PD-ABF-798
82169

REACH

RESOURCES FOR · CHILD HEALTH

EMERGENCY CHILDHOOD IMMUNIZATION SUPPORT PROGRAM: TAJIKISTAN

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

EMERGENCY CHILDHOOD IMMUNIZATION SUPPORT PROGRAM:

TAJIKISTAN

On behalf of:

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

16 - 19 March 1992

Report of a Visit by

David Bassett
Deputy Director, TSD/IHPO
Centers for Disease Control

TABLE OF CONTENTS

I. BACKGROUND 1

II. ASSESSMENT FINDINGS 1
- A. Childhood Immunization Program in Tajikistan. 1
- B. Vaccine Availability. 2
- C. Vaccination Coverage 3
- D. The Cold Chain 4
- E. Syringes and Needles 5
- F. Vaccination Program Workers 6
- G. Communications 7

III. CONCLUSIONS 7

ACRONYMS

A.I.D.	Agency for International Development
ARI	Acute Respiratory Infections
BCG	Bacillus, Calmette, and Guerin
CIS	Commonwealth of Independent States
DPT	Diphtheria, Pertussis, Tetanus
EPI	Expanded Program on Immunization
FAP	Feldsher Obstetrician Post
MOH	Ministry of Health
NATO	North Atlantic Treaty Organization
OPV	Oral Polio Vaccine
SES	Sanitary and Epidemiology Station
TT	Tetanus Toxoid
UNICEF	United Nation Children's Fund
WHO	World Health Organization

I. BACKGROUND

From March 13 to 19, 1992, the writer visited the Republic of Tajikistan as part of the Agency for International Development's effort to assess Republic needs for its childhood immunization activities. Information available prior to arrival in Tajikistan indicated that the Republic had achieved high vaccination coverage of its childhood population, but that coverage levels are now falling, due to interruptions in vaccine supplies related to the break-up of the Soviet Union.

Tajikistan is a country of 143,000 square kilometers with a population estimated at close to six million. Its capital is Dushanbe, which has a population of 600,000. The crude birth rate is 38/1000 (1991), and the infant mortality rate is 40/1000 (1991). Ethnic composition of Tajikistan is 62% Tajik, 24% Uzbek, 8% Russian, with small numbers of other minorities.

Tajikistan is the most rural of the central Asian republics of the CIS, with about 60% of the population living in rural areas. Tajikistan is also the republic with the lowest standard of living. It is a mostly mountainous country, with only 7% of its land arable.

Tajikistan exports cotton, fruits, vegetables and silk. It imports consumer goods, clothing, textiles, and food. The industrial base in Tajikistan is small.

II. ASSESSMENT FINDINGS

Meetings were held with Ministry of Health Officials responsible for childhood immunizations. During these meetings an attempt was made to assess the overall effectiveness of Tajikistan's childhood immunization program. Information on the availability of vaccines and syringes/needles and an examination of the effectiveness of vaccine storage and transportation procedures (i.e., the cold chain) at different levels of health facilities were used to make this assessment. Ministry officials were also asked if they would be receptive to additional consultants visiting Tajikistan to assist with vaccination planning and logistics in the event that the Republic is selected for AID assistance.

A. Childhood Immunization Program in Tajikistan.

1. Organization. For administrative purposes, the Republic is divided into six administrative regions. These are Dushanbe City, 13 districts which are under the control of Dushanbe City (considered as a separate region), and the four oblasts of Leninabad, Kugan Tubee, Kulab and Pamir (see annex 1 for a schematic representing the geographical location of these regions).

   In each of these six administrative regions, immunizations are offered at three different levels of health facilities. The highest level is the polyclinic, which is usually a full service hospital with a fully certified physician in charge. The second level is what was translated as a "medical attendancy." This facility is a limited service hospital (more like the health centers found in former British colonies) and is headed by a Physician's Assistant. The third and most peripheral level of facility at which immunizations are offered is the outpatient clinic (similar to dispensaries found in former British colonies) which is headed by a Medical Sister (or Brother), a category of staff less qualified than the Physician's Assistant.

