

**STUDY REPORT  
ON  
THE PROJECT  
FOR  
EXPANSION OF IMMUNIZATION  
IN  
THE WEST BANK AND THE GAZA STRIP  
FOR  
THE CHILD HEALTH**

**January 2000**

**Japan International Cooperation Agency (JICA)**

## PREFACE

In response to a request from the Palestinian Interim Self-Government Authority, the Government of Japan decided to conduct a basic design study on the Project for Expansion of Immunization in the West Bank and the Gaza Strip and entrusted the study to the Japan International Cooperation Agency (JICA).

JICA sent to the West Bank and Gaza Strip a study team from November 21 to December 11, 1999.

The team held discussions with the officials concerned of the Palestinian Interim Self-Government Authority, and conducted a field study at the study area. After the team returned to Japan, further studies were made, and as this result, the present report was finalized.

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 Palestinian Interim Self-Government Authority for their close cooperation extended to the teams.

January, 2000



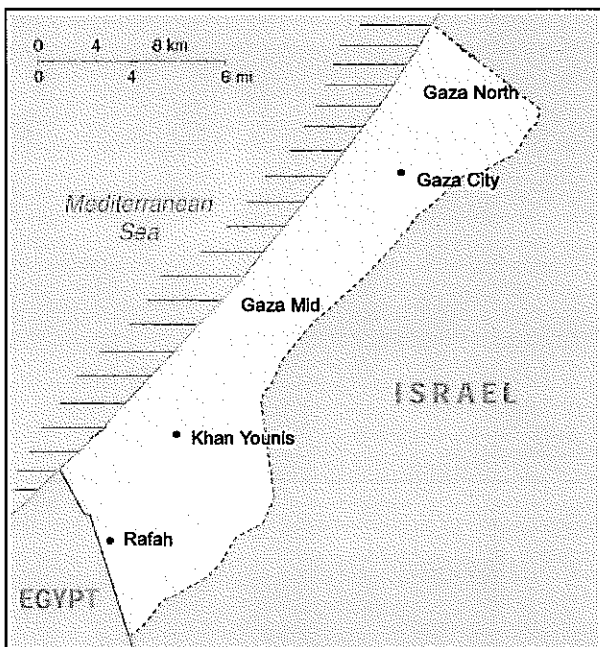
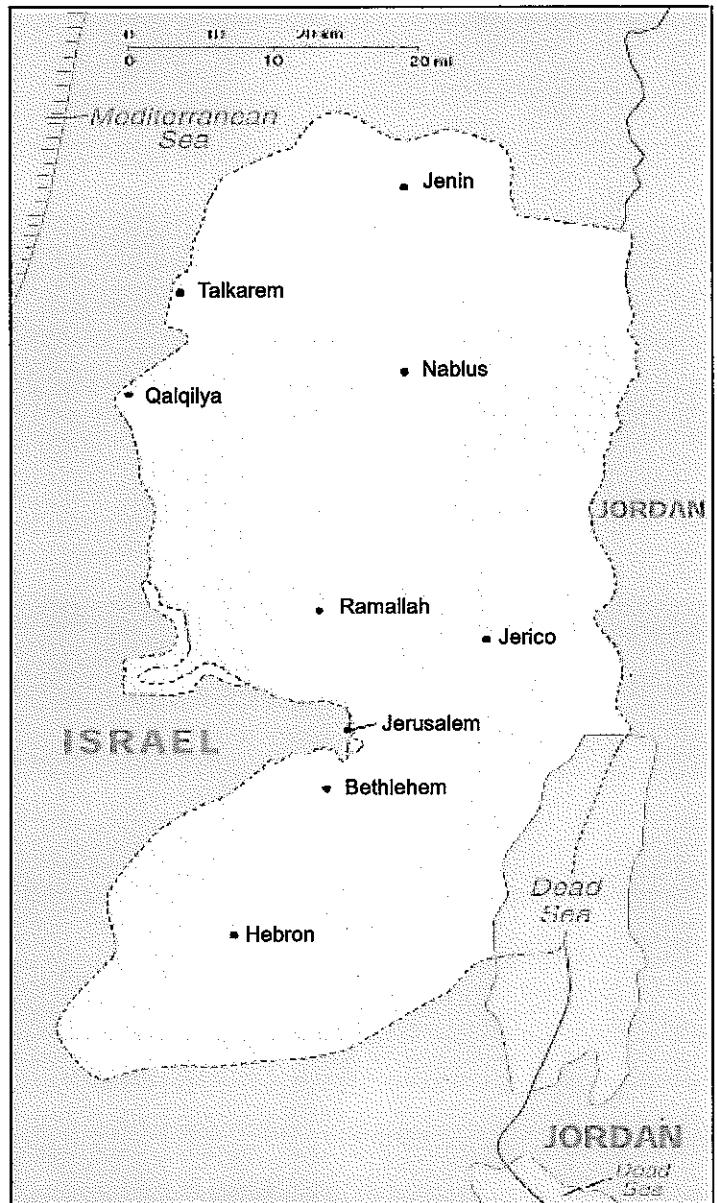
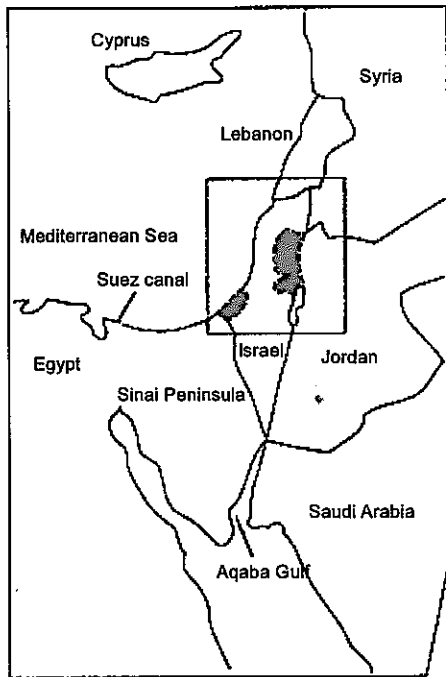
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Kimio Fujita

President

Japan International Cooperation Agency (JICA)

## Location Map of the PA



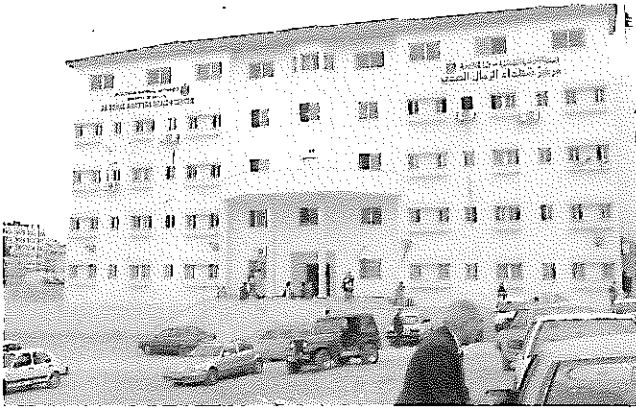


Photo-1

A I Remal Martyrs Health Center where the EPI Department of the Ministry of Health is located.

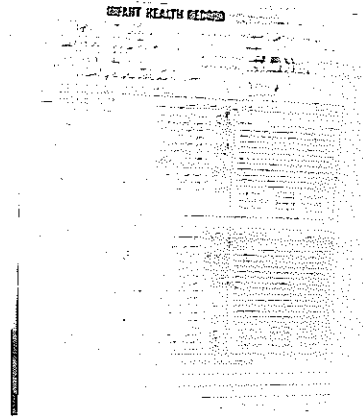


Photo-2

A datasheet for recording the health information of individual infants, including their immunization data.

