population (1.4%) with a per capita monthly income in 1990 of greater than 300 rubles, Kyrgyzstan ranks (with Turkmenistan) third poorest in the former Soviet Union. As elsewhere in central Asia, price increases, a lack of hard currency and disruption of prior trade relations has led to shortages of drugs and vaccines. Further Government-decreed priceprice hikes and the lifting of subsidized controlled prices (e.g., for petrol) are expected as the country shifts to a market economy. The prevailing mood may well have best been forecast by W. B. Yeats at the turn of the century: "Things fall apart; the center cannot hold."

Kyrgyzstan is said to be one of the most democratic of the central Asian states of the former Soviet Union and is led by a popular reformist.

B. PLACES VISITED

Bishkek:

Ministry of Health
Republican SES

Osh:

Osh Department of Health
Osh Oblast SES
Osh Oblast polyclinic
Osh Oblast rural district hospital
Osh Oblast FAP (Feldsher obstetrician post)

C. HEALTH STATUS

The population is young and rapidly increasing, having registered an 80% increase in total population from 1959 to 1982. The crude birth rate and infant mortality rates are given by the Ministry of Health as 29.1 and 29.6 per 1000 live births, respectively. The range of IMRs in the oblasts is 23 to 32 per 1000 live births (Annex 1). However, other sources give a country-wide IMR figure as high as 38.

Approximately 38% of the total population and 29% of the newborns of Kyrgyzstan are urban. (Annes 1). The capital and largest city is Bishkek with a population of 630,100 and an IMR of 30.9, higher than the national average because of the referral of high-risk pregnancies to the capital. Substantially higher IMR occurs in the rural areas relative to the urban areas within Osh, Jalal-abad, and Isyk-kul Oblasts, while the IMR is much higher in the urban than in the rural area of Talas Oblast.

Previous assessment teams which have recently visited Kyrgyzstan have indicated that the leading causes of childhood death are acute respiratory infections, diarrheal diseases and vaccine-preventable diseases.

D. VACCINATION COVERAGE

The target number of children by age group and the doses required of each vaccine are presented in Annex 2. The immunization schedule in Kyrgyzstan is the same as has been followed for many years throughout the former Soviet Union. Primary BCG is given once during the first year of life, followed by three re-vaccinations. The primary DPT series consists of three doses in the first year of life, followed by a single re-vaccination in the third year of life. DT vaccine is given twice before the age of 17 and TT is given every 10 years after that. The primary oral polio series consists of three doses during the first year of life, followed by two re-vaccinations in the second and two in the third years of life, and single re-vaccinations during the 8th and 16th years of life -- comprising a total of 9 doses per child of polio vaccine. Measles is given at 12 months and again at 6 years of age.

Immunization coverage reported by republic from the former Soviet Union to the World Health Organization is presented for 1989 (Annex 3). Out of the 12 republics, Kyrgyzstan ranked 11th in both diphtheria (61.6%) and pertussis coverage of infants (60.2%), 10th in polio coverage of infants (72.0%), and 6th in measles coverage by two years of age (90.5%). According to data provided by the State Sanitary and Epidemiology Department of the MOH, coverage in Kyrgyzstan had improved by 1991 with coverage reported as 73% for diphtheria and tetanus and 71% for pertussis (Annex 4). Polio and measles coverage had changed little with rates of 75% and 89%, respectively.

However, coverage figures provided by the Republican Sanitary and Epidemiological Station (SES) in Bishkek for 1991 for the country were at odds with the above figures (Annex 4). Their coverage figures were considerably higher (consistently 6 to 7% higher) with 78% for diphtheria, pertussis and tetanus, 81% for polio, and 94% for measles. The reason for the discrepancies could not be determined on this short visit, but may well have to do with the way the denominator of eligible children is calculated.

Reported coverage figures provided to WHO from 1988 to 1991 indicate that polio3 coverage declined more steeply in Kyrgyzstan than in any other republic from 1988 to 1990, dropping from 84% in 1988 to 72% in 1989 to 68% in 1990. Coverage rose slightly in 1991 to 73%.

The disaggregated coverage figures by oblast reveal important differences (Annex 4). Osh and Jalal-abad oblasts and Bishkek city lag far behind in DPT and polio coverage. Otherwise, BCG and measles coverage is uniformly high in all oblasts and Bishkek. With 96% BCG coverage (range: 93-98%) access to services is certainly not a problem. BCG is given to the newborns before discharge from the hospital, and the overwhelming majority of births occur within the health facilities. Because data by dose in the multi-dose DPT and polio series are not reported to higher levels (only DPT3 and polio3 is reported as the drop-out between doses is assumed to be minimal), it is unclear between which contact the high drop-out between BCG and DPT/polio3 in Osh Oblast, Jalal-abad Oblast and Bishkek city occurs. Given the reportedly high measles coverage everywhere, the low DPT/polio3 coverage in these three areas suggests problems in the delivery system, low public confidence in DPT/polio, or an older average age of immunization such that children are not completing their DPT/polio series until their second year of life. This is an important area which needs to be explored to determine the appropriate response.

According to the data provided by the State Sanitary and Epidemiology Department, the difference in coverage between diphtheria/tetanus and pertussis (73% and 71%, respectively) is very small, which suggests that DT is not being substituted for DPT by over-cautious health workers, as in Russia where the differential between diphtheria and pertussis coverage is very wide (82.7% and 60.3%, respectively).

Reported measles coverage in 1991 did not suffer from any lack of vaccine, which will be discussed later. Because quarterly reports from the oblasts have not yet been received, the Republican SES is unaware whether or not the current shortage of measles vaccine has affected coverage in 1992.

When questioned as to why coverage was low, health officials invariably discussed the shortage of vaccine. With prodding, other causes were identified for the years before the current economic and supply crisis.

Chief among these causes were the conservatism of the pediatricians, which extends down to lower level staff, who are quick to find a contraindication to vaccination. (One feldsher in Osh Oblast informed the writer that of his target of 140 infants, he had recorded that 22 had contarindications for receiving DPT.)

E. ORGANIZATION OF THE IMMUNIZATION SERVICES

The immunization program falls within the responsibility of the Sanitary and Epidemiological Stations, of which there are some 56 at various administrative levels in the country. The SES is responsible for infectious disease control and cold chain management. The Republican SES has country-wide responsibilities for disease control and prevention. Bishkek City is administratively autonomous from the oblast within which it is located and has its own SES.

