

**STUDY REPORT  
ON  
THE PROJECT FOR EXPANSION OF IMMUNIZATION  
AGAINST NEONATAL TETANUS  
IN  
THE ISLAMIC REPUBLIC OF PAKISTAN**

**MARCH 2000**

**JAPAN INTERNATIONAL COOPERATION AGENCY**

GR2

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## PREFACE

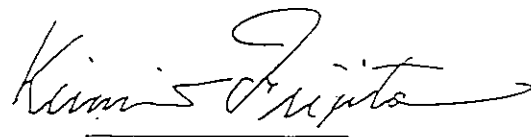
In response to a request from the Government of the Islamic Republic of Pakistan, the Government of Japan decided to conduct a study on the Grant Aid for Child Health, The Project for Expansion of Immunization against Neonatal Tetanus and entrusted the Japan International Cooperation Agency (JICA) to conduct the study with the assistance of the Japan International Cooperation System (JICS).

JICA sent to Pakistan a study team from June 28 to July 19, 1999.

I hope that this report will contribute to the promotion of the project and to the enhancement of friendly relations between our two countries.

I wish to express my sincere appreciation to the officials concerned of the Government of the Islamic Republic of Pakistan for their close cooperation extended to the team.

March 2000

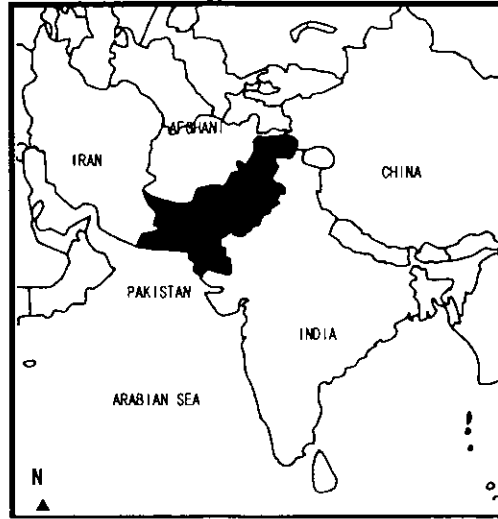
A handwritten signature in cursive script, reading "Kimio Fujita". The signature is written in black ink and is positioned above a horizontal line.

Kimio Fujita

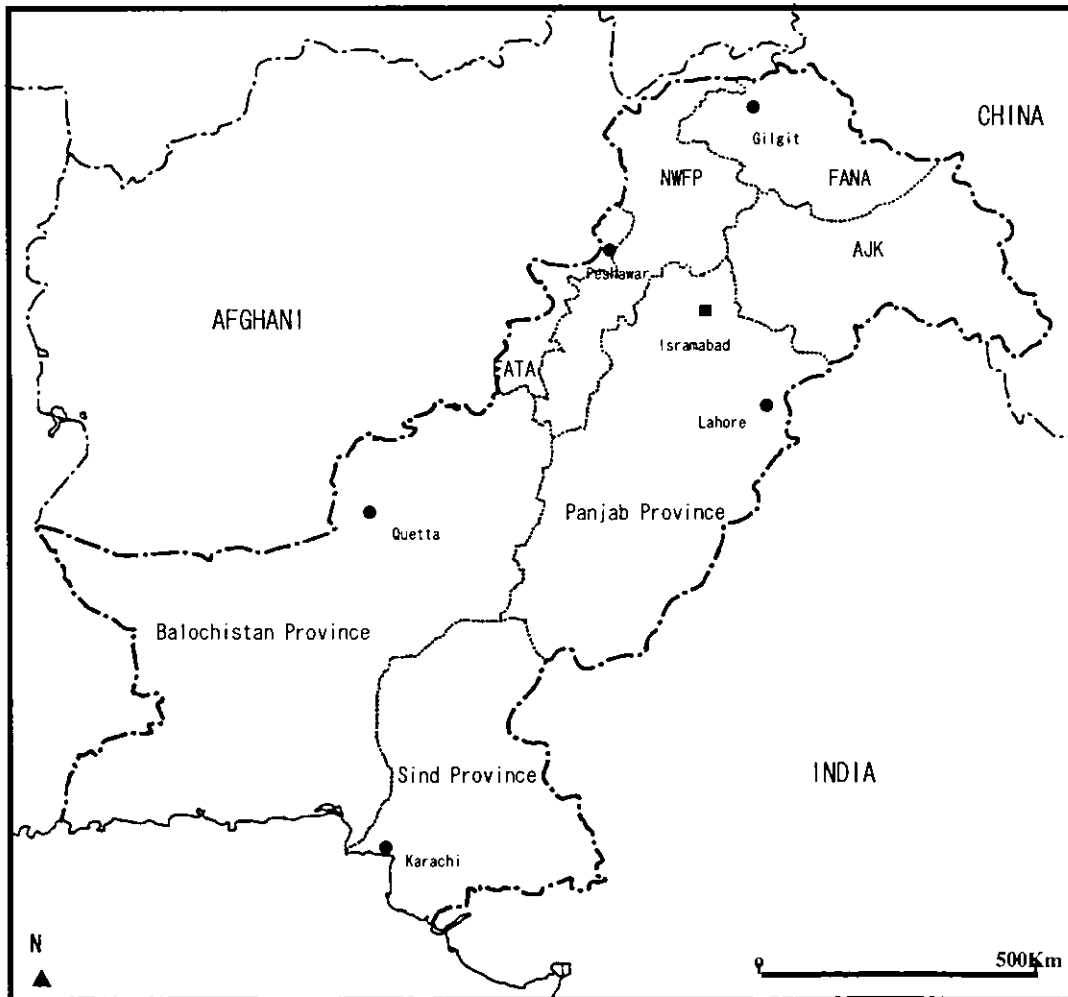
President

Japan International Cooperation Agency

Location Map



ASIA REGION



PAKISTAN MAP

## Abbreviations

3C	Clean hand, Clean delivery surface, Clean umbilical cord care
ADB	Asian Development Bank
AFP	Acute Flaccid Paralysis
AJK	Azad Jamu and Kashmir
ARI	Acute Respiratory Infection
BHU	Basic Health Unit
CDC	Centers for Disease Control and Prevention
CDD	Control of Diarrheal Diseases
CFC	Cholo Fluoro Carbon
DFID	Department for International Development
DPT	Diphtheria, Pertussis, Tetanus
EPI	Expanded Programme on Immunization
FANA	Federally Administered Northern Areas
FATA	Federally Administered Tribal Areas
FMT	Female Medical Technician
FWA	Family Welfare Assistant
GDP	Gross Domestic Product
ICT	Islamabad Capital Territory
IMF	International Monetary Fund
KESC	Karachi Electricity Supply Corporation
LHV	Lady Health Visitor
LHW	Lady Health Worker
MCH	Maternal and Child Health
NID	National Immunization Day
NIH	National Institute of Health
NNT	Neonatal Tetanus
OECD	Organization for Economic Cooperation and Development
OPV	Oral Polio Vaccine
ORS	Oral Rehydration Salts
PC-1	Planning Commission Form No. 1
PHC	Primary Health Care
PTCL	Pakistan Telecommunication Company Limited
RHC	Rural Health Center
SAP	Social Action Programme
SNID	Sub-National Immunization Day
TBA	Traditional Birth Attendant
UNDP	United Nations Development Programme
USAID	United States Agency for International Development
WAPDA	Water & Power Development Authority
WHO	World Health Organization

Report of the Survey on Equipment Supply for Child Health Grant Aid  
The Project for Expansion of Immunization against Neonatal Tetanus  
in the Islamic Republic of Pakistan

Table of Contents

Preface

Location Map

Abbreviations

Chapter1	Background of the Project .....	1
1-1	Background of the Project.....	1
Chapter2	Contents of the Project .....	4
2-1	Objects of the Project.....	4
2-2	Basic Concepts of the Project.....	4
2-3	Basic Design.....	7
Chapter3	Implementation Plan .....	16
3-1	Implementation Plan.....	16
3-2	Operation and Maintenance Costs.....	20
Chapter4	Project Evaluation and Recommendation .....	21
4-1	Project Effect.....	21
4-2	Recommendation.....	22

Reference

1. Member List of the Survey Team
2. Survey Schedule
3. List of Party Concerned in the Recipient Country.
4. Minutes of Discussion
5. Appendix

## Chapter 1: Background of the Project

### 1-1. Background of the Project

Neonatal tetanus (NNT) is known as "the silent killer" because in many cases, newborn infants die before their births are recorded, and as a result, only few deaths are recorded. Childbirth under insanitary conditions and incomplete sterilization of instruments have been identified as the main causes of NNT. It is thus relatively easy to take measures against NNT. Although effective measures are taken by all nations, there are still many victims, mainly in developing countries. The reason for this is that poverty, lack of education, traditional customs, etc. impede such measures.

In 1989, the World Health Organization (WHO) convened the World Health Assembly, and adopted a resolution to eliminate NNT (NNT down to 1 per 1000 births or less) from the world by 1995, and commenced programmes to achieve this goal.

As a result, 97 countries, representing 61% of the relevant developing nations, achieved the goal by 1995. This goal was reaffirmed in 1996 and a new target date was set for neonatal tetanus elimination by the year 2000, for the 63 countries accounting for the remaining 39% that had not achieved the goal.

Today, over 50% of infants worldwide are born to mothers who are not immunized against tetanus, which means that the newborn infants lack the antibodies that would protect them from NNT. At present, close to 300,000 newborn infants die each year within 3 weeks of birth from NNT. The majority of these fatalities occur in a small number of nations in which the risk of NNT is high. Among these countries, the Islamic Republic of Pakistan (hereinafter referred to as Pakistan) comes after India and Nigeria in terms of the large number of deaths. For this reason, the government of Pakistan has made NNT a major public health issue, and has made efforts to improve the situation.

Based on results from a nationwide mortality survey carried out in

1981, the NNT mortality rate was 14/1000 live births leading to an estimated 70,000 deaths annually. Based on the repeated surveys conducted in 1989, it was estimated that the annual mortality rate was around 10/1000 live births. This meant that over 46,000 newborn infants died in 1989 because of NNT. In 1996, a total of 1800 cases of NNT were reported countrywide. Although based on the progress in TT coverage (51%) and clean delivery coverage, it is estimated that at least 30,000 newborn infants still die annually from NNT.

In order to resolve this situation, the Ministry of Health formed the plan "For implementation of NNT High Risk Area Approach in High Risk Districts of Pakistan(1998-2000)" in 1997. The project aims to improve TT vaccination coverage by short term measures in the districts and to raise clean delivery coverage in where the situation is not favorable.

For countermeasures against NNT are highly needed, the Government of Pakistan requested the Government of Japan to support Expanded Programme on Immunization in Pakistan to reach NNT elimination.

The government of Pakistan has revised the plan by shifting its schedule from the original 3-year period from 1998 to 2000 to the 3-year period from 1999 to 2001<sup>1</sup>. As shown in Table 1, the details of the request are broadly divided into tetanus vaccine, syringes, and cold chain equipment<sup>2</sup> and disposable clean delivery kits. The facilities involved will be at the central vaccine storage warehouse, regional vaccine storage warehouses, and the vaccination posts<sup>3</sup> - the locations at which the vaccinations will actually be given.

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<sup>1</sup> July, 1999 to June, 2000, according to Pakistan's fiscal calendar.

<sup>2</sup> Equipment used for keeping vaccine cold during transportation.

<sup>3</sup> The locations at which the vaccinations will actually be given include permanent and temporary facilities.

Table 1: Details of the Request

Requested Equipment	
Vaccine	Tetanus vaccine (20 doses/vial)
Syringes	Auto-destruct syringes
	Syringe disposal boxes
Cold Chain Equipment	Vaccine carriers
	Small-size vaccine refrigerators
	Icelined refrigerators
	Voltage stabilizers (for small-size refrigerators)
	Voltage stabilizers (for Icelined refrigerators)
	Cold rooms
Others	disposable clean delivery kits



## Chapter 2: Contents of the Project

### 2-1. Objects of the Project

The Ministry of Health created the plan "For implementation of NNT High Risk Area Approach in High Risk Districts of Pakistan (1998-2000)". The object of this plan is to eliminate NNT in high risk priority union councils by the end of year 2001. The strategies to achieve this elimination goal are to conduct three(3) immunization campaigns to administer 3 doses of TT vaccination to women of child bearing age in the high risk union councils, to raise clean delivery coverage in the high risk union and to establish an effective NNT surveillance system.

### 2-2. Basic Concepts of the Project

#### 1) Scope of Cooperation

To eradicate the NNT, vaccination programs and clean childbirth care have been adopted in many developing countries as the most effective strategies. In Pakistan also, both strategies have been adopted, and traditional birth attendant (TBA) drills are carried out each year as a means of promoting clean childbirth cares. However, it will probably take a long time for clean childbirth methods employing TBA to penetrate a culture in which traditional childbirth at home accounts for 80% of the total. As a means, therefore, of narrowing the approach to be used in the NNT vaccination campaign, the extent of Japan's cooperation has been limited to the relevant, TT vaccine, syringes and cold chain equipment.

At the time of preparing this project, the following criteria have been used to identify high risk districts and high risk union councils.

- A) High risk districts: Districts reporting more than 5 NNT cases in 1998 irrespective of population size.
- B) High risk union councils: Union councils reporting one or more cases in 1998 among the high risk districts.

In the case of the 7 districts of Balochistan, the following criteria have been used, because of the lack of reporting systems. Only few cases

are reported, in Balochistan, in spite of the fact that there was a considerable high number of NNT.

A) High risk districts: Districts where one or more cases of NNT have been reported in the past.

