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**REACH**

RESOURCES  
FOR CHILD  
HEALTH

**EMERGENCY CHILDHOOD IMMUNIZATION  
SUPPORT PROGRAM:  
TURKMENISTAN**



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**EMERGENCY CHILDHOOD IMMUNIZATION SUPPORT PROGRAM:**

**TURKMENISTAN**

**20 - 25 March 1992**

**On behalf of:**

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

**Report of a Visit by**

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## **ACRONYMS**

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

## I. BACKGROUND

From March 20 to 26 1992, the writer visited the Republic of Turkmenistan 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 Turkmenistan 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.

Turkmenistan is a country of 488,000 square kilometers, and a population of 3.8 million. The capital of Turkmenistan is Ashkhabad, which has a population of nearly 400,000. The crude birth rate in Turkmenistan is 30/1000, and the infant mortality rate is 45/1000. Ethnic composition of the republic's population is 72% Turkmen, 10% Russian, 9% Uzbek and smaller numbers of several minorities.

Turkmenistan is largely desert. Forty percent of its work force is employed in agriculture and forestry, 20% in industry and 17% in health/science/education/art. The main agricultural crop is cotton, which is grown for export. Sheep, goats, wool and grapes are other significant agricultural products.

Turkmenistan is the least industrialized republic in the CIS, but it does produce large amounts of natural gas and is largely self-sufficient in energy. It imports large quantities of food, clothing, and consumer goods.

## 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 Turkmenistan'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 Turkmenistan to assist with vaccination planning and logistics in the event that the Republic is selected for AID assistance.

### A. Childhood Immunization Program in Turkmenistan

1. Organization. For administrative purposes, the Republic is divided into five regions plus Ashkhabad City. The five regions are Balkan, Tashauz, Ashkhabad, Chardzhou, and Mary. (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 called an ambulatory clinic, which is directed by a doctor and a doctor's assistant (this would be similar to health centers found in former British colonies). The third and most peripheral level of facility at which immunizations are offered is called the Doctor's assistant and the outpatient clinic (similar to dispensaries found in former British colonies) which is headed by Medical Sister (or Brother), a category of staff less qualified than the Physician's Assistant.

In Turkmenistan there are 22 polyclinics, 44 ambulatory clinics, and 1280 Doctor's Assistant and Midwife Clinics (1346 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.

2. Vaccination Schedule. The vaccination schedule utilized by Turkmenistan 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 (at ages 6, 11 and 16 years). There are then booster vaccinations every 5-7 years until age 30.

DPT requires the usual 3 primary vaccinations (beginning at age 3 months, with 45 day intervals before DPT2 and DPT3). The first DPT revaccination takes place at 18 months. After this, revaccinations are given with DT vaccine. The 2nd revaccination takes place at 9 years and the third at 16 years. Boosters are then given every 10 years until the age of 56.

Polio requires the usual 3 primary vaccinations plus 4 revaccinations. Because of the summer heat and a cold chain recognized to be less than adequate, polio vaccinations are offered only during the months of March, May, October and December. The first vaccination is not given until children have reached the age of 3 months. The first revaccination is given between 1 and 2 years of age. The second between 2 and 3 years. The third is given between the 6 and 7 years of age and the 4th between 14 and 15.

Measles calls for 1 primary vaccination and 1 revaccination. The first vaccination cannot be given before 12 months, and then only after completion of the first three vaccinations for DPT and Polio. The measles revaccination occurs at 6 years.

It can be readily appreciated that strict adherence to this schedule requires 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.

3. It is of note that the Turkmenistan program essentially ceases activity during the hottest months of the year in recognition of the threat that the heat poses to the vaccines (a tacit recognition of cold chain limitations). Depending on the weather, vaccination activity is stopped in May and resumes sometime in September. Individual clinics no doubt continue to use vaccines they have in stock until they are depleted, but no vaccine moves through the cold chain during this period.