In Tajikistan, there are 415 polyclinics, 1431 medical attendancies, and 442 outpatient clinics (2288 total vaccination points) well distributed among the 6 administrative regions (see Annex 2 for a breakdown of facilities by type and number for each of the administrative regions). It is likely that there are additional points at which vaccinations are offered (parastatals and collective farms, for example, usually have their own clinics). The point to be made here is that the Republic has more than an adequate number of well distributed vaccination points to enable high vaccination coverage to be achieved and maintained.

2. Vaccination Schedule. The vaccination schedule utilized by Tajikistan is apparently similar to that in use by other members of the Commonwealth of Independent States (CIS). This schedule is different from what is normally encountered in EPI programs in other countries in that it employs large numbers of revaccinations after the primary vaccinations have been administered. The BCG schedule requires 1 primary and 3 revaccinations. DPT requires the usual 3 primary vaccinations plus one booster, and then 7 DT vaccinations. Polio requires the usual 3 primary vaccinations plus 6 revaccinations. Measles calls for 1 primary vaccination and 1 revaccination. It can be readily appreciated that strict adherence to this schedule will require considerably greater quantities of vaccines, syringes/needles and vaccine storage capacity than is the case for the usual EPI vaccination schedule of 1 BCG, 3 DPT, 3 Polio and 1 Measles.

B. Vaccine Availability.

1. Prior to 1992. Annex 3 shows the quantity of vaccines received by Tajikistan during the period 1989-1991. It can be seen that vaccine shipments were received regularly, and that the quantities of vaccines received annually were quite uniform. All of these vaccine shipments came from Russia or other republics of the former Soviet Union. The cost of these vaccines (also shown in Annex 3) was minuscule if calculated at current dollar to ruble exchange rates, but this is perhaps not appropriate, given the current chaotic state of ruble convertability. Ministry officials stated that vaccine stock outages have been rare and short-lived.

2. Situation in 1992. As of March 19, only two vaccine shipments had been received by Tajikistan in 1992. One was a shipment of 14,000 doses of measles vaccine which arrived from Pakistan. No one seemed to know what had prompted this shipment to be made. The other was a shipment of 450,000 doses of polio vaccine which arrived from Russia. This was a continuation of normal vaccine supplies, but may well be the last one for some time to come. Both these shipments arrived in March.

Prior to leaving Moscow for the Central Asian Republics, it was learned that UNICEF will be providing measles vaccine to the CIS. Specific information on the number of doses of measles vaccine that will be distributed to each of the Central Asian Republics was also obtained. The amount indicated for Tajikistan is 100,000 doses. It should be mentioned that on the date of departure from Tajikistan, there had been no confirmation that this information was accurate (the UNICEF member of the NATO team, which was in Tajikistan during the time of the writer's visit, did not know of any decision to send vaccine to Tajikistan).

Discussions with Ministry of Health officials did not reveal any steps being taken to assure the uninterrupted continuation of vaccine supplies. There seemed to be an expectation that the current confusion would be sorted out before any serious difficulties develop, and that vaccine shipments would be forthcoming as per existing contractual arrangements with Moscow. There appear to be no vaccines "in the pipeline" other than what is expected from Russia as per existing contractual arrangements, and the rumored measles vaccine to come from UNICEF.

In Tajikistan, vaccines received at the Central Store (i.e. shipments originating outside the Republic) are shipped quickly to regions inside the Republic. In turn, the regions send the vaccines to the districts with minimum delay. The districts then see that the vaccines are distributed as needed to vaccination points. Visits to the Central Store confirmed that there was virtually no vaccine for the childhood immunization program remaining there. A visit to one region store and one district store indicated that these stores also were essentially out of vaccine. This information by itself does not indicate a vaccine shortage since these stores normally do not hold vaccines very long. A visit to one polyclinic, one medical attendancy clinic and one outpatient clinic revealed that in no single facility were all the childhood vaccines in stock. Each facility had one or two of the required vaccines but the vaccines in stock varied from one facility to another. In no facility was the supply of the vaccines sufficient for more than one or two months.

C. Vaccination Coverage

The vaccination coverage figures provided by the Ministry of Health (Head of the Department of Maternal and Child Health, Dr. Valentina Malceva) were BCG, 80.2%; DPT, 87.2%; Polio, 90%; and Measles, 79%. These are excellent coverage figures.