B) High risk union councils: Union councils where one or more cases of NNT have been reported in the past among the high risk districts.

Based on the above criteria, the batch of 57 high risk districts and their respective 1,100 of high risk union councils<sup>7</sup> have been identified with a total population of 23.4 million. Out of this total population, the number of women of children bearing age to be targeted are estimated to be 5.1 million in the high risk union council. This makes up 18% of the total number of women of children bearing age in the country. (Table 2, Appendix 1,2).

AJK and FANA lie on the borderline with India, and include disputed territory; they were excluded for this reason. And the targeted number of persons was computed based on the plan drawn up at the 1997 joint meeting<sup>6</sup>, and the 1998 census.

The criteria for selecting high risk areas in the next year, 2002 will be revise to ensure that all high risk areas in the country are identified. However at the present time, the targeted number of women of child bearing age in the year 2002 is estimated to be 60% of those in the first year of the campaign, taking the experience of the official in the Ministry of Health and WHO into consideration.

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<sup>7</sup> Wards, in municipal areas.

<sup>6</sup> The targeted population was computed based on NNT cases in 1996 in each district under the jurisdiction of the high risk union.

Table 2: NNT Campaign Targets

Fiscal Year		Number of Districts	Number of Union Councils	Number of population	Number of Women of Childbearing Age
		Total	110	4,215	approx. 128,000,000
2001	Targeted	57	1,100	23,394,000	5,146,680
	Percentage of National Total	52%	26%	18%	18%
2002 (estimate)	Targeted	—	660	14,045,000	3,090,000
	Percentage of National Total	—	16%	11%	11%

## 2) Period of Cooperation

The original request from Pakistan was for assistance to cover a period of 3 years. But until now, the actual number of NNT has not been grasped correctly. So the period of cooperation for this project will be the first 2 years of 2001 and 2002. And the second year plan will be modified as necessary, based on the results of the first year.

## 3) Implementation Period

The three(3) immunization campaigns to administer 3 doses of TT vaccine will be conducted from September to May, in order to avoid the summer and the rainy season. This schedule is probably also appropriate from the viewpoint of the safe transportation of the vaccine, convenience in moving staff and vaccine recipients.

## 4) Implementation Schedule

Procurement of the equipment for this project will be divided into 3 phases considering the Pakistan's vaccination schedule, installation and distribution period to each union council. That is to say cold chain equipment used in campaign in 2001, which include installation, will be procured during the first phase. Vaccines and other equipment used in campaign 2001 will be procured during the second phase. Moreover, equipment used in campaign 2002 will be procured during the third phase. (Table 7)

The presumed implementation schedule of the year 2001 is shown in Table 3. The shipment of vaccine and syringes will be divided into 2 times, taking warehouse storage capacity into account. The other equipment will be sent all at once the first time. Regarding the schedule of the year 2002, it will probably be possible the same as the previous year.

Table 3: NNT Campaign Implementation Process Chart

Month	Services Provided by Japan	Services Provided by Pakistan
1	Exchange of signed documents	Notification of provinces, districts regarding implementation
2-4	Execution designs, bids, suppliers' contracts	Creation of a comprehensive plan Preliminary survey of target unions
5-8	Production of equipment	Joint preparatory meetings of national and provincial governments, and related organizations Regional (province/district/union) level preparations
9	Transportation of equipment	
10	Transportation of vaccine for first and second campaigns	Domestic delivery/installation of cold chain equipment Regional PR activities, registration of vaccine recipients Training of vaccination staff, etc. First domestic delivery of vaccine
11		First campaign Second domestic delivery of vaccine
12		Appraisal report on first campaign Second campaign
13-14		Appraisal report on second campaign
15	Third shipment of vaccine	
16-17		Third domestic delivery of vaccine
18		Third campaign
19		Comprehensive campaign appraisal report

## 2-3. Basic Design

### 2-3-1. Design Concept

The planned equipment is those requested by the government of Pakistan for use in countermeasures against NNT. The quantity of vaccine and syringes is calculated according to the number of vaccine recipients (women of child bearing age). The quantity of cold chain equipment is, in principle, calculated according to the number of relevant facilities and the amount of equipment currently available. The specifications for equipment are adopted in accordance with present

formats and future trends, since standardization is desirable, insofar as possible, from the standpoint of both operations and maintenance (see Table 4).

Among the aforementioned equipment to be provided, cold rooms that meet the specifications are manufactured in Japan and Pakistan, and may be supplied from these countries. The vaccines, and other equipment will be supplied from third countries, because products that meet the specifications (Product Information Sheets) that is regulated by UNICEF are not manufactured in Japan and Pakistan. There are differences in quality between products of suppliers of DAC countries and those of countries outside the DAC. Therefore, Pakistan's Ministry of Health has implemented a policy of giving priority to suppliers from DAC countries.

Table 4: Equipment Selection Criteria

Planned Equipment	Quantity	Specifications
Vaccine	<ul style="list-style-type: none"> <li>● The fiscal 2001 population will be computed from the 1998 census and Pakistan's population growth rate of 2.61%.</li> <li>● The recipients will all be women of childbearing age (15-45 years old) in the targeted areas.</li> <li>● Women of childbearing age are 22% of the population.</li> <li>● The vaccine will be administered in 3 doses.</li> <li>● A standard value of 25% will be adopted as the vaccine loss rate (coefficient: 1.33)<sup>8</sup></li> </ul>	<ul style="list-style-type: none"> <li>● Vaccine is supplied in Pakistan through UNICEF. Since all vaccine is WHO-approved product (manufactured in OECD member nations), the same standards will be adopted in the present proposal.</li> </ul>
Syringes	<ul style="list-style-type: none"> <li>● The numbers of recipients and of doses are the same as for vaccine, above.</li> <li>● A standard value of 10% will be adopted as the syringe loss rate (coefficient: 1.1).</li> </ul>	<ul style="list-style-type: none"> <li>● There is concern about reuse of syringes at vaccination posts. Since it is thought that auto-destruct type syringes will be used increasingly in the future in accordance with WHO and UNICEF recommendations, the same format is adopted herein.</li> </ul>
Cold Chain Equipment	<ul style="list-style-type: none"> <li>● 1 syringe disposal box will be provided per 100 syringes.</li> <li>● Basically, cold chain equipment will be currently used equipment. Only in the event that more are needed for campaign implementation will new equipment be provided.</li> <li>● The allotment to each district will be proportional to the number of intended recipients.</li> </ul>	<ul style="list-style-type: none"> <li>● In general, the format presently used at EPI sites will be adopted.</li> <li>● Electrical equipment will be provided with voltage stabilizers, since the nationwide electrical power situation is not good.</li> </ul>

<sup>8</sup> Loss coefficient =  $100 \div (100 - \text{loss rate})$

## 2-3-2. Basic Design

The purpose of this Grant Aid Cooperation is to provide the equipment necessary for 2 years (2001-2002) of the nationwide campaign planned by Pakistan for eliminating NNT in Pakistan.

Below are the planned equipment for the campaign implemented in 2001. In principle, the allotment of cold chain equipment to each district will be proportional to the number of intended recipients (see Appendix 3).

### ① Vaccine, syringes, and syringe disposal boxes

Table 5 shows how the quantities of tetanus vaccine and syringes are derived from the number of intended recipients, and the number of syringe disposal boxes from the number of syringes.

Table 5: Necessary Quantities of Tetanus Vaccine, etc.

Planned Equipment	Intended Number of Recipients	Number of Doses	Loss Coefficient	Necessary Quantity	Planned Quantity
Tetanus Vaccine	5,146,680	3	1.33	20,535,253 doses	17,027,000 20/vial
Syringes	5,146,680	3	1.1	16,984,044 syringes	16,984,000 syringes
Syringe Disposal Boxes	-	-	-	-	169,840 boxes

Note: Planned quantities of vaccine and syringes of less than 1000 will be rounded off.

### ② Vaccine carriers

During the campaign, secondary health facilities, meeting places, schools, mosques, and homes of individuals will be temporarily used as vaccination posts, in addition to permanent structures and mobile vehicles. Vaccine carriers will be needed for transporting and storing vaccine to be administered in these permanent and temporary facilities. Since it is thought that at least 10 will be needed per union council during the campaign, it will be necessary to prepare a total of 11,000 vaccine carriers. Out of the 16,339 vaccine carriers known to exist

in Pakistan, approximately 11,000 are located outside the target areas, or are routinely employed for other purposes (Table 6). Thus, approximately 5,000 old vaccine carried can be used for the campaign. Accordingly, 6,000 will be newly provided to make up for the shortage.

Table 6: State of Cold Chain Maintenance in Pakistan (1999)

	EPI Facilities	Number of Facilities	Overview of Facilities	Major Refrigerating Installations and the Number Owned					
				Cold Rooms	Freezer Rooms	Refrigerators	Freezers	Small-size Refrigerators	Carriers
Vaccine Warehouses	Central Warehouse	1	Located in the National Institute of Health in Islamabad, the capital. These will store and deliver to the Provinces the vaccine provided from abroad every 3 months.	7	2				
	Provincial Warehouses	5	Located in each provincial capital and in AJK, under the jurisdiction of the provincial Board of Health. Shipment from the central warehouse to Balochistan and Sind Provinces will be by aircraft; otherwise by insulated van, as necessary.	23	13				
	Regional Warehouses	27	Under the jurisdiction of regional Health Offices; vaccine will be shipped from the provincial warehouses every 3 months.			1,171	182		
	District Warehouses	120	Under the jurisdiction of District Health Offices; vaccine will be shipped from the regional or provincial warehouses each month.						
	Tehsil Warehouses	413	Under the jurisdiction of District Health Offices; vaccine will be shipped from the district warehouses each month.						
vaccination Posts	EPI Centers	2,649	Permanent posts; vaccine will be supplied from the tehsil or district warehouses each month.					2,649	
	Mobile Teams	69	Mobile teams, using vehicles; vaccine will be supplied from the tehsil or district warehouses each week.						16,339
	Circuit Teams	4,695	Teams that periodically carry out vaccination at circuit posts; vaccine will be supplied every few days or so from EPI Centers or tehsil warehouses.						

Note: The listed quantities of equipment are only those confirmed at the central warehouse.  
Sources: NIH, UNICEF

### ③ Small-size refrigerators

The campaign will target approximately 1,100 unions. Although each union has at least 1 Rural Health Center (RHC) or Basic Health Unit (BHU), only about half of them are permanent EPI centers equipped with refrigerators for vaccine storage. Most of the refrigerators presently in use were built in the early 1980's. Out of 550 of these refrigerators, approximately 50 need to be renovated, due to obsolescence.

Since the remaining half of the unions do not have centers equipped with permanent centers, they are making do with cold boxes and vaccine carriers. The burden will become too great during the campaign, when large amounts of vaccine will be required in a short period. Because there is a limit to the safety of storage, and the amount of vaccine that can be stored with this sort of equipment. In order to ensure expansion of EPI posts, and smooth implementation of vaccination, 550 new refrigerators will be procured for RHC or BHU where there is no refrigerator. Voltage stabilizers will be supplied due to concerns about the instability of electrical power supply.

If routine vaccination is stepped up as a result of implementation of this campaign, the small-size refrigerators can be expected to serve an important purpose in preparing the vaccination offices for use in EPI activities.

### ④ Icelined refrigerators

During the campaign, existing refrigerators will be used to store large amounts of tetanus vaccine in the warehouses of district and tehsil offices. Because there are problems with quantitative imbalances and deterioration<sup>9</sup>, a total of 113 refrigerators will be needed. The newly purchased 113 refrigerators (1.36 million dose/12,000 dose, 12,000 doses/ refrigerator) are needed to store 1/5 (about 1.36 million doses) of the amount of vaccine necessary for first round vaccination. In

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<sup>9</sup> The WHO survey refers to the problem presented by the deterioration,



principle, 1 refrigerator will be provided for districts with less than 50,000 intended recipients, 2 for districts with between 50,000 and 100,000, and 3 for districts with 100,000 or more.

Since power supply conditions are poor throughout the country and blackouts are frequent<sup>10</sup>, Icelined refrigerators, which have blackout response functions, will probably be appropriate. The type that is also equipped with a freezer that is capable of re-freezing ice packs will be provided, because a shortage of ice packs for vaccine carriers is anticipated during the campaign period in the planned district and tehsil warehouses.

#### ⑤ Voltage Stabilizers

Existing refrigerators generally use voltage stabilizers, since, as mentioned above, blackouts are frequent, and voltage is unstable. In order to ensure the long-term stability of the equipment, the small-size refrigerators and Icelined refrigerators covered will be equipped with these devices.

#### ⑥ Cold rooms

There are 2 freezer rooms (-20°) and 7 refrigerator rooms (+4°) in the central vaccine warehouse managed by the national government. They were all built between the early 1980's and early 1990's, and deterioration is particularly notable in 4 of the 7 refrigerator rooms. Immediate measures are required in 2 of the refrigeration rooms that cannot be expected to work enough during the campaign period.

The site of setting up the Cold Room is planned in the separate warehouses<sup>11</sup> that does not need construction work. The Cold Room will be equipped with automatic generators and voltage Stabilizers as a power supply measures.

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in recent years, of most equipment and materials.

<sup>10</sup> According to a WHO report, they average 2-3 per day, lasting 4-6 hours.

<sup>11</sup> The floor space of the site is approximately 660 m<sup>2</sup>, of which only half is in use at present.

The computed planned quantities of equipment, conforming with policy on design and basic plan detailed in the preceding sections, are listed in Table 7.

