REPORT

MONGOLIA WHO EXPANDED PROGRAMME ON IMMUNIZATION PROGRAMME REVIEW

Mongolia
1-28 September 2002

Manila, Philippines
January 2003
REPORT
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PROGRAMME REVIEW

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NOTE

The views expressed in this report are those of the participants in the Mongolia WHO Expanded Programme on Immunization Programme Review and do not necessarily reflect the policies of the World Health Organization.

Keywords:

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<td>16</td>
<td>AIMAG VISIT: SUKHIBAATAR</td>
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1. BACKGROUND

1.1 EPI Review

In July 2002, the WHO Regional Office for the Western Pacific received a request from the Mongolia Ministry of Health to conduct an Expanded Programme on Immunization (EPI) Programme Review. WHO agreed and an EPI Programme Review was conducted from 1 to 28 September 2002.

The EPI Review focused on the status of the following:

1. cold chain equipment/management;
2. vaccine supply/management;
3. general EPI coverage;
4. safe injection/waste disposal; and
5. vaccine procurement financial sustainability.

1.2 Mongolia EPI Programme

Mongolia has placed a high priority on immunization and achieved notable success in controlling vaccine preventable diseases. The EPI was established in 1962. Routine immunization coverage of all EPI vaccines for the under-one year of age cohort has been over 90% nationwide since 1977.

According to the Mongolian Statistical Yearbook 2000, the population of Mongolia was 2 373 516 with a per capita gross national product (GNP) of US$ 397. Also in 2000, the infant mortality rate and maternal mortality rate were 31.23 and 1.58 per 1000 live births, respectively.

During the winter season of 1999-2002, Mongolia experienced severe cold weather, and many nomads lost their livestock. Some of them were forced to abandon agricultural business and moved to the capital city and towns. This movement resulted in children being unregistered, and therefore potentially not included in the vaccination programme. How to ensure that these children are covered is one of the major challenges for the programme.

The previous national EPI review of 1997 showed high vaccination coverage. Implementation of the national EPI programme was satisfactory in general, with immunization coverage higher than 90% for all antigens.

However, programme management, cold chain and logistics, social mobilization and disease surveillance were cited as areas needing improvement.

The Mongolian Government adopted a National Immunization Plan, 1999-2004 (see Annex 1). The plan addresses specific areas for improvement in the national EPI in the areas of immunization planning and advocacy; immunization practices including safety injection; cold chain and storage management; training and education of the EPI staff; and disease surveillance.
The Mongolian Government enacted immunization legislation in 2000. As part of this law, in order to strengthen immunization financial sustainability, an immunization fund was created. The fund is to be used primarily to support injection needle and syringe supply.

The national programme expenditures were approximately US$ 1.13 million in 2001. The Government contribution was 57.6% of the total budget, while the Japan International Cooperation Agency (JICA) contributed 41.3%, and the United Nations Children’s Fund (UNICEF) contributed 1.1%.

EPI vaccines for routine use have been provided by JICA under the multilateral/bilateral equipment supply programme in cooperation with UNICEF and WHO (see Annex 2 for 2001 national EPI expenditures).

2. EPI REVIEW PROCESS

A WHO short-term consultant was contracted for the period of 1 to 28 September 2002 to initiate the EPI review; design questionnaires for the EPI managers, pediatricians, cold chain technicians (aimag level), family doctors and vaccine nurses (soum level) to be utilized during the review; select locations to be visited during the review; coordinate overall review activities with the National Centre for Communicable Diseases (NCCD)/Ministry of Health and UNICEF; and participate in the review process.

All questionnaires were translated into Mongolian by the national EPI manager and EPI team staff of the NCCD. The questionnaires for EPI managers were distributed to aimags and collected during the EPI managers’ workshop held from 12 to 15 September 2002 at Ulaanbaatar.

Three additional WHO staff arrived on 21 September 2002 - two staff from the WHO Regional Office for the Western Pacific and an additional consultant. On 22 September 2002, a coordination meeting was held at the Ministry of Health. At this time, plans for visits of three additional teams, each team with a WHO representative and a Ministry of Health counterpart were finalized. A fourth team, composed of a WHO consultant who had arrived earlier, and the Ministry of Health counterpart had already begun field investigations.

Each of the four teams was assigned one aimag to visit. Information would be collected through observation, interviews and use of the questionnaire. As well as visiting the aimag centres, soum centres and health centres were visited. Interviews were conducted with directors, EPI managers, doctors, nurses, and vaccinators at each location. In addition to aimag visits, one team also visited the national vaccine stock facility at Ulaanbaatar.

The findings and recommendations of the EPI review team were reported to the Ministry of Health on 30 September 2002. The intermediate result of the JICA cold chain equipment survey was also reported at that time.
3. FINDINGS

3.1 National and Aimag Level EPI Policy and Achievement

The Mongolian Government (the Ministry of Health) recently modified the national immunization schedule, reducing the dose for Bacille Calmette-Guérin (BCG) (15 years) and oral polio vaccine (OPV) (two and eight years). The second dose of BCG will be eliminated in the near future (see Annex 5).

New antigens such as *Haemophilus influenzae* type b (Hib), meningococcal meningitis A and C and hepatitis A are being considered for addition to the EPI in the future. Currently, disease burdens for these infections are being estimated. The Mongolian Government (the Ministry of Health) is also seeking an opportunity to introduce new combined vaccines, diphtheria-tetanus-pertussis (DTP) + hepatitis B, using the Global Alliance for Vaccines and Immunization (GAVI) fund.