Attempts to ascertain just how these coverage figures were calculated proved to be very frustrating. Given the vaccination schedule employed in Tajikistan, it is important that the numerator and denominator be specified so that vaccination coverage figures can be interpreted. The writer was unable to determine if there have been formal vaccination coverage surveys conducted in Tajikistan, but it appears that there have not been. Information was requested on the number of vaccinations, by antigen, for the period 1989-1991, so that the administrative method (number of vaccinations given by antigen divided by the number in the target age group for that antigen) could be employed to calculate or verify coverage. The Ministry was unwilling to provide this information.

Dr. Malceva stated that the BCG coverage figure represents newborns given the initial BCG vaccination, so the coverage figure of BCG should be reasonably accurate. Other figures are more suspect, but if they are derived in a manner consistent with what was found in Turkmenistan, they are also probably accurate. In Turkmenistan annual planning estimates for the number of children to be vaccinated are based on the estimated number of children to be born annually. The number of vaccinations for each antigen that would be administered to this number of children in their first year of life is then estimated (on the basis of 1 BCG, 1 Measles, 3 DPT and 3 Polio). Vaccine requirements for the coming year are also estimated in this way. During the year, each district reports on the number of vaccinations administered to

children under 1 year of age. (DPT and Polio vaccinations are not reported until all three primary vaccinations have been administered). At the end of the year, vaccination coverage is determined administratively for each antigen by dividing the number of vaccinations administered during the year by the number of estimated newborns for the year.

Support for the contention that the vaccination coverage claimed by Tajikistan is reasonable comes from the fact that disease incidence for measles, diphtheria, pertussis and polio is low (see Annex 4), although there was a polio outbreak of 29 cases in 1990. The absence of reported high disease incidence rates can be false comfort, however, if the surveillance and reporting system is not reliable. It is not presently known how reliable Tajikistan's infectious disease reporting system is.

D. The Cold Chain

1. Organization. Vaccines received from outside the Republic are received by the vaccine central stores at the Republican Sanitary and Epidemiological Station in Dushanbe. This facility has a large cold room for storage of vaccines at 2 to 8 degrees C. It also has large freezers (of Russian manufacture) for storage of measles and polio vaccines. The cold room is in a basement which stays cool during the winter months. When the cold room was visited, the power was disconnected but the temperature inside was within the 2 to 8 degrees C range. It was explained that the cold room power is routinely disconnected during winter months, but is reconnected when the weather becomes warm in the spring.

The freezers are located above ground in a sturdy shelter with a permanent roof and concrete floor. The "walls" of the structure are of chain-link fencing which means that the freezers are exposed to ambient temperatures. This indicates a potential problem during the hot time of year when ambient temperatures reportedly reach 40-45 degrees C, but cold chain personnel stated that the freezers performed perfectly even during the hot time of year. This may need to be verified.

As stated earlier, vaccines received at the central store are dispatched to the regions as quickly as possible. Vaccines are said to never remain in the central store more than 5 weeks. Transport to Leninabad and Pamir oblasts is by plane. Transport to other oblasts and to the districts under Dushanbe control is by refrigerated truck.

Vaccines received at regional stores are likewise redistributed expeditiously. Transport from regions to districts is accomplished by using cold boxes containing ice packs. Clinics send personnel to the district stores to obtain their vaccines. They transport their vaccines in "vaccine carriers" which are in reality lightly insulated picnic bags of Russian manufacture. This equipment is only marginally suited for the purpose of keeping vaccines and is so recognized by the health officials, but it is the only kind of vaccine carrier available.

There was no opportunity to observe any vaccination clinics, but it was possible to interview persons responsible for giving vaccinations at the polyclinic, ambulatory clinic, and outpatient clinic visited. The polyclinic and

the ambulatory clinic both had refrigerators (no thermometer). The outpatient clinic had a "vaccine carrier" in which the vaccines were being kept cold. The persons interviewed seemed to know what they are supposed to do to preserve vaccines. Verification that this is indeed the case will require observations at a number of clinics when vaccines are being administered.