Table 7: Planned Quantities of Equipment

Planned Equipment	Units	Planned Quantities			Remarks
		Year 2001		Year 2002	
		Phase1	Phase2	Phase3	
Tetanus Vaccine	vials	—	1,027,000	616,200	
Auto-destruct Syringes	pieces	—	16,984,000	10,190,400	
Syringe Disposal Boxes	boxes	—	169,840	101,904	
Vaccine Carriers	units	6,000	—	3,600	
Small-size Vaccine Refrigerators	units	50	550	360	
Icelined Refrigerators	units	113	—	68	
Voltage Stabilizers (for small-size refrigerators)	units	50	550	360	
Voltage Stabilizers (for Icelined refrigerators)	units	113	—	68	
Cold Rooms	units	2	—	—	

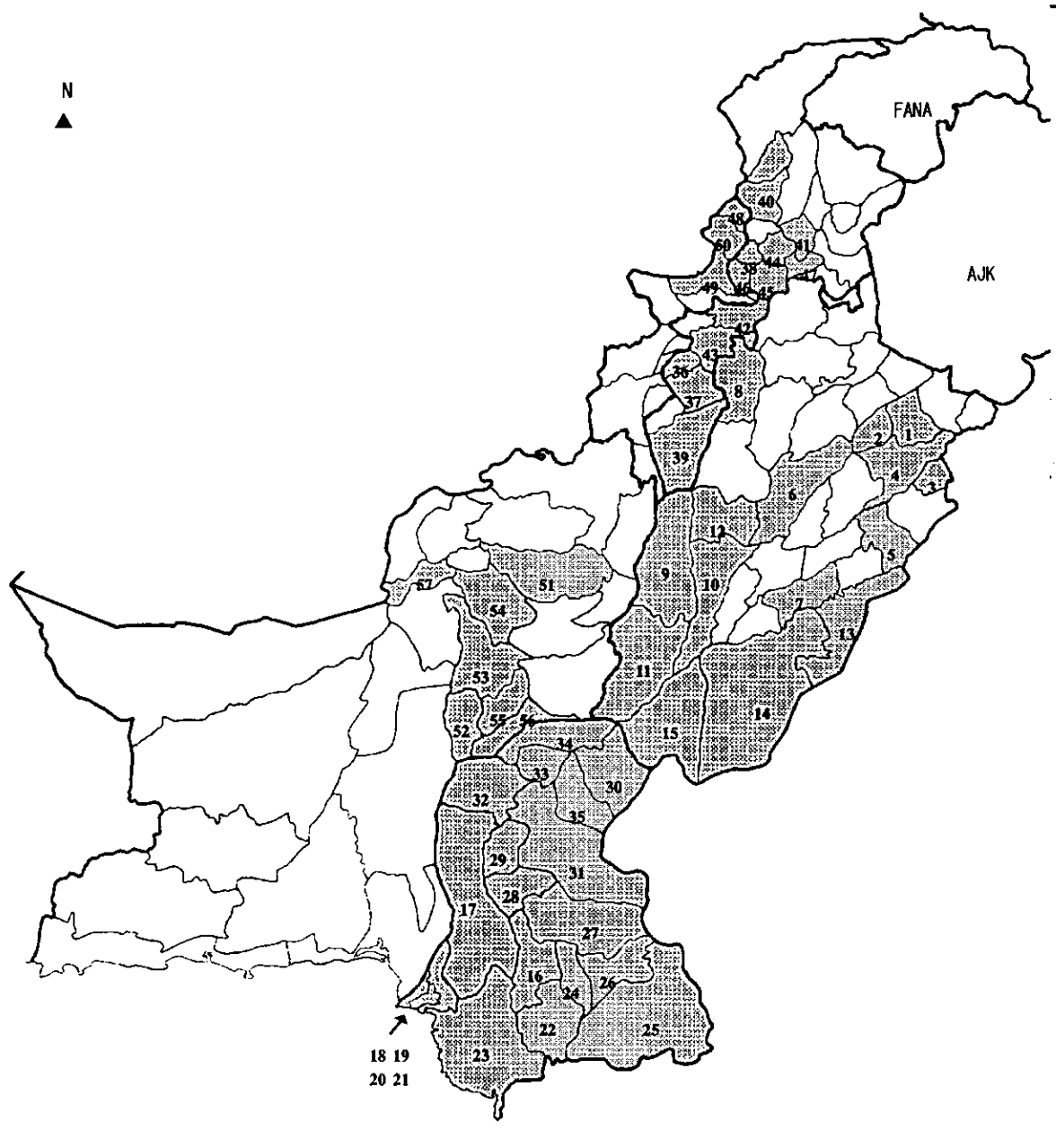
The details of selected planned equipment, conforming with policy on design and basic plan detailed in the preceding sections, are shown in Table 8.

Table 8: Details of Planned Equipment

Planned Equipment	Volume, etc.	Destination	Purpose
Tetanus Vaccine	20 doses/vial	Vaccination posts in the targeted regions.	Vaccination of women of childbearing age (15-45 years old).
Auto-destruct syringes	Volume: 0.5 ml	"	Used in aforementioned vaccination; disposable
Syringe Disposal Boxes	Volume: 5 liters	"	To be incinerated for safe disposal of aforementioned syringes; disposable
Vaccine Carrier	Volume: approx. 1.7 liters	"	For transport of vaccine between warehouses and EPI centers, between EPI centers and circuit posts, and for storage
Small-size vaccine refrigerator	Volume: approx. 17 liters	EPI centers, or facilities proposed for that purpose.	Used for storage of small quantities of vaccine for short periods.
Icelined Refrigerators	Volume: approx. 37 liters	District or tehsil vaccine warehouses	Storage of fixed amounts of vaccine, and freezing of ice packs
Voltage Stabilizers (Small-size vaccine refrigerator)	Electric Capacity: 500 VA	EPI centers, or facilities proposed for that purpose.	For aforementioned small-size refrigerator.
Voltage Stabilizers (Icelined Refrigerators)	Electric Capacity: 500 VA	District or tehsil vaccine warehouses	For aforementioned Icelined refrigerators.
Cold Rooms	Volume: approx. 30 m <sup>3</sup>	Central warehouse in the National Institute of Health.	For long-term storage of large quantities of vaccine.

Based on the reports of NNT of 1998, districts shown in Map-1 were chosen for targets of campaign 2001.

Map-1: The targeted district of campaign in 2001



<b>Punjab</b>	13 Bahawalnagar	25 Tharparkatr	37 Lakki Marwat	50 Mohmand
1 Gujranwala	14 Bahawalpur	26 Umerkot	38 Charsadda	<b>Baluchestan</b>
2 Hafizabad	15 R.Y.Khan	27 Sanghar	39 D.I. Khan	51 Loralai
3 Lahore	<b>Sindh</b>	28 Nawab Shah	40 Dir	52 Jhal Magsi
4 Sheikhpura	16 Hyderabad	29 N. Feroze	41 Buner	53 Bolan
5 Okara	17 Dadu	30 Ghotki	42 Kohat	54 Sibi
6 Jhang	18 Karachi Malir	31 Khairpur	43 Karak	55 Nasirabad
7 Vehari	19 Karachi East	32 Larkana	44 Mardan	56 Jafarabad
8 Mianwali	20 Karachi Central	33 Shikarpur	45 Nowshera	57 Quetta
9 D.G. Khan	21 Karachi West	34 Jacobabad	46 Peshawar	
10 Muzaffargarh	22 Badin	35 Sukkur	47 Swabi	
11 Rajanpur	23 Thatta	<b>NWFP/FATA</b>	48 Bajaur	
12 Leiah	24 Mirpur Khas	36 Bannu	49 Khyber	

## Chapter 3: Implementation Plan

### 3-1. Implementation Plan

#### 3-1-1. Procurement Plan

The vaccination of TT will be conducted in 3 rounds under this plan. The interval between the first and second round will be 1 month and the interval between the second and third round will be 6 months.

As regards the vaccine storage capacity at the central warehouse, it will be possible to deliver all vaccines at once if a new cold room is in place. However in order to avoid any risk, such as an overlap with storage of NID vaccine, a damage to the quality of vaccine incurred through long-term storage, the delivery of the vaccine will be divided into two deliveries. First delivery is the vaccines used for the first and second round, and the second delivery is the vaccines used for the third round. The temperature of the vaccine should be maintained at 2-8° C during transportation, therefore air transport - with short transportation time and easy temperature management - will be utilized.

Regarding the procurement of other equipment, they will be transported all at once by sea. The delivery will be completed until at least 2 months before the first round, taking into account the period of the internal transportation to the established site in Pakistan.

3-1-2. Implementation Schedule

(1) Budgetary division of the years

Divided into three years (fiscal 1999, 2000, 2001).

(2) Progress schedule

3-2 Project Cost Estimate

Table 3-1 Implementation Schedule, 1999 (1<sup>st</sup>)

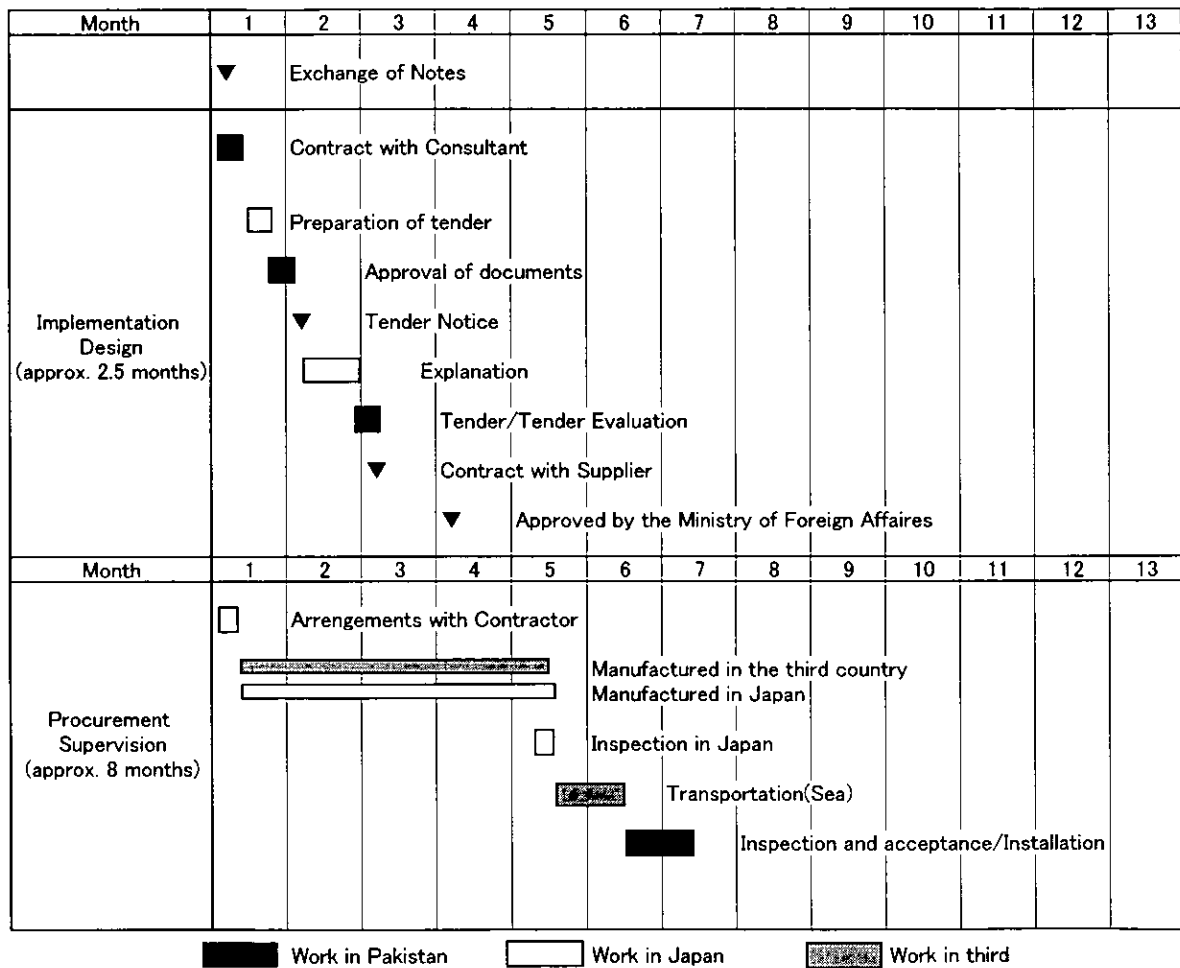


Table 3-1 Implementation Schedule, 2000 (2<sup>nd</sup>)