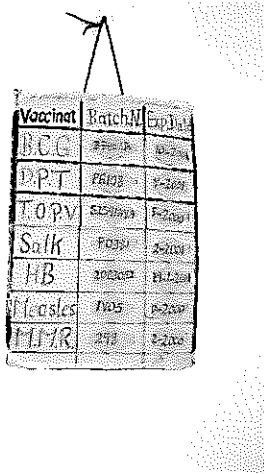


Photo-3

At each clinic, vaccine information is posted on a highly visible place to prevent the medical staff from administering expired vaccines.

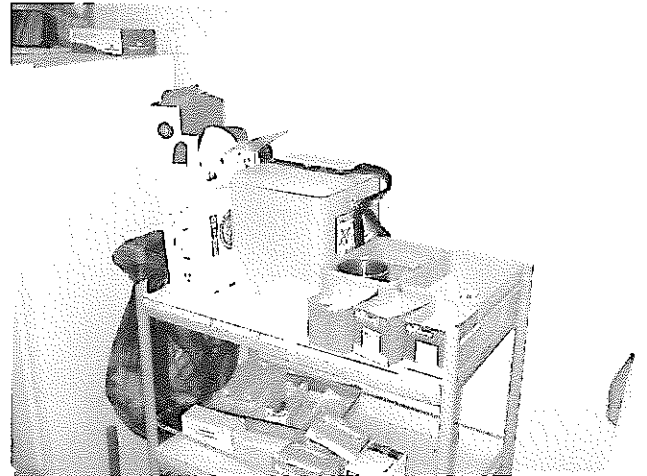


Photo-4

Each clinic is equipped with safety boxes for disposing used syringes as recommended by WHO.



Photo-5

UNICEF and WHO have provided each clinic with an average of two ice-line-type refrigerators for storing vaccines.

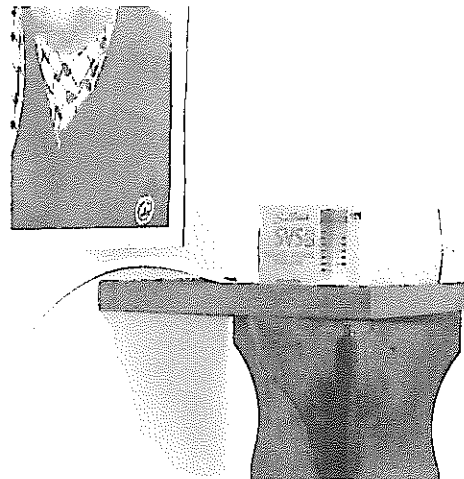


Photo-6

The ice-line-type refrigerator installed in this clinic in the Gaza Strip has a voltage stabilizer to counter voltage fluctuation.



Photo-7

The UNRWA Office in the Gaza Strip administers both the Gaza Strip and the West Bank.

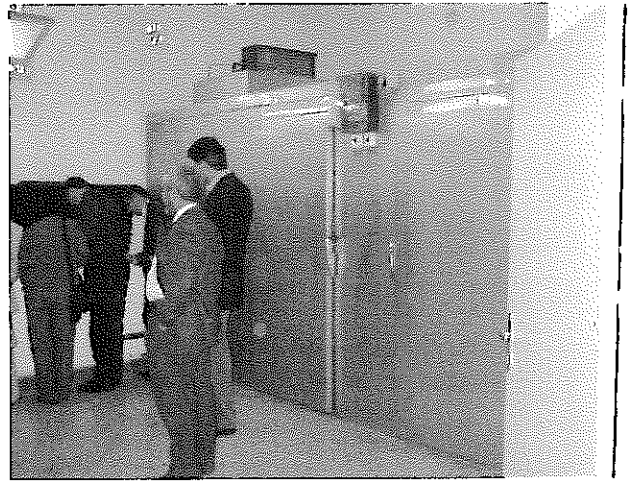


Photo-8

A cold room for vaccine storage within the UNRWA Office, from which vaccines are distributed to each clinic.



Photo-9

A freezer for storing polio vaccines within the UNRWA Office. It is a part of the ice-line refrigerator/freezer system and does not have a separate unit for polio vaccines.



Photo-10

Medical drugs are stored in an orderly manner at the UNRWA Office.



Photo-11

A Clinic run by UNRWA that offers various services, including maternal-and-child health education and contraception counseling.

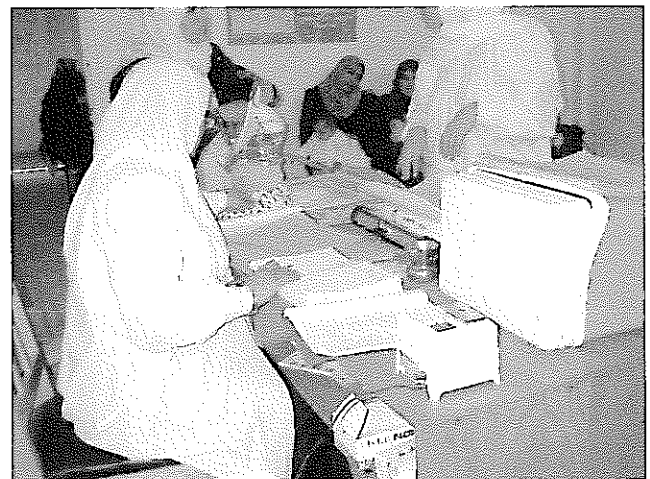


Photo-12

At UNRWA clinics, immunization is given according to the unified schedule adopted by the Ministry of Health. An electric incinerator to burn used needles is seen in front.



Photo-19

At this trailer-converted clinic, polio vaccines are given on NIDs.



Photo-20

A scene from polio vaccination activities on NID.

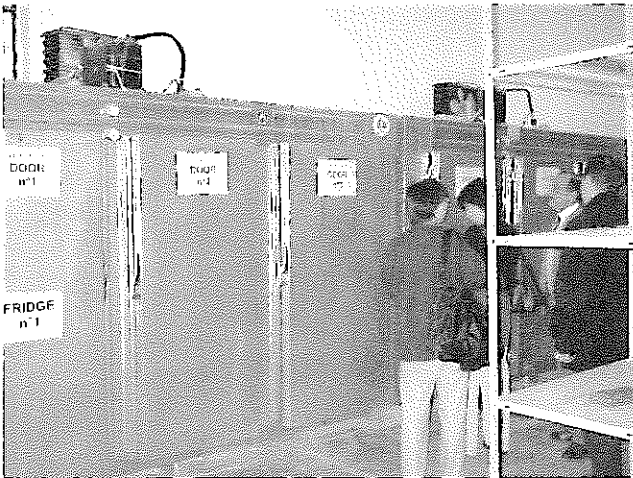


Photo-21

At the West Bank Central Medical Store, vaccines are stored in one of the four refrigerators. The entire vaccine supplies for the whole PA are initially stored in this facility and then distributed to the Gaza Strip.

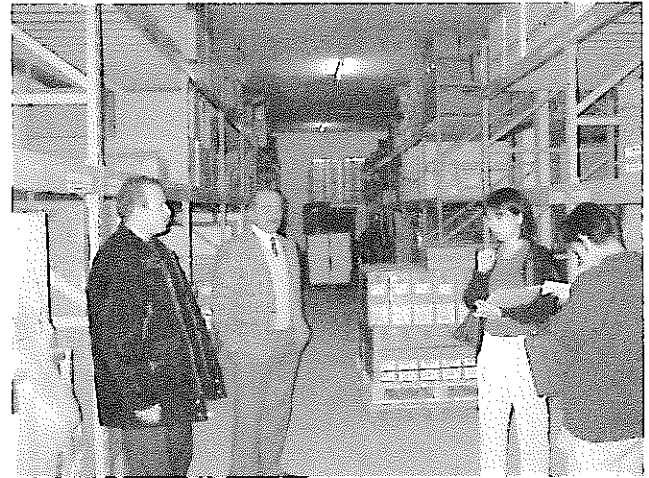


Photo-22

The West Bank Central Medical Store also stores drugs and disposables for the entire West Bank.