2. Observations: While a basic cold chain infrastructure exists, it appears that additional cold chain hardware is needed to enable the cold chain to function properly (see Annex 5 for estimate of cold chain hardware needs).

It would be very beneficial to the Tajikistan immunization program to have a qualified cold chain expert visit the Republic and do a thorough assessment of the cold chain. There are a number of fairly simple and inexpensive refinements that could be made that would transform a basic system into an excellent one, and a qualified cold chain consultant could make the necessary and appropriate recommendations.

Cold chain training materials developed by WHO could serve as useful models for cold chain training. Other cold chain accessories developed by WHO, such as time-temperature indicators and freeze watch indicators, etc., could also be useful.

It appears that the Tajikistan cold chain infrastructure is generally sound, but suspect. The suspicions may be unfounded, but should be eliminated or confirmed through investigation of whether or not the system works as well as its workers think it does. The questions that need to be addressed are the following:

- Does vaccine received at the airport arrive safely, and is it safely transported to the Central Store (it was reported that Russian vaccine manufacturers do not ship their vaccines in cold boxes)?

- Does the Central Store cold room maintain temperatures in the 2 to 8 degree C range during the hot months of the year? Do the Central Store freezers perform adequately when ambient temperatures reach 40 degrees C and above?

- Do the oblasts and districts assure that vaccines are transported to the next lower level according to safe cold chain procedures?

- Do individual clinics keep the vaccine safely up to the time of administration?

E. Syringes and Needles

The vaccination program does not have an independent source of needles and syringes. It must obtain its supply from the general MOH stores, which supply all the Ministry's needs.

The clear preference of program officials is to use disposable syringes, when they are available. When they are not available (which is frequently) the program relies on reusable glass syringes. These appear to be in adequate supply, although it appears that the number of needles available for them do

not allow for needles to be replaced with regularity. No one mentioned this as a problem, but it is a question that might be looked into further.

The supply of syringes and needles for the Ministry of Health for the years 1989-1991, is presented in Annex 6. Reusable and most disposable syringes have been received from former republics of the Soviet Union in the past. Recently disposable syringes have been received from Sweden and Korea (probably PDR), but no one could explain to the writer how these sources were tapped.

The Ministry contact for vaccine storage and vaccination supplies (Tonchin Yuri Andreyivitch) stated that the number of disposable syringes needed annually to fully meet the vaccination program's requirements is 3 million. The method for arriving at this number was not shared, but this number clearly covers primary vaccinations and revaccinations. Using an annual number of births of 200,000 and allowing for some wastage, the number of disposable syringes necessary to delivery primary vaccinations to newborns for a period of one year would be 1,050,000 (200,000 x 5 plus 5%). As is the case for vaccines, the Ministry does not appear to have made any special arrangements to assure future supplies of disposable syringes.

F. Vaccination Program Workers

Persons responsible for vaccinations. At all observed levels, the persons responsible for administering vaccines to children appear to be competent and highly motivated. They want to do a good job and believe that they are doing a good job. Actual vaccination activities were not observed, so there remain some questions that can only be answered through observations of activities, but there is no reason to believe that the work is not being performed at a high standard.

Personnel at all levels were asked about sterilization procedures for reusable syringes and needles. The answers received indicate that sterilization efforts are, if anything, overzealous.

Two notable tendencies were observed among vaccinators that could be termed sub-optimal. One is the tendency to be over-cautious about contra-indications to vaccination. Children are examined by a health worker (a pediatrician, if the clinic has one) prior to being allowed to be vaccinated. Any slight illness is accepted as a valid reason not to vaccinate. It is understood that this is a common practice throughout the former Soviet Union, but it is one that public health people should be trying to change.

The second tendency is the great abhorrence that vaccinators have for throwing vaccine away. The vaccinators know that opened vials of vaccine must be discarded at the end of the day, but are very reluctant to have to do so. This tendency causes vaccinators to allow only one vaccination day per week for vaccines that come in multi-dose vials of 10 doses or more. This causes unnecessary inconvenience to mothers who are trying to have their children vaccinated.