The immunization fund, which was created by the immunization law, is not yet fully functioning for procurement of injection needles and syringes.

The EPI receives strong political support from governors at both the aimag and soum levels. Aimag has a policy and plan for the EPI, which is reported to surpass stated targets.

Vaccine coverage in Mongolia is high. Routine immunization coverage of all EPI vaccines for the under-one year of age cohort has been over 90% nationwide since 1977. In 2001, BCG coverage was 98%, DTP3 - 95.2%, OPV - 95.4%, measles - 95.1% and hepatitis B - 95.1%. Reported coverage rates at the aimag level for most EPI vaccines are at or above 95% (see Annex 9). At the soum level, most of the coverage rates exceed 90%.

However, pockets of low coverage exist due to difficulties in accessing mobile populations and unregistered children. Biannual National Immunization Days (NIDs) are conducted during the first 10 days of May and October. Catch-up immunization for missed children is the primary purpose of the biannual NID. Because most of the infants are already immunized at routine sessions in rural soums, education and advocacy have received more emphasis during the recent NIDs. In some aimags, non-EPI immunization (e.g. typhoid vaccine) is given to the recommended age group when epidemics occur.

3.2 Vaccine Stock Management

Vaccine Procurement

Vaccine requirements are estimated annually and supplied in a single shipment. Vaccine storage capacity at the national level is often exceeded when vaccine orders arrive. The procurement of EPI vaccines completely depends on support from donors. The Ministry of Health has found it difficult to purchase EPI vaccines and is dependent upon donor funding in the short term for vaccine procurement.

Vaccine requirements are calculated using national population data (state statistical office) and vaccine wastage rates calculated from aimag reports. Order amounts are increased by 25% to allow for a buffer stock.
Vaccine stock levels are high (see Annex 7). Wastage of a five-month supply of DTP and a seven-month supply of BCG vaccines is expected to occur due to the expiry date. High stock levels appear as a result of not considering current stock balances when ordering vaccines.

**National Vaccine Store**

Accurate records were kept for all vaccine stocks and physical stocks are checked at least monthly. Stock records for diluents or safety boxes are not kept. Syringes are not supplied by the EPI, but are ordered through the hospital supply system.

Cold chain equipment was functioning well and temperatures were within the acceptable range at the time of inspection. Temperature readings are recorded by hand. A chart recorder for the cold room has not worked since mid-2001. This was fixed by the review team.

A cold room and refrigerator/freezers are used to store vaccines. Vaccine storage space is insufficient to receive a single arrival vaccine shipment. Both diphtheria-tetanus (DT) and hepatitis B vaccines were placed at the bottom of ice-lined refrigerators where they are at risk of freezing.

A demonstration of vaccine packaging was observed. Staff protected freeze-sensitive vaccines from contact with ice packs using foam, however, it did not allow for ice packs to warm sufficiently before placement in cold boxes. The vaccine store has two types of freeze watch indicators in stock, but staff used freeze watch indicators for DTP with hepatitis B vaccine.

Vaccine arrival reports were implemented in 2002 for all vaccine arrivals, but do not include a physical inspection of vaccines.

**3.3 Cold Chain and Logistics Management at the Aimag and Soum Levels**

All facilities had adequate well functioning cold chain equipment and temperatures were recorded twice a day. In some facilities, temperature recording was not done on Saturdays and Sundays. Vaccines were well arranged however. In some aimag level, hepatitis B vaccine was stored at the bottom of an ice-lined refrigerator.

Staff knowledge of vaccine vial monitors (VVMs) was high and all vaccines inspected that had VVMs were found to be good. DTP vaccines in some aimags and soums were difficult to suspend and were likely to have been exposed to sub-zero temperatures.

Vaccines are received from the national level every three months, and include a 25% buffer level. Vaccines are distributed to the soum every month and again a 25% buffer level is maintained. Accurate stock records were kept at both sites for all vaccines, with frequent stock takes. Stock records are not kept for diluents, syringes or safety boxes. The reagent for tuberculin test (PPD) is often in shortage or no supply.

Vaccine wastage is recorded at aimag and soum level. The main source of wastage is the discarding of opened vials due to the use of the multi-dose vial policy for two days or less. Estimated causes of vaccine wastage for 2001 are quantified in Annex 8. Some staff do not calculate vaccine wastage rate correctly.

Shortage in fuel for motorcycles and generators is a common problem at the soum level. Spare parts for vehicles, motorcycles and generators are often not available, which makes repairing them very difficult. JICA reported that 11% (8/73) of refrigerators they installed had already broken down. There is no regular maintenance service and replacement policy.
3.4 Immunization Practices, Training and Supervision

Immunizations are provided in three modes, at the aimag hospital, soum hospital and through outreach services provided at the aimag and soum levels. The aimag provides immunization three to five days per week, and the soum, few days to several days per month - depending on the target population and geographical conditions. In Sukhbaatar Aimag, for example, 25% to 60% of all immunizations were given at the immunization units and 60% to 75% was given through outreach services. Birth doses of hepatitis B, BCG and OPV are provided in the maternity ward by the midwife (usually separate from EPI programme services).