Immunizations are provided through fixed facilities, some of which vaccinate every day of the week. There are a total of 1354 health facilities of various types which offer immunization (Annex 5). The vast majority of these (1320) have refrigerators for storing vaccine. Vaccination is also provided at 3,458 pre-schools and schools.

In addition to relying on fixed facilities for routine immunization, special disease control activities have been launched in response to or in anticipation of disease outbreaks. For example, three rounds of a polio mop-up mass house-to-house campaign targeting all children aged 3 months to 7 years was conducted in Isyk-Kul Oblast during 1990-1991. A single round of a measles campaign targeting children from 8 months to 12 years of age was conducted in Osh and Jalal-abad Oblast.

All vaccines are provided free of charge from the State. No non-governmental organizations provide vaccinations. The Children's Fund is a local group which provided half (20,000 rubles) of the funds required in 1990-1991 for one of the rounds of mass polio "mop-up" vaccination.

Various soviet institutes have traditionally played an important policy and consultative role in the former republics. As the overall relationship with Moscow undergoes change, these roles are being re-defined. A Center for Prevention was created in Bishkek in 1990 merging functions of the previous Institutes of Medical Ecology and Obstetrics and Pediatrics.

F. VACCINE LOGISTICS AND COLD CHAIN

VACCINE PROCUREMENT AND ARRIVAL INTO KYRGYZSTAN

Vaccine requirements for the year are calculated at rayon and oblast levels to permit 100% of eligibles to be reached and are consolidated at the Republican SES in Bishkek for four northern oblasts and at the Osh Oblast SES for Osh and Jalal-abad Oblasts. Contracts with the manufacturers are then placed. The budgets of the individual oblasts are debited by the Republican or Osh Oblast SES according to the cost of the vaccines which are supplied. Beginning in 1993, oblasts are scheduled to contract directly with vaccine manufacturers for their requirements. The sources of the vaccine supplied to Kyrgyzstan appears in Annex 6.

Vaccines are sent by the manufacturers to the airports in Bishkek and Osh cities. There are no cold

room facilities at either airport. There are direct flights to both Bishkek and Osh from Moscow, which is the place of manufacture for measles, polio and some of the BCG vaccines. DPT and presumably the other toxoid preparations (TT and DT) come from Ufa in Russia while most of the BCG vaccine comes from Stavropol in Russia. Neither Ufa nor Stavropol is connected by direct flights to Kyrgyzstan. Much BCG also comes from a manufacturer in Moscow. It is unlikely that any of the vaccine is stored in airport cold rooms at the airports of origin or transshipment.

Cold chain and EPI staff in the Republican SES claimed that measles and polio vaccines take one day to reach them in Bishkek, while DPT can take from a few days to several weeks. BCG is said to take a few days to arrive. In the available time, it was not possible to closely examine the air waybills and other documentation to determine the precise routings and duration of shipments. These documents are not examined or kept by the EPI staff, but are instead retained at the accounts division. No reports describing the condition of the vaccine upon arrival are maintained.

Before despatching vaccines, the manufacturers are supposed to send advance notification by cable to the authorities in Bishkek and Osh. It is not unusual for the cables to arrive on the same day or even after the vaccine. The cable indicates the air waybill number, the number of boxes, nature of the goods, flight number and date and estimated time of arrival. On occasion, the airport authorities in Bishkek have had to contact the Republican SES authorities to inform them that vaccine had arrived. The SES collects the vaccine by truck from the airport.

None of the vaccines are shipped from the manufacturers in insulated containers. Ice is not included within the ordinary cardboard and wooden boxes. In the winter, the kits containing BCG and diluent and the toxoid preparations (DPT, DT, TT) are encased within a thin layer of cotton wool to guard against freezing. Some staff expressed the opinion that vaccines can withstand several days of exposure to ambient temperatures above +8 C and did not sufficiently appreciate the cumulative damage done by each and every exposure. However, most SES staff realized with resignation that vaccines were reaching them without proper safeguards from the manufacturers.

For temperature-sensitive vaccines to be exposed to ambient temperatures at such a high level of the cold chain, through which all vaccines must pass, is alarming. Furthermore, at such a high level of the cold chain, problems can be much more easily rectified than at peripheral levels. This link in the cold chain must be carefully assured in the short-term in case any vaccine is purchased from the former Soviet Union using USA funds and must be systematically improved in the long-term.

VACCINE SUPPLY AND LOGISTICS WITHIN KYRGYZSTAN

Measles is provided in 1-dose and 2-dose vials, polio in 10-dose and 25-dose vials, and DPT in 2-dose vials of 1 ml. BCG boxes contain 5 vials of vaccine and 5 vials of diluent of 2 ml. each, sufficient to give 20 doses of 0.1 ml per reconstituted vial. A reduced-strength BCG is similarly packaged and delivered in a 0.1 ml. dose, but with half the micrograms of antigen for very young and "weak" children. Opened vials of vaccine are to be discarded at the end of the day, except for polio vaccine which is to be kept in the refrigerator and used for the succeeding few days.

The vaccines tend to be bulkier in their packaged volume than vaccines used in most countries of the world. The inclusion of BCG diluent within the vaccine box greatly increases the volumetric requirements for cold storage. Whether or not sufficient storage capacity exists within the refrigerators at various levels of the cold chain is unknown.

Vaccine stock ledgers are meticulously kept by experienced staff at the Republican SES with all the information entered which would potentially allow for effective stock control. The particulars of vaccine arrival into the Republican SES from 1990 to the present and showing the date of receipt, place of manufacture, quantity supplied, date of expiry and usable months of life until expiry appear

in Annex 7.

During the 26 months reviewed by this writer in the Republican SES vaccine stock ledgers, there were 9 arrivals of measles vaccine, 10 of polio, 15 of BCG and 12 of DPT. All vaccines were from manufacturers in the former Soviet Union. However, the stock ledger did not contain any information on the donated measles vaccine in 1990 or 1991 from Belgium (said to be about 150,000 doses) and in 1991 from Pakistan (said to be about 3000 doses of vaccine which does not appear to have been thoroughly dried). Similarly, Osh Oblast received the following number of vaccine shipments from the manufacturers from 1990 to the present: 9 of measles, 8 of polio, 12 of BCG and 11 of DPT.

No Russian-manufactured measles vaccine has arrived since May 1991. The other vaccines have been received without interruption into 1992.