Persons responsible for the cold chain. The same comments about competency and motivation made for vaccination personnel apply to cold chain personnel. In every instance, workers to whom questions were directed were able to give fully satisfactory answers. Some questions remain about how the system really works during the hot time of year, but these questions can be answered only by observing vaccine handling during that time of year.

It should be mentioned that at the national vaccine store, and at the oblast and district level stores, there are persons whose only job is to be responsible for vaccine management and accounting. At the clinic level, it is the vaccinators who are also responsible for looking after the safety of vaccines.

The writer did encounter a common practice at the national, oblast and district stores of storing measles and polio vaccines in refrigerators even when they was sufficient storage space for the vaccines in freezers. If the integrity of the cold chain is going to be challenged as the vaccines move closer the end of the cold chain, it would seem sensible to try to keep the measles and polio vaccines frozen as long as possible. This is especially true if the vaccines are being shipped from the manufacturer without refrigeration.

G. Communications

Health officials at all levels of responsibility, (national, regional and district) were asked if they would be interested in having technical assistance for the effort to motivate mothers to bring their children for vaccination. In all instances there was an emphatic lack of interest in this type of assistance. The feeling seemed to be that motivating mothers to bring their children for vaccination had not been a problem in the past and that this was not the kind of assistance that was needed from outsiders. As the immunization program becomes more decentralized, this situation may change, but it seemed clear that now was not the time to insist.

III. CONCLUSIONS

A. There is clearly an immediate vaccine need for the Republic of Tajikistan. Vaccination coverage levels for newborns are already being affected by vaccine shortages.

1. Annual vaccine needs, assuming 200,000 newborns annually and a liberal 25% vaccine wastage (50% for BCG) would be:

measles	=	250,000 doses
BCG	=	300,000 doses
DPT	=	750,000 doses
Polio	=	750,000 doses

2. If assistance is offered to Tajikistan, it should not be restricted geographically. It is unlikely that it would be acceptable to the Government to have geographical restrictions on where vaccines can be used. It is also unlikely that it would be possible to assure that the use of donated vaccines is restricted to designated geographical areas.

3. Given that the Government has not yet worked out long range plans for vaccine provision, it seems reasonable to offer enough vaccine to meet the needs of newborns for one year. There may be difficulties is assuring that vaccine use is restricted to newborns, but the Government would probably be more receptive to this condition than to limiting use geographically.

4. BCG vaccine should be provided as part of the assistance. BCG vaccine is part of the Government's childhood immunization program. If the U.S. Government is going to support the program, it should support the entire schedule of vaccinations, not just part of the schedule.

5. Tajikistan has indicated its satisfaction with Russian vaccines, and its willingness to continue receiving Russian vaccines, so this is a purchase option if, in fact, there are Russian vaccines available that meet WHO standards. Tajikistan authorities have also indicated that they have no negative view of Russian DPT vaccine.

B. The cold chain in Tajikistan needs to be thoroughly assessed prior to the shipment of significant quantities of vaccines. This is especially true given that if Tajikistan is chosen for assistance, vaccination activity would take place during the hot time of year. If Tajikistan is chosen, it is recommended that a cold chain expert visit Tajikistan several weeks prior to the arrival of vaccines in order to signal what additional cold chain equipment and accessories will be required. The expert should then remain as long as it takes to assure that cold chain integrity is being, and will continue to be, maintained. It seems likely that some provision of cold chain equipment and accessories will be necessary. Some cold boxes, a larger number of vaccine carriers and such accessories as time-temperature indicators will surely be needed.

If it is determined that the cold chain is not strong enough to keep vaccines potent for more than 1-3 months, vaccines will need to be provided in several shipments (the number of shipments will depend on how good the cold chain is). If all the vaccines are shipped at once, and the cold chain can't keep them safe for more than, say, three months, some of the vaccines would have to be used on older children for revaccinations, or discarded as useless. This would compromise the effectiveness of U.S. assistance.

C. A quantity of disposable syringes should be provided that will complement the quantity of vaccines provided. If the above estimated amounts of vaccine are provided, the minimum number of disposable syringes required would be 1,050,000 (allowing 5% wastage). It is recommended that this number be increased to 1.25 million to allow for the fact that, even with tight controls, some of the syringes will undoubtedly be used by other Ministry of Health services.