Some aimags provide outreach services several times per month and the soum a couple of times per month. Nomadic people are located from 10 kms to >200 kms from the facilities. Some nomads are not in the original jurisdiction and the local facility may not provide care for these children. This may result in missed children.

There are dedicated EPI managers at the aimag level. Well-trained and dedicated EPI staff were present at both the aimag and soum level. Registered vaccine nurses administer all vaccines.

Staff reported that adequate EPI training was provided on an ongoing basis at most localities. There, however, may be a need for additional training to be provided to family doctors and nurses, as more vaccines will be administered at doctors’ health centres in the future.

In four aimags where teams visited, two to seven supervisory visits to the soum facilities occurred in the past year. The most frequent problems pointed out were the unavailability of motorcycles for outreach, not recording the refrigerator temperatures, and inadequate space for immunization services. Some motorcycles and generators were out of order because of lack of repair tools. Many of these problems were resolved after supervisory visits.

3.5 Safe Injection

MONSAM, the Mongolian/Korean joint project manufactures inexpensive disposable needles and syringes (>20 million sets per year). The Mongolian Government has decided to switch to the use of auto-disable (AD) syringes. A small, partial conversion of the plant to AD syringe production has occurred. However, assistance to complete this technology transfer is needed and the Ministry of Health has requested such assistance from donors.

The disposable syringes are used for all immunizations and generally collected in safety boxes after use. Destruction is by burning at the facility level. In some soum levels, safety boxes were dumped and not burned. Sometimes small number of syringes and needles were burned without collecting in safety boxes. Because it is difficult to transport safety boxes during outreach activities (transport is usually via motorcycle) appropriate disposal is not always conducted properly.

3.6 Immunization Reporting and Disease Surveillance

Good vaccine records were maintained at the aimag and soum level. Immunization figures are reported from the soum to the aimag and from the aimag to the national level each month. Information flow between the national and aimag levels (supported by WHO) is generally carried out on a timely basis. Information flow between the aimag and soum levels (supported by local governments) are the responsibility of the local government and does not always occur on a timely basis.
Estimated vaccine projections are based on registration data and reported needs from family doctors. However, difficult economic situations and recent winter disasters have caused a high rate of internal migration and displacement. Many migrants living in districts in Ulaanbaatar are not registered upon arrival in the new area. As a result, some children do not receive their scheduled vaccination each year. These unregistered children are mainly immunized during NIDs. This may result in less than optimal coverage rates.

Both active and passive surveillance activities are conducted. Family doctors provide reports from patient visits (passive) and EPI team members search for disease cases (active) during outreach visits. The quality of daily case reporting is sometimes a concern due to lack of knowledge of some of the reporters (family doctors).

The immunization programme is found to be effective in preventing EPI diseases with a reduction in child mortality over the last five years. None or only few EPI diseases are reported by the soums in the last five years. A total of 129 acute flaccid paralysis (AFP) cases were reported from 1996 through 2001 (see Annex 10). Annual reported numbers varied from nine to 43 (median 17). Average national population under 15 years of age was 872 099, so AFP per 100 000 was 1.03 to 4.94 (median 1.95). All the cases were tested, and none were identified as wild poliovirus (see Annex 11). None or few adverse events following immunization (AEFI) cases were reported.

3.7 Social Advocacy and Community Knowledge

Parents were interviewed regarding their knowledge of the EPI and it was found to be high. Vaccinators provide information to parents about diseases, schedules, AEFI and the date of their next visit at the time of vaccination.

Almost all who were interviewed, including community leaders, supported childhood immunization. Advocacy was provided primarily via direct verbal communication, printed materials, placards, wall newspapers, billboards and radio.

3.8 Sustainability

Over the past five years, JICA has provided funding for the purchase of all EPI routine vaccine. However, JICA has indicated that there is an urgent need for the Ministry of Health to develop a financial sustainability plan. JICA indicated that if a vaccine financial sustainability plan was in place, it may be possible for JICA to continue to provide funding on a progressively diminishing level.

4. CONCLUSIONS

The EPI in Mongolia has been found to be highly effective in preventing EPI diseases with a reduction in child mortality over the last five years. Coverage rates for all antigens were found to be particularly high, although it is recognized that recent internal migrations and displacement is placing pressures on coverage rates, particularly in urban areas. The review teams identified the following areas that can be further strengthened: (1) vaccine forecasting and receiving procedures have significant deficiencies; (2) a large degree of the vaccine wastage is preventable; (3) the current open vial policy is unnecessarily limited; (4) cold chain equipment management is weak in various areas; and (5) appropriate planning for long term financial sustainability for vaccine procurement needs has not been completed.
5. RECOMMENDATIONS

(1) Immunization records should be transferred when children move to a new aimag.

(2) Government policy should encourage families to register their children promptly when transferring to a new aimag.

(3) Advocacy activities are needed for local governors to support EPI.

(4) Training is needed for EPI staff to deal with social mobilization issues and family doctors in the provision of immunizations.

(5) Maximum vaccine stock levels at the national store should be reduced to six months.

(6) Vaccine arrival procedures should include a visual inspection of vaccine physical characteristics.

(7) Multi-dose vial policy at the central and aimag levels should be extended from the current two days.

(8) Multi-dose vial policy should be expanded to the soum level for vaccines with VVMs (presently OPV and hepatitis B).