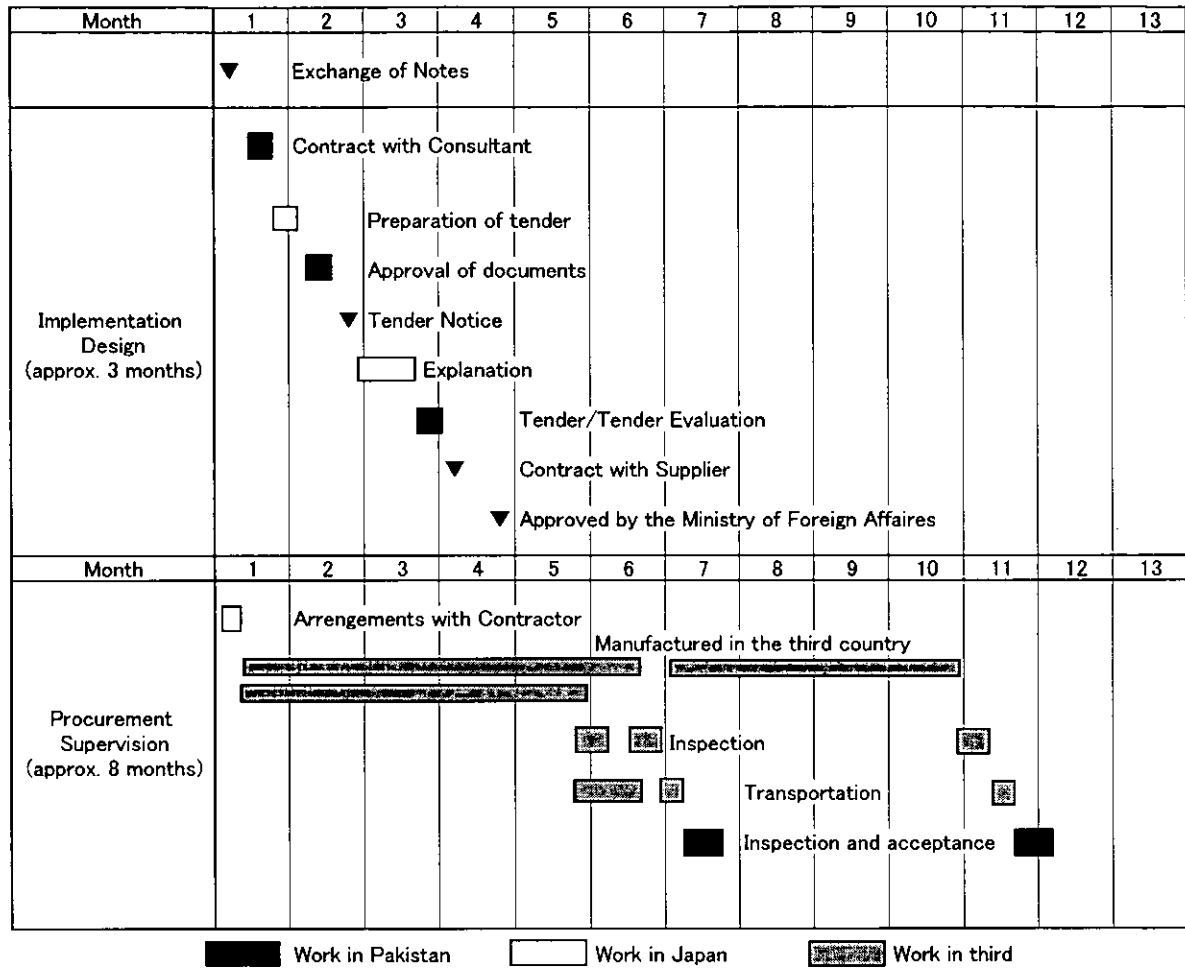
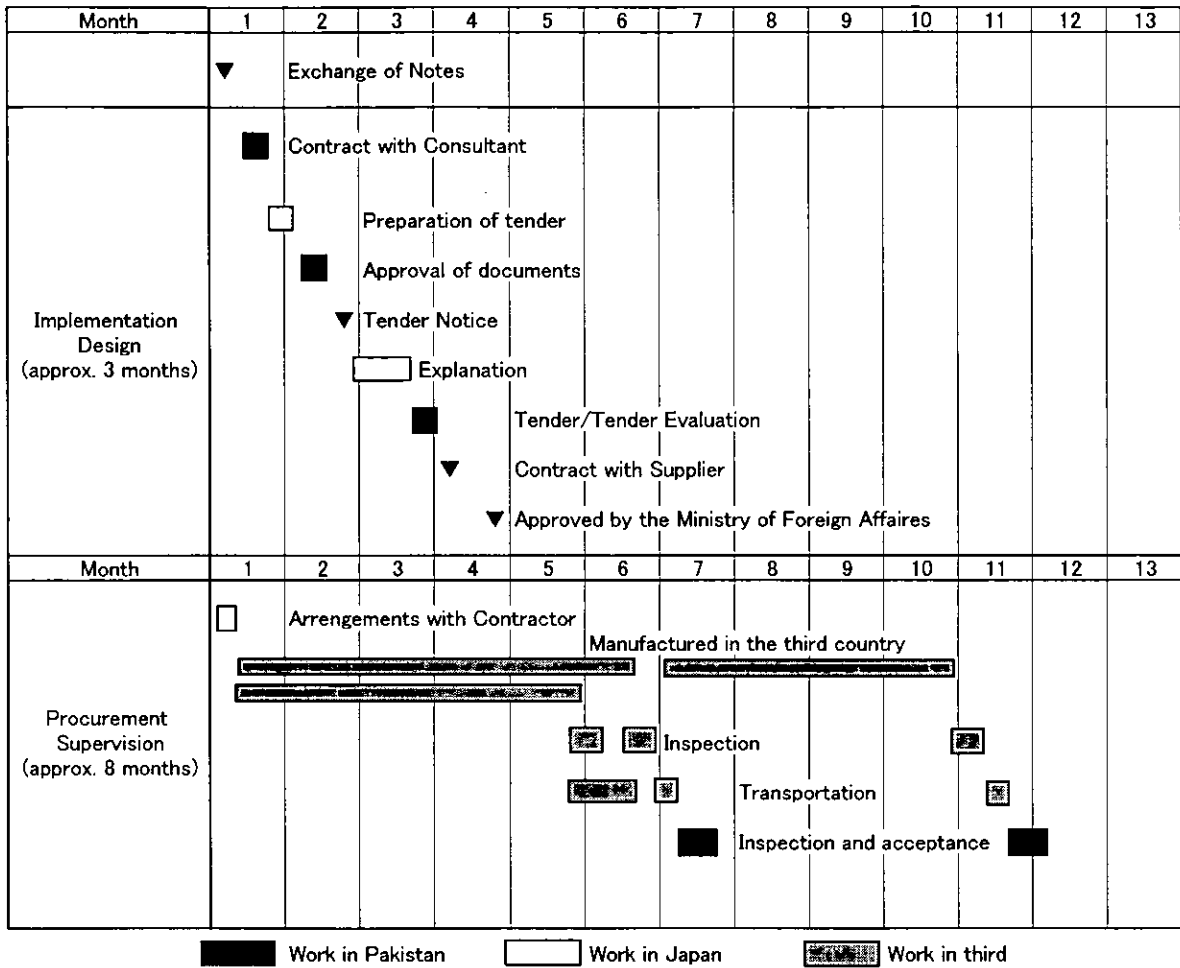


Table 3-1 Implementation Schedule, 2001 (3<sup>rd</sup>)





### 3-1-2 Obligations of the Recipient Country

1) To ensure all the expenses and prompt execution for unloading, customs clearance at the port of disembarkation and internal transportation of the equipment purchased under the Grant Aid Cooperation.

2) To exempt Japanese nationals from customs duties, internal taxes, and other fiscal levies which will be imposed in the recipient country with respect to the supply of the equipment and services under the Verified Contracts.

3) To accord Japanese nationals whose services may be required in connection with the supply of the equipment and services under the Verified contracts, such facilities as may be necessary for their entry into the recipient country and stay therein for the performance of their work.

4) To maintain and use the installed facilities and equipment procured by the Grand Aid Cooperation appropriately and effectively. And to ensure the needed personnel for this purpose. To bear the total costs of maintenance and administration except that expected by the Grand Aid Cooperation.

### 3-2 Operation and Maintenance Costs

The Maintenance Department of the National Institute of Health will carry out maintenance of cold chain equipment and facilities at the central site. Regional maintenance will be carried out, in principle, by cold chain technicians provided by the provincial governments.

Since the planned equipment does not require advanced repair technology or frequent replacement of parts, it is not likely that technological problems will arise.

## Chapter 4: Project Evaluation and Recommendations

### 4-1. Project Effect

Maternity health care in Pakistan lags considerably behind world standards. In particular, the eradication of NNT has become an important issue. If the present proposal is implemented under these circumstances, the spur provided by the activities may be expected to produce the following direct and indirect results.

#### 1) Direct Results

##### ① Reduction in number of cases

Out of more than 5 million births in Pakistan each year, the maternal vaccination rate of TT is only about 50%. The remaining 2.5 million births occur in the danger of infection to mothers and newborn infants. Under these circumstances, if the present proposal is implemented, approximately 8 million women (5 million in the first year, 3 million in the second) of childbearing age (approximately 30% of the total of 28 million) will get the opportunity to receive the vaccination. If a high rate of vaccination can be achieved, the incidence of cases in the target areas will be considerably reduced, and the newborn infant mortality will decline.

##### ② Expansion of Cold Chain Equipment

According to the WHO research, overall aging of the cold chain equipment is becoming evident. Hence, renewal is needed within a few years.

Under this circumstance, implementation of this project will lead to the expansion of cold chain equipment service in the target area. Thus, this proposal is useful for the EPI activity hereafter. The following improvements mentioned below may be expected.

- The national average number of vaccine carriers will be increased from 4 to 5 per union.

- The rate of vaccination posts equipped with small refrigerators will be increased from 50 to 62%.
- Maintenance work will be performed on the 2 cold rooms in the central warehouse that are most in need of renovation.

## 2) Indirect results

### ① Raising the health consciousness of mothers and families

It is frequently pointed out that low literacy rates and lack of knowledge about sanitation among mothers are obstacles to vaccination activities. This is especially so of vaccination against NNT, because the necessities of immunizing the mothers should be understood by the family.

A vaccination campaign that mobilizes regional or mass media offers mothers and families a new chance to increase their awareness in regard to vaccination. If the campaign raises the consciousness of mothers and families, there is a possibility that future routine activities can be conducted more readily. And this may lead to the increase in the rate of vaccination.

## 4-2. Recommendations

The implementation of the present plan will go a long way toward raising the health standards of mothers and children, as mentioned above. The following measures would be desirable on the part of Pakistan, from the standpoint of smooth implementation of the plan, and of proper equipment operation and maintenance.

### ① Conveyance of equipment

It is essential that equipment be completed the delivery to the sites before the campaign begins, since the equipment turned over to the government of Pakistan at the port of Karachi will include items to be used for storage, etc. The equipment to be used for the campaign will be mainly the secondary warehouses, and the offices used as

vaccination posts. With the exception of the cold room to be set up in the central warehouse, the provincial governments will be responsible for transportation of equipment. Meticulous planning will therefore be necessary for each province. The Ministry of Health should undertake guidance and supervision to ensure that appropriate arrangements are made.

② Personnel distribution and training

It is no exaggeration to say that the key to success in a campaign that is concentrated in a short period is to ensure that the necessary vaccination personnel are available. Beginning with the central vaccination staff, the plan calls for the mobilization of lady health visitors (LHVs), FMT, and lady health workers (LHWs). Depending on the region, it will also be necessary to obtain the cooperation of districts and unions that are not targeted. Central supervision will be essential to implementation of the plan, based as it is on planned distribution of the appropriate personnel.

Although at present partial introduction of auto-destruct syringes has started in Pakistan, ordinary disposable syringes are usually used for vaccination. For this reason, it is assumed that many of the relevant staff are not familiar with the use of auto-destruct syringes and their disposal boxes. Since these syringes will be used in the office vaccination posts, it is especially vital that thorough guidance be given at the provincial level. Before that, it will be essential to have the central authorities prepare a manual, and provide guidance for the provincial officials in charge.

Guidance and information activities geared toward local residents cannot be neglected, since this will be the first nationwide campaign against NNT. Prior to the campaign, it will be necessary to provide sufficient central guidance for the responsible provincial personnel in regard to regional participation and their roles therein, in order to avoid on-site confusion.

### ③ Campaign preliminary survey and evaluation

Due to the lack of established information systems for NNT, relevant data must be gathered and analyzed in the first year, both before and after implementation. And the results reflected in the following year's activities.

In addition, necessary data related to such matters as the status of cold chain equipment must be gathered in advance from districts for which campaigns are planned for the following year. A more effective supply plan must be prepared, in accordance with actual circumstances, with reference to campaign analysis results.

### ④ Maintenance

Although there are no particular regulations regarding freon-using refrigerators in Pakistan, all refrigerators provided for this plan are the freon substitute type, as planned in the EPI activities. Central and provincial government technicians can maintain freon-using refrigerators, but freon substitute refrigerators will entail reliance on private sector services. It would be desirable therefore to retrain the staff as soon as possible.

