

*draft five year plan
for MCH Project
June 1998 (JICA Advisory Team)*

EPI IN MONGOLIA

1. COUNTRY SITUATION

Mongolia EPI has been acknowledged for its major achievement of National Immunization Programme Goals of Immunization coverage rates greater than 80% for all EPI vaccines by one year of age since 1995. Behind the high achievements, lies the strong political commitment of the Government of the Government of Mongolia and concerted efforts between government and International agencies such as WHO, UNICEF and JICA. By the 1996, the coverage rates were for BCG- 91.6%, OPV3- 89.6%, DPT- 89.3%, measles 88.0%, and HBV3-88.0%. For 1997 the following coverage rates of routine immunization had been achieved 96.4% for BCG, 92.5% for OPV3, 90,6% for measles vaccine.

Mongolia has no case of polio reported since 1994 and no measles death has been reported since 1993. Vaccine preventable diseases incidences have been decreased last 2 years as a result of high routine immunization coverage and intensive NID campaign activities for various population groups on specific targeted diseases. In May, 1996 the Ministry of Health (MOH) conducted National Immunization Campaign with measles vaccine for all children aged 9 months to 11 years through the country with support from WHO. The coverage achieved was over 90%. As a result of large scale mass immunization campaign in May, 1996 measles cases have significantly decreased from 119 cases just 2 cases for the 1997. In collaboration with WHO, MOH conducted Td vaccination campaign for adults 16-40 years in November and December, 1995. The incidence of disease decreased from 0.56/10.000 population in 1995 to 0.2/ 10.000 in 1996. Surveillance data show that the epidemic has been controlled due to timely intervention with very large scale mass diphtheria immunization.

A major cold chain rehabilitation programme has been successfully implemented and 34 % out of the 392 sums' old house refrigerators have been replaced with new long-range Iceland refrigerators MK-74 in collaboration with WHO, UNICEF and JICA. Total of new refrigerators 25 for aimag level and 135 for sum level. Also one hundred " Honda" electric generators were provided by JICA for remote sums in 1997.

During the EPI implementation period vaccine preventable disease surveillance system has been strengthened through training and workshops. The specialist of national and Ulaanbaatar institutes, aimag centre EPI units and sum vaccinators and doctors from 21 aimags were trained EPI Logistics and Cold Chain in 1996 and 1997. A new system of active surveillance was commenced in January 1996, with weekly zero reporting from every aimag for measles, diphtheria, tetanus, meningococcal meningitis and acute flaccid paralysis. Also increased public awareness of the importance of universal childhood immunization has been observed such as parents self-seeking vaccination for their children rather than only responding to traditional for vaccines.

2. NATIONAL TARGETS

1. Increase immunization coverage to 95% with communities active involvement.
2. To reduce morbidity and mortality of hepatitis, tuberculosis and diphtheria.
3. All sums supplied with required cold chain equipment.
4. Active surveillance system of EPI target diseases established sum and bag
5. All aimags laboratory adequately equipped to support active surveillance activities.

3. EVALUATION

- As an impact of successful EPI programm the immunization coverage rates have been increased by 4-6% for each EPI vaccine since 1995.

- 34% out of the 392 sums' old house refrigerators have been replaced with new long-range iceland refrigerators MK-74.

- Vaccine preventable diseases incidences have been decreased.

- The guidelines om Cold chain maintenance and logistics has been revised and was issued under the Health Minister's order in 1997.

- The disease surveillance system has been strengthened through trainig workshops and established of a weelky 0 reporting system from aimag center to IDC

- Two vehicles supplied for vaccine transportation and surveillance activities for Govi - Altai and Orkhan aimags.

- Active surveillance system of AFP was established. In 1997, a total of 18 cases of AFP were reported in nation wide.

4. CONSTRAINTS

- lack of cold chain equipment at sum and bag level.

- Lack of knowledge of rural medical personnel on EPI.

- No regular monitoring system at local level.