(9) International vaccine orders should be delivered in two or three shipments per year.

(10) A cold chain equipment replacement plan should be developed.

(11) Training in cold chain equipment repair should be provided to one person in each aimag.

(12) Generators, motorcycles and vehicle spare parts should be stocked at the aimag level and equipment should be checked regularly.

(13) The Ministry of Health should assess the feasibility of local AD syringe production through technology transfer.

(14) Safety boxes should be used for both fixed sites and outreach immunization activities.

(15) Staff responsible for syringe and needle disposal should receive training in correct practices.

(16) An overall Ministry of Health medical waste management plan should be developed.

(17) Donor assistance will be needed by the Ministry of Health for vaccine procurement in the short term.

(18) The Ministry of Health should ensure that vaccine costs are minimized through reduced vaccine wastage, more efficient immunization schedules and vaccine stock levels.

(19) The Ministry of Health needs to initiate steps towards the development of a financial sustainability plan for the EPI on a mid and long term basis.
Major Goals of the Mongolian Immunization Programme Plan (1999-2004)

Immunization planning and advocacy

- Every year Aimag updates the immunization planning.
- Meeting involving Aimag government officials has been held before.

Immunization practices

- Immunization coverage of infants for all routine antigens exceeds 90% at all Soum and Aimag level.

Cold chain and storage management

- All Soums and Aimag vaccine storages are satisfactorily equipped.
- Inventory of cold chain equipment at all levels will be carried out annually.
- Analysis of vaccine use and wastage patterns is carried out annually.

Training and education

- Every year Aimag sends staff to the national EPI meeting.
- Training on immunization procedures, including cold chain operation, has been carried out at the Aimag level staff annually, and for >50% of Soum and bag level staff each year.
- All staff providing injections will receive updated training on safe injections as part of immunization procedures training.
- Surveillance training has been conducted for the Aimag staff annually.

Safety injection

- 100% of immunization injections are given safely.
- Safety boxes are introduced at all levels of the health system.

Surveillance

- Surveillance workshop has been carried out for the Aimag level staff each year.
- Surveillance report including zero case reporting has been done regularly between the Soum and Aimag level.
## ANNEX 2

### Expenditure for the National EPI by Funding Sources, 2001

<table>
<thead>
<tr>
<th>Ref. #</th>
<th>Category / Line item</th>
<th>Central Government</th>
<th>JICA</th>
<th>UNICEF</th>
<th>WHO</th>
<th>Total Expenditure</th>
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<td>Vaccines BCG</td>
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<td>OPV</td>
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<td>DTP</td>
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<td></td>
<td>DT</td>
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<td>Hep B</td>
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<td>139,780</td>
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<td>Syringes routine</td>
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<td>Rubella NID</td>
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<td>Epidemiological grounds</td>
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<td>Equipment (cold chain, spare parts, sterilisation...)</td>
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<td>• Freezers</td>
<td>14,155</td>
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<td></td>
<td>• Vaccine carriage</td>
<td>2875</td>
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<tr>
<td></td>
<td>• Safety box</td>
<td>1597</td>
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<td></td>
<td>• Indicator</td>
<td>818</td>
<td></td>
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<tr>
<td></td>
<td>• Refrigerator</td>
<td>49,998</td>
<td></td>
<td></td>
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<td></td>
<td></td>
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<td></td>
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<td>69,443</td>
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<td>3.1</td>
<td>• motorcycle</td>
<td>24,759</td>
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<td>3.2</td>
<td>• Cost transportation</td>
<td>5,727</td>
<td>11,182</td>
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<td>640,952</td>
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<td></td>
<td>• Cost keeping of vaccine</td>
<td>10,364</td>
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<tr>
<td></td>
<td>• Workers salary</td>
<td>568,920</td>
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<tr>
<td><strong>Total expenditure</strong></td>
<td><strong>665,011</strong></td>
<td><strong>47,518</strong></td>
<td><strong>457,976</strong></td>
<td><strong>12580</strong></td>
<td></td>
<td><strong>1,133,085</strong></td>
</tr>
</tbody>
</table>
1 Aimag

1.1 Date of review

1.2 Aimag name

Relationships: Map out:
- orders vaccines and other supplies;
- process for Monthly report and other information flows;

2 Services provided in Aimag

2.1 Reduction number of immunization sessions
   2000...................
   2001...................
   2002...................

2.2 If reduction number of immunization sessions
   When,
   How,
   why

2.3 How many times mobile immunizations are planned per month

2.4 How many immunizations unite in Aimag

2.5 Does Aimag have immunization programme

2.6 Any children not served (Number of children)....................
   Reasons (floating, street children, unregistered, disaster)

2.7 What do you think how many unvaccinated children are detected at NID?
   Biannual NID is important to maintain high vaccination coverage in your Aimag?