The usable life from arrival to expiry dates for measles vaccine averaged 7 months (range: 3 to 10 months), for polio averaged a little less than 5 months (range: 4 to 6 months), for BCG averaged 16.5 months (range: 3 to 24 months), and for DPT averaged 14.5 months (range: 12-16 months).

The very vaccines which are most sensitive to heat -- polio and measles -- and which have the shortest expiry dates do not arrive frequently enough for use before expiry at some peripheral levels of the cold chain. In the case of polio vaccine, this situation can be improved by storing the vaccine in freezers at the Republican SES and Oblast levels. Currently, polio vaccine in the Republican SES is stored in a cold room at refrigerator temperatures, under which condition it can be kept for only six months. Continuous storage at freezing temperatures would extend the usable life to 24 months from the date of manufacture. In the case of measles and polio vaccines (until freezers are found for storage), more frequent shipments from the manufacturers to Bishkek and from Bishkek to the oblasts would permit more rapid turnover of stock before expiry at each level.

With such short expiry dates on the polio vaccine, it is a nearly impossible juggling act to keep the right amount -- not too much and not too little -- in Bishkek at any given moment. The storage history of polio vaccines received during 1991 is shown in Annex 8. In one case vaccine was still in stock as late as the month of expiry ("0" month), in two cases vaccine was in stock the month before expiry ("-1" month), and in one case vaccine was in stock 2 months before expiry ("-2").

For the most part, measles and polio vaccines were not scheduled to arrive during the hottest months of the year; although with such short expiry dates for polio vaccine, this cannot be avoided. DPT vaccine did arrive during the coldest months when accidental freezing is a distinct risk.

The absolute number of vaccinations given in Osh Oblast in 1990 and 1991 appears in Annex 9. Despite the disruptions within the former Soviet Union during 1991, the number of vaccinations in 1990 and 1991 remained nearly the same. Although stocks of measles vaccine at the central cold stores in Bishkek and Osh cities dried up towards the end of 1991, vaccine must have remained at lower levels to permit a similar level of primary vaccination in both years.

The short time spent in Osh did not permit the writer to thoroughly examine the stock ledgers in detail or visit the cold storage facilities. The ledger is not maintained in as careful detail as the one in the Republican SES. Staff stated that the only shortages of vaccine were for measles (Annex 10). The Republican SES and the Osh SES supply vaccine to 4 and 2 oblasts, respectively. Oblast staff bring cold boxes to the Republican and Osh SES to collect their planned quota of vaccine. Ice is provided by the SES but the writer saw inadequate amounts in stock. Shampoo bottles were being used to make ice. Several refrigerator trucks also are used to collect vaccines. From oblasts, rayons collect their vaccine in military flasks. MOH staff requested a donation of cold boxes for the supply of vaccine from oblast to rayon. The cold boxes would be light-weight 36 hours of cold life and with a 15-20 liter volume, weighing no more than 20 kg. when full. Vaccine carriers with

a 1.5 liter capacity were requested for vaccine supply from rayons to FAPs.

At the end of the year, Osh Oblast SES pushes its remaining stock, whether or not requested, to lower levels to make room for the next quarter's supply. This may encourage a glut of vaccine at the lowest (and presumably most vulnerable) level of the cold chain which cannot be used before expiry. Osh Oblast SES stated that a schedule exists to stagger collection of vaccine. This is not the case at the Republican SES.

The writer saw no evidence that minimum stock levels have been calculated to warn of impending shortages and the need to re-order. The writer was informed that additional vaccine can be ordered from the manufacturer with as little as 2 weeks lead time.

Several of the oblasts have cold rooms and each rayon and FAP is said to have a refrigerator. The temperature in the Republican SES was 9 C but had not been recorded for three weeks. Only electric refrigerators are used. Osh Oblast SES officials stated that electricity is available 24 hours per day everywhere. Nevertheless, the writer was told that in the event of a power failure, diesel generators operate the village's electric grid, including the refrigerator. The writer is unaware of the condition of any of this equipment.

G. ANNUAL VACCINE REQUIREMENTS

The annual requirement for vaccines, which includes amounts for both primary and booster vaccinations, appears in Annex 6. The amounts of vaccine requested and received in 1991 and 1992, which appear in Annex 10, differ from the annual requirements for a variety of reasons. Vaccine balances at the end of the year are taken into consideration when ordering vaccine for the following year. Due to shut-down of BCG production at the factory in Tashkent, less BCG could be requested in 1991. The measles manufacturer in Moscow reduced Kyrgyzstan's request for 400,000 doses and supplied only 296,000 doses.

Of total vaccinations of DPT, polio and measles which were given in 1991 in Osh Oblast, the approximate proportion which were given as part of the primary series (as opposed to re-vaccinations) was as follows:

DPT	76%
polio	42%
measles	58%

The significance of these figures is that in times of scarce vaccine, a policy of concentrating on primary vaccinations directed towards the most epidemiologically-appropriate high-risk age groups will result in significant vaccine savings. For example, only 42% of the annual consumption of polio vaccine would be required to provide the complete primary series at 1991 coverage levels. The MOH has already instituted a policy of giving preference to the youngest age groups for primary vaccination.

H. VACCINES CURRENTLY IN STOCK

Annex 11 shows for DPT, measles and polio vaccines the average monthly amounts of vaccine despatched from and months' worth of stock stored within the Republican SES during 1991. The current stock position as of 1 March 1992 and months' worth of stock at 1991 consumption patterns is also shown. Ample amounts of DPT, 3.8 months' worth, were in stock on 1 March 1992. However, measles vaccine was out of stock and there was only a one month stock of polio vaccine. The vaccines currently in stock will be used before their expiry dates.

The Republican SES was expecting to receive 70,000 doses of donated measles vaccine from UNICEF, of which apparently only 40,000 doses (and 70,000 doses of diluent) arrived on the day of this writer's departure. Of the 100,000 doses of measles vaccine contracted for the first quarter from Russia, the Republican SES has been told by the manufacturer that, due to shortages in raw materials, Kyrgyzstan should expect to receive only 4000 doses in April. Several health staff expressed the opinion that Russia would look to its own needs first if there were insufficient stock.