- Weak active surveillance for EPI target diseases at sum and bag level

- lack of laboratory facilities for EPI target diseases

5. 2000-2001 PRODUCTS

- Eradication of measles.
- Reduction of morbidity and mortality from hepatitis B, tuberculosis and diphtheria.
- Improvement of laboratory diagnostic technology for EPI target diseases at aimag level

6. TARGETS

By 2001,

1. Increase immunization coverage to 95 with communities active involvement.
2. To achieve vaccine self-reliance sufficiency
3. To eradicate measles
4. Active surveillance of EPI target diseases established at bag level.
4. All sum hospital supplied with required new cold chain equipment

7. PROJECTION FOR 20003-2006

1. Collaboration will continue for reduction of EPI target diseases and for achievement of diphtheria elimination
2. Collaboration will continue in improvement of cold chain logistics systems

Problems and needs of Diseases surveillance

	<i>Problems</i>	<i>Needs</i>
1	Outbreak of diphtheria reporting some aimags	Conduct case control study
		To improve lab. confirmation diphtheria cases
		NID, SNID and HRRl
2	Measles outbreak occurred every 3 and 4 years	To improve lab.confirmation of every measles suspected case
		To improve case management
		NID, SNID and HRRl
3	Weak communication and information system	To establish computer network
		To conduct training all level medical staffs
4	B hepatitis cases not consistently decrease	To improve lab. confirmation Hepatitis B cases
		To increase immunization coverage of Hepatitis B vaccine
5	Weak of AFP surveillance at som bag level	To improve active surveillance of AFP at som and bag level
		To conduct training on EPI target diseases sureillance including AFP
		SNID and HRRl
		To achieve polio certification criteria

Immunization coverage

	<i>Problems</i>	<i>Needs</i>
1	Unsuffiecent to calculate immunization coverage in som level.	To promote specific tasks for every aimags.
2	Not clarified the goal of immunization coverage by year.	Medical doctor should estimate the immunization coverage. To conduct training on calculation of immunization coverage.
3	Depending on movement of population the number of unregistered childreis high.	To establish computer network on vaccination and registration of children.
4	Lack of transportation.	To suppy by motorcycles and cars.
5	Noor knowledge about immunization for urban people.	To distribute posters to parents and involve parents to training.
6	Poor participation of NGO on immunization activities.	To organize training and NID.

Cold chain

	<i>Problems</i>	<i>Needs</i>
1	No technician engineer for cold chain at all level.	To get budget for technician.
2	To arrange central cold room and connect to generator.	To invite a specialist
3	Some equipments become older.	To renew the equipments
4	Lack of guidelines and manual on cold chain.	To supply by manual on cold chain and safety work.
5	Unsufficient back up system on cold chain.	To involve computer network.
6	Poor knowledge of the technician.	To organize training.

Monitoring and supervision

	<i>Problems</i>	<i>Needs</i>
1	Laboratory control on vaccines receiving from foreign countries has not done.	To improve laboratory capacity.
2	Lack of investigation on vaccine adverse event after vaccination.	To conduct surveys on adverse event.
3	Many cases of vaccine allergy among the nurses who is responsible for vaccine.	To conduct surveys vaccine allergy among the medical staffs.
4	Evaluation on implementation of EPI is not sufficient at the aimag and som level.	To evaluate implementation of EPI at the every unit.