D. If Tajikistan is selected for assistance, the Government needs to be contacted regarding the acceptability of a cold chain consultant. If several republics are selected for assistance, there will probably be an AID technical coordinator who will move from one republic to another during the time of direct technical assistance to assure that all is progressing according to plan. The Government should also be made aware of the possibility of a visit by such a person.

E. The Ministry of Health needs to develop a realistic plan for meeting its vaccine needs for the next 2-3 three years at least. U.S. Government emergency assistance could help them through the major part of the first year, but they need to know if their expectation that shipments of vaccine from Russian manufacturers will eventually resume is realistic. WHO and UNICEF would be valuable partners to work with the Ministry to develop a realistic longer-term plan. The U.S. Government could render a very useful service by making the appropriate contacts with WHO and UNICEF to see that this process gets underway without further delay.

ANNEX 1

Representation of the Six Regions of Tajikistan

ANNEX 2

Republic of Tajikistan

Number and Distribution of Vaccination Points

REGION	POLY CLINICS	MEDICAL ATTENDANCY CLINICS	OUTPATIENT CLINICS	TOTAL
LENINABAD	130	326	113	569
KULAB	57	241	81	379
PAMIR	28	147	32	207
KURGAN TUBEE	71	340	62	473
DUSHANBE	56	16	--	72
13 DISTRICTS UNDER DUSHANBE CONTROL	63	361	164	588
TOTAL	415	1431	442	2288

ANNEX 3

Republic of Tajikistan

Vaccines Received 1989 - 1991
(doses x 1000)

Vaccine	1989	1990	1991
BCG*	900.0	710.0	1,020.0
DPT*	1,038.0	1,260.6	1,094.0
DT*	1,300.0	2,366.5	1,205.0
Measles	227.8	661.5	107.0
OPV	2,670.0	2,390.0	2,020.0

COST PER DOSE
(In U.S. $)

	BCG	DPT	DT	Measles	POLIO
1 Ruble=US$1.25	0.26	1.00	0.175	3.25	0.625
US$1.00=100 Rubles	0.0023	0.0080	0.0014	0.026	0.005

Numbers received from MOH have been multiplied by 10 for BCG, 2 for DPT, and 5 for DT, under assumption that figures were for number of vials received instead of doses.

ANNEX 4

Republic of Tajikistan

Incidence Rates of Selected Diseases, 1989 - 1991
(cases/100,000 population)

Disease	1989	1990	1991
Diphtheria	0.35	0.21	0.09
Pertussis	15.9	17.9	8.7
Tetanus	NA	NA	NA
Tuberculosis	45.9	34.4	38.8
Measles	132.0	131.8	22.7
Polio	0.09	0.03	2.0
Hepatitis (All)	918.3	539.2	779.6
Hep A	824.1	469.4	706.2
Hep B	94.2	69.8	73.4
Hep C	NA	NA	NA
Hep E	NA	NA	NA
Other Diseases:			
Diarrhea < 2 years	672.1	710.0	686.5
Diarrhea Total	912.4	995.7	1005.4
ARI < 15 years	6716.4	5991.0	5479.6
ARI Total	10254.1	9391.1	8588.7

ANNEX 5

Republic of Tajikistan

Cold Chain Equipment Needed to Ensure that All Vaccination Transit Points Have Adequate and Appropriate Vaccine Transit and Storage Capability

(As Stated by Ministry of Health)

Vaccine Carriers	-	Maximum	300
Cold Boxes	-	Maximum	350
Refrigerators (electric, 0.5 cu. m.)	-	Maximum	150

Note: A thorough cold chain assessment needs to be performed by a qualified cold chain technician. Such a consultation could result in a revision of the above, and possibly the addition of other items.

ANNEX 6

Republic of Tajikistan

Needles and Syringes Received by MOH 1989 - 1991*

	1989	1990	1991
Reusable Syringes	526,400	544,240	592,380
Reusable Needles	717,900	400,900	415,600
Disposable Syringes	5,700,000	16,200,000	48,000,000

Needles include sub-cutaneous and intradermal, and varying sizes.