## Reference

The Islamic Republic of Pakistan  
The Project Expansion of Immunization against Neonatal  
Tetanus

Member List of the Survey Team

1. Leader	Shinji TOZUKA	Japan International Cooperation System
2. Planner of Equipment and Procurement	Taiji NAKATANI	Japan International Cooperation System
3. Planner of Equipment and Procurement	Toshiyuki OMOTO	Japan International Cooperation System

## Schedule of the Study Team

Day	Date		Activities	Place of Stay
1	28-Jun	Mon	Tokyo(14:00)→ Islamabad(21:05)	Islamabad
2	29-Jun	Tue	Courtesy Call and Discussion with JICA Office Courtesy Call on Embassy of Japan Courts Call and Discussion with Ministry of Health	Islamabad
3	30-Jun	Wed	Courtesy Call on Ministry of Finance and Economic Affairs	Islamabad
4	1-Jul	Thu	Discussion with National Institute of Health (NIH) Officials Discussion with EPI Officials	Islamabad
5	2-Jul	Fri	Site Survey(Federal Store)	Islamabad
6	3-Jul	Sat	Analysis of result of the survey Marketing Research	Islamabad
7	4-Jul	Sun	Team Meeting	Islamabad
8	5-Jul	Mon	Site Survey (Province, Distrit Store and EPI Spot)	Lahore
9	6-Jul	Tue	Site Survey (Province, Distrit Store and EPI Spot)	Islamabad
10	7-Jul	Wed	Site Survey (Province, Distrit Store and EPI Spot)	Islamabad
11	8-Jul	Thu	Site Survey (Province, Distrit Store and EPI Spot) Discussion with WHO Officials Discussion with UNICEF Officials	Islamabad
12	9-Jul	Fri	Discussion on M/M	Islamabad
13	10-Jul	Sat	Analysis of result of the survey Marketing Research	Islamabad
14	11-Jul	Sun	Team Meeting	Islamabad
15	12-Jul	Mon	Data Collection	Islamabad
16	13-Jul	Tue	Site Survey (Maintenance Center)	Islamabad
17	14-Jul	Wed	Discussion on M/M Marketing Research	Islamabad
18	15-Jul	Thu	Report to JICA Office Report to Embassy of Japan Islamabad (22:35) →	—
19	16-Jul	Fri	Tokyo(12:40)	—



## List of Party Concerned in the Recipient Country

Name	Position	Belonging
Ministry of Health		
Dr. Palusa Arshad Melik	Deputy Director General	
Mr. Matiullah Khan	Joint Secretary	
Economic Affairs Division		
Mr. Zaheer Ahmed	Joint Secretary	
National Institute of Health		
Lt.Gen(Rtd) Muhammad Saleem	Executive Director	
Dr. Rehan Hafiz	National Project Manager	Federal EPI Cell
Mr. Qadir Abbasi	Statistic Officer	Federal EPI Cell
Mr. Ahemd Bashir	Store Officer	Federal EPI Cell
WHO		
Dr. Mohammad Ali Barzgar	Representative	
Mr. M. Hanif Lang	Surveillance Officer	Federal EPI Cell
Mr. M. Ismat Ullah Chaudhry	Operation Officer Punjab	
UNICEF		
Ms. Serap Maktav	Deputy Representative	
Dr. Imran Ravji	Consultant Child Health	
Public Health Center of District		
Dr. Riaz Ahmad	Divisional Health Supervisor	Gujranwala
Dr. Akhtar Ali	District Health Officer	Gujranwala
Dr. Azam Khan	Project Manager EPI	Peshawar
Dr. Haji Gul	District Health Officer	Mardan
Embassy of Japan in Pakistan		
Toshiyuki IWAFUJI	Counselor	
Makoto NOJIRI	First Secretary	
JICA Office in Pakistan		
Kazuo NAKAGAWA	Chief	
Noriaki NAGATOMO	Staff	
Mr. Mahmood A. Jilani	Chief Programme Officer	

MINUTES OF DISCUSSIONS  
ON THE STUDY ON THE PROJECT FOR IMPLEMENTATION OF  
NEONATAL TETANUS HIGH RISK APPROACH IN HIGH RISK DISTRICTS  
IN THE ISLAMIC REPUBLIC OF PAKISTAN

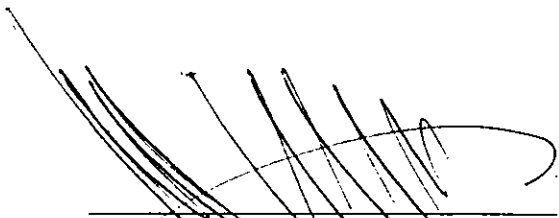
In response to a request from the Government of the Islamic Republic of Pakistan (hereinafter referred to as "Pakistan"), the Government of Japan decided to conduct a Study on the project for implementation of Neonatal Tetanus High Risk Approach in High Risk Districts (hereinafter referred to as "the Project") and entrusted the study to the Japan International Cooperation Agency (hereinafter referred to as "JICA").

JICA sent the Study Team (hereinafter referred to as "the Team"), headed by Mr Shinji TOTSUKA, Deputy Resident Representative, JICA Pakistan Office to Pakistan from June 28 to July 15, 1999.


The Team had a series of discussions with the officials concerned of the Government of Pakistan and conducted field surveys.

In the course of discussion and field surveys, both parties confirmed the main items described on the attached sheets. The Team will proceed to further works and prepare the Study Report.

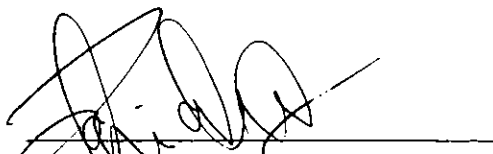
Islamabad, July 23, 1999



Mr Shinji TOTSUKA  
Leader  
The Study Team  
Japan International Cooperation Agency



Lt. Gen(Rtd) Muhammad Saleem  
Executive Director  
National Institute of Health(NIH)



Mr Zaheer Ahmad  
Joint Secretary  
Economic Affairs Division  
Islamic Republic of Pakistan



Mr Matiullah Khan  
Joint Secretary  
Ministry of Health  
Islamic Republic of Pakistan

## ATTACHMENT

### 1. Object of the Project

The object of the project is to reduce the risk of neonatal tetanus in Pakistan.

### 2. Project Site

The Project sites are identified as the high risk areas for neonatal tetanus listed in Annex I.

### 3. Responsible and implementing Agency

3-1 Responsible Agency: Ministry of Health, GOP

3-2 Implementing Agency: National Institute of Health (NIH)

### 4. Items requested by the Government of Pakistan

After the discussions with the Team, the items described in Annex II were finally requested by the Government of Pakistan.

The items which shall be considered as Japan's Grant Aid are listed in "The Items Requested to the Government of Japan". The other items are also listed in "The Items to be Provided by the Government of Pakistan" for reference of the Project.

The Description with the detailed project components will be finalized by the Team and will be recommended to the Government of Japan for approval.

### 5. Japan's Grant Aid Scheme

5-1 The Pakistani side has understood the system of Japan's Grant Aid Scheme in Annex III as explained by the Team.

5-2 The Pakistani side will take necessary measures, as described in Annex IV for smooth implementation of the Project on the condition that the Grant Aid is extended to the Project by the Government of Japan.

### 6. Schedule of the Study

JICA will prepare the study report on the Project and sent it to the Government of Pakistan around November, 1999.

### 7. Other Relevant Issues

#### 7-1 PC-I

The Team recommended the Government of Pakistan to prepare separate PC-I for the Project and the PC-I should be approved by November, 1999. A consultant fee as foreign exchange cost and a banking charge and custom clearance charge at port of arrival as local cost must be reflected in the PC-I.

The Pakistani side promised the Team to do so.

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### 7-2 Eligible Source of the Countries

Pakistani side requested the Team to consider the member of OECD countries as eligible source of countries to secure the quality of the items.

The Team promised to convey the request to JICA Head Office, Tokyo and advised Pakistani side to make a request at the time of finalization of a Tender Document.

### 7-3 Implementation System of Immunization

The implementation system of immunization is described in Annex V.

However, the Team requested the Pakistani side to coordinate with other donors i.e. WHO and UNICEF for implementation, monitoring and evaluation of the campaign.

### 7-4 Request for Technical Cooperation of JICA

The Pakistani side requested the Team to dispatch experts in the following fields;

- 1) Public Health
- 2) Vaccine Production
- 3) Vaccine Quality Control
- 4) Monitoring and Evaluation

The Team explained the Pakistani side a procedure of formal request (preparation of A1 Form by NIH→Ministry of Health→EAD→Embassy of Japan) and promised to convey the request to JICA Head Office, Tokyo.

### 7-5 Procurement of Syringes

The Pakistani side explained the Team that the Auto-destruct Syringes are strongly recommended by WHO and UNICEF and it is a conditionality of SAP(Social Action Program). It is therefore more desirable for the Pakistani side to procure the Auto-destruct Syringes.

### 7-6 Report to JICA Pakistan Office

The Pakistani side will conduct the monitor and surveillance of NNT campaign of year 2000 and report the review of the result to JICA Pakistan Office.

## PROJECT SITES FOR NNT HIGH RISK AREA DURING 2000

PROVINCE	DISTRICT NAME	POPULATION		CBA IN HR AREAS
		TOTAL	HIGH RISK	
PUNJAB	Gujranwala	3,460,356	1,142,000	251,240
	Hafizabad	843,067	169,000	37,180
	Lahore	6,371,139	1,400,000	308,000
	Sheikhupura	3,312,363	795,000	174,900
	Okara	2,251,688	450,000	99,000
	Jhang	2,875,909	950,000	209,000
	Vehari	2,099,989	483,000	106,260
	Mainwali	1,063,690	295,000	64,900
	D.G. Khan	1,673,201	678,000	149,160
	Muzafargarh	2,647,188	845,000	185,900
	Rajanpur	1,112,572	235,000	51,700
	Layyah	1,132,015	248,000	54,560
	Bahawalnagar	2,033,782	452,000	99,440
	Bahawalpur	2,085,643	789,000	173,580
	R Y Khan	3,151,740	647,000	142,340
<b>TOTAL PUNJAB</b>	<b>15</b>	<b>36,114,342</b>	<b>9,578,000</b>	<b>2,107,160</b>
SINDH	Hyderabad	2,917,635	934,000	205,480
	Dadu	1,675,639	501,000	110,220
	Karachi Malir	1,069,241	343,000	75,460
	Karachi East	2,790,414	486,000	106,920
	Karachi Central	2,299,778	529,000	116,380
	Karachi West	2,136,679	437,000	96,140
	Badin	1,138,431	364,000	80,080
	Thatta	1,129,325	325,000	71,500
	Mrpur Khas	924,426	231,000	50,820
	Thar	931,383	235,000	51,700
	Umankor	673,971	170,000	37,400
	Sanghar	1,458,505	294,000	64,680
	Nawabshah	1,075,359	569,000	125,180
	N. Feroz	1,093,503	186,000	40,920
	Ghotki	978,273	350,000	77,000
	Khairpur	1,555,818	358,000	78,760
	Larkana	1,954,592	1,123,000	247,060
	Shikarpur	889,359	759,000	166,980
	Jacobabad	1,438,531	725,000	159,500
	Sukkur	901,648	154,000	33,880
<b>TOTAL SINDH</b>	<b>20</b>	<b>29,032,510</b>	<b>9,073,000</b>	<b>1,996,060</b>
NWFP/FATA	Bannu	711,514	213,000	46,860
	Lakki Marwat	500,774	125,000	27,500
	Charsada	999,957	301,000	66,220
	D.I. Khan	610,978	246,000	54,120
	Dir	1,318,803	401,000	88,220
	Bunair	514,924	105,000	23,100
	Kohat	983,705	295,000	64,900
	Karak	434,387	109,000	23,980
	Mardan	1,490,357	447,000	98,340
	Nowshera	893,068	268,000	58,960
	Peshawar	2,150,091	645,000	141,900
	Swabi	1,038,485	356,000	78,320
	Bajour	613,085	184,000	40,480
	Khyber	549,079	165,000	36,300
Mohmand	340,715	102,000	22,440	
<b>TOTAL NWFP/FATA</b>	<b>15</b>	<b>13,149,922</b>	<b>3,962,000</b>	<b>871,640</b>
Balochistan	Loralai	307,289	71,000	15,620
	Jhal Magsi	106,486	31,000	6,820
	Bolan	288,099	67,000	14,740
	Sibi	182,977	82,000	18,040
	Nasirabad	248,562	82,000	18,040
	Jaffarabad	431,272	142,000	31,240
	Quetta	1,326,554	306,000	67,320
<b>TOTAL BALOCHISTAN</b>	<b>7</b>	<b>2,891,239</b>	<b>781,000</b>	<b>171,820</b>
<b>TOTAL PAKISTAN</b>	<b>57</b>	<b>81,188,013</b>	<b>23,394,000</b>	<b>5,146,680</b>

### THE ITEMS REQUESTED TO THE GOVERNMENT OF JAPAN

ITEMS	QUANTITY	
	2000	2001
TT Vaccine (20 doses vial)	1,027,000	616,200
Auto-destruct Syringes	16,984,000	10,190,400
Disposable Boxes for syringes	169,840	101,904
Vaccine Carriers	6,000	3,600
Small Refrigerators	1,200	720
Ice-Lined Refrigerators	113	68
Stabilizers for Small Refrigerators	1,200	720
Stabilizers for Ice-Lined Refrigerators	113	68
Cold Rooms	2	0

The quantity of the items requested for year 2001 is roughly estimated on the basis of year 2000 for reference. The quantity required for each item will be recalculated based on the review of the campaign of year 2000.

### THE ITEMS TO BE PROVIDED BY THE GOVERNMENT OF PAKISTAN

- 1.Cards
- 2.Tally Sheets/Registration Sheets
- 3.Training of Vaccinators (Females/Males)
- 4.Hiring of Vehicles
- 5.Petrol/diesel, oil, lubrication
- 6.Ice
- 7.Supervision and monitoring
- 8.Surveillance (material/training)

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Japan's Grant Aid Scheme

1. Grant Aid Procedures

1) Japan's Grant Aid Program is executed through the following procedures.

Application(Request made by a recipient country)

Study(Basic Design Study conducted by JICA)

Appraisal & Approval(Appraisal by the Government of Japan and Approval by Cabinet)

Determination(The Notes exchanged between the Government of Japan and the recipient country)

Implementation(Implementation of the Project)

2) Firstly, the application or request for a Grant Aid Project submitted by recipient country is examined by the Government of Japan (the Ministry of Foreign Affairs) to determine whether or not it is eligible for Grant Aid. If the request is deemed appropriate, the Government of Japan assigns JICA (Japan International Cooperation Agency) to conduct a study on the requested project.

Secondly, JICA conducts the study (Basic Design Study), using (a) Japanese consulting firm(s).

Thirdly, the Government of Japan appraises the project to see whether or not it is suitable for Japan's Grant Aid Scheme based on the Basic Design Study report prepared by JICA. If the project is justified, then submitted to the Cabinet for approval.