Activities of the project

Draft

ITEM		By year				
		1998	1999	2000	2001	2002
Disease surveillance	• To conduct supplementary NIDs	SNIDs for OPV and meningococcal meningitis	SNIDs	NIDs for Measles	SNIDs	SNIDs
	• To introduce active surveillance system at sum and bag level	Establish active surveillance system for EPI target diseases at sum level	Establish active surveillance system for EPI target diseases at bag level	Establish computer network system in central level	Establish computer network system in sum level	Strengthen active diseases surveillance
	• To strengthen laboratory facilities for EPI target diseases	Supply lab reagents and kits for central laboratory	Supply reagents and equipment for National Polio Lab	Supply lab reagents and kits for aimag laboratory	Continue to support laboratory facilities	Continue to support laboratory facilities
	• To conduct epidemiological research	Double check active surveillance by direct visit	Conduct polio certification review	Conduct case control study	Conduct case control study	Conduct case control study
Immunization coverage	• To increase immunization coverage to 95 %	Establish reporting system for non registered children in central level	Establish reporting system for non registered children in sum and bag level	Involve immunization coverage in computer network in central level	Involve immunization coverage in computer network in sum level	To conduct survey on immunization coverage
	• To develop new program on immunization at sum and bag level	Conduct survey	Develop programme	Introduce new immunization programme	Implement new immunization programme	Implement new immunization programme
	• To conduct training on immunization	Conduct workshop on immunization for health center doctors	Conduct workshop on immunization for aimag doctors	Conduct workshop on immunization for sum and bag doctors	Conduct workshop on immunization	Conduct workshop on immunization

Cold chain	<ul style="list-style-type: none"> To supply cold chain equipment 	Supply 100 Honda generator and 90 refrigerator for aimag and som	Supply 70 Honda generator and 60 refrigerator for aimag and som	Supply 30 Honda generator and 40 refrigerator	Supply 20 Honda generator and 30 refrigerator and 35 cold box	Supply 40 refrigerator 30 cold box
	<ul style="list-style-type: none"> To supply car and motorcycle for vaccine transportation and diseases surveillance 	Supply 16 Russian jeeps for the aimag	Supply 5 cars and 40 motorcycles	Supply 25 motorcycles	Supply 15 motorcycles	Supply 2 cars and 15 motorcycles
	<ul style="list-style-type: none"> To introduce backup system for cold chain 	Make registration of cold chain equipment	Conduct workshop on cold chain logistic for aimag doctors	Involve cold chain equipment requirement in computer network in central level		
Training	<ul style="list-style-type: none"> To conduct training on disease surveillance and social mobilization for the doctors and nurses 	Conduct workshop for 6 aimags	Conduct workshop for 8 aimags and 6 health centers	Conduct workshop for 6 aimags and 7 health centers	Conduct workshop for 5 aimags	Conduct workshop for 6 aimags and health centers
	<ul style="list-style-type: none"> To develop and print training materials for doctors, parents and volunteers 	Print 3 kind of training materials for parents	Develop and print training materials on cold chain	Develop and print training materials on immunization	Develop and print training materials on disease surveillance	Develop and print training materials
	<ul style="list-style-type: none"> To conduct training for the mothers 		Conduct training for 12000 mothers	Conduct training for 20000 mothers	Conduct training 20000 mothers	Conduct training 30000 mothers
Vaccine supply	<ul style="list-style-type: none"> To supply 6 vaccines 					
	<ul style="list-style-type: none"> To supply syringes and needles for BCG 		179899ps	155673ps	157923	162423ps
Monitoring	<ul style="list-style-type: none"> To conduct monitoring on EPI implementation 	Conduct monitoring survey for 5 aimags	Conduct monitoring survey for 7 aimags	Conduct monitoring survey for 7 aimags	Conduct monitoring survey for 7 aimags	Conduct monitoring survey for 7 aimags

Activities of the project

Draft

	ITEM	By year				2002
		1998	1999	2000	2001	
1. Disease surveillance	● 1.1. To conduct supplementary NID	15265\$	13786\$	55298\$	14709\$	34255\$
	● 1.2. To introduce active surveillance system at som and bag level	7567\$	7164\$	16500\$	1500\$	
	● 1.3. To strengthen laboratory facilities for EPI target diseases					
	● 1.4. To conduct epidemiological survey	366\$	488\$	610\$	610\$	610\$
2. Immunization coverage	● 2.1. To increase immunization coverage to 95%					
	● 2.2. To develop new program on immunization at som and bag level					
	● 2.3. To conduct training on immunization	1220\$	2560\$	3400\$	3400\$	3400\$