3 Planning/Standard setting

3.1 Is there Aimag plan for immunization services for 2002 (e.g. outreach services / education)

3.2 Is there a standard set for DPT3

3.3 Has that standard been achieved

4 Monitoring and Evaluation

4.1 Does Aimag office evaluate the EPI plan

4.2 Does Aimag office assess the EPI programme
Annex 3
Aimag EPI managers’ Questionnaire

5 Staffing issues in Aimag
5.1 Staff receive salaries on a regular basis
5.1.1 If no, how many staff are affected
Reasons and consequences

6 Training of staff in Aimag
6.1 Staff received training in EPI in 2001-2002 throughout Aimag
6.2 Number of staff trained in EPI
6.3 Training given and needs: record year given (or not N; not sure X)
For Needs: 0=none, 1-3, with increasing priority

<table>
<thead>
<tr>
<th>Given</th>
<th>Needed</th>
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<tbody>
<tr>
<td>General immunization</td>
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</tr>
<tr>
<td>Cold chain, VVM</td>
<td></td>
</tr>
<tr>
<td>Vaccine stock management</td>
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<tr>
<td>Routine reporting, surveillance</td>
<td></td>
</tr>
<tr>
<td>AEFI, Safe injection</td>
<td></td>
</tr>
<tr>
<td>Other (social socialization, advertisement)</td>
<td></td>
</tr>
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</table>

7 Supervision
7.1 Does Aimag provide supervisory visits to any health facility
7.2 How many times provided supervisory visit in the past 3 months
7.3 What problems most frequently identified during visits
7.4 Action to solve problems
7.5 If could not solve problems, reason

8 Finance
8.1 Do shortages of money, resources, or staff stop province doing as many immunization services and outreach needed
Aimag EPI managers' Questionnaire

8.2 Resource shortages and needs (levels in physical units, USD/Tg)

<table>
<thead>
<tr>
<th>Resource</th>
<th>Current level</th>
<th>Needed level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Staff</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vaccines</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Needles/syringes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vehicle</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Petrol</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Trained staff</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

How the needed resources could flow

9 Community knowledge of immunizations and diseases

9.1 Staff give information to parents after immunizing

9.1.1 Kind of information (e.g. side effect, diseases, next visit)

9.1.2 Method of information (e.g. talk, brochure distribution, radio poster)

9.2 Community and parents have good knowledge of importance of immunization and the diseases

9.3 Aimag has a plan for social mobilization/advocacy

10 Equipment

10.1 Do health facilities re-use syringes or needles

10.2 Do health facilities have AD syringes

10.3 If yes, do health facilities have adequate sterilization facilities

10.4 Aimag has instruction to discard used syringes or needles

If yes, how.................................

11 Monitoring of adverse events following immunization (AEFIs)

11.1 Does the Aimag record reactions or other events

11.2 Any immunization safety concerns this year

Detecting, reporting and responding to AEFIs and description of specific past concerns/issues
12 Vaccine usage policy

12.1 If a 10-dose vial of measles or BCG is not used up in one day, should the vial saved be used on the next day?

12.2 Is multi-dose vial policy (using open vial at subsequent session) used for any vaccine?

12.3 Which vaccines MVP used and under what conditions; and if dated when opened?

12.4 If only one child turns up for clinic, should staff open a new measles vaccine vial?

12.5 Which vaccine do you think you can use? Please put ○ or X

<table>
<thead>
<tr>
<th>VVM</th>
<th>○ or X</th>
</tr>
</thead>
<tbody>
<tr>
<td>Square lighter than circle</td>
<td></td>
</tr>
<tr>
<td>Square matches the circle</td>
<td></td>
</tr>
<tr>
<td>Square darker than the circle</td>
<td></td>
</tr>
</tbody>
</table>

12.6 Aimag monitors wastage

12.7 Aimag store thrown out vaccine this year (2002) that was:

- Expired
- VVM 'exposed'
- Cold chain failure
- By open vial policy
- Other

AIMAG STORE & COLD CHAIN

13 Good quality supplies, equipment and consumables are available where and in the amount needed

13.1 Aimag maintains an inventory of cold chain equipment

13.2 Aimag has plan/schedule for routine maintenance of this equipment

13.3 Aimag has plan/schedule for routine maintenance of vehicles
Aimag EPI managers’ Questionnaire

13.4 Concerns/issues for supplies and maintenance/repair

14 Vaccine forecasting and availability
14.1 Is vaccine received as ordered
14.2 Any problems with the ordering and supply process
14.3 Do Hep.B, DPT, DT, TT ever arrived frozen
14.4 How often are vaccines out of stock: Never X/ Yearly O/ <3monthly O/ Often X/ Unsure or Cannot assess X
If out of stock, give name of vaccine.................................
Reason..............................................................
14.5 Enough amount of needles and syringes
If no, reason...................................................................
Please describe your idea to improve situation

14.6 Enough amount of safety boxes
If no, reason...................................................................
Who/how vaccine is ordered; dealing with problems in vaccines supplied (e.g. if frozen); informed when vaccines to arrive; periods and vaccines that have been out of stock; how calculate vaccine needs/orders; matching vaccine with safety boxes and syringe/needles; comparison of vaccine and needle/syringe issues.