Records at Republican and Osh SES levels do not provide a picture of the stock position at lower levels. However, staff felt that low stock levels of polio existed. The Republican SES has tried without success to find out from the manufacturer why the quarterly allotment has not yet arrived. At this writer's request, a consultant from the U.S. Centers for Disease Control on assignment in Moscow contacted the manufacturer who stated that Kyrgyzstan had no outstanding order. The situation to this writer, at least, remains unclear, although Republican SES staff seem to think the vaccine will arrive any day.

I. VACCINE PRICE

The price per dose of vaccines contracted by the Republican SES and the Osh Oblast in 1992 appears in Annex 12. The price per dose of polio vaccine in 10-dose vials has increased 50 times to 2.5 rubles since 1991 ($1 equals approximately 100 rubles.) The price per dose for one-dose vials of measles has increased 850% to nearly 3 rubles; and for 2-dose vials, the price per dose has increased 1050% to 1.89 rubles. The same fixed amount of money can buy 57% more doses if only 2-dose vials were purchased. While wastage would be somewhat higher, the purchase of 2-dose vials could be an efficient method of increasing the amount of measles vaccine.

The 1.5 million rubles which used to cover all vaccine procurement was provided from the top down. Now, with the country facing huge deficits, the oblasts are expected to locate the funds at a time when 10 million rubles are required to purchase the same amount of vaccines. Vaccines are not a separate budget line, but are included on a single line with all medicines and biologicals.

J. SYRINGES AND NEEDLES

Kyrgyzstan MOH officials estimate that 50 million disposable syringes are needed per year for the entire health system if disposables are exclusively used. By government decree, all immunizations at any age are supposed to be given with disposable syringes. If the immunization calendar is completely adhered to, a single child will eventually receive 30 immunizations by the age of 17, which includes 4 BCG, 4 DPT, 2 DT, 2 measles, 1 mumps, and 17 mantoux tests (which, although not immunizations, are also supposed to be given with a disposable syringe). The MOH calculated an annual requirement of 3.4 million syringes for the immunization program.

Disposable syringes are in short supply and rose 1800% in cost from .27 rubles apiece in 1990 to 4.87 rubles in 1991. The current price is said to be 6 rubles. MOH officials acknowledge that current budgets can cover only 5% of the required expenditures but somehow expect the oblasts to find the money. The funds must come from out of the budget for pharmaceuticals. The SES does not calculate their requirements for disposable syringes for immunization, nor do they stock them. This is the responsibility of the pharmaceutical division of the MOH.

Osh Oblast SES officials stated that no disposable syringes needed to be donated.

Health facilities rely on centralized sterilization of reusable syringes and needles for their non-immunization requirements.

At all health facilities visited, the writer observed that disposable syringes and needles used for immunization were being separated after use and soaked in a disinfectant. The used syringes/needles are then exchanged for new supplies returned at higher levels of the distribution system. The used materials are eventually recycled into manufactured products. The writer saw no needle cutters or sharps containers.

The annual requirements calculated by the writer for disposable syringes for selected primary and booster immunization to children less than and more than two years of age appears in Annex 13. Approximately 615,000 syringes are required for the age group less than two years old.

Health staff and officials unanimously expressed interest in the availability of a technology with which they were not previously familiar: portable steam sterilizers (pressure cookers), approved for use in the EPI by and available from WHO/UNICEF, which are fitted with racks and which utilize reusable syringes/needles specially constructed so as not to melt at high temperatures. MOH staff are prepared for a wholesale return in rural areas to a reusable syringe policy for EPI using this new technology. In the year-term, a donation of some disposable syringes will be welcomed and needed, but officials wish to avoid non-sustainable reliance relying upon donors.

K. INCIDENCE OF INFECTIOUS DISEASES

The reported annual incidence of vaccine-preventable diseases for the country for the period 1989 to 1991 appears in Annex 14. It was not possible within the short visit to obtain figures from earlier years. The incidence of measles in 1991 increased substantially compared to the previous years. Measles is said to peak during the autumn and winter months, although data were not presented. Some authorities have stated that the nutritional status of children could be worsened if a measles epidemic were to come later in the year.

Osh Oblast SES presented annual data from 1971 to 1991 which show that epidemics of measles occur every 3 to 4 years with the last major epidemic occurring in 1988 (Annex 15). The health staff feel that a mass round of measles vaccinations in 1990 may have averted an epidemic otherwise expected in 1991.

L. MONITORING

The method used for calculating targets varies by age group. No two persons questioned were able to explain how the targets are calculated, although everyone stated that there was a unified method known to all. Each level gets vaccination coverage figures annually from the next lower level. Monitoring of achievements against targets during the course of the year is not routinely done at any level. MOH staff expressed keen interest in the availability of software for monitoring immunization coverage.

If selected for emergency assistance from the United States, monitoring of vaccinations performed will be done by comparing the number of vaccinations given by antigen and by dose against the number of infants and children aged 12-23 months old.

M. COMMUNICATIONS

It is claimed that there is a very low drop out rate between doses in the multi-dose series (although absolute numbers of vaccinations disaggregated by dose are not available at higher levels), which would attest to the system's ability to communicate with parents about the need to return for subsequent doses. If drop-out is low, however, and if access is high as measured by high BCG coverage levels, then there is a sizeable number of children who are not coming for their first dose in the multi-dose series. Reasons for this should be explored.

However, all staff expressed confidence that their system would continue to attract clients if vaccine shortages could be remedied. Suggestions that focus group interviews or marketing techniques directed at parents or health workers would be useful to design communications materials were rejected outright. Staff claim that the necessary skills are present and that outside TA would not be needed. Staff do not share the concern that, with the break-up of the top-down approach, parents may no longer feel compelled or motivated to come for immunizations. The feeling is that parents will do what they are told to do because it is good for them.

N. EMERGENCY REQUIREMENTS

VACCINE

The only vaccines which are critically required are measles and possibly polio. All other vaccines have been in stock and no shortages are foreseen, as the MOH and oblasts have established an effective system of contracting with the manufacturers which seems to work. The situation regarding polio vaccine remains unclear, as previously discussed, since the manufacturer seems not to be complying with the requested amounts. The MOH authorities are willing to receive vaccination from any source, but are most comfortable with Russian-made vaccines, with which health staff are already familiar.

The amounts of vaccine which are required will depend on the number of doses in each vial, as the wastage will vary accordingly. Health staff are accustomed to using vials containing few doses.