3.	Cold chain	● 3.1. To supply cold chain equipment	110064\$	75655\$	39044\$	34793\$	24724\$
		● 3.2. To supply car and motorcycle for vaccine transportation and diseases surveillance		6800\$	22865\$	13720\$	30793\$
		● 3.3. To introduce backup system for cold chain		1200\$			
4.	Training	● 4.1. To conduct training on disease surveillance and social mobilization for the doctors and nurses	aimags-3600\$	aimags-5200\$ health cen-3600\$	aimags-3900\$ health cen-4200\$	aimags-3500\$	aimags-4000\$ health cen-3000\$
		● 4.2. To develop and print training materials for doctors, parents and volunteers	4500\$	300\$	4200\$	300\$	4200\$
		● 4.3. To conduct training for the mothers		878\$	1460\$	1460\$	2100\$
5.	Vaccine suppl	● 5.1. To supply 6 vaccines	312083\$	320453\$	325083\$	329716\$	334345\$
		● 5.2. To supply syringes and needles for BCG	23386\$	20237\$	20529\$	20822\$	21114\$
6.	Monitorin	● 6.1. To conduct monitoring on EPI implementation	850\$	1180\$	1110\$	1120\$	1150\$

Training

	Aimags name	Transtportation cost	Printing cost	for proffessors and equivalent	rental of premises	total
1	Архангай	26000x4=104000	300,000	72,000	72,000	548,000
2	Баянөлгий	63800=255200	300,000	72,000	72,000	699200
3	Баянхонгор	31600=126400	300,000	72,000	72,000	570400
4	Булган	18000=72000	300,000	72,000	72,000	516000
5	Говьалтай	46400=185600	300,000	72,000	72,000	629600
6	Говьсүмбэр	9500=38000	300,000	72,000	72,000	482000
7	Дархануул	9000=3600	300,000	72,000	72,000	480000
8	Дорноговь	13760=55040	300,000	72,000	72,000	499040
9	Дорнод	34300=137200	300,000	72,000	72,000	581200
10	Дундговь	15900=63600	300,000	72,000	72,000	507600
11	Завхан	47900=191600	300,000	72,000	72,000	635600
12	орхон	12940=51760	300,000	72,000	72,000	495760
13	Өвөрхангай	17950=71800	300,000	72,000	72,000	515800
14	Өмнөговь	30700=122800	300,000	72,000	72,000	566800
15	Сүхбаатар	31300=125200	300,000	72,000	72,000	569200
16	Сэлэнгэ	12140=48560	300,000	72,000	72,000	492560
17	Төв	2000=8000	300,000	72,000	72,000	452000
18	увс	56100=224400	300,000	72,000	72,000	668400
19	Ховд	57100=228400	300,000	72,000	72,000	672400
20	Хөвсгөл	3100=124000	300,000	72,000	72,000	568000
21	хэнтий	20500=82000	300,000	72,000	72,000	526000
						11,675,560

TR 1

1998 6 aimags
 1999 8 aimags
 2000 6 aimags
 2001 5 aimags
 2002 6 aimags

2,987,760
 4,295,160
 3,299,840
 2,916,400
 3,313,560
 16,812,720

1/8 82079

1998 —
 1999 6 health cen
 2000 7 health cen
 2001 5 health cen
 2002 5 health cen

3,000,000
 3,500,000
 2,500,000
 2,500,000
 11,500,000

Monitoring

Monitoring

	Aimags name	Transportation cost 交通费	Food and accume 日当、宿泊	Total
1	Архангай	52000	8000x2 x5 =80000	52000
2	Баянөлгий	127600	80000	207600
3	Баянхонгор	63200	80000	143200
4	Булган	36000	80000	116000
5	Говьалтай	92800	80000	172800
6	Говьсүмбэр	19000	80000	99000
7	Дархануул	18000	80000	98000
8	Дорноговь	27520	80000	107520
9	Дорнод	68600	80000	148600
10	Дундговь	31800	80000	111800
11	Завхан	99800	80000	179800
12	орхон	25880	80000	105880
13	Өвөрхангай	35900	80000	115900
14	Өмнөговь	61400	80000	141400
15	Сүхбаатар	62600	80000	142600
16	Сэлэнгэ	24280	80000	104280
17	Төв	4000	80000	84000
18	увс	112200	80000	192200
19	Ховд	114200	80000	194200
20	Хөвсгөл	62000	80000	142000
21	хэнтий	41000	80000	121000
		1179780	1600000	2779780