15 Stock control system
15.1 Stock monitoring form used for vaccines
15.2 Is closest-to-expiry vaccine issued first
15.3 Is ‘least-VVM life’ vaccine issued first
15.4 How often is physical stock matched up with stock record: No record X/ Never X/ 1-2x per year O/ Every 1-3 months O/ With every shipment O/ Cannot assess X
15.5 Is vaccine stock well managed
Use / effectiveness / accuracy of the system for both vaccines and other supplies
15.6 Number of each vaccine in stock
15.7 Status of vaccine vials and how stored
Annex 3
Aimag EPI managers' Questionnaire

16 Cold chain

16.1 Type of fridges in province store used for vaccine storage

<table>
<thead>
<tr>
<th>Type (code)</th>
<th>Year supplied</th>
<th>Thermometer in fridge</th>
<th>Current reading</th>
<th>How often recorded out of 2-8°C</th>
<th>Model</th>
<th>Number working condition</th>
<th>Donor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fridge1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fridge2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fridge3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Freezer 1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Freezer 2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Type of fridge(s): electric ☑, gas ☑, kerosene ☑, solar ☑, ice-line ☑, Chest ☑

Functioning thermometer in appropriate place in fridge Y/P/N/U/X

Current reading [X°C]

How often recorded: Bi-daily ☑ / Daily ☑ / Weekly ☑ / Episodic ☑ / No chart ☑

N of times in past 3 months/Number of records in past 3 months that temp out of recommended range

16.2 Have DPT, Hep.B, DT, TT ever frozen in the fridge Y/P/N/U/X

16.3 Is there sufficient fridge capacity to store vaccine needs Y/P/N/U/X

16.4 Adequate carriers and ice packs Y/P/N/U/X

16.5 Good overall cold chain management at Aimag store Y/P/N/U/X

16.6 No. of fridge failures in Aimag (outside Aimag store) over past year, 3 years N

Reason(s) for failure

16.7 What kind of trouble do you see most

16.8 Please describe your idea to improve situation:

17 Vaccine reports

17.1 Has province sent August reports to NCCD Y/P/N/U/X

17.2 Date of month that report is usually sent (range) N

17.3 Is a copy kept Y/P/N/U/X

Process for receipt, recording, and forwarding of monthly reports

18 Target diseases surveillance

18.1 Do you think there are some unreported cases in your Aimag Y/P/N/U/X

Please describe limitations of the diseases reporting
## 18.2 Diseases surveillance data
What kinds of diseases do you report? Please fill out table below.

<table>
<thead>
<tr>
<th>Disease</th>
<th>Reported cases</th>
<th>Investigated cases</th>
<th>% reported cases were investigated</th>
<th>Confirmed cases</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>N</td>
<td></td>
<td>N</td>
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<tr>
<td></td>
<td>N</td>
<td>N</td>
<td></td>
<td>N</td>
</tr>
<tr>
<td></td>
<td>N</td>
<td>N</td>
<td></td>
<td>N</td>
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</tr>
<tr>
<td></td>
<td>N</td>
<td>N</td>
<td></td>
<td>N</td>
</tr>
</tbody>
</table>

## 18.3 AFP surveillance data

<table>
<thead>
<tr>
<th>AFP</th>
<th>Reported cases</th>
<th>Investigated cases</th>
<th>% reported cases were investigated</th>
<th>Confirmed cases</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>N</td>
<td></td>
<td>N</td>
</tr>
<tr>
<td></td>
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<td></td>
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<td>N</td>
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<tr>
<td></td>
<td>N</td>
<td>N</td>
<td></td>
<td>N</td>
</tr>
</tbody>
</table>
Field Trip Itineraries and Participants

Sukhbaatar team
Dashtseren (NCCD), R. Arslan (UNICEF), H. Takahashi (WHO-STC/JICA)
Visited Baruun-urt Aimag, Tuvshinshiree, Asgart and Erdentsagaan Soum

Orkhon team
Ch. Munkhtsetseg (NCCD), N. Lubsandash (ADRA), R. Wiat (WHO),
R. Duncan (WHO-STC)
Visited Orkhon Aimag and Jargalant Soum

Darkhan-Uul team
N. Dondog (NCCD), O. Ariunnuy (NCCD), W. Antkowiak (WHO)
Visited Darkhan-uul Aimag, Khongor, Orkhon and Sharin gol Soum

Arkhangai team
B. Enkhtuya (NCCD), C. Anand (NCCD), H. Tanaka (WHO)
Visited Arkhangai Aimag, Ikhtumir, Erdenemandal, and Khotont Soum

Ulaanbaatar team
S. Naryad (NCCD), N. Suvdmaa (NCCD), J. Mendsaikhan (WHO)
Visited Sukhbaatar, Songino-khairkhan, Nalaikh and Bagahuur district
Immunoisation Schedule 2002, Recent Coverage and WHO Recommendations

<table>
<thead>
<tr>
<th>Vaccine</th>
<th>Current schedule</th>
<th>Coverage (%) 1999, 2000, 2001</th>
<th>WHO EPI Recommendations</th>
</tr>
</thead>
<tbody>
<tr>
<td>OPV</td>
<td>Birth, 2, 3, 4 months</td>
<td>PV3 = 86.7, 93.9, 95.4</td>
<td>6, 10, 14 weeks</td>
</tr>
<tr>
<td>BCG</td>
<td>Birth, 8 years</td>
<td>BCG1 = 93.9, 97.2, 98.0</td>
<td>Birth</td>
</tr>
<tr>
<td></td>
<td>2, 3, 4 months and</td>
<td>DTP1 = N/A 96.9, 96.6</td>
<td>Birth</td>
</tr>
<tr>
<td>DPT</td>
<td>2 years</td>
<td>DTP3 = 88.4, 94.1, 95.3</td>
<td>6, 10, 14 weeks</td>
</tr>
<tr>
<td>Hep B</td>
<td>Birth, 2, 8 months</td>
<td>HepB3 = 79.0, 92.6, 95.1</td>
<td>Birth, 6, 14 weeks</td>
</tr>
<tr>
<td>Measles</td>
<td>8 and 12 months</td>
<td>MSL1 = 78.5, 92.4, 95.1</td>
<td>9 months</td>
</tr>
<tr>
<td>DT</td>
<td>8, 15 years</td>
<td>N/A</td>
<td></td>
</tr>
</tbody>
</table>