Photo-23

Vaccines are transported regularly from Israel's Tel Aviv Airport to the Central Medical Store using ambulance and other vehicles since a refrigerated truck is not available just to be used for this purpose.

ENRWA'S IMMUNIZATION SCHEDULE  
IN WEST BANK AND GAZA

Vaccine	Dose	Route	Site	Course	Age
ECC	0.5ml (0.1 ml after age of 1 year)	Intradermal	Left upper arm	Primary Booster	- On first registration - At school entry
OPV	3 Drops	Oral	Mouth	Primary series Booster	- At 9, 14 & 19 months of age - At 12 months of age - At school entry
IPV*	1 ml	Sub-cutaneous	Left upper arm	Two doses	- At 1 & 2 months of age
DPT	0.5 ml	Intra-muscular	Lateral aspect of the thigh	Primary series Booster	- At 3, 4.5 months of age - At 12 months of age
Mening	0.5 ml	Sub-cutaneous	Left upper arm	One dose	- At 9 months of age
Hepatitis B	0.5 ml	Intra-muscular	Lateral aspect of the thigh	3 doses	- At 0, 1 & 6 months of age
BCG	0.5 ml	Sub-cutaneous	Left upper arm	Primary	- At 15 months of age
TT	0.5 ml	Intra-muscular	Left upper arm	Booster Caring pregnant	- For 3rd Prev. in Wa Gaza - For Pregnant & 3 yrs later

\* If provided by the MOH of the Palestinian Authority

Photo-24

The immunization schedule is posted in each clinic of the West Bank to facilitate the activities.



Photo-25

Many of the Ministry of Health's clinics are staffed only with fulltime nurses who offer medical treatment, and medical doctors pay visits on a regular basis (once a week).

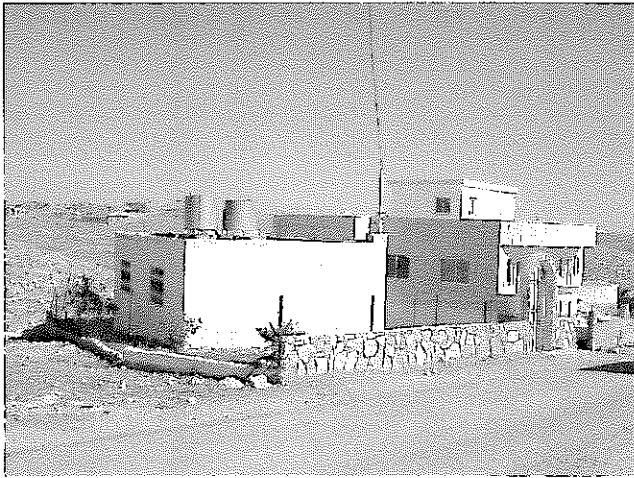


Photo-27

Many Health Posts (the building in front) have been constructed in the West Bank to give immunization to those living in remote areas. The building in the photo was donated by a landowner who lives in the house at the back.



Photo-29

As the West Bank does not have a disposal site of medical wastes, some clinics dispose of such wastes by themselves.



Photo-26

Vaccines are transported in cold boxes and vaccine carriers. Many facilities still use old-type cold boxes.

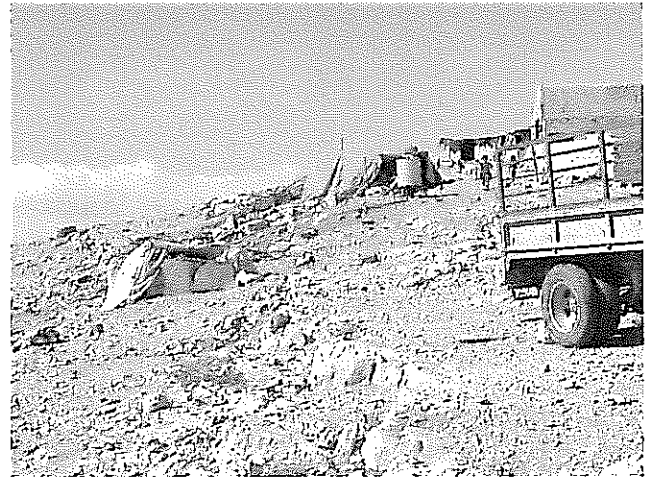


Photo-28

As the immunization activities in the West Bank include the Bedouin Tribe, the mobile teams travel around the region.



Photo-30

In the West Bank, two mobile teams (each team consists of a doctor and two nurses) ride in the same car to visit remote areas regularly for immunization activities.

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## Chapter 1 Background of Request

### 1-1 Circumstances and Contents of the Request

#### 1-1-1 Circumstances of the Request

##### (1) Status of the Health Sector and the Immunization Expansion Project

Table-1 below shows the major health indicators that reflect the general health conditions of the Palestinian Interim Self-Government Authority (hereinafter referred to as "the PA"). Although these figures fall behind those of industrial nations, they are better than most of its neighboring countries' figures. Its average life expectancy of over 70 years indicates a low infant mortality rate. According to the 1997 statistics, the infant mortality rate of the PA was 24.1 per 1,000, and the average life expectancy was 71.3 years.

Table-1: Comparison of Health Indicators between the Countries in Middle East and North Africa

	Mortality rate of infants	Mortality rate of children under 5 years	Birth rate of small weight infants <sup>1</sup>	Maternal death rate <sup>2</sup>	Life expectancy at birth
	1997	1997	1990-1997	1980-1997	1997
PA	24	28	6	25	71.3
Israel	6	6	7	5	78.0
Jordan	20	24	7	41	70.0
Lebanon	30	37	10	100	70.0
Tunisia	27	33	8	70	69.0
Industrial Nations	6	7	-	-	78.0

Source: Ministry of Health, 1999 World Children White Paper, 1997 Population and Health Indicators of the East Mediterranean Countries

The leading causes of death and the morbidity of infectious diseases that are preventable by vaccination are listed in Table-2 and Table-3 respectively. The leading causes of death for infants (babies up to the age of 12 months) are malformation, premature birth, and pneumonia, and those for young children<sup>3</sup> (ages

<sup>1</sup> Infants who weigh less than 2500 grams at birth.

<sup>2</sup> Number of women whose deaths are associated with pregnancy or childbirth.

<sup>3</sup> According to the definitions of some international organizations, infants refer to babies up to the age of 12 months, and infants under five include those up to the age of five. For statistical purposes, the Ministry of Health has divided infants into two groups: infants under one and infants between one and five years old.

between one and five) are malformation, pneumonia, and traffic accident. Like other developing nations, acute respiratory diseases, intestinal infectious diseases, and dehydration are among the top-ranking causes of death. Owing to the EPI activities, deaths caused by infectious diseases that are preventable by immunization stay low in the ranking.