Fourthly, the project approved by the Cabinet becomes official when pledge by the Exchange of Notes signed by both Governments.

Finally, for the implementation of the project, JICA assists the recipient country in such matters as preparing tenders, contracts and so on.

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## 2. Basic Design Study

### 1) Contents of the Study

The aim of the Basic Design Study (hereafter referred to as "the Study") conducted by JICA on a requested project (hereafter referred to as "the Project") is to provide a basic document necessary for the appraisal of the Project by the Japanese Government. The contents of the Study are as follows:

a) Confirmation of the background, objectives, benefits of the requested Project and institutional capacity of agencies concerned of the recipient country necessary for the Project's implementation.

b) Evaluation of the appropriateness of the Project to be implemented under the Grant Aid Scheme from a technical, social and economic point of view.

c) Confirmation of items agreed on by both parties concerning the basic concept of the Project

d) Preparation of a basic design of the Project

e) Estimation of the Project Cost

The contents of the original request are not necessarily approved in their initial form as the contents of the Grant Aid Project. The Basic Design of the Project is confirmed considering the guideline of Japan's Grant Aid Scheme.

The Government Japan requests the Government of the recipient country to take whatever measures are necessary to ensure its self-reliance in the implementation of the Project. Such measures must be guaranteed even though they may fall outside of jurisdiction of the organization in the recipient country actually implementing the Project. Therefore, the implementation of the Project is confirmed by the relevant organizations in the recipient country through the Minutes of Discussions.

### 2) Selection of Consultants

For the smooth implementation of the Study, JICA uses (a) registered consultant firm(s). JICA selects (a) firms(s) based on proposals submitted by interested firms. The firm(s) selected carry (ies) out the Basic Design Study and write(s) a report based upon terms of reference set by JICA. The consulting firm (s) used for the Study which is (are) recommended by JICA to the recipient country to also work on the Project's implementation after the Exchange of Notes, in order to maintain technical consistency.



### 3. Japan's Grant Aid Scheme

#### 1) What is Grant Aid?

The Grant Aid Program provides a recipient country with non-reimbursable funds needed to procure the facilities, equipment and services (engineering service and transportation of the products, etc.) for economic and social development of the country under the principals in accordance with the relevant law and regulations of Japan. Grant Aid is not supplied through the donation of materials as such.

#### 2) Exchange of Note (E/N)

Japan's Grant Aid is extended in accordance with the Notes exchanged by the two Governments concerned, in which the objective of the Project, period of execution, conditions and amount of the Grant Aid, etc., are confirmed.

3) "The period of Grant Aid" means the one fiscal year in which the Cabinet approves the project for within the fiscal year, all procedure such as exchanging of Notes, concluding contracts with (a) consultants firm(s) and (a) contractor(s) and final payment to them must be completed. However in case of delays in delivery, installation or construction due to unforeseen factors such as weather, the period of the Grant Aid can be further extended for a maximum of one year at most by mutual agreement between the two Governments.

4) Under the Grant Aid, in principle, Japanese products and services including transport or those of the recipient country are to be purchased.

When both Governments deem it necessary, the Grant Aid may be used for the purchase of the products or services of the third country.

However the prime contractors, namely, consulting contracting and procurement firms, are limited to "Japanese nationals" (The term "Japanese nationals" means persons of Japanese nationality or Japanese corporation controlled by persons of Japanese nationality).

#### 5) Necessity of "Verification"

The Government of recipient country or its designated authority will conclude contracts denominated in Japanese yen with Japanese national. Those contracts shall be verified by the Government of Japan. This "Verification" is deemed necessary to secure accountability to Japanese taxpayers.

#### 6) Undertaking required of the Government of recipient country

In the implementation of the Grant Aid Project, the recipient country is required to undertake such necessary measures as the following:



a) To secure land necessary for the site of the Project and to clear, level and reclaim the land prior to commencement of the construction.

b) To provide facilities of the distribution electricity, water supply drainage and other incidental facilities in and around the sites.

c) To secure buildings prior to the procurement in case the installation of the equipment.

d) To ensure all the expenses and prompt execution for loading, customs clearance at the port of disembarkation and internal transportation of the products purchased under the Grant Aid.

e) To exempt Japanese nationals from customs duties, internal taxes and other fiscal levies which will be imposed in the recipient country with respect to the supply of the products and services under the Verified Contracts.

f) To accord Japanese nationals whose services may be required in connection with the supply of the products and services under the verified contracts, such facilities as may be necessary for their entry into the recipient country and stay therein for the performance of their work.

7) "Proper Use"

The recipient country is required to maintain and use the facilities constructed and the equipment purchased under the Grant Aid properly and effectively and to assign the necessary staff for operation and maintenance of them as well as to bear all the expense other than those covered by the Grant Aid.

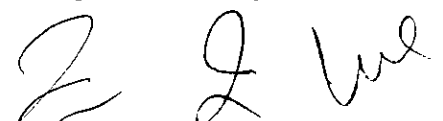
8) "Re-export"

The products purchased under the Grant Aid shall not be re-exported from the recipient country.

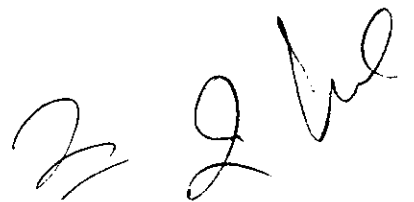
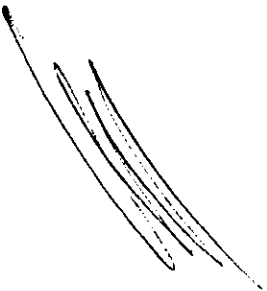
9) Banking Arrangement (B/A)

a) The Government of the recipient country or its designated authority should open an account in the name of the Government of the recipient country in a bank in Japan (hereinafter referred to as "the Bank"). The Government of Japan will execute the Grant Aid by making payment in Japanese yen to cover the obligations incurred by the Government of the recipient country or its designated authority under the Verified Contracts.

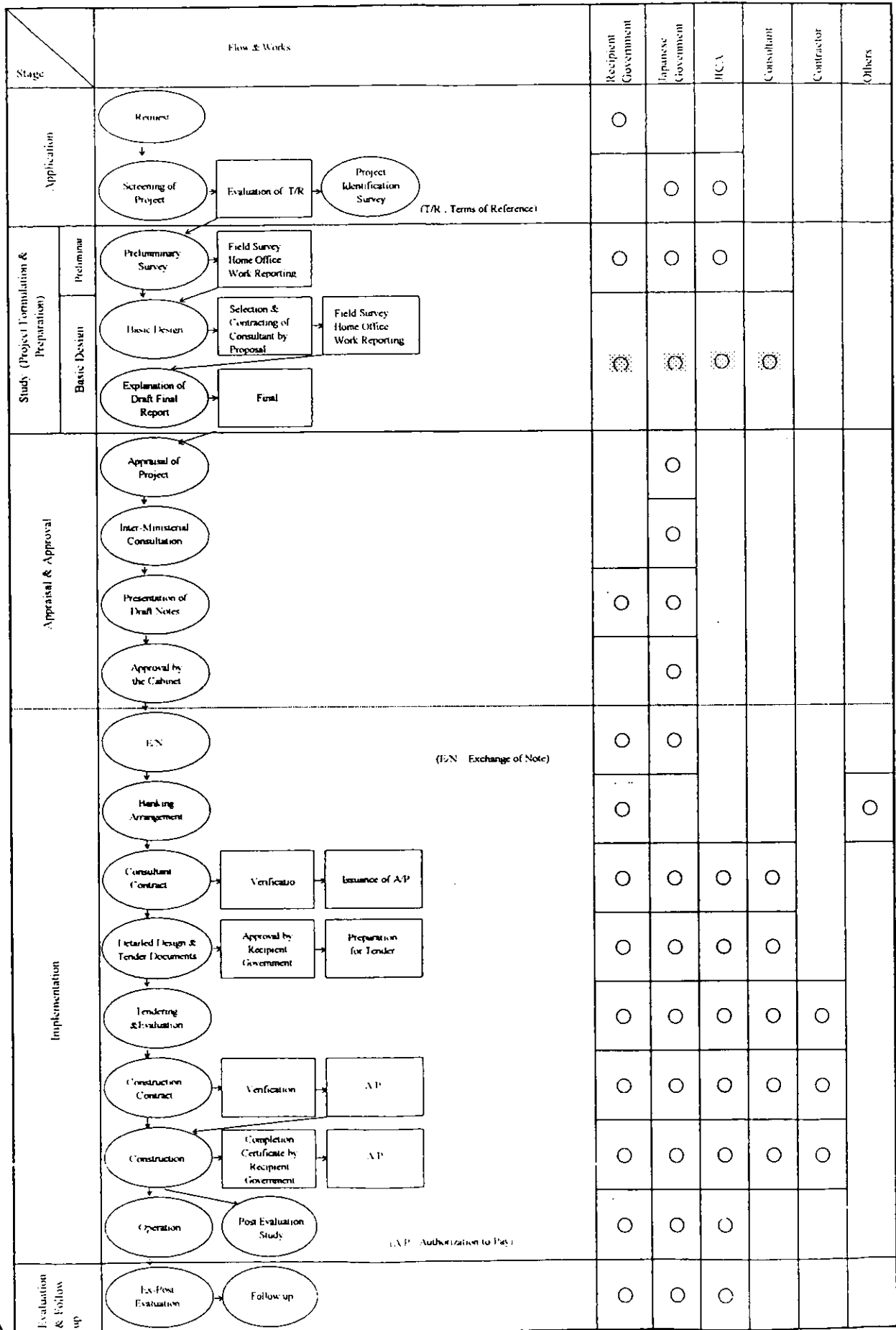
b) The payments will be made when payment requests are presented by the



Bank to the Government of Japan under an authorization to pay issued by the Government of the recipient country or its designated authority.

A handwritten signature in cursive script, appearing to read "Z. L. W.", located in the bottom right corner of the page.A large, dark, diagonal scribble or mark in the bottom left corner of the page, consisting of several overlapping, curved lines.

FLOW CHART OF JAPAN'S GRANT AID PROCEDURES



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## Annex IV

### Necessary Measures to be taken by the Government of Pakistan

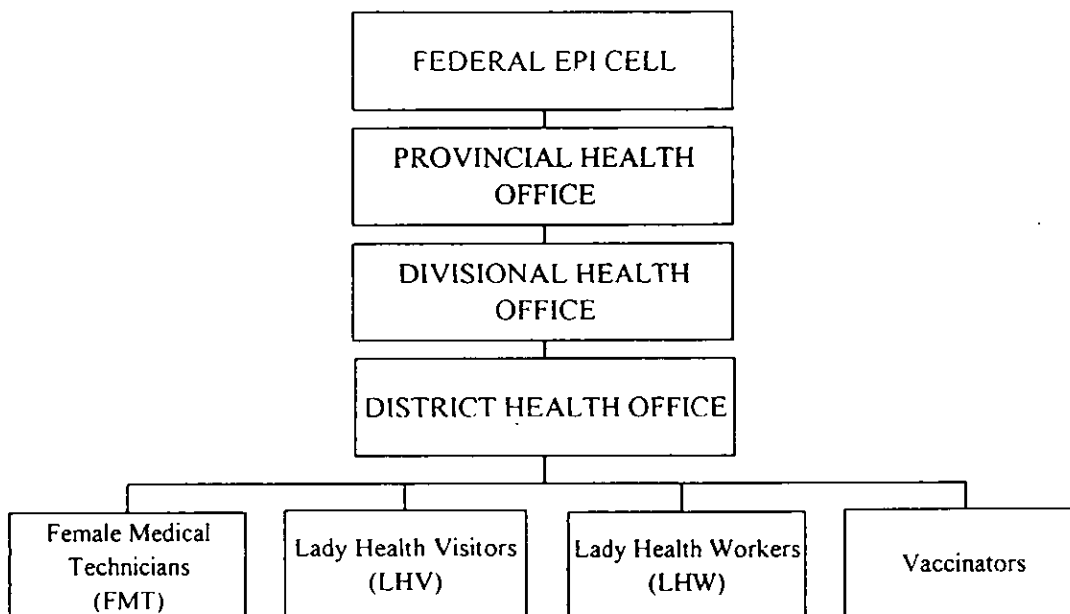
Following measures should be taken by the government of Pakistan on condition that the Grant Aid by the Government of Japan is extended to the Project:

1. To provide data and information necessary for the Project;
2. To bear commissions to the Japanese foreign exchange bank for its banking services based upon the Banking Arrangement, namely the advising commission of the "Authorization to Pay" and payment commission;
3. To ensure prompt unloading, tax exemption, customs clearance at the port/air port of disembarkation in Pakistan and prompt internal transportation therein of the materials and equipment for the Project procured under the Grant Aid;
4. To exempt Japanese juridical and physical nationals engaged in the Project from customs duties, internal taxes and other fiscal levies which may be imposed in Pakistan with respect to the supply of the products and services under the verified contracts;
5. To accord Japanese nationals whose services may be required in connection with the supply of the products and the services under the verified contracts such facilities as may be necessary for their entry into Pakistan and stay therein for the performance of their work;
6. To provide necessary permissions, licenses and other authorizations for implementing the Project, if necessary;
7. To assign appropriate teaching and administrative staff members for proper and effective operation and maintenance of the equipment and instruments;
8. To maintain and use properly and effectively the equipment and instruments;
9. To provide facilities for distribution of electricity, water supply and drainage and other incidental facilities in and around the sites; and
10. To bear all the expenses, other than those to be borne by the Japan's Grant Aid within the scope of the Project.