## B. Vaccine Availability

1. Prior to 1992. Annex 3 shows the quantity of vaccines received by Turkmenistan, compared to estimated quantities needed, for the period 1989-1991. It can be seen that, except for measles vaccine, receipts have generally matched needs during this period. Officials were asked what they do when measles vaccine quantities are insufficient. The answer was that first priority is given to primary measles vaccinations until there are sufficient vaccine quantities to allow revaccinations. All of these vaccine shipments came from Russia or other republics of the former Soviet Union. The cost of these vaccines 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, but it would appear that the program has been operating with less than adequate amounts of measles vaccine for most of the past several years.
2. Situation in 1992. During the week of March 16, 60,000 doses of measles vaccine (with syringes) were received from UNICEF. With this shipment, it appears that Turkmenistan has enough vaccine to continue its vaccination program uninterrupted for about the next 2 months.

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 and that vaccine shipments would be forthcoming as per existing contractual arrangements with Moscow before any serious difficulties developed. There appear to be no vaccines "in the pipeline" other than what is expected from Russia as per existing contractual arrangements.

In Turkmenistan, vaccines received at the Central Store (i.e. shipments originating outside the Republic) are shipped to regions inside the Republic within a period of no more than several weeks. In turn, the regions send vaccines to the districts very quickly. 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 district store indicated that this store also was not holding any vaccine supplies. 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 and two ambulatory clinics revealed that these facilities had sufficient vaccine for approximately two months more. There seemed to be no realization that there were no current prospects for receiving additional vaccines in the country.

## C. Vaccination Coverage

In Turkmenistan vaccination coverage is determined by the administrative method, employing an estimate of the number of newborns for a given calendar year (denominator), and the number of children under one year of age (under 24 months for measles) who receive vaccinations for the specific program antigens.

Using this method, the coverage figures for 1991 are the following: BCG, 100%; DPT3, 75.4%; Polio3, 84.8%; and Measles, 57.9%. During the brief time in Turkmenistan it was not possible to obtain coverage figures for previous years, so the trends for vaccination coverage over the past several years are not known. The measles coverage figure appears particularly low and would correspond to the fact that only 73,500 doses of measles vaccine were received in 1991 (see Annex 3).

As in Tajikistan, the incidence rates for the diseases for which the program provides vaccine are low (see Annex 4). It is thought that disease reporting is reasonably accurate (private discussion with Scott McNabb, CDC Epidemiologist who visited Turmenistan concurrently with the writer). If this is true, it indicates that vaccination coverage has been high in the recent past at that only in 1991 are coverage problems beginning to be experienced.

#### 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 Ashkhabad. This facility has a large cold room for storage of vaccines at 2 to 8 degrees C. It also has several upright 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. At the time of the visit, the cold room was in operation and functioning properly. The freezers, however, had been turned off. Vaccine recently arrived from UNICEF was being kept in the cold room, rather than in a freezer.

The Republican Sanitary and Epidemiological Station (SES) cold storage facility has no cold boxes. Vaccines arriving at the airport (if they are shipped by a Russian manufacturer they are not usually shipped in a refrigerated state) therefore are not refrigerated until they arrive at the cold chain store.

This lack of cold boxes also presents serious problems for the shipment of vaccines from the central vaccine stores to the regional stores.

Shipments from the central store to the districts of Ashkhabad Region are accomplished by representatives coming from the districts to collect their vaccines. They collect these vaccines in "vaccine carriers", which are insulated picnic baskets of Russian manufacture, which are only marginally acceptable for use in vaccine storage. Shipments to the other four regions present more serious problems in that these shipments are initiated by the central store and are sent by plane. Since the central store has no cold boxes, These shipments are made without the benefit of refrigeration. Program officials were aware of the dangers inherent in this practice, but insisted that the shipments were made with a maximum period of 3 hours elapsing before the shipped vaccines could be refrigerated at the other end. Even three hours exposure to ambient temperatures is not good, but one can imagine there are opportunities for this period to exceed 3 hours.

Vaccine shipments from regional stores to the districts are accomplished through the use of the "vaccine carriers". Officials from the district SES collect vaccines directly from the vaccine store of their region. Individual clinics collect their vaccines from their district store.

Vaccines received at the central store are dispatched to the regions as quickly as possible. Vaccines received by regions are likewise kept for a minimum period of time.