Table-2: The Leading Causes of Death

Order	Infants	%	Young Children	%
1	Malformation	18.6	Malformation	13.8
2	Premature birth	14.2	Pneumonia	13.5
3	Pneumonia	12.8	Traffic accident	10.0
4	Respiratory disorder	9.5	Other accident, External injury	7.7
5	Sepsis	7.6	Malignant neoplasm	6.1
6	Sudden death, unknown reason	6.3	Other respiratory system disease	5.4
7	Gastroenteritis, Dehydration	3.3	Gastroenteritis, Dehydration	4.0
8	Others	27.7	Others	39.5
Total		100.0		100.0

Source: Ministry of Health

Table-3: The morbidity of infectious diseases that are preventable by vaccination

Infectious disease	Morbidity
Pulmonary Tuberculosis	387 cases / year*
Diphtheria	None
Pertussis	35 cases / year
Tetanus	5 cases / year Of the 5 cases, one was neonatal tetanus
Polio	Not reported since 1988
Measles	307 cases / year* There is a periodic epidemic in a three to four-year cycle.
Rubella	129 cases / year
Mumps	397 cases / year
Hepatitis B	Incidence of Hepatitis is 222 cases per year. Number of carriers is 2,132 / year. According to results of an examination, 5 – 7 % of blood donors had positive HBs antigen.
Meningitis	Viral meningitis : 2,390 cases / year Others 298 cases / year

Source: Ministry of Health, \*1997 Population and Health Indicators of the East Mediterranean Countries

In the PA, EPI activities began in the late 1950s. After experiencing two outbreaks of polio in 1964 and 1976, inactivated polio vaccine was introduced. Since then, reinforcement programs have been incorporated into major immunization activities, and measles, MMR, and hepatitis B vaccines have been added in 1979, 1981, and 1993 respectively.

Before the self-government was established, immunization schedules varied depending on the organization in charge (government/UNRWA) and the region (West Bank/Gaza Strip). Since 1996, all health care facilities have been following a unified schedule. Table-4 shows the immunization schedule established based on the recommendation of WHO, according to which vaccinations against the EPI six diseases<sup>4</sup>, hepatitis B, and rubella, as well as boosters<sup>5</sup>, are being given.

Table-4: Immunization Schedule

Age	Vaccine	Remarks
One-day-old	HBV1•BCG	
1 month	HBV2•IPV1	The system to administer IPV prior to OPV is adopted, considering two times outbreaks of polio in the past that may be due to type I in the natural environment and the risk of polio caused by OPV.
2 months	DPT1•OPV1•IPV2	
4 months	DPT2•OPV2	
6 months	DPT3•OPV3•HBV3	
9 months	Measles	
12 months	DPT4•OPV4	Booster
15 months	MMR	Booster
6 years	DT	
15 years	dT	
12 years	Rubella	This is vaccinated to girls only for prevention of congenital rubella syndrome (CRS).
15 – 49 years	Tetanus Toxoid	During the first pregnancy, vaccination is carried out twice. If immunized enough (i.e. 6 times vaccination up to 15 years), however, these vaccinations are unnecessary.

Source: Ministry of Health

<sup>4</sup> Six diseases preventable by immunization that consist of infant tuberculosis, DTP (diphtheria, pertussis, and tetanus), polio, and measles, as well as neonatal tetanus, against which vaccines is given during pregnancy. Some countries are adding hepatitis B and yellow fever vaccines to the above.

<sup>5</sup> Fourth DTP shot given during the ages between 15 and 24 months will provide additional protection against tetanus for five years. DT and dT boosters will provide protection for 10 and 30 years respectively.



Table-5: Target Populations of Immunization by year and for the year 2000

Vaccine	1997	1998	1999	2000
BCG	52,322	51,245	120,903	126,000
HBV OPV IPV DPT, Measles, MMR	96,805	96,798	120,903	126,000
DT	NA	95,389	97,579	101,000
dT	NA	50,017	69,780	70,000
Rubella	NA	33,456	39,233	40,000
Tetanus Toxoid	96,805	96,798	120,903	65,000

Source: Ministry of Health

(2) Problems concerning implementation of immunization

Immunization coverage of the PA and neighboring countries is shown in Table 6.

Table-6: Comparison of Immunization Coverage between the Countries in Middle East and North Africa

	Immunization coverage for infants under the age of one (%)					Coverage of neonatal tetanus vaccination in twice
	BCG	DPT	Polio	Measles	Hepatitis B	
PA	89	96	96	96	100	*31
Israel	unknown	92	93	94	unknown	unknown
Jordan	24	96	96	90	85	40
Lebanon	unknown	92	92	89	unknown	unknown
Tunisia	93	96	96	92	90	80

Source: 1999 World Children White Paper, 1997 Population and Health Indicators of the East Mediterranean Countries

Note: PA's vaccination coverage of neonatal tetanus is less than 50% of that of Tunisia and is even lower than that of Jordan. It was found out during the survey that the target population of neonatal tetanus vaccine in the PA only includes those who have not received a total of six injections before the first pregnancy. However, the rate was calculated based on the total number of multiparous women, causing the rate to be low.

Like its neighboring nations, PA's immunization coverage for infants less than one year old is above 90% for most types of vaccines. However, 3% of the target population in 2000, or about 4,000 infants under one, are still unable to have the benefit of immunization. In addition, while most women today

deliver babies at health care facilities, women of the nomadic Bedouin Tribe still give birth at home<sup>6</sup> thereby exposing neonates to the risk of contracting tetanus. It would take substantial additional resources to locate infants who were left out from the immunization program and trace the Bedouin Tribe while keeping the current coverage level.

The budget of the Ministry of Health (MOH budget) is getting tighter in recent years, and the allocation of the government revenues to the Ministry of Health is decreasing percentage-wise each year. Of the MOH budget, labor cost takes up about 50%, leaving not enough funds for the purchase of vaccines and making it difficult to maintain the current coverage level. In order for the PA to smoothly implement the top-priority EPI program while meeting a soaring demand for vaccines due to population growth (caused by natural growth and immigrants) and provision to UNRWA, the country must rely on external assistance from international organizations or other countries.

#### 1-1-2 Contents of the Request

The Ministry of Health's "National Health Plan" was initiated in 1999. However, due to budgetary crunch, the Ministry became unable to purchase vaccines on its own account and thus requested the Japanese government to provide 19 types of vaccines and seven vehicles that were necessary for the FY2000 (October 2000 to September 2001) activities.

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<sup>6</sup> Neonatal tetanus is contracted mostly at the cut section of the umbilical cord. Child deliveries at home are usually assisted by traditional birth attendance, relatives, and friends, who could increase the risk of infection by using not sterilized tools or treating the umbilical cords inappropriately.

Table-7: Contents of the Request

No.	Requested Item	Quantity (dose)	Target
1	Oral polio vaccine	480,000	Prevention of polio 4 doses/person, Wastage: 20%
2	BCG vaccine	100,000	Prevention of tuberculosis 1 dose = 0.1 mL
3	Hepatitis B vaccine	330,000	Prevention of Hepatitis B 3 doses/person, Wastage: 10%
4	DPT vaccine	440,000	Prevention of diphtheria, pertussis and tetanus 4 doses/person, Wastage: 10%
5	Inactivated poliomyelitis vaccine	200,000	Prevention of polio 2 doses/person
6	Measles vaccine	125,000	Prevention of measles
7	MMR vaccine	100,000	Prevention of measles, mumps and rubella
8	DT (infant)	100,000	Prevention of diphtheria and tetanus For infants
9	DT (adult)	100,000	Prevention of diphtheria and tetanus For schoolchildren
10	Rubella vaccine	45,000	Prevention of birth of a baby having rubella syndrome congenital. For schoolgirls only
11	Tetanus toxoid	120,000	For pregnant women and for hospital
12	Anti rabic vaccine	3,000	Prevention of rabies after being bitten by a dog
13	Anti rabic serum	500	Prevention of rabies after being bitten by a dog Used together with vaccine depending on a degree of a bite.
14	Hepatitis B vaccine (adult)	30,000	Prevention of hepatitis B
15	Meningitis vaccine	15,000	Prevention of meningitis Combination of A, C, W135 and Y type
16	Hepatitis B immunoglobulin	100	Given together with vaccine for prevention of hepatitis B in the case of accidental sting with injection needles or fetomaternal infection.
17	Immunoglobulin	1,100	Prevention of viral diseases and others
18	Influenza vaccine	6,000	Prevention of influenza
19	PPD (Purified Protein Derivative)	1,500	For identifying BCG vaccinated persons
20	Vehicle	7 cars	Two cars for the Gaza Strip, five cars for the West Bank

## Chapter 2 Contents of the Project

### 2-1 Objectives of the Project

The purpose of this Project is to procure necessary equipment and supplies for the smooth implementation of the FY2000 EPI activities that were drafted by the financially-crunched Ministry of Health in line with the National Development Plan's goal to "human resource development."