## IMPLEMENTATION SYSTEM OF IMMUNIZATION

### 1. Organaization

Organaizational Chart of implementing immunization is described as below. Ministry of Health (MOH) is managing to conduct EPI activities with vaccinators currently available, including FMT, LHV and LHW, on each level under control of District Health Officer.



### 2. Cold Chain System

MOH has the following facilities and quantity to conduct EPI activities, and each facility basically has the listed cold chain equipment for the storage of vaccines.

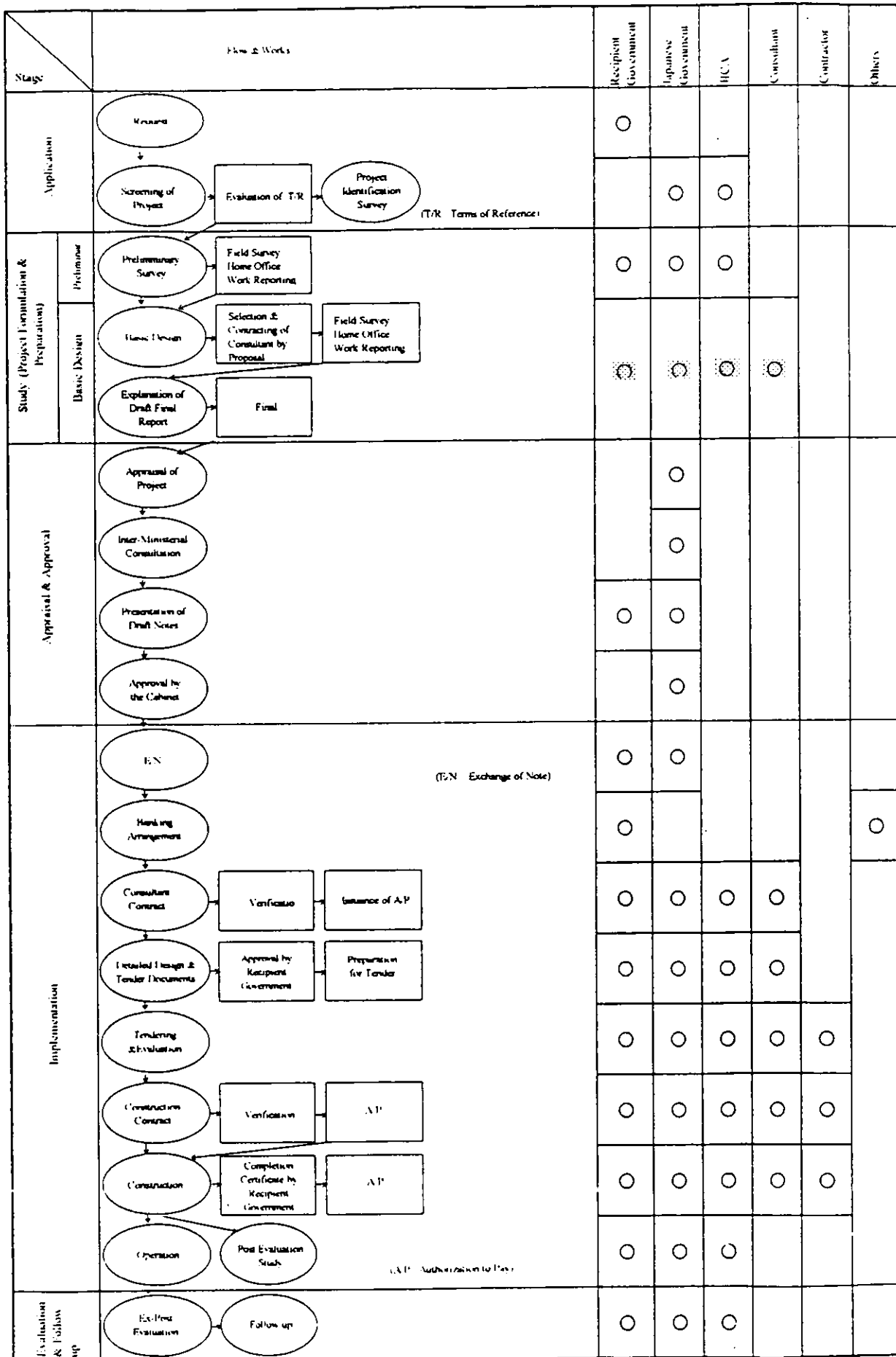
Central Store	1	Cold Room, Freezers, ILRs
Provincial Store	5	Cold Room, Freezers, ILRs
Divisional Store	27	Cold Room, Freezers, ILRs
District Store	120	Freezers, ILRs, Cold Boxes
Tehsil Store	413	Freezers, ILRs, Cold Boxes
EPI Fixed Center	2,649	Refrigerators
Out Reach Teams	4,695	Vaccine Carriers
Mobile Teams	69	Cold Box

### 3. Budget

Budget for EPI is allocated according to Five Years Plan of EPI&CDD prepared by NIH.

*[Handwritten signatures and scribbles]*

FLOW CHART OF JAPAN'S GRANT AID PROCEDURES



## Annex IV

### Necessary Measures to be taken by the Government of Pakistan

Following measures should be taken by the government of Pakistan on condition that the Grant Aid by the Government of Japan is extended to the Project:

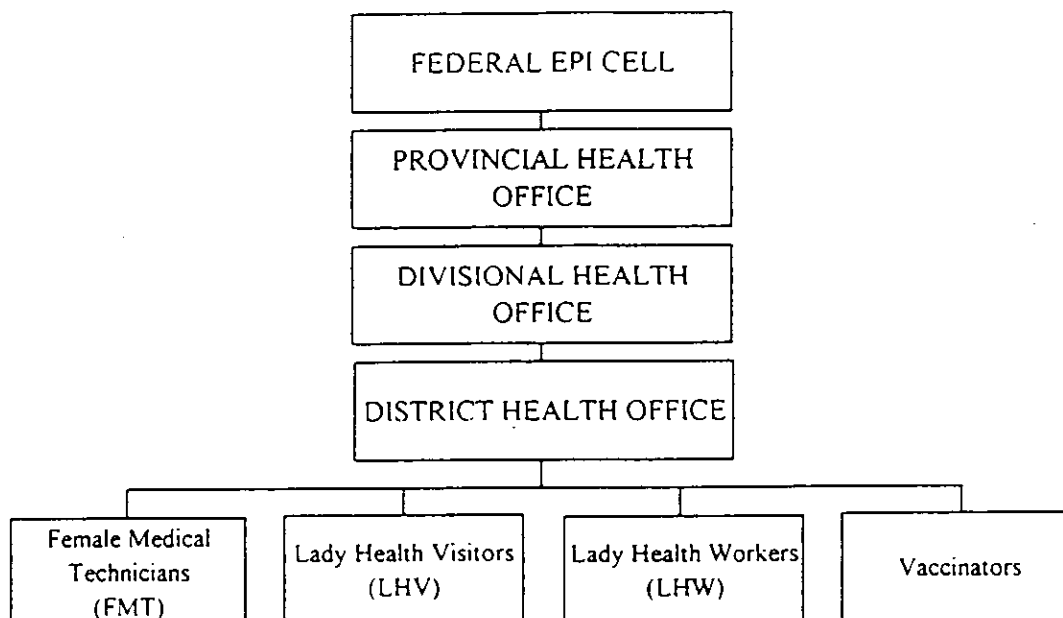
1. To provide data and information necessary for the Project;
2. To bear commissions to the Japanese foreign exchange bank for its banking services based upon the Banking Arrangement, namely the advising commission of the "Authorization to Pay" and payment commission;
3. To ensure prompt unloading, tax exemption, customs clearance at the port/air port of disembarkation in Pakistan and prompt internal transportation therein of the materials and equipment for the Project procured under the Grant Aid;
4. To exempt Japanese juridical and physical nationals engaged in the Project from customs duties, internal taxes and other fiscal levies which may be imposed in Pakistan with respect to the supply of the products and services under the verified contracts;
5. To accord Japanese nationals whose services may be required in connection with the supply of the products and the services under the verified contracts such facilities as may be necessary for their entry into Pakistan and stay therein for the performance of their work;
6. To provide necessary permissions, licenses and other authorizations for implementing the Project, if necessary;
7. To assign appropriate teaching and administrative staff members for proper and effective operation and maintenance of the equipment and instruments;
8. To maintain and use properly and effectively the equipment and instruments;
9. To provide facilities for distribution of electricity, water supply and drainage and other incidental facilities in and around the sites; and
10. To bear all the expenses, other than those to be borne by the Japan's Grant Aid within the scope of the Project.



## IMPLEMENTATION SYSTEM OF IMMUNIZATION

### 1. Organization

Organizational Chart of implementing immunization is described as below. Ministry of Health (MOH) is managing to conduct EPI activities with vaccinators currently available, including FMT, LHV and LHW, on each level under control of District Health Officer.



### 2. Cold Chain System

MOH has the following facilities and quantity to conduct EPI activities, and each facility basically has the listed cold chain equipment for the storage of vaccines.

Central Store	1	Cold Room, Freezers, ILRs
Provincial Store	5	Cold Room, Freezers, ILRs
Divisional Store	27	Cold Room, Freezers, ILRs
District Store	120	Freezers, ILRs, Cold Boxes
Tehsil Store	413	Freezers, ILRs, Cold Boxes
EPI Fixed Center	2,649	Refrigerators
Out Reach Teams	4,695	Vaccine Carriers
Mobile Teams	69	Cold Box

### 3. Budget

Budget for EPI is allocated according to Five Years Plan of EPI&CDD prepared by NIH.

## Appendices

## Appendix

The Reported Number of NNT Cases in Each District in the late three Years

District	NTT Cases in 1996	NTT Cases in 1997	NTT Cases in 1998	Targeted District in 2001
<b>PUNJAB</b>				
RAWALPINDI	0	0	0	
ATTOCK	5	0	0	
CHAKWAL	0	0	0	
JHELUM	0	7	0	
GUJRANWALA	14	14	33	<input type="checkbox"/>
HAFIZABAD	4	4	5	<input type="checkbox"/>
GUJRAT	4	3	4	
MANDI BHAUDDIN	2	1	1	
SIALKOT	1	0	4	
NAROWAL	1	1	0	
LAHORE	62	19	38	<input type="checkbox"/>
SHEIKHUPURA	33	23	13	<input type="checkbox"/>
KASUR	22	11	2	
OKARA	7	0	5	<input type="checkbox"/>
MULTAN	1	3	0	
LODHRAN	28	4	0	
VEHARI	13	24	11	<input type="checkbox"/>
SAHIWAL	2	0	0	
PAKPATTAN	3	3	2	
KHANEWAL	0	1	0	
FAISALABAD	5	2	0	
TOBA TEK SINGH	1	2	4	
JHANG	10	16	11	<input type="checkbox"/>
SARGODHA	8	2	1	
MIANWALI	25	15	22	<input type="checkbox"/>
BHAKKAR	4	10	3	
KHUSHAB	11	6	3	
D. G. KHAN	63	70	46	<input type="checkbox"/>
RAJANPUR	24	10	5	<input type="checkbox"/>
MUZAFFARGARH	46	51	33	<input type="checkbox"/>
LEIAH	10	9	9	<input type="checkbox"/>
BAHAWALPUR	69	65	53	<input type="checkbox"/>
BAHAWALNAGAR	16	18	25	<input type="checkbox"/>
RAHIM YAR KHAN	13	25	15	<input type="checkbox"/>
<b>SINDH</b>				
KARACHI SOUTH	9	7	3	
KARACHI EAST	20	26	12	<input type="checkbox"/>
KARACHI WEST	25	19	20	<input type="checkbox"/>

District	NTT Cases in 1996	NTT Cases in 1997	NTT Cases in 1998	Targeted District in 2001
KARACHI CENTRAL	12	16	14	<input type="checkbox"/>
KARACHI MALIR	20	20	10	<input type="checkbox"/>
THATTA	17	18	47	<input type="checkbox"/>
BADIN	25	17	39	<input type="checkbox"/>
HYDERABAD	39	42	32	<input type="checkbox"/>
MIRPUR KHAS	6	5	9	<input type="checkbox"/>
SANGHAR	26	34	47	<input type="checkbox"/>
DADU	39	32	36	<input type="checkbox"/>
LARKANA	219	163	153	<input type="checkbox"/>
SHIKARPUR	79	59	38	<input type="checkbox"/>
JACOBABAD	20	78	43	<input type="checkbox"/>
SUKKUR	18	10	13	<input type="checkbox"/>
KHAIRPUR	84	79	46	<input type="checkbox"/>
NAWAB SHAH	34	32	22	<input type="checkbox"/>
NAUSHAHRO FEROZE	29	25	13	<input type="checkbox"/>
THARPARKAR	9	11	9	<input type="checkbox"/>
UMERKOT	23	20	6	<input type="checkbox"/>
GHOTKI	74	99	98	<input type="checkbox"/>

#### NWFP

ABBOTTABAD	5	6	1	
BANNU	24	57	51	<input type="checkbox"/>
BATAGRAM	0	1	0	
BUNER	6	9	10	<input type="checkbox"/>
CHARSADDA	62	62	40	<input type="checkbox"/>
CHITRAL	0	0	0	
D.I.KHAN	19	32	25	<input type="checkbox"/>
DIR (Upper, Lower)	90	84	61	<input type="checkbox"/>
HARIPUR	0	6	2	
KARAK	17	10	8	<input type="checkbox"/>
KOHAT	17	30	20	<input type="checkbox"/>
KOHISTAN	0	0	1	
LAKKI MARWAT	10	17	5	<input type="checkbox"/>
MALAKAND	4	1	4	
MANSEHRA	0	5	4	
MARDAN	69	57	45	<input type="checkbox"/>
NOWSHERA	52	67	30	<input type="checkbox"/>
PESHAWAR	118	120	89	<input type="checkbox"/>
SWABI	55	100	73	<input type="checkbox"/>
SWAT	12	4	2	
TANK	2	1	1	