N/A: data not available
Estimated Vaccine Wastage from Aggregated Aimag Data, 2001

<table>
<thead>
<tr>
<th>Vaccine</th>
<th>End stock 2000</th>
<th>Received 2001</th>
<th>End stock 2001</th>
<th>Dose opened</th>
<th>Dose given</th>
<th>Wastage %</th>
</tr>
</thead>
<tbody>
<tr>
<td>OPV</td>
<td>60,030</td>
<td>445,000</td>
<td>169,898</td>
<td>336,132</td>
<td>290,010</td>
<td>14</td>
</tr>
<tr>
<td>BCG</td>
<td>190,043</td>
<td>558,600</td>
<td>310,965</td>
<td>437,678</td>
<td>136,316</td>
<td>69</td>
</tr>
<tr>
<td>DPT</td>
<td>67,186</td>
<td>337,400</td>
<td>190,835</td>
<td>213,751</td>
<td>186,371</td>
<td>13</td>
</tr>
<tr>
<td>Hep B</td>
<td>54,740</td>
<td>272,400</td>
<td>101,456</td>
<td>225,684</td>
<td>141,539</td>
<td>37</td>
</tr>
<tr>
<td>Measles</td>
<td>84,893</td>
<td>576,240</td>
<td>199,878</td>
<td>461,255</td>
<td>388,205</td>
<td>16</td>
</tr>
<tr>
<td>DT</td>
<td>37,596</td>
<td>156,248</td>
<td>72,303</td>
<td>121,541</td>
<td>101,861</td>
<td>16</td>
</tr>
</tbody>
</table>
**ANNEX 7**

Vaccine Stock Levels Over the Last 12 Months Calculated from Stock Records

<table>
<thead>
<tr>
<th>Vaccine</th>
<th>Maximum stock level</th>
<th>Minimum stock level</th>
<th>Current stock level</th>
</tr>
</thead>
<tbody>
<tr>
<td>OPV</td>
<td>19 months</td>
<td>7 months</td>
<td>7 months</td>
</tr>
<tr>
<td>BCG</td>
<td>42 months</td>
<td>18 months</td>
<td>32 months</td>
</tr>
<tr>
<td>DPT</td>
<td>23 months</td>
<td>12 months</td>
<td>12 months</td>
</tr>
<tr>
<td>Hep B</td>
<td>12 months</td>
<td>0</td>
<td>12 months</td>
</tr>
<tr>
<td>Measles</td>
<td>10 months</td>
<td>5 months</td>
<td>5 months</td>
</tr>
<tr>
<td>DT</td>
<td>19 months</td>
<td>7 months</td>
<td>12 months</td>
</tr>
</tbody>
</table>
## Estimated Causes of Vaccine Wastage (%), 2001

<table>
<thead>
<tr>
<th>Vaccine</th>
<th>Total wastage dose</th>
<th>Damaged during transport</th>
<th>Cold chain failed</th>
<th>Misused</th>
<th>Under filled</th>
<th>Vial expired</th>
<th>Others</th>
<th>Unused</th>
</tr>
</thead>
<tbody>
<tr>
<td>OPV</td>
<td>46,122</td>
<td>0</td>
<td>0.03</td>
<td>0.13</td>
<td>4.24</td>
<td>0</td>
<td>9.43</td>
<td>86.17</td>
</tr>
<tr>
<td>BCG</td>
<td>301,362</td>
<td>0.10</td>
<td>0</td>
<td>0.01</td>
<td>4.36</td>
<td>1.93</td>
<td>5.17</td>
<td>88.43</td>
</tr>
<tr>
<td>DPT</td>
<td>27,380</td>
<td>0.09</td>
<td>0.03</td>
<td>0.05</td>
<td>2.18</td>
<td>0</td>
<td>2.46</td>
<td>95.18</td>
</tr>
<tr>
<td>Hep B</td>
<td>84,145</td>
<td>0.01</td>
<td>0.05</td>
<td>0.02</td>
<td>1.02</td>
<td>0.07</td>
<td>0.29</td>
<td>98.55</td>
</tr>
<tr>
<td>Measles</td>
<td>73,050</td>
<td>0</td>
<td>0</td>
<td>0.19</td>
<td>3.07</td>
<td>0.68</td>
<td>11.15</td>
<td>84.91</td>
</tr>
<tr>
<td>DT</td>
<td>19,680</td>
<td>0.03</td>
<td>0.15</td>
<td>0.62</td>
<td>0.39</td>
<td>4.50</td>
<td></td>
<td>94.31</td>
</tr>
</tbody>
</table>
### Infant Population and Vaccination Coverage (%) 2001, Mongolia