2 person from central team

	Transportation cost
1	Архангай 26000x 2=52000
2	Баянөлгий 63800x2=127600
3	Баянхонгор 31600x2=63200
4	Булган 18000x2=36000
5	Говьалтай 46400x2=92800
6	Говьсүмбэр 9500x2=19000
7	Дархануул 9000x2=18000
8	Дорноговь 13760x2=27520
9	Дорнод 34300x2=68600
10	Дундговь 15900x2=31800
11	Завхан 49900x2=99800
12	орхон 12940x2=25880
13	Өвөрхангай 17950x2=35900
14	Өмнөговь 30700x2=61400
15	Сүхбаатар 31300x2=62600
16	Сэлэнгэ 12140x2=24280
17	Төв 2000x2=4000
18	увс 56100x2=112200
19	Ховд 57100x2=114200
20	Хөвсгөл 31000x2=62000
21	хэнтий 20500x2=41000

MONITORING
 Budget by Aimag by Year
 To conduct monitoring
 b.

	1998	1999	2000	2001	2002
1	99000	132000	107520	142600	207600
2	172800	207600	148600	104280	143200
3	143200	143200	111800	84000	116000
4	142000	116000	179800	192200	172800
5	142600	172800	105880	142000	99000
6	699600	99000	115900	121000	98000
7		98000	141400	132000	107520
8		968600	910900	918080	944120
	1180\$	1110\$	1120\$	1150\$	

6 Aimag 8 Aimag 8 Aimag 8 Aimag 8 Aimag

**Required funds for AFP weekly telephone call
from aimag to som**

Aimag	Number of som	Charge rate for 3'	Number of t/ call for 1 year	Total required budget in tugrike
1zone				
Tuv	27	351	52	492804
Darkhan-Uul	4	351	52	73008
Nalaikh	1	351	52	18252
Baganuur	1	351	52	18252
Gobi-Sumber	3	351	52	54756
Bagakhangai	1	351	52	18252
Orkhon	2	351	52	36504
2 zone				
Arkhangai	19	351	52	346788
Bulgan	16	351	52	292032
Bayankhongor	20	351	52	365040
Dornogobi	14	351	52	255528
Dornod	14	351	52	255528
Uvurkhangai	19	351	52	346788
Umnugobi	15	351	52	273780
Sukhbaatar	13	351	52	237276
Selenge	17	351	52	310284
Khuvsgel	24	351	52	438048
Khentii	21	351	52	383292
Dundgobi	16	351	52	292032
3 zone				
Gobi-Altai	18	351	52	328536
Zavkhan	24	351	52	438048
Khovd	17	351	52	310284
Uvs	20	351	52	365040
Bayan-Ulgii	14	351	52	255528
Total	340	351	52	6205680