#### FATA

BAJAUR	22	27	56	<input type="checkbox"/>
KHYBER	56	59	43	<input type="checkbox"/>
KURRAM	0	4	1	
MOHMAND	15	22	10	<input type="checkbox"/>

District	NTT Cases in 1996	NTT Cases in 1997	NTT Cases in 1998	Targeted District in 2001
ORAKZAI	0	0	0	
NORTH WAZIRISTAN	2	0	3	
SOUTH WAZIRISTAN	0	4	0	
<b>BALUCHISTAN</b>				
QUETTA	0	2	2	<input type="checkbox"/>
PISHIN	0	0	0	
CHAGAI	0	0	0	
KILLA ABDULLAH	-	0	0	
ZHOB	0	0	0	
LORALAI	-	0	-	<input type="checkbox"/>
KILLA SAIFULLAH	-	-	-	
MUSA KHEL	-	0	-	
BARKHAN	-	-	-	
JHAL MAGSI	4	-	0	<input type="checkbox"/>
BOLAN	0	0	0	<input type="checkbox"/>
JAFARABAD	0	0	0	<input type="checkbox"/>
NASIRABAD	0	0	0	<input type="checkbox"/>
SIBI	0	10	0	<input type="checkbox"/>
ZIARAT	0	0	-	
KOHLU	-	-	-	
DERA BUGTI	0	-	0	
MASTUNG	0	0	0	
KALAT	0	0	0	
KHUZDAR	0	0	0	
AWARAN	-	0	-	
LASBELA	0	0	0	
KHARAN	0	0	0	
PANJGUR	0	0	0	
GWADAR	0	0	0	
TURBAT	-	0	-	
<b>AJK</b>				
MUZAFFARABAD	0	1	0	
MIRPUR	7	2	1	
KOTLY	5	1	0	
BAGH	0	0	0	
POONCH	0	0	0	
<b>FANA</b>				
GILGIT	3	6	4	
SKARDU	0	0	0	
DIAMIR	0	0	0	
GHIZER	0	0	0	
GANCHI	0	0	0	
<b>Total</b>	<b>2,010</b>	<b>2,038</b>	<b>1,650</b>	<b>57 Districts</b>

1) The symbol of [-] means that NNT case was not reported in the year.

Source : NIH

## Target Districts &amp; Number of CBAs in High-Risk Union Councils in 2001

District	NNT cases in 1998	Number of CBAs in 2001		
		Population of District	Population of Targeted High-Risk Union Councils	Targeted Number of CBAs
<b>PUNJAB</b>				
1 Gujranwala	33	3,460,356	1,142,000	251,240
2 Hafizabad	5	843,067	169,000	37,180
3 Lahore	38	6,371,139	1,400,000	308,000
4 Sheikhpura	13	3,312,363	795,000	174,900
5 Okara	5	2,251,688	450,000	99,000
6 Jhang	11	2,875,909	950,000	209,000
7 Vehari	11	2,099,989	483,000	106,260
8 Mianwali	22	1,063,690	295,000	64,900
9 D.G. Khan	46	1,673,201	678,000	149,160
10 Muzaffargarh	33	2,647,188	845,000	185,900
11 Rajanpur	5	1,112,572	235,000	51,700
12 Leiah	9	1,132,015	248,000	54,560
13 Bahawalnagar	25	2,033,782	452,000	99,440
14 Bahawalpur	53	2,085,643	789,000	173,580
15 R.Y.Khan	15	3,151,740	647,000	142,340
Sub-total		36,114,342	9,578,000	2,107,160
<b>SINDH</b>				
16 Hyderabad	32	2,917,635	934,000	205,480
17 Dadu	36	1,675,639	501,000	110,220
18 Karachi Malir	10	1,069,241	343,000	75,460
19 Karachi East	12	2,790,414	486,000	106,920
20 Karachi Central	14	2,299,778	529,000	116,380
21 Karachi West	20	2,136,679	437,000	96,140
22 Badin	39	1,138,431	364,000	80,080
23 Thatta	47	1,129,325	325,000	71,500
24 Mirpur Khas	9	924,426	231,000	50,820
25 Tharparkar	9	931,383	235,000	51,700
26 Umerkot	6	673,971	170,000	37,400
27 Sanghar	47	1,458,505	294,000	64,680
28 Nawab Shah	22	1,075,359	569,000	125,180
29 N. Feroze	13	1,093,503	186,000	40,920
30 Ghotki	98	978,273	350,000	77,000
31 Khairpur	46	1,555,818	358,000	78,760

District	NNT cases in 1998	Number of CBAs in 2001		
		Population of District	Population of Targeted High-Risk Union Councils	Targeted Number of CBAs
32 Larkana	153	1,954,592	1,123,000	247,060
33 Shikarpur	38	889,359	759,000	166,980
34 Jacobabad	43	1,438,531	725,000	159,500
35 Sukkur	13	901,648	154,000	33,880
Sub-total		29,032,510	9,073,000	1,996,060
<b>NWFP/FATA</b>				
36 Bannu	51	711,514	213,000	46,860
37 Lakki Marwat	5	500,774	125,000	27,500
38 Charsadda	40	999,957	301,000	66,220
39 D.I. Khan	25	610,978	246,000	54,120
40 Dir (Upper, Lower)	61	1,318,803	401,000	88,220
41 Buner	10	514,924	105,000	23,100
42 Kohat	20	983,705	295,000	64,900
43 Karak	8	434,387	109,000	23,980
44 Mardan	45	1,490,357	447,000	98,340
45 Nowshera	30	893,068	268,000	58,960
46 Peshawar	89	2,150,091	645,000	141,900
47 Swabi	73	1,038,485	356,000	78,320
48 Bajaur	56	613,085	184,000	40,480
49 Khyber	43	549,079	165,000	36,300
50 Mohmand	10	340,715	102,000	22,440
Sub-total		13,149,922	3,962,000	871,640
<b>BALUCHISTAN</b>				
51 Loralai	0	307,289	71,000	15,620
52 Jhal Magsi	0	106,486	31,000	6,820
53 Bolan	0	288,099	67,000	14,740
54 Sibi	0	182,977	82,000	18,040
55 Nasirabad	0	248,562	82,000	18,040
56 Jafarabad	0	431,272	142,000	31,240
57 Quetta	2	1,326,554	306,000	67,320
Sub-total		2,891,239	781,000	171,820
<b>Total 57 Districts</b>		<b>81,188,013</b>	<b>23,394,000</b>	<b>5,146,680</b>



District	NNT cases in 1998	Number of CBAs in 2001		
		Population of District	Population of Targeted High- Risk Union Councils	Targeted Number of CBAs

Source : NIH, POPULATION AND HOUSING CENSUS OF PAKISTAN, 1998

- 1) CBAs: Women of Child Bearing Age
- 2) The vaccines used in FATA are supplied through NWFP, therefore date of FATA is added to the one of NWFP
- 3) It is estimated that women of childbearing age are 22% of the population.
- 4) The number of NNT cases is based on the data reported at second or third level of Medical Center.

## The Plan of the Allotment of Cold Chain Equipment

Below are the planned cold chain equipment and materials. The allotment of cold chain equipment to each district will be proportional to the number of intended recipients. But in the view of the difference of the numbers between districts at present time, to rearrange the number of distribution may be needed.

## The Allotment of Cold Chain Equipment in 2001

District	NNT cases in 1998	Target Districts & No. of CBAs in High-Risk Union Councils	Distribution Plan			
			Vaccine Carrier	Small Refrigerator		Ice-lined Refrigerator
			phase 1	phase 1	phase 2	phase 1
<b>PUNJAB</b>						
RAWALPINDI	0					
ATTOCK	0					
CHAKWAL	0					
JHELUM	0					
GUJRANWALA	33	251,240	293		57	3
HAFIZABAD	5	37,180	43			1
GUJRAT	4					
MANDI BHAUDDIN	1					
SIALKOT	4					
NAROWAL	0					
LAHORE	38	308,000	359		73	3
SHEIKHUPURA	13	174,900	204			3
KASUR	2					
OKARA	5	99,000	115			2
MULTAN	0					
LODHRAN	0					
VEHARI	11	106,260	124			3
SAHIWAL	0					
PAKPATTAN	2					
KHANEWAL	0					
FAISALABAD	0					
TOBA TEK SINGH	4					
JHANG	11	209,000	244		44	3
SARGODHA	1					
MIANWALI	22	64,900	76			2
BHAKKAR	3					
KHUSHAB	3					
D. G. KHAN	46	149,160	174			3
RAJANPUR	5	51,700	60			2
MUZAFFARGARH	33	185,900	217		39	3
LEIAH	9	54,560	64			2

BAHAWALPUR	53	173,580	202			3
BAHAWALNAGAR	25	99,440	116			2
RAHIM YAR KHAN	15	142,340	166			3
Sub Total		2,107,160	2457		213	38
<b>SINDH</b>						
KARACHI SOUTH	3					
KARACHI EAST	12	106,920	125			3
KARACHI WEST	20	96,140	112			2
KARACHI CENTRAL	14	116,380	136			3
KARACHI MALIR	10	75,460	88			2
THATTA	47	71,500	83			2
BADIN	39	80,080	93			2
HYDERABAD	32	205,480	240		40	3
MIRPUR KHAS	9	50,820	59			2
SANGHAR	47	64,680	75			2
DADU	36	110,220	128		20	3
LARKANA	153	247,060	288		50	3
SHIKARPUR	38	166,980	195			3
JACOBABAD	43	159,500	186			2
SUKKUR	13	33,880	39			1
KHAIRPUR	46	78,760	92			2
NAWAB SHAH	22	125,180	146			2
NAUSHAHRO FEROZE	13	40,920	48			1
THARPARKAR	9	51,700	60			2
UMERKOT	6	37,400	44			1
GHOTKI	98	77,000	90			2
Sub Total		1,996,060	2,327		110	43
<b>N.W.F.P.</b>						
ABBOTTABAD	1					
BANNU	51	46,860	55		10	1
BATAGRAM	0					
BUNER	10	23,100	27		2	1
CHARSADDA	40	66,220	77			2
CHITRAL	0					
D. I. KHAN	25	54,120	63		10	2
DIR (Upper, Lower)	61	88,220	103		15	2
HARIPUR	2					
KARAK	8	23,980	28		4	1
KOHAT	20	64,900	76		13	2
KOHISTAN	1					
LAKKI MARWAT	5	27,500	32		6	1
MALAKAND	4					
MANSEHRA	4					
MARDAN	45	98,340	115		23	2
NOWSHERA	30	58,960	69		14	2
PESHAWAR	89	141,900	165		33	3
SWABI	73	78,320	91		16	2
SWAT	2					
TANK	1					
Sub Total		772,420	901		146	21
<b>F.A.T.A.</b>						
BAJAUR	56	40,480	47		6	1
KHYBER	43	36,300	42		5	1
KURRAM	1					
MOHMAND	10	22,440	26		3	1

ORAKZAI	0					
NORTH WAZIRISTAN	3					
SOUTH WAZIRISTAN	0					
Sub Total		99,220	115	14	3	
<b>BALUCHISTAN</b>						
QUETTA	2	67,320	78		2	
PISHIN	0					
CHAGAI	0					
KILLA ABDULLAH	0					
ZHOB	0					
LORALAI	-	15,620	18		1	
KILLA SAIFULLAH	-					
MUSA KHEL	-					
BARKHAN	-					
JHAL MAGSI	0	6,820	8		1	
BOLAN	0	14,740	17		1	
JAFARABAD	0	31,240	36		1	
NASIRABAD	0	18,040	21		1	
SIBI	0	18,040	21		1	
ZIARAT	-					
KOHLU	-					
DERA BUGTI	0					
MASTUNG	0					
KALAT	0					
KHUZDAR	0					
AWARAN	-					
LASBELA	0					
KHARAN	0					
PANJGUR	0					
GWADAR	0					
TURBAT	-					
Sub Total		171,820	199	0	8	
<b>A. J. K.</b>						
MUZAFFARABAD	0					
MIRPUR	1					
KOTLY	0					
BAGH	0					
POONCH	0					
Sub Total		-	-	-	-	
<b>F. A. N. A.</b>						
GILGIT	4					
SKARDU	0					
DIAMIR	0					
GHIZER	0					
GANCHI	0					
Sub Total		-	-	-	-	
<b>Total</b>		<b>5,146,680</b>	<b>5,999</b> (6,000)	<b>50</b>	<b>483</b>	<b>113</b>

Note 1: Actual number of Vaccine Carrier is 6,000.

Note 2: The districts for Small Refrigerators (phase 1) have not been decided yet.

The Allotment of Cold Chin Equipment in 2002

<b>Total</b>	-	<b>3,088,008</b>	<b>3,600</b>	<b>360</b>	<b>68</b>
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Source : NIH

The way of estimation of the number of cold chain equipment in 2002 (3<sup>rd</sup>) is adopted the same method used in 2001 (1<sup>st</sup>, 2<sup>nd</sup>), in principal. As result, the investigating commission estimated the number of the procurements as follow: Vaccine Carrier: 3,600 units, Small-size Refrigerator: 360 units, Ice lined Refrigerator: 68 units, taking the experience of person in charge of Ministry of Health and WHO in to the consideration. The place of distribution of above equipment will be decided according to the report that is presented by NIH after the decision of the districts and Union Councils based on the number of NNT (New born Neonatal Tetanus) cases in 2001.