### 2-2 Basic Concept of the Project

#### (1) Basic Concept

The Ministry of Health has worked out a program for children under the National Health Plan and established a goal to increase the coverage rate of various vaccines for the FY2000 to 95% in order to strengthen the control over infectious diseases that are preventable by immunization.

The Ministry of Health aims at giving immunization and other PHC services to every single Palestinian. This effort will eventually lead to people's participation in the government health insurance program and the financial self-sufficiency of various health programs. However, the high labor and administrative costs are taking up a large portion of the MOH budget thereby disabling the Ministry from carrying out the programs on its own account.

In view of the above circumstances, this Project intends to support the achievement of the goals of the National Health Plan by providing vaccines, syringes, and other necessary items for the EPI activities in FY2000.

#### (2) Contents and Scale

Targets and needed quantities of vaccines for the FY2000 activities and the vaccine doses to be provided through this Project are listed in Table-13 below.

Types and dosages of vaccines were chosen based on the EPI principle<sup>7</sup> and WHO recommendation<sup>8</sup> and for the improvement of mother-and-child health and immunization coverage. Also, it was decided to procure PPD that is essential to the efficient improvement of EPI immunization and BCG coverage.

Until 1999, the Ministry of Health calculated the immunization target population for each year based on the dosages administered in the preceding year. For the FY 2000, Japan will be responsible for procuring 100% of the vaccines, which means that we need to obtain accurate figures as we cannot achieve the target coverage if we fail to procure sufficient quantities of vaccines. Therefore, we calculated the target population based on the population (PCBS estimation) of each age group subject to immunization in FY2000 plus the population growth rate for FY2000 (PCBS estimation). The target population of PPD

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<sup>7</sup> To save children from diseases and disabilities by giving immunization against six diseases that are preventable by vaccination.



consists of infants up to 12 months who have not received EPI immunization, or 3% of the age group. As for TT, we determined to procure enough dosages to cover 10% of women of childbearing age or ages between 15 and 45 (although WHO's definition of childbearing age is between 15 and 49, the range was modified according to the Ministry of Health's past data).

Table-13: The FY2000 Immunization Plan and the amount of doses to be procured

Vaccine	Target population	Times of vaccination	Total doses (A)	Wastage % (B)	The amount of doses to be procured (C)	Dose <sup>9</sup> / Vial <sup>10</sup>	The amount of vials to be procured
OPV	126,000	4	504,000	20	630,000	10	63,000
BCG	126,000	1	126,000	50	252,000	10	25,200
HBV	126,000	3	378,000	10	420,000	10	42,000
DPT	126,000	4	504,000	10	560,000	10	56,000
IPV	126,000	2	252,000	0	126,000	1	*126,000
Measles	126,000	1	126,000	25	168,000	10	16,800
MMR	126,000	1	126,000	0	126,000	10	126,000
DT	101,000	1	101,000	10	112,000	1	11,200
dT	70,000	1	70,000	0	78,000	10	7,800
Rubella	40,000	1	40,000	10	44,000	10	4,400
TT	65,000	2	130,000	10	144,000	10	14,400
PPD	4,000	1	4,000	0	4,000	10	400

Note1: The annual requirement for IPV is 252,000 doses. This Project will provide 126,000 doses, and the Palestinian side will procure the remaining 126,000.

Note2: Formula for calculating the doses to be procured through the Project:  $C = A \times 100/100 - B$

Dosages to be procured through this Project were calculated by multiplying the target population by the number of vaccination and the rate of wastage for each type of vaccine. The loss referred to in the above Table represents vials broken during transportation and vaccines unused after breaking the seals (BCG and measles vaccines expire in six hours after unsealing, and other vaccines within the same day of unsealing.) The wastage of each vaccine was derived partially from the WHO guidelines but more from the Ministry of Health's data.

The numbers of syringes and safety boxes needed for the dosages of vaccines to be procured through

<sup>8</sup> WHO recommends that hepatitis B vaccine be included in the immunization program.

<sup>9</sup> An amount of medicine administered at one time.

this Project are listed in the Table-14 below:

Table-14: Syringes and Safety Boxes to be procured

Item	Spec.	Required quantity	Quantity to be procured	Purpose
Auto-disable Syringe	0.5ml with needle 23G X 25mm	971,000	971,000	For DPT, MMR, DT, dT, TT and rubella vaccines. Each syringe is used only once.
Disposable Syringe	2ml with needle 25G X 25mm	756,000	756,000	For HBV, IPV and measles vaccines. Each syringe is used only once.
Syringe for BCG	0.1ml with needle 27G X 10mm	126,000	126,000	For BCG Each syringe is used only once.
Safety Box	5 liters	18530	18,600	1 box for 100 used syringes For safety disposal of used syringes

Although syringes were not requested, we decided to include them as necessary items for the EPI activities. Because even if sufficient quantities of vaccines were available, they cannot be administered without an enough number of syringes thus failing to improve the coverage rate. We calculated the number of based on the corresponding quantities of vaccines and the loss rate of 0% while taking into consideration the Ministry of Health's preferences. Types of injection needles were selected based on the Ministry of Health's experiences and by taking into account the presence/absence of additives in the vaccines, age of the target group, and route of administration (intra-dermal or intra-muscular)<sup>11</sup>.

Almost all health care facilities in the PA use WHO-standard safety boxes for the safe disposal of syringes. Although safety boxes were not on the list of requested items, we decided to include them in a corresponding quantity to the number of syringes in order to prevent environmental contamination due to improper disposal and infection due to accidental sting.

## 2-3 Basic Design

### 2-3-1 Design Concept

This Project is to continue and support the EPI activities as part of the National Health Plan that has been implemented by the Ministry of Health since 1999 in line with the PA's National Development Plan. During a period between 1998 and 1999, cold-chain equipment essential to the EPI activities were provided in sufficient quantities. Japan intends to donate funds for procuring vaccines and syringes that are necessary for implementing the EPI activities for the FY2000.

<sup>10</sup> Small bottles in which injections are sealed in.

<sup>11</sup> DPT, DT, dT, and HBV contain additives to improve fixation. Although HBV contains an additive and is administered intramuscularly, the Ministry of Health specifies finer 25G needles for HBV. Because the target population of the vaccine consists of children and only small dosages are injected into them.

### (1) Policy for Transportation and Frequency of Delivery

Vaccines are biological products to be administered to a large number of healthy people, and as such that their safety must be ensured strictly. To avoid the loss of potency and deterioration of other qualities, air transportation is the best to transport vaccines quickly under proper temperature control. Since the Gaza International Airport in the PA is for passengers only, we will send the vaccines to Tel Aviv Airport in Israel, where freezers and refrigerators are in place. After customs clearance in Tel Aviv, the vaccines will be transported by a private contractor to the Central Medical Store in the West Bank.

Syringes will be transported by sea. However, as the PA does not have an international commercial port, they will be delivered to Ashdod Port in Israel, from which private transport companies will carry the syringes to the Central Medical Stores in the Gaza Strip and the West Bank.