**Expanded Programme on Immunization Mongolia
Estimated of 1998-2002 year for EPI Vaccine Requirements**

A. Vaccine doses and vials required, routine EPI, primary & boosters (by years)

Antigen	Doses Vials	1998	1999	2000	2001	2002	Immunization schedule
OPV	10 d/vls with droppers	58,644	62,269	63,169	64,069	64,969	4ds Routine & primary <1 yrs, 2ds boosters for 2 and 8 yrs
	Doses	586438	622692	631692	640692	649692	
OPV	20 d/vls with droppers	10,903	9,847				2 ds SNID's for <5 yrs
	Doses	218060	196949				
IPV	20 d/vls					24,468	1 ds NID's for 1-8 yrs
	Doses					489371	
MLS	10 d/vls with diluent	20,456	20,756	21,056	21,356	21,656	2 ds Routine & primary 1 yrs
	Doses	204564	207564	210564	213564	216564	
MLS	10 d/vls with diluent			48,937			1 ds NID's for 1-8 yrs
	Doses			489371			
DPT	10 d/vls	40,913	41,513	42,113	42,713	43,313	3 ds Routine & primary <1 yrs, 1 ds boosters for 2 yrs
	Doses	409128	415128	421128	427128	433128	
DT	20 d/vls	7,082	5,708	5,791	5,873	5,956	2 ds boosters for 8 and 15 yrs
	Doses	141634	114160	115810	117460	119110	
DT	20 d/vls				17,305		2 ds SNID's for 7-15 yrs
	Doses				346098		
BCG	10 d/vls with diluent	50,814	53,448	54,221	54,993	55,765	1 ds Routine & primary <1 yrs, 2 ds boosters for 8 and 15 yrs
	Doses	508139	534482	542205	549932	557650	
HEP.B	10 d/vls	23,013	23,351	23,688	24,026	24,363	3 ds Routine & primary <1 yrs
	Doses	230135	233510	236885	240260	243635	
Survivors		51141	51891	52641	53391	54141	

Note: Wastage multipliers as follows:

Routine EPI, all primary series: OPV, DPT, MLS 2; Hep.B 1,5

Routine EPI, primary series, cities and former cities and aimag center BCG 5, sum and bag level BCG 10

NID & SNID's OPV, IPV, DT, Measles and all boosters 1,1

NID immunization target for one doses of IPV and Measles is all children 1-8 years of age

B. EPI vaccines cost estimates (by years)

Antigen	Doses Vials	1998	1999	2000	2001	2002	Total cost in USD
OPV	10 d/vls with droppers	46,915	49,815	50,535	51,255	51,975	250,495
OPV	20 d/vls with droppers	15,264	13,786				29,050
IPV	20 d/vls					34,255	34,255
MLS	10 d/vls with diluent	23,115	23,454	79,092	24,132	24,471	174,264
DPT	10 d/vls	28,639	29,059	29,479	29,899	30,319	147,395
DT	20 d/vls	6,020	4,852	4,922	19,701	5,063	40,558
BCG	10 d/vls with diluent	76,221	80,172	81,331	82,490	83,648	403,862
HEP.B	10 d/vls	131,174	133,101	135,022	136,948	138,869	675,114
Total		327,348	334,239	380,381	344,425	368,600	1,754,993

Note: Prices as follows: BCG 10 d/vials \$1.5, OPV 10d/vials \$0.80, DPT 10d/vials \$0.70, MLS 10d/vials \$1.13,
Hep.B 10 d/vials \$5.70, DT 20 d/vials \$0.85
OPV and IPV for NID's 20 d/vials \$1.40

Expanded Programme on Immunization Mongolia
Estimated Annual EPI Vaccine Requirements
 (by doses)