Measles vaccine donated by the United States should arrive before the end of April, if possible, to coincide with the possible presence of a vaccine logistics and cold chain expert consultant. The UNICEF-supplied 40,000 doses of measles vaccine is being supplied in 10-dose vials and with a realistic 25% wastage rate will be enough to last at most only three months, if its use is limited to primary vaccinations of children aged 12 months old. If measles vaccination has ceased for several months at peripheral levels, as is likely, then there is a large backlog of unimmunized children which will quickly consume the UNICEF supplies. Vial containing 1, 2, or 5 doses are most acceptable to the MOH.

If supplied in vials containing few doses, then 130,000 doses of measles vaccine should be urgently supplied in divided shipments of 65,000 each, with five month intervals between shipments. If the vials contain 10 doses, then a total of 210,000 doses in divided shipments of 105,000 each should be sent, again with five month intervals between shipments. This should be sufficient quantity to immunize the current cohort through the winter.

The situation with polio may or not be acute, and may or not be determined at this time with sufficient confidence, as it is unclear whether the manufacturer will honor their contracts. To be on the safe side, an urgent shipment of polio vaccine should be considered. The vials should have 10 doses each, as is current practice throughout the former Soviet Union. The United States would need to donate 390,000 doses to cover one year's cohort with three primary vaccinations. Wastage is minimal with polio, as the current policy is to use opened refrigerated vials for three to five days. The 390,000 doses should be supplied in two divided shipments of 195,000 doses each with an interval of five months between arrivals. The exact date of the first arrival will need to be coordinated carefully with the manufacturer and the MOH in Bishkek so as not to overload the system, in case their outstanding order for 160,000 under the current contract is honored. So as not to undermine domestic vaccine production, the second shipment of 195,000 doses may need to be canceled if the manufacturer is able to comply with their contractual obligations. Depending on availability of USA resources for use within the selected countries and competing needs, it may be possible also to consider provision of hepatitis B vaccine in the limited areas which are already using it but which are facing shortages. Hepatitis B is stated to be a very common problem in Kyrgyzstan.

Any vaccine to be supplied should have an expiry date of at least 12 months from the date of manufacture to the date of expiry. This must be stipulated at the time of ordering.

Vaccines to be supplied from outside the former Soviet Union must comply with WHO guidelines for the international packaging and shipping of vaccines.

All vaccines should be consigned to the Ministry of Health, which is located on Moscovskaya Street 148, Bishkek 720405, Kyrgyzstan. The telephone number is (331) 268848, or any of the phone numbers listed in Annex 16 for Drs. Shapiro, Firsova, and Genis. The fax number is (331) 228424. Foreign humanitarian assistance is said to be exempt from import duty.

The consignee for any air shipment to Osh, which is approximately 10 hours from Bishkek by road, is the Department of Health in Osh.

The recent experience offloading food and medical supplies sent on Department of Defense airplanes indicates that if such aircraft will be used, they will need to carry their own cargo handling equipment.

SYRINGES AND STERILIZATION EQUIPMENT

A quantity of disposable syringes may be expected shortly from UNICEF. If so, the number of syringes supplied by the USA and listed below could be reduced.

- disposable non-reusable syringes (SOLOSHOT acceptable) 1,000,000

These are suitable for intramuscular and subcutaneous injections.

- portable steam sterilizers with kits

A limited number could be provided at first and introduced by a logistics and cold chain expert consultant. The final number to be provided and their exact specifications will be determined at that time. However, it is likely that as many as 1000 sterilizers with re-usable syringes will be needed, since there are 930 FAPs (feldsher-obstetrician posts). Instructional material which accompanies a slide set suitable for training will be translated into Russian. Hard water filters will need to be provided.

COLD CHAIN SUPPLIES AND EQUIPMENT

A detailed list of cold chain requirements in order to preserve the donated vaccines is being assembled and will include icepacks, thermometers, vaccine carriers, cold boxes, and a limited number of refrigerators and freezers.

EMERGENCY TECHNICAL ASSISTANCE

A one-person logistics and cold chain expert is urgently required to collaborate with the nationals in identifying exact requirements for each link in the cold chain to allow the emergency supplies of vaccine to be used safely and effectively. He/she will also assure that any vaccines and syringes will be received, appropriately stored and handled expeditiously.

The expert will develop a detailed workplan for the emergency response and obtain signatures on any waiver of liability or exchange of letters which may be required. He/she will identify TA requirements for the emergency response. The person will also conduct training on those new and unfamiliar cold chain items which may arrive in the country as part of the emergency effort. A

vaccine logistics and cold chain training course, which has never been held within the country, could be conducted. This would take advantage of the new-found interest which will have been stimulated by a mid-level managers course in Moscow in early April, to which a representative from Kyrgyzstan has been invited.

ANNEX 1

Demographic Data for Kyrgyzstan, 1991

	population			newborns			
blast	total	urban	rural	total	urban	rural	IMR
'alal-abad	782,200	230,900	551,300	27811	6706	21105	28.2 *U22.5 *R30.0
)sh	1,322,500	363,300	959,200	47695	9259	38436	32.1 U29.4 R38.8
Chuisky	791,200	226,000	565,200	17305	4796	12509	23.0 U24.2 R22.5
Talas	198,600	32,800	165,800	6639	913	5726	32.0 U47.0 R29.6
Naryn	259,900	54,500	205,400	8288	?	?	31.2 U30.0 R31.2
Issyk-kul	426,400	139,000	287,400	11982	3522	8460	28.6 U21.8 R31.5
Bishkek city	631,300	631,300	n.a.	11186	11186	0	30.9
Kyrgyzstan	4,422,200	1,684,300	2,737,900	130906	38154	92752	29.6 U26.9 R30.6

* U=urban R=rural

Source: Ministry of Health, Kyrgyzstan

ANNEX 2

1991 Immunization Targets and Doses Required, Kyrgyzstan

		doses required of each vaccine:						
newborns	130,906	BCG	DPT	DT	OPV	Meas	TT	Mumps
target by 1 year	117,602	1	3	-	3	-		
target by 2 years	118,680	-			2	1		1
target by 3 years	118,594		1		2			
target by 7 years	107,692	1				1		
target by 8 years	105,739				1			
target by 10 years	96,997	1		1				
target by 14 years	88,169							
target by 16 years	78,596			1	1		1	
target by 17 years	76,354	1						
	TOTAL	4	4	2	9	2	1	1