There was no opportunity to observe any vaccination clinics, but it was possible to interview persons responsible for giving vaccinations at the different clinic levels. All the clinics visited had properly functioning refrigerators with thermometers. 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 is obvious that additional cold chain hardware is needed to enable the cold chain to function properly (see Annex 5). It is simply not acceptable that vaccines are received and shipped in an unrefrigerated state in a country where ambient temperatures exceed 35 degrees and even 40 and 45 degrees C for significant periods of the year.

It would be very beneficial for the Turkmenistan 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 Turkmenistan cold chain infrastructure is generally sound, but suspect. These suspicions should be eliminated or confirmed through investigation of how well the system works. 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?
- Why are measles and polio vaccines not stored in freezers at the national and the regional stores?
- Do the regions 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.

Information on syringe and needle use/needs is presented in Annex 6. Russian sources of manufacture have been relied upon exclusively. These sources are presently unreliable for disposable syringes, which means that without supplies from outside the CIS, reusable syringes will be more heavily relied upon in the short term. Based on the number of newborns projected for 1992 (130,000), a conservative estimate (number of vaccinations  $\times$  5, plus a 5% wastage rate) of the number of disposable syringes needed to fully vaccinate a one year cohort of newborns would be 682,500). 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 adequate.

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 (one program official said that malnutrition is considered a contraindication for 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 (although one clinic indicated that opened vials of polio vaccine can be kept up to two days before being discarded). 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 region 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 common practice at the national, region and district stores of storing measles and polio vaccines in refrigerators even when they was sufficient storage space for the vaccines in freezers is puzzling. 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. If the capability exists to keep the vaccines frozen, why not use it?

G. Communications

Officials at various levels of responsibility (at the National, Regional and District level) were asked about their interest in having technical assistance for motivating mothers to bring their children for vaccination (immunization-specific health education messages). In every instance there was an emphatic lack of interest in having this type of technical assistance. There seems to be a feeling that getting mothers to bring their children has not been a problem in the past and that the MOH does not need outside assistance to accomplish this task. As immunization activities become more decentralized, this may change, but it seemed clear that there was no point in pressing the issue at the present time.

### III. CONCLUSIONS

A. If some or all of the vaccine shipments presently expected by the Turkmenistan authorities do not materialize, Turkmenistan will be facing severe vaccine shortages in another 2-3 months time. An effort needs to be made to determine from the Russian vaccine manufacturers how much of the requested vaccine amounts will be provided. Given that Turkmenistan has not made alternative arrangements for vaccine, it would be an appreciated humanitarian gesture if the U.S. Government could provide enough emergency vaccines to cover projected shortfalls for a one year cohort of newborns.

1. Assuming for planning purposes that annual requirements for all the childhood vaccines will need to be provided, and also assuming 130,000 newborns and a liberal 25% vaccine wastage (50% for BCG), the quantity of vaccines that would be needed are:

measles	=	162,500 doses
BCG	=	195,000 doses
DPT	=	487,500 doses
Polio	=	487,500 doses

2. If assistance is offered to Turkmenistan 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 in assuring that vaccine use is restricted to newborns, but the Government should be more receptive to this condition than to limiting use geographically. In fact, the program on its own has been restricting the use of its meager supplies of measles vaccine to newborns.

4. If the best information is that BCG vaccine supplies will indeed be interrupted, 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. Turkmenistan 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. Turkmenistan authorities did indicate that they have had problems with Russian DPT vaccine, but upon further investigation it appeared that the problem was one of public (and pediatrician) perception related to negative media information on the pertussis component of DPT rather than actual day to day problems.
- B. The cold chain in Turkmenistan needs to be further assessed prior to the shipment of significant quantities of vaccines. This is especially true given that if Turkmenistan is chosen for assistance, vaccination activity would take place during the hot time of year (indeed, some thought might be given to avoiding immunization activities during the hottest months (June, July and August). If Turkmenistan is chosen, it is recommended that a cold chain expert visit the republic 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 cannot 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 682,500 (allowing 5% wastage). It is recommended that this number be increased to 800,000 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 Turkmenistan 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 assistance could help them through the major part of the first year, but they need to know if it is realistic to assume that shipments of vaccine from Russian manufacturers will eventually resume. WHO and UNICEF will be vauluable 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 I