Aimags/City	Population				Vaccine doses required, routine EPI, primary series					Doses required, boosters		
	Total 1996	<1 year	8 year	15 year	BCG	OPV	DPT	Measles	Hep B	BCG	OPV	DT
Arkhangai	98441	2448	2931	2222	19830	24480	19584	9792	11016	5668	3224	5668
Bayan-Ulgii	83562	2527	3224	2355	20470	25270	20216	10108	11372	6137	3546	6137
Bayankhongor	86824	2220	2737	2062	17955	22200	17760	8880	9990	5279	3011	5279
Bulgan	61180	1317	1728	1760	10670	13170	10536	5268	5927	3837	1901	3837
Gobi-Altai	69012	1647	2004	1753	13345	16470	13176	6588	7412	4133	2204	4133
Dornogobi	46575	1071	1352	1085	8680	10710	8568	4284	4820	2681	1487	2681
Dornod	76403	1730	2378	2208	14015	17300	13840	6920	7785	5045	2616	5045
Dundgobi	50431	1247	1490	1241	10105	12470	9976	4988	5612	3004	1639	3004
Zavkhan	102341	2282	2914	2893	18485	22820	18256	9128	10269	6388	3205	6388
Uvurkhangai	111045	2852	3423	2582	23185	28520	22816	11408	12834	6606	3765	6606
Umnugobi	44324	1204	1387	1125	10115	12040	9632	4816	5418	2763	1526	2763
Sukhbaatar	56534	1406	1800	1649	11390	14060	11248	5624	6327	3794	1980	3794
Selenge	95507	1844	3149	2982	14935	18440	14752	7376	8298	6744	3464	6744
Tuv	104238	1723	3034	2698	13955	17230	13784	6892	7754	6305	3337	6305
Uvs	98625	2893	2818	2503	23430	28930	23144	11572	13019	5853	3100	5853
Khovd	90083	2758	2935	3350	22340	27580	22064	11032	12411	6914	3229	6914
Khuvsgul	113312	2722	3363	2559	22050	27220	21776	10888	12249	6514	3699	6514
Khentii	71212	1709	2006	1962	13845	17090	13672	6836	7691	4365	2207	4365
Ulaanbaatar	624896	12281	18497	16309	61405	122810	98248	49124	55265	38287	20347	38287
Darkhan-Uul	87368	1619	2415	3267	8095	16190	12952	6476	7286	6250	2657	6250
Orkhon	61495	1355	2206	1693	6775	13550	10840	5420	6098	4289	2427	4289
Gobi-Sumber	12084	286	416	293	1430	2860	2288	1144	1287	780	458	780
Total	2245492	51141	68207	60551	366505	511410	409128	204564	230135	141634	75028	141634

Expanded Programme on Immunization Mongolia
Estimated Annual EPI Vaccine Requirements (by vials)

Population				Number of vials routine EPI, primary & boosters					
Total 1996	<1 year	8 year	15 year	BCG 10d/vials	OPV 10d/vials	DPT 10d/vials	Measles 10d/vials	Hep B 10d/vials	DT 20d/vials
98441	2448	2931	2222	2550	2770	1958	979	1102	283
83562	2527	3224	2355	2661	2882	2022	1011	1137	307
86824	2220	2737	2062	2323	2521	1776	888	999	264
61180	1317	1728	1760	1451	1507	1054	527	593	192
69012	1647	2004	1753	1748	1867	1318	659	741	207
46575	1071	1352	1085	1136	1220	857	428	482	134
76403	1730	2378	2208	1906	1992	1384	692	779	252
50431	1247	1490	1241	1311	1411	998	499	561	150
102341	2282	2914	2893	2487	2603	1826	913	1027	319
111045	2852	3423	2582	2979	3229	2282	1141	1283	330
44324	1204	1387	1125	1288	1357	963	482	542	138
56534	1406	1800	1649	1518	1604	1125	562	633	190
95507	1844	3149	2982	2168	2190	1475	738	830	337
104238	1723	3034	2698	2026	2057	1378	689	775	315
98625	2893	2818	2503	2928	3203	2314	1157	1302	293
90083	2758	2935	3350	2925	3081	2206	1103	1241	346
113312	2722	3363	2559	2856	3092	2178	1089	1225	326
71212	1709	2006	1962	1821	1930	1367	684	769	218
624896	12281	18497	16309	9669	14316	9825	4912	5526	1914
87368	1619	2415	3267	1435	1885	1295	648	729	313
61495	1355	2206	1693	1106	1598	1084	542	610	214
12084	286	416	293	221	332	229	114	129	39
2245492	51141	68207	60551	50814	58644	40913	20456	23013	7082
				\$76,221	\$46,915	\$28,639	\$23,116	\$131,177	6019