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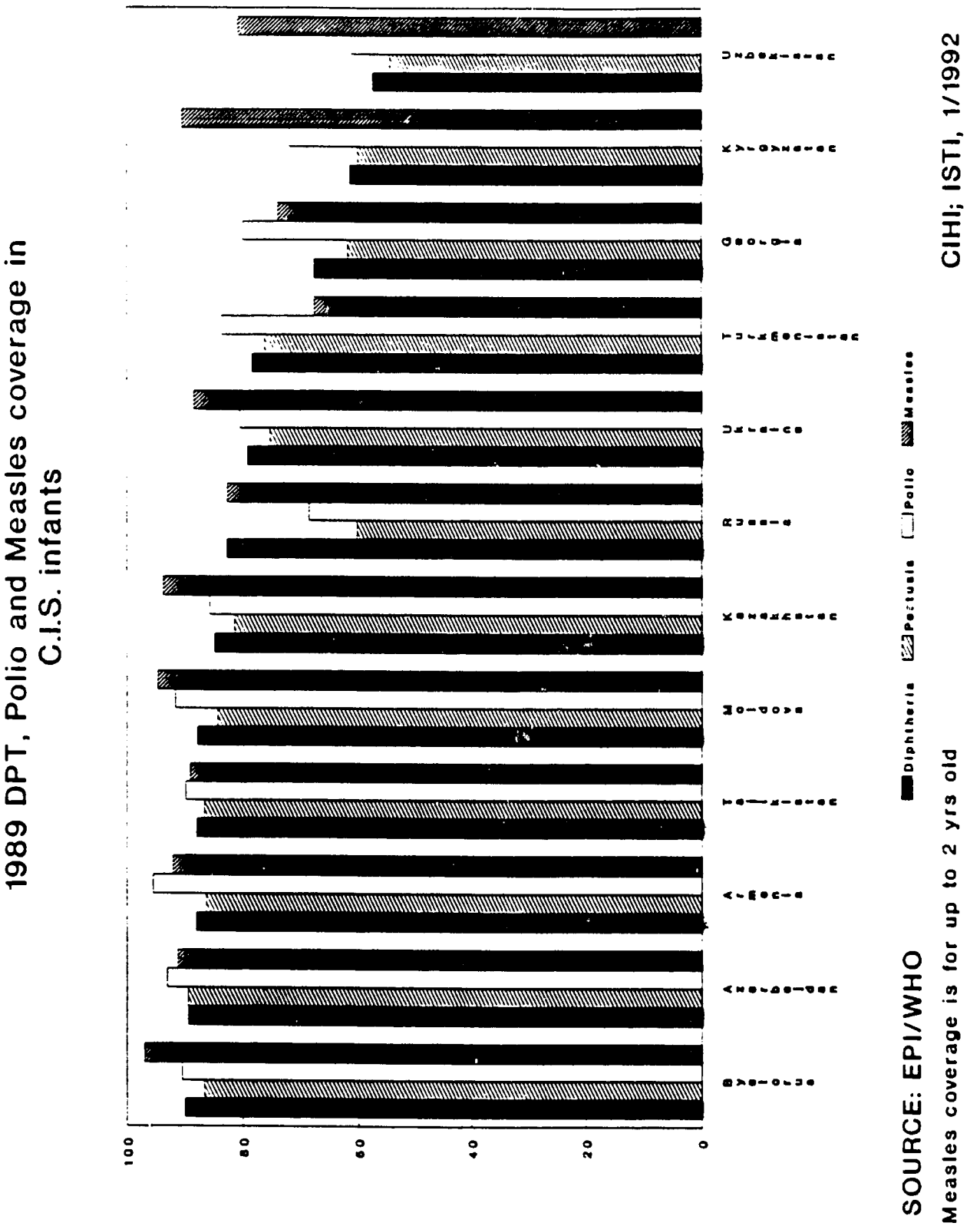
ANNEX 3


1989 DPT, Polio and Measles coverage in C.I.S. infants
100
80
60
40
20
0
Diphtheria
Pertussis
Polio
Measles
SOURCE: EPI/WHO
Measles coverage is for up to 2 yrs old
CIHI; ISTI, 1/1992

ANNEX 4

Immunization Coverage by Oblast and Bishkek City, 1991

oblast/ city	newborns	target*	% of infants immunized with: BCG	DPT3	Polio3	Measles**
Chuisky		15465	94	93	99	98
Talas		5677	93	92	94	97
Naryn		8007	98	95	95	97
Isyk-kul		10714	98	95	95	98
Osh		43014	96	75	78	94
Jalal-abad		24490	96	58	59	89
Bishkek		9763	97	78	87	91
Kyrgyzstan		117602	96	78	81	94

diphtheria 72.9%* polio 75.4%*** pertussis 70.9%*****
measles 89.1%* tetanus 72.9%*****

* actual targets vary by antigen

** measles vaccine is given beginning at 12 months of age

*** figures given by State Sanitary and Epidemiology Department, Ministry of Health

Source: Republican Sanitary and Epidemiological Station, Bishkek

ANNEX 5

Health Facilities and Other Sites in Kyrgyzstan which Offer Vaccinations

type of facility	number
feldsher-obstetrician post ("FAP")	930
rural outpatient clinic ("SUB")	191
rural district hospital ("SVA")	142
central rayon hospital ("CRB")	56
child polyclinic (urban)	35
pre-schools	1691
schools	1767

Source: State Sanitary and Epidemiology Department, Ministry of Health, Kyrgyzstan

ANNEX 6

Sources of Vaccine Supplied to Kyrgyzstan and Annual Requirements, 1991

vaccine	supplier	annual requirement
BCG	Scientific Research Institute, Epidemiology Moscow	1,000,000 doses*
	Scientific Industrial Corporation, "Allergen" Stavropol, Russia	
DPT	Scientific Research Institute Ufa, Russia	760,000 doses**
DT	Enterprise "Biomed" Moscow	300,000 doses**
Polio	Scientific Research Institute, of Poliomyelitis and Viral Encephalitis	1,520,000 doses
Measles	Scientific Research Institute, of Poliomyelitis and Viral Encephalitis	400,000 doses

* which equals 10,000 kits, each with 5 ampoules of BCG vaccine and 5 ampoules of diluent (2 ml. per ampoule of diluent)

** which equals 380 liters of DPT and 150 liters of DT vaccine

Source: State Sanitary and Epidemiology Department, Ministry of Health, Kyrgyzstan Particulars of Vaccine Arrivals into Republican Bishkek SES, 1990-1992