The delivery of the vaccines will not take place until October 2000 at the earliest. Until then, the Ministry of Health will procure vaccines to be given in the PA.

As the Central Medical Store in the West Bank can only store 6-month supplies, the vaccines will be brought to the PA in two deliveries and the syringes in one delivery. Vaccines expire in two years from the date of manufacture (or three years for most of freeze-dried vaccines). Syringes usually expire in five years after the date of sterilization. Thus, they will not expire during transportation.

### (2) Policy for Procured Items

Items and quantities requested for this Project are listed in Table-6. This Project will provide only vaccines (to prevent certain infectious diseases and PPD for diagnosis), syringes and safety boxes that are needed for the EPI activities in FY2000. Although seven vehicles of varying model types for transporting vaccines and mobile team and for mobile clinic were requested, we decided not include them in the Project. This is because we could not find a consistent reason or urgent need for such vehicles as each jurisdiction of the Ministry of Health in the West Bank was allocated a vehicle for the traveling mobile team in 1999 (six vehicles were procured by ECHO, and four by the Ministry of Health).

### (3) Policy for Suppliers

Suppliers of each item to be procured through this Project are selected based on the following policies:

(i) Vaccines

None of the vaccines listed for the Project is manufactured by the pharmaceutical factories in the PA. To assure the quality of the vaccines, we will procure them according to the GMP<sup>12</sup> of WHO and the qualification standards of the UN. Suppliers of this Project include vaccine manufacturers in Japan and other DAC nations, as well as those in Indonesia (OPV and measles vaccines only).

(ii) Syringes

Two types of syringes will be procured through this Project: the auto-disable type and the disposable type. Auto-disable syringes are not manufactured in the PA or Japan. Disposable syringes will be procured from a third country also, as those manufactured in Japan do not meet the specifications.

(iii) Safety Boxes

They will be procured from a third country, as those manufactured in the PA and Japan do not meet the WHO standard.

(4) Policy for Maintenance and Administrative Capabilities

Vaccines to be procured through this Project will be controlled by the assistant pharmacist at each Central Medical Store and mostly by the nurses at each health care facility. As for cold-chain equipment, spare refrigerators are reserved in case of breakage. Also, when UNICEF and WHO provided the cold-chain equipment, they also provided spare parts and repair kits, with which the staff of the central maintenance department of the Ministry of Health, as well as the repair personnel stationed in each health jurisdiction, take care of problems and failures. As for the breakage of vehicles for transporting vaccines and immunization staff, the Ministry of Health entrusts private companies to repair them as necessary since the Ministry of Health does not have its own repair shop.

(5) Policy for Equipment Specifications

(i) Vaccines

Selection of mono-dose or multi-dose was made according to what has been used in the actual immunization sites. As for the containers of vaccines, there are several types, such as ampoules, vials, and syringes. To avoid vaccine spillage by falling and to minimize contamination after unsealing, we decided to choose the vial-type as preferred by the Ministry of Health.

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<sup>12</sup> An acronym of Good Manufacturing Practice, a standard concerning the manufacture and quality control of pharmaceutical products. Compliance with GMP requires the entire production process and quality to be controlled, from the acceptance of raw materials to the proper maintenance of facility, equipment, and environment for each manufacturing process.

(ii) Syringes

We will procure both auto-disable and disposable types. Auto-disable syringes were chosen not to prevent the reuse as seen in some developing countries, but to be consistent with the practices of each health care facility (See Table-15).

(iii) Safety Boxes

For the disposal of used syringes, each health care facility is using 5-liter safety boxes of WHO specification. Thus, this Project will provide the same type of safety boxes.

2-3-2 Basic Design

(1) Overall Plan

The Ministry of Health has been carrying out the EPI activities throughout the PA under the unified schedule adopted in 1996. EPI activities are carried out by most health care facilities as their daily routines. The entire population subject to immunization in FY2000 is scheduled to be immunized individually at different health care facilities.

(2) Equipment Plan

The specification and use of materials and equipment provided through this Project are shown in Table 15.

Table 15: Contents and Scale of the Cooperation

No	Description	Specification	Target person/ Purpose of use	Quantity
1	Oral Poliomyelitis Vaccine (OPV)	10 doses/vial with dropper	4 vaccinations before 1 year old Prevention of polio, intestinal immunity	63,000 vials
2	BCG	10 doses/vial with diluent	1 vaccination in early time after birth Prevention of tuberculosis	25,200 vials
3	Hepatitis B Vaccine	10 doses/ vial	3 vaccinations before 6 months old Efficient for the children not infected from mother's body	42,000 vials
4	DPT Combined Vaccine	10 doses/ vial	4 vaccinations before 1 year old Prevention of Diphtheria, Pertusis and Tetanus	56,000 vials
5	Inactivated Poliomyelitis Vaccine (IPV)	1 dose/ vial	2 vaccinations before 2 months old Reinforcement of prevention of Polio	126,000 vials
6	Measles	10 doses/vial	1 vaccination at 9 months old Prevention of Measles	16,800 vials
7	Measles Mumps and Rubella Combined Vaccine (MMR)	1 dose/vial with diluent	1 vaccination at 15 months old Supplement immunity effect for measles	126,000 vials
8	Diphtheria Tetanus Toxoid Combined Vaccine	10 doses/vial	1 vaccination at 6 years old Supplement immunity effect for 10 years against Tetanus	11,200 vials
9	Diphtheria Tetanus Toxoid Combined Vaccine	10 doses/vial	1 vaccination 15 years old Supplement immunity effect for 30 years against Tetanus	7,800 vials
10	Rubella Vaccine	10 doses/vial with diluent	1 vaccination at 12 years old for girls to prevent birth of congenital rubella syndrome child	4,400 vials
11	Tetanus Toxoid (TT)	10 doses/vial	Vaccination for not immunity pregnant women of 15 ~45 years old Prevention of neonatal tetanus	14,400 vials
12	Purified Protein Derivative (PPD)	10 doses/vial	For diagnosis For the verification of positive conversion of child without record of vaccination	400 vials
13	Auto Distract Syringe	0.5ml with needle (23G x 25mm)	Use once for DPT, MMR, DT, dT, TT vaccines 0.5 ml/dose	971,000
14	Disposable Syringe	2 ml with needle (25T x 25 mm)	Use once for HBV, IPV and Rubella Vaccines 0.5 ml/dose	756,000
15	Syringe for BCG Vaccine	0.1ml with needle (27G x 10 mm)	Use once for BCG Vaccine	126,000
16	Safety Box	5 liters	100 Syringe/box For safety disposal of used syringes	18,600 boxes