**Expanded Programme on Immunization Mongolia
Estimated Annual EPI Vaccine Requirements
Syringes & Needles**

Aimags/City	Population				Number of syringes & needles for primary & boosters					
	Total 1996	<1 year	8 year	15 year	BCG	DPT	Measles	Hep B	DT	Total needs
Arkhangai	98441	2448	2931	2222	7601	9792	4896	7344	5153	34786
Bayan-Ulgii	83562	2527	3224	2355	8106	10108	5054	7581	5579	36428
Bayankhongor	86824	2220	2737	2062	7019	8880	4440	6660	4799	31798
Bulgan	61180	1317	1728	1760	4805	5268	2634	3951	3488	20146
Gobi-Altai	69012	1647	2004	1753	5404	6588	3294	4941	3757	23984
Dornogobi	46575	1071	1352	1085	3508	4284	2142	3213	2437	15584
Dornod	76403	1730	2378	2208	6316	6920	3460	5190	4586	26472
Dundgobi	50431	1247	1490	1241	3978	4988	2494	3741	2731	17932
Zavkhan	102341	2282	2914	2893	8089	9128	4564	6846	5807	34434
Uvurkhangai	111045	2852	3423	2582	8857	11408	5704	8556	6005	40530
Umnugobi	44324	1204	1387	1125	3716	4816	2408	3612	2512	17064
Sukhbaatar	56534	1406	1800	1649	4855	5624	2812	4218	3449	20958
Selenge	95507	1844	3149	2982	7975	7376	3688	5532	6131	30702
Tuv	104238	1723	3034	2698	7455	6892	3446	5169	5732	28694
Uvs	98625	2893	2818	2503	8214	11572	5786	8679	5321	39572
Khovd	90083	2758	2935	3350	9043	11032	5516	8274	6285	40150
Khuvsgul	113312	2722	3363	2559	8644	10888	5444	8166	5922	39064
Khentii	71212	1709	2006	1962	5677	6836	3418	5127	3968	25026
Ulaanbaatar	624896	12281	18497	16309	47087	49124	24562	36843	34806	192422
Darkhan-Uul	87368	1619	2415	3267	7301	6476	3238	4857	5682	27554
Orkhon	61495	1355	2206	1693	5254	5420	2710	4065	3899	21348
Gobi-Sumber	12084	286	416	293	995	1144	572	858	709	4278
Total	2245492	51141	68207	60551	179899	204564	102282	153423	128758	768926
Cost in TUGRUG					20328587	10432764	5216382	7824573	6566658	39215226

**Expanded Programme on Immunization Mongolia
Estimated of 1998-2002 year for EPI Requirements
Syringes & Needles**

A. Number of syringes and needles (by years)

Antigen	1998	1999	2000	2001	2002	Total
MLS	102,282	103,782	550,165	106,782	10,828	873,839
DPT	204,564	207,564	210,564	213,564	216,564	1,052,820
DT	128,758	103,782	105,282	421,417	108,282	867,521
BCG	179,899	155,673	157,923	160,173	162,423	816,091
HEP.B	153,423	155,673	157,923	160,173	162,423	789,615
IPV					444,883	444,883
Total Needs	768,926	726,474	1,181,857	1,062,109	1,105,403	4,844,769
Survivors	51,141	51,891	52,641	53,391	54,141	

A. Cost estimates for syringes and needles (by tugrug)

Antigen	1998	1999	2000	2001	2002	Total
MLS	5,216,382	5,292,882	22,794,315	5,445,882	5,522,382	44,271,843
DPT	10,432,764	10,585,764	10,738,764	10,891,764	11,044,764	53,693,820
DT	6,566,658	5,292,882	5,369,382	7,050,495	5,522,382	29,801,799
BCG	20,328,587	17,591,049	17,845,299	18,099,549	18,353,799	92,218,283
HEP.B	7,824,573	7,939,323	8,054,073	8,168,823	8,283,573	40,270,365
IPV					22,689,033	22,689,033
Total cost in tugrug	50,368,964	46,701,900	64,801,833	49,656,513	71,415,933	282,945,143

Note: Estimated of prices for one disposable syringes 51 tugrug, (MON-SAM) Co.LTD
Estimated of prices for BCG syringes & needles 0.13 USD, [113 tugrug]