ANNEX 7

Particulars of Vaccine Arrivals into Republican Bishkek SES, 1990-1992

vaccine	date of receipt	source	quantity	date of expiry	usable life (mos.)
			(in doses)		
Measles (1-dose vials)	1/90	moscow	42,500	7/90,9/90	6 and 8
	3/90	moscow	30,000	6/90,8/90	3 and 5
	3/90	moscow	25,000	11/90	8
	4/90	moscow	50,000	11/90	7
	9/90	moscow	20,000	5/91	8
	1/91	moscow	45,000	9/91	8
	3/91	moscow	25,000	1/92	10
	4/91	moscow	10,000	2/92	10
	5/91	moscow	2,500	9/91	4
			(in doses)		
Measles (2-dose vials)	4/90	moscow	25,000	11/90	7
	1/91	moscow	25,000	10/91	9
	3/91	moscow	4,000	10/91	7
	4/91	moscow	64,000	10/91	6
			(in doses)		
polio (10-dose vials)	1/90	moscow	98,000	12/89 + 6*	5
	4/90	moscow	179,000	4/90 + 6	6
	5/90	moscow	200,000	5/90 + 6	6
	7/90	moscow	94,000	6/90 + 6	5
	10/90	moscow	94,000	8/90 + 6	4
	1/91	moscow	144,000	12/90 + 6	5
	4/91	moscow	201,000	4/91 + 6	6
	8/91	moscow	120,000	8/91 + 6	6
	10/91	moscow	115,000	9/91 + 6	5
	1/92	moscow	35,000	12/91 + 6	5
			(in doses)		
polio (25-dose vials)	1/90	moscow	42,000	12/89 + 6	5
	4/90	moscow	75,000	4/90 + 6	6
	7/90	moscow	39,000	6/90 + 6	5
	10/90	moscow	39,000	9/90 + 6	5
	1/91	moscow	48,000	1/91 + 6	6
	4/91	moscow	67,000	4/91 + 6	6
	8/91	moscow	35,000	7/91 + 6	5
	10/91	moscow	40,000	9/91 + 6	5
	1/92	moscow	30,000	1/92 + 6	6

			(in kits)		
BCG - full strength (100 doses per kit)	6/90	stavropol	1,500	4/92	22
	9/90	stavropol	500	8/92	23
	11/90	stavropol	610	2/91	3
	12/90	tashkent	1,500	2/92	14
	1/91	stavropol	1,000	10/93	21
	3/91	moscow	1,000	1/93	22
	4/91	moscow	2,500	3/93	23
	5/91	stavropol	3,000	4/93	23
	6/91	stavropol	2,000	5/93,6/93	23 and 24
	10/91	stavropol	5,500	9/93	23
	1/92	stavropol	5,000	12/93	23
	2/92	stavropol	4,000	1/94	23
			(in kits)		
BCG - reduced strength (100 doses per kit)	2/90	not recorded	360	5/90	3
	7/90	moscow	1,500	5/91	10
	11/90	moscow	4,500	8/91	9
	4/91	moscow	2,000	8/91,1/92 and 3/92	4,9 and 11
			(in liters)		
DPT (2-dose vials)	1/90	ufa	30	3/91	14
	4/90	ufa	20	6/91,7/91	14, 15
	5/90	ufa	50	8/91	15
	7/90	ufa	30	10/91,11/91	15, 16
	9/90	ufa	20	12/91,1/92	15, 16
	10/90	ufa	20	1/92	15
	1/91	ufa	30	1/92,3/92	12, 14
	2/91	ufa	20	4/92	14
	2/91	ufa	2.5	5/92	15
	8/91	ufa	22.5	11/92	15
	10/91	ufa	22.5	1/93	15
	2/92	ufa	20	4/93	14

* polio vaccine box has a date of manufacture after which it can be stored for only 6 months at refrigerator temperatures

Source: based on information provided by the Republican Sanitary and Epidemiological Station, Bishkek

ANNEX 8

Storage History of Polio Vaccines Received by Republican SES during 1991

ate of receipt	doses	expiry date*	last date despatched from Bishkek SES
anuary 1991	144,000	12/90 + 6 = 5/91	May 1991
pril 1991	201,000	4/91 + 6 = 10/91	September 1991
ugust 1991	120,000	8/91 + 6 = 2/92	December 1991
ctober 1991	115,000	9/91 + 6 = 3/92	February 1992

Russian polio vaccine has a date of manufacture printed on the box and can be sed for six months after that date if stored at refrigerator temperatures.

ource: based on data provided by the Republican Sanitary and Epidemiological tation, Bishkek.

ANNEX 9

Number of Vaccinations Given in Osh Oblast, 1990-1991

vaccine	1990	1991
BCG (1 dose)	46018	46201
DPT (3rd dose of primary series)	44993	43904
DPT re-vaccination (1 dose)	41666	42057
Polio (3rd dose of primary series)	44973	44527
Polio re-vaccination (2nd dose, 2nd year of life)	49049	46733
Polio re-vaccination (2nd dose, 3rd year of life)	43105	45095
Measles (1 dose)	45931	42546
Measles re-vaccination (1 dose)	?	30592

Source: Sanitary and Epidemiological Station, Osh Oblast

ANNEX 10

Type of Vaccine Requested and Received, 1991-1992 in Kyrgyzstan

Vaccine	unit	doses per unit	Requested in 1991	Received in 1991	Requested in 1992	Received as of 1 March 1992
DPT	liters	2000	380	312.6	360	65.0
DT	liters	2000	150	161.0	130	35.0
TT	liters	2000	50	54.1	50	8.0
BCG-full	kits	100	50000	28500	50000	14000
BCG-reduced	kits	100	14000	12800	14000	0
measles	doses	-	400000	296000	330000	0
mumps	doses	-	200000	104000	200000	0
polio	doses	-	1520000	1570000	1320000	65000

Source: Republican Sanitary and Epidemiological Station, Bishkek

ANNEX 11

Average Monthly Vaccine Despatched and Months' Worth of Stock Stored at Republican SES, 1991 and Current Stock Position as of 1 March 1992

vaccine	average monthly (1991) quantity despatched	months' worth of vaccine stocked at start of month: max. stock	min. stock	current stock (1 March)	stock will last
polio	67,300 doses	4.6 mos.	1.0 mos.	4000 doses	2 days
DPT*	20,500 doses	10.0 mos.	3.8 mos.	92,000 doses	4.5 mos.
measles	17,700 doses**	3.3 mos.	0 mos.	0 doses	0 mos.