## Chapter 3 Implementation Plan

### 3-1 Implementation Plan

#### 3-1-1 Implementation Schedule

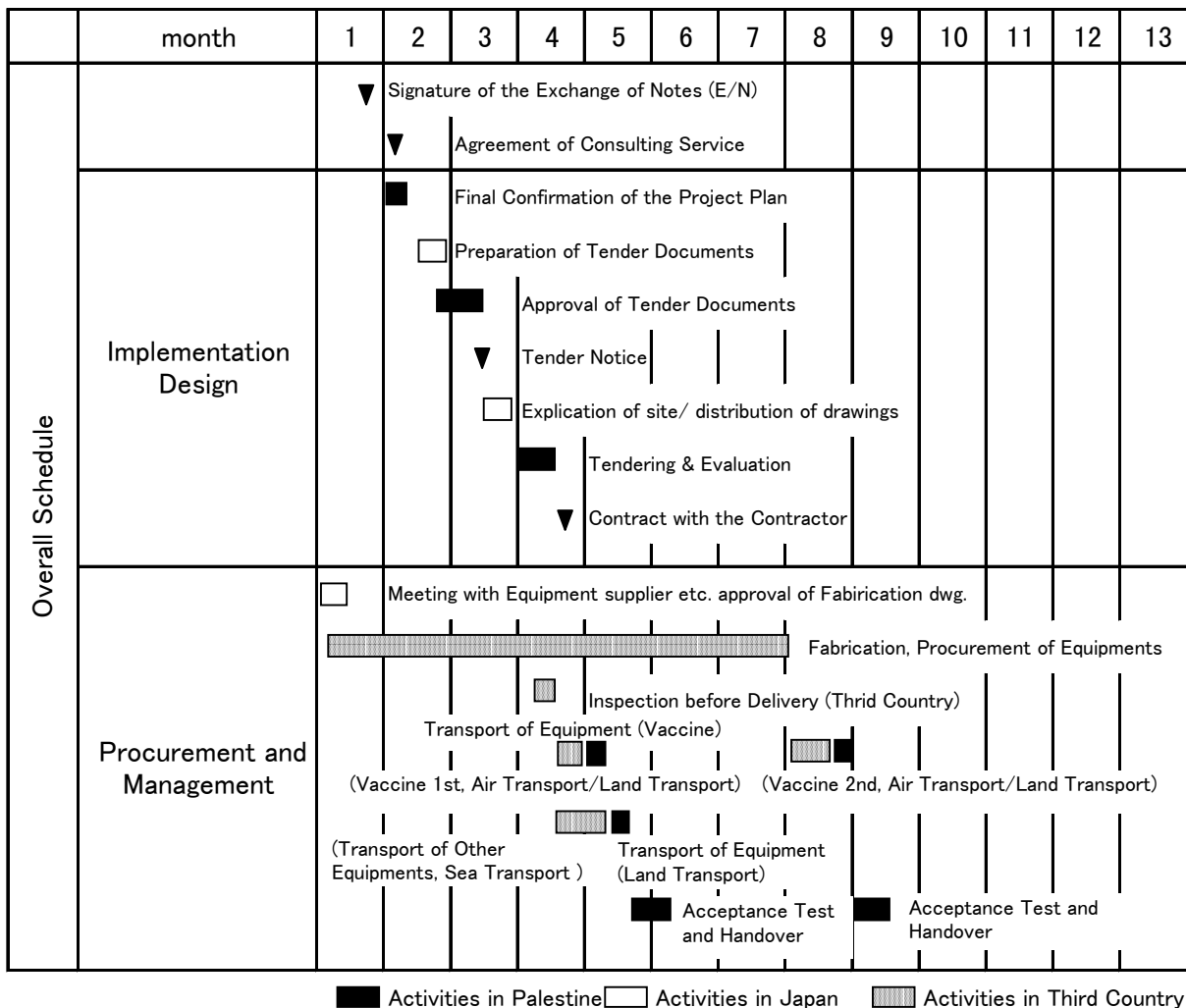
(1) The fiscal year: 1999

(2) Schedule

The overall schedule (from E/N to handover) : 11.5 months

From E/N to Supply Contract : 3.0 months

Delivery (from supply contract to handover) : 8.5 months



This Project is covered by the budget of the FY1999 and hence the implementation of the Project from Exchange of Notes to handover shall be completed by the end of FY 2000. As components of the Project mostly comprise vaccines procured from the third countries, handover will be executed before shipping.

As for the time required for transportation, it is estimated that it would take one week for air transport of vaccines that will be procured from Europe and US. Other equipment and materials would

require two weeks for sea transport and one week for land transport from Israel to the PA.

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

Listed below are items that the recipient country is responsible for in the implementation of this Project.

- (1) To submit the data, documents and others required for the implementation of EPI.
- (2) To ensure the security of the Project Site and other relevant places.
- (3) To pay payment charges based on Banking Arrangement (B/A).
- (4) To store vaccines, equipment and materials in the appropriate conditions.
- (5) To make certain that the equipment for carrying and storing vaccines will be used properly and that necessary personnel and costs for the maintenance and control of the equipment will be allocated.
- (6) To secure necessary and sufficient personnel to implement EPI

### 3-2 Project Cost Estimation

#### 3-2-1 Project Cost Estimation

##### (1) Costs to be Born by the Recipient Country

None

#### 3-2-2 Operation and Maintenance Plan

The PA commenced the activities of Immunization Program in the late 1950s and has sufficient experience up to the present. The fact that in the PA immunization coverage rate has been kept about 97% proves that the PA has enough capability for implementing EPI in terms of technical skill and organization. Further, there is no physical problem since UNICEF and WHO donated in 1998-1999 the cold-chain equipment that is indispensable to the storage of vaccines.



## Chapter 4 Project Evaluation and Recommendation

### 4-1 Verification of Appropriateness and Expected Benefits

The appropriateness of this Project was evaluated as follows:

Item	Verification
Beneficiary	<p>Targets and the schedule of immunization under this Project were determined according to the unified schedule of the Ministry of Health. Aiming at near 100% coverage without causing a shortage or excess of vaccines, the quantity of vaccines to be procured was calculated based on the target population derived from the 1997 census, an estimated population growth rate, and wastage based on the Ministry of Health's experiences. The population subject to immunization during this Project period consists of 126,000 infants under age five, 211,000 children aged between 6 and 15, and 65,000 pregnant women. This Project will cover the entire area of the PA. The vaccines to be procured through this Project include those for refugees, for whom the Ministry of Health has been providing vaccines since 1998. Refugees living outside of camps will be able to receive immunization in other places than UNRWA clinics, and the risky-group Bedouin tribe will also be vaccinated by the mobile team. Thus, the entire population of the Gaza Strip and the West Bank will directly or indirectly benefit from this Project.</p>
Purpose	<p>Health and medical care are indispensable aspects to fulfill basic human needs. To generate interest in health education and prevent infectious diseases to maintain health through EPI activities will contribute to the "human resources development." The densely-populated Gaza Strip is susceptible to the spread of infectious diseases. In the widely-spread-out West Bank, on the other hand, epidemics are hard to control once they break out. In order for the EPI activities to take effect, they must be implemented on a continuous basis. This Project is urgently needed to ensure the health of the PA people.</p>
Implementation system of the recipient country	<p>In FY1999, all vaccines were purchased within the MOH budget. Although some of the EPI activities are carried out by UNRWA and NGOs, the Ministry of Health will be able to implement the activities if financial assistance is available.</p> <p>The Ministry of Health and each health care facility have personnel who are adequately skilled in terms of giving immunization, properly storing vaccines and other supplies, maintaining related equipment, and administering the EPI activities.</p>

Item	Verification
Objectives of interim and long-term development plans	The PA's health sector, in its National Development Plan (1998-2000), established a goal to decrease the infant mortality, birth, and maternity mortality rates and increase the average life expectancy. By enforcing the EPI activities and keeping the low morbidity rate of infectious diseases, this Project will contribute directly to lowering the infant mortality rate and indirectly to raising the average life expectancy.
Profitability	This Project will not generate any profit. The vaccines will not be used in general medical practices and will not be subject to medical charges. Immunization will be given to all the members of the target population free of charge.
Environmental impact	Disposal of bio-hazardous materials is a common problem shared by all nations. For the safe disposal of used syringes, this Project will provide safety boxes in a quantity corresponding to that of syringes to be procured through this Project. Since the health care facilities have been using the same type of safety boxes, they can properly handle primary disposal. A garbage disposal facility has recently been built in the Gaza Strip, which can properly handle secondary disposal. In the West Bank, on the other hand, there are no such disposal facilities, and a risk of infection from bio-hazardous wastes is a cause for concern. While the construction of a disposal facility is urged, each health care facility is disinfecting medical wastes in its own incinerators thereby preventing infection for the time being.
Feasibility	In light of the Japan's Grant Aid system, this Project can be executed without particular difficulties.