## REPRESENTATION OF THE SIX REGIONS OF TURKMENISTAN



### Regions

- 1 Ashkhabad City
- 2 Balkan
- 3 Tashauz
- 4 Ashkhabad
- 5 Charjou
- 6 Mary

488,000 km<sup>2</sup>  
3.8 million population

ANNEX 2

Republic of Turkmenistan

Number and Distribution of Vaccination Points

Region	Polyclinic	Ambulatory Total Doctor's Clinic (Dr & Dr's Ass't i/c)	Asst & Midwife Points	Total
Ashkhabad City	11	-	4	15
Balkan	5	6	93	104
Tashauz	2	8	306	316
Ashkhabad	-	8	184	193
Charjou	2	12	344	358
Mary	2	10	349	361
TOTAL	22	44	1280	1346

**ANNEX 3**

Republic of Turkmenistan

Vaccines Requested and Received 1989 - 1991  
(doses x 1000)

Vaccine	1989		1990		1991	
	Req'd	Rec'd	Req'd	Rec'd	Req'd	Rec'd
BCG*	650.0	420.0	715.0	89.2	617.5	301.4
BCG-M	50.0	32.5	35.0	12.5	68.0	58.0
DPT	500.0	549.5	508.0	508.0	509.0	509.0
DT	NA	NA	NA	NA	NA	NA
Measles	234.8	145.0	238.0	285.0	245.0	73.5
OPV	1212.0	1212.0	1385.0	1403.5	1258.0	1748.0

\* Amounts represent number of vials requested times 10. MOH officials stated that 10 doses is the number routinely administered from 20 dose vials.

**ANNEX 4**

Republic of Turkmenistan

Incidence Rates for Selected Diseases 1989 - 1991  
(cases/100,000 Population)

Disease	1989	1990	1991
Diphtheria	2.1	0.1	0.1
Pertussis	2.0	7.1	5.0
Tetanus	0.03	0.05	0.1
Neonatal tetanus	NA	NA	NA
Tuberculosis	18.5	28.6	55.3
Measles	192.1	76.4	36.2
Polio	0.03	1.09	0.5
Hepatitis (All)	733.5	354.3	576.0
Hep A	632.6	279.5	515.3
Hep B	100.6	74.3	60.3
Hep C	NA	NA	NA
Hep E	NA	NA	NA
Other Diseases:			
Pneumonia < 2 years	NA	NA	NA
Pneumonia Total	NA	NA	NA
Diarrhea < 2 years	578.0	546.7	537.4
Diarrhea Total	4286.4	4109.4	4146.2
ARI < 15 years	10175.3	9766.3	9230.4
ARI Total	18150.0	16033.7	15020.2

**ANNEX 5**

**Republic of Turkmenistan**

**Cold Chain Equipment Required to Meet Short-Term Program Needs**

<b>ITEM</b>	<b>UNITS</b>
<b>ICEPACK FREEZER</b>	<b>7</b>
<b>VACCINE FREEZER</b>	<b>7</b>
<b>COLD BOX</b>	<b>660</b>
<b>ICEPACKS</b>	<b>5000</b>
<b>THERMOMETERS</b>	<b>500</b>

**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 Turkmenistan**

**Estimates of Disposable Syringe Needs for One Year Cohort of Newborns**

**(Assuming 130,000 Newborns)**

<b>ESTIMATE OF OFDA TEAM (BASED ON 1 SYRINGE FOR EACH DOSE OF VACCINE REQUIRING SYRINGE FOR DELIVERY)</b>	<b>FOR MEASLES AND DPT - 650,000</b>
	<b>FOR BCG - 195,000</b>
<b>ESTIMATE OF NATIONAL SES</b>	<b>TOTAL - 750,000</b>
<b>TOTAL VACCINATION PROGRAM NEEDS (NEWBORNS PLUS REVACCINATIONS), ESTIMATE OF NATIONAL SES</b>	<b>TOTAL - 1,500,000</b>

15