* DPT is recorded in liters, with one liter equal to 2000 doses

** based on 1990 figures

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Source: based on data provided by the Republican Sanitary and Epidemiological Station, Bishkek

24'

ANNEX 12

Price (Rubles) per Dose of Vaccines Contracted for 1992, Kyrgyzstan

vaccine	1992 price per dose* (Bishkek)	1991 price per dose** (Osh Oblast)	1992 price per dose** (Osh Oblast)
measles	2.5	1-dose vial: .35 2-dose vial: .18	1-dose vial: 2.96 2-dose vial: 1.89
DPT	.41	.25	Moscow: .61 Ufa: .41
DT	.39		
BCG	2.2		
Polio	2.5	.048	10-dose vial: 2.5 25-dose vial: 2.0

Source: * State Sanitary and Epidemiology Department, Ministry of Health, Kyrgyzstan

** Sanitary and Epidemiological Station, Oshskaya Oblast

ANNEX 13

Annual Requirements* for Disposable Syringes for Immunization in Kyrgyzstan

vaccine	for primary vaccination at ages 0-23 months	for booster vaccination above 2 years of age	calculated by Sanitary and Epidemiology Department, MOH for immunization program
DPT	275,000**	107,000	not provided
measles	112,000	82,000	"
BCG	125,000	111,000	"
DT	--	159,000	"
mumps	103,000	--	"
total*	615,000	459,000	3,400,000

* N.B. Based on 1991 coverage levels. In addition to the above needs, disposable syringes are required to be used for any immunization, which includes:

- yearly mantoux testing up to age 17
- TT every ten years
- as necessary against typhoid, tularemia, brucellosis, etc.

** assumes negligible drop-out from DPT 1 to DPT 3 (as figures for DPT1 and DPT3 are not reported to higher levels)

Source: coverage data provided by the Republican Sanitary and Epidemiological Station, Bishkek

ANNEX 14

Annual Incidence of Vaccine-Preventable Diseases, Kyrgyzstan, 1989-1991

	incidence (per 100,000)		
disease	1989	1990	1991
diphtheria	0.08	0.1	0.2
pertussis	4.1	5.4	4.3
neonatal tetanus	0	0	0
tuberculosis	49.7	53.0	56.1
measles	1.3	13.3	19.5
poliomyelitis	0.1	0.02	0.09
hepatitis (all forms)	711.3	638.0	511.9
hepatitis A	653.2	597.4	475.1
hepatitis B	58.1	40.5	36.7
hepatitis C	0	0	0
hepatitis D	0	0	0
mumps	41.6	33.3	48.4
rubella	68.5	45.8	47.7
meningococcal meningitis	5.7	4.9	4.9

Source: State Sanitary and Epidemiological Department, Ministry of Health, Kyrgyzstan

ANNEX 15

Measles Incidence per 100,000 Population, Osh Oblast, 1971-1991

Year	incidence
1971	68.60
1972	306.79
1973	209.71
1974	44.70
1975	3.86
1976	58.56
1977	184.85
1978	0.52
1979	1.33
1980	153.13
1981	368.56
1982	42.58
1983	59.15
1984	233.70
1985	26.77
1986	4.32
1987	66.69
1988	314.28
1989	39.24
1990	0.94
1991	30.34

Source: Sanitary and Epidemiological Station, Osh Oblast

ANNEX 16

Commodities Requested by Ministry of Health, Kyrgyzstan

ITEM	QUANTITY
COLD CHAIN	
cold boxes with thermometers	300
vaccine carriers with thermometers	2000
thermometers	10000
refrigerator trucks	7
refrigerators (heavy-duty)	50
refrigerators (domestic), including some ice-lining refrigerators	150
PATHtimers	1000
steam sterilizers fitted with racks	15000
VACCINE	
measles vaccine	180,000 doses
hepatitis B vaccine	450,000 doses
SYRINGES	
disposable 2.0 and 5.0 ml.	2 million
plastic reusable (steam sterilizable)	0.5 million

Source: State Sanitary and Epidemiological Department, Ministry of Health, Kyrgyzstan

Persons Contacted

SHAPIRO, Boris Moiseevich	First Deputy Minister of Public Health Chief State Sanitary Doctor People's Deputy Member of the Presidium Bishkek City Council (tel: 265650)
FIRSOVA, Svetlana N.	Chief, State Sanitary and Epidemiological Department (tel: 227832; 265650; 268993; 265552; fax: (331)-228424; cable: 245274; telex: 245274)
GENIS, Vladimir Israelevitch	Deputy Chief, State Sanitary and Epidemiological Department (tel: 268993)
ROSHKOVA, Liudmila Vasilevna	EPI Specialist, State Sanitary and Epidemiological Department
OMURALIEV, Kurmanbek T.	Head Physician, Republican SES, Bishkek (tel: 262214; 266166)
MASYMBAYEVA, Elmira	Immunologist, Republican SES, Bishkek (tel: 265934)
BAYITOV, Immatkul	Epidemiologist, Republican SES, Bishkek (tel: 227826)
BELYAKOVA, Liudmila F.	Storekeeper, Republican SES, Bishkek (tel: 261445)
MITIN, Anatoly	Storekeeper Assistant, Republican SES, Bishkek
ISABAYEV, A. I.	Deputy Chairman Osh Oblast Council
RYSALIYEV, Damir J.	Chief, Health Department Osh Oblast (tel: 23504; 23122)
BAYAJIYEV, Asylbek B.	Chief, SES Osh Oblast
NURIYEV, Vasil S.	Chief Immunologist, SES Osh Oblast
SATGAREYEVA, Rosa G.	Medical Director Central Polyclinic, Osh
TURABAYEVA, M.	Obstetrician

	FAP, Osh Oblast
BERDIYEV, E.	Feldsher, FAP, Osh Oblast
MARASILOVA, T.	Nurse FAP, Osh Oblast
Robert Baldwin	U.S. Centers for Disease Control, Atlanta, Georgia
Roscius Newell Doan	Project Hope, Moscow
Ralph Bresler	Counsellor of Embassy of the United States of America, Kyrgyzstan (tel: 222777)
Sylvia Woodby	Embassy of the United States of America (tel: 222777)
Jennifer Scotti	Embassy of the United States of America (tel: 222777)