#### 4-2 Technical Assistance and Coordination with Other Donors

International organizations that support EPI activities are WHO, UNICEF, and UNRWA. A WHO coordinator told us that WHO had supplied a sufficient amount of cold-chain equipment jointly with UNICEF and that they expect the Ministry of Health to purchase vaccines at its own account thereby encouraging the Ministry's self-sufficiency. In fact, WHO gave advice on tendering and procurement but did not extend financial assistance in 1999. UNICEF basically shares the same approach with WHO. Although UNICEF is providing OPV, it is to be given to infants under five all at once on the National Immunization Days as part of its worldwide polio eradication campaign and is separate from the OPV immunization as part of the Ministry of Health's EPI activities. At the end of 1999, a "polio safety declaration" was made in a conference held in the PA, and the Ministry of Health did not request UNICEF to provide OPV for FY2000. However, the policy was later overturned, and UNICEF is now preparing 400,000 doses of requested OPV for the FY2000 activities. UNRWA is also experiencing financial

difficulties and has expressed its desire to gradually transfer the responsibility for the refugees to the Ministry of Health and has been supplied with vaccines by the Ministry since 1998.

Because of financial reasons, the Ministry of Health cannot procure an enough amount of vaccines for implementing this Project in FY2000 and has requested assistance only to Japan. EPI activities will not take effect unless they are implemented over a wide range of areas on a continuous basis. Thus, budgetary constraint must not stop the continuation of the activities, and financial aid is in urgent need. However, the above international organizations have been extending support to the PA for many years and are now in the process of encouraging the Ministry of Health and other government organizations of the PA to become independent of outside help. Therefore, in extending support through this Project, it is important to work in close coordination with WHO and UNICEF that have been sharing the results of the past EPI activities in the PA.

#### 4-3 Recommendation

This Project will provide entire quantities of vaccines and syringes necessary for the FY2000 EPI activities in the PA. Thus, the Project will directly contribute to the preservation of the low morbidity rate of infectious diseases among infants and achieve the immunization coverage target of 95% if implemented surely. Also, it will indirectly contribute to the improvement of BHN of the Palestinian people by continuously preventing the spread of epidemics. Except for the financial aspect, the implementing system of the PA government is sound and can adequately run and administer the Project. In order to utilize this Project not only for ensuring the health of individual children but also for paving the way for the wellbeing of future generations, the following considerations need to be taken:

##### (1) Vaccination Record Book

A Japanese equivalent of this book is the maternity health record book. However, once a child enrolls in an elementary school, the school health program takes over, and the record kept in the book often does not get utilized effectively. Japan has been receiving feedback concerning this issue through its assistance projects to developing countries in recent years. In the PA, children are scheduled to receive a total of six tetanus vaccine shots and two rubella vaccine shots before they reach age 15. Keeping the record of vaccination holds a key not only to the health of individual children but also to the inhibition of neonatal tetanus and the prevention of congenital rubella syndrome, which lead to the wellbeing of the future generations. The vaccination record book of the West Bank is designed to be used throughout the life of the book holder. That of the Gaza Strip, on the other hand, is only used until the individual reaches the age three.

For the effective use of life-long immunization data, and from the standpoint of health education, the modification of the vaccination record book is desired.

## (2) Mobile Team

In the West Bank, where the Bedouin tribe moves around following water and pasture, and many people do not have easy access to health care facilities as they live in spread-out areas, a team of doctors and nurses makes its rounds to immunize such people. However at present, the team can visit each location once a month at the most. At this frequency, many children miss the opportunity of being inoculated because of a delay in advance information and the health condition on that day. To maintain and improve the coverage, it is necessary to have more personnel and vehicles to increase the frequency of visits.

## Annex

- 1 Member List of the Survey Team
- 2 Survey Schedule
- 3 List of Party Concerned in the West Bank and the Gaza Strip

1 Member List of the Survey Team

1. Team Leader: Shigeru Okamoto

Resident Representative

JICA Office in Gaza

2. Study & Procurement Planning 1: Shoji Hasegawa

General Grant Aid Division

Grant Aid Management Department

Japan International Cooperation System

3. Study & Procurement Planning 2: Keiko Kobayashi

General Grant Aid Division

Grant Aid Management Department

Japan International Cooperation System

4. Study & Procurement Planning 3: Miki Nomoto

General Grant Aid Division

Grant Aid Management Department

Japan International Cooperation System

## 2 Survey Schedule

No.	Date	Day	Schedule	Stay
1	11/21	Sun.	Tokyo(10:55) → Frankfurt → Tel Aviv(23:20)	Tel Aviv
2	11/22	Mon	Courtesy call and meeting with JICA office Tel Aviv → Gaza	Gaza
3	11/23	Tue	Courtesy call and meeting with MOH and MOPIC in Gaza	ditto
4	11/24	Wed	Meeting with WHO and UNRWA in Gaza	ditto
5	11/25	Thu	Site Survey	ditto
6	11/26	Fri	Analysis of data, Internal meeting	ditto
7	11/27	Sat	Site survey	ditto
8	11/28	Sun	ditto	ditto
9	11/29	Mon	Ramallah → Gaza Courtesy call and meeting with MOH in Ramallah	Ramallah
10	11/30	Tue	Site survey	ditto
11	12/1	Wed	ditto	ditto
12	12/2	Thu	ditto	ditto
13	12/3	Fri	Meeting with WHO and UNICEF in Ramallah Ramallah → Gaza	Gaza
14	12/4	Sat	Meeting about Items and specifications	ditto
15	12/5	Sun	Discussion and signing of Minutes	ditto
16	12/6	Mon	Analysis of data, Internal meeting	ditto
17	12/7	Tue	Courtesy call with MOEA, Gaza → Tel Aviv	Tel Aviv
18	12/8	Wed	Market Research(CODAN/SAREL) Report to Embassy of Japan and JICA office	ditto
19	12/9	Thu	Market research(MELS)	ditto
20	12/10	Fri	Tel Aviv(10:40) → London →	
21	12/11	Sat	→ Tokyo(13:30)	

### 3 List of Party Concerned in the West Bank and the Gaza Strip

#### **【The Gaza Strip】**

Dr. Riyad Al Za'noun	Minister of Health
Dr. Munzer Shareef	Deputy of Minister, MOH
Dr. Yousef El Hindi	Director General International Cooperation, MOH
Dr. Jabbar El Tibi	Director General Primary Health Care, MOH
Mr. Jihad Ahmed	EPI Manager, MOH
Mr. Waleed A. Siam	Director General Asian Affairs Bureau, MOPIC
Dr. Mohammand Al-Borno	Deputy Director General Asian Affairs Bureau, MOPIC
Dr. Rafik D. Zanoun	National Program Officer, WHO-Gaza
Dr. Humaid Abu Mouse	Field Disease Control Officer, UNRWA

#### **【The West Banik】**

Dr. Iyad M. Arafah	Director Epidemiology Dpt., MOH
Dr. As'ad Ramlawi	Director Preventive Medicine, MOH
Dr. Abdul-Aziz M. Shukeir	Director of P.H.D. of Alkhalil, MOH
Dr. Laid Mahmoud Hammouz	Director of Nablus P.H.D., MOH
Dr. Yousef Abu Safieh	Minister of Enviromental Affairs
Dr. Paolo Piva	Health Coordinator, WHO
Dr. Bertrand Bainvel	Program Officer, UNICEF