<table>
<thead>
<tr>
<th>Aimag</th>
<th>Population</th>
<th>BCG</th>
<th>OPV</th>
<th>DPT</th>
<th>Measles</th>
<th>Hep. B</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arkhangai</td>
<td>2,033</td>
<td>97.2</td>
<td>98.7</td>
<td>98.7</td>
<td>98.3</td>
<td>97.3</td>
</tr>
<tr>
<td>Bayan-Ulgii</td>
<td>2,882</td>
<td>98.6</td>
<td>97.9</td>
<td>97.9</td>
<td>98.8</td>
<td>98.8</td>
</tr>
<tr>
<td>Bayan-khongor</td>
<td>1,928</td>
<td>98.2</td>
<td>98.7</td>
<td>98.7</td>
<td>98.3</td>
<td>99.1</td>
</tr>
<tr>
<td>Bulgan</td>
<td>953</td>
<td>97.7</td>
<td>98.2</td>
<td>98.2</td>
<td>98.1</td>
<td>97.1</td>
</tr>
<tr>
<td>Gobi-Altai</td>
<td>1,548</td>
<td>99.1</td>
<td>91.5</td>
<td>91.5</td>
<td>94.8</td>
<td>94.4</td>
</tr>
<tr>
<td>Gobi-Sumber</td>
<td>247</td>
<td>99.6</td>
<td>87.4</td>
<td>87.4</td>
<td>90.3</td>
<td>90.3</td>
</tr>
<tr>
<td>Darkhan-Uul</td>
<td>1,479</td>
<td>96.6</td>
<td>94.7</td>
<td>94.7</td>
<td>97.1</td>
<td>97.2</td>
</tr>
<tr>
<td>Dornogobi</td>
<td>1,018</td>
<td>97.6</td>
<td>95.3</td>
<td>95.3</td>
<td>97.1</td>
<td>97.1</td>
</tr>
<tr>
<td>Dornod</td>
<td>1,389</td>
<td>99.7</td>
<td>99.1</td>
<td>99.1</td>
<td>99.1</td>
<td>99.1</td>
</tr>
<tr>
<td>Dundgobi</td>
<td>952</td>
<td>100</td>
<td>98.5</td>
<td>98.5</td>
<td>96</td>
<td>96</td>
</tr>
<tr>
<td>Zavkhan</td>
<td>1,843</td>
<td>98.6</td>
<td>99.9</td>
<td>99.9</td>
<td>93.7</td>
<td>97.9</td>
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<tr>
<td>Orkhon</td>
<td>1,416</td>
<td>96.3</td>
<td>97</td>
<td>97</td>
<td>96.1</td>
<td>93.6</td>
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<tr>
<td>Uvurkhangai</td>
<td>2,492</td>
<td>98.5</td>
<td>97.6</td>
<td>97.6</td>
<td>97.4</td>
<td>97.4</td>
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<tr>
<td>Umnugobi</td>
<td>1,067</td>
<td>98.7</td>
<td>96.9</td>
<td>96.9</td>
<td>99</td>
<td>99.3</td>
</tr>
<tr>
<td>Sukhbaatar</td>
<td>1,098</td>
<td>98.8</td>
<td>98.2</td>
<td>98.2</td>
<td>97.8</td>
<td>97.8</td>
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<tr>
<td>Selenge</td>
<td>1,584</td>
<td>99.9</td>
<td>98.5</td>
<td>98.5</td>
<td>99.2</td>
<td>99.2</td>
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<tr>
<td>Tuv</td>
<td>1,107</td>
<td>98.4</td>
<td>99.5</td>
<td>99.5</td>
<td>98.7</td>
<td>98.7</td>
</tr>
<tr>
<td>Uvs</td>
<td>2,334</td>
<td>97.3</td>
<td>99.9</td>
<td>96.1</td>
<td>96.1</td>
<td>98.7</td>
</tr>
<tr>
<td>Khovd</td>
<td>2,246</td>
<td>98.4</td>
<td>97.1</td>
<td>97.1</td>
<td>99.8</td>
<td>99.9</td>
</tr>
<tr>
<td>Khuvsugul</td>
<td>2,452</td>
<td>99.9</td>
<td>98.7</td>
<td>98.7</td>
<td>98.2</td>
<td>98.2</td>
</tr>
<tr>
<td>Khentil</td>
<td>1,505</td>
<td>98.8</td>
<td>93.6</td>
<td>93.6</td>
<td>95.7</td>
<td>95.7</td>
</tr>
<tr>
<td>Ulaanbaatar</td>
<td>14,876</td>
<td>97</td>
<td>90.5</td>
<td>90.5</td>
<td>89.8</td>
<td>89.3</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>48,449</strong></td>
<td><strong>98</strong></td>
<td><strong>95.4</strong></td>
<td><strong>95.2</strong></td>
<td><strong>95.1</strong></td>
<td><strong>95.1</strong></td>
</tr>
<tr>
<td>------------------</td>
<td>-------------------------------</td>
<td>----------------------------------------</td>
<td>-------------------------------</td>
<td>-------</td>
<td>-------</td>
<td>-------</td>
</tr>
<tr>
<td>Arkhangai</td>
<td>39,547</td>
<td>3</td>
<td>7</td>
<td>2</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>Bayan-Ulgii</td>
<td>41,877</td>
<td>3</td>
<td>1</td>
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<td></td>
</tr>
<tr>
<td>Bayankhongor</td>
<td>34,706</td>
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<td>TOTAL</td>
<td>872,099</td>
<td>61</td>
<td>129</td>
<td>13</td>
<td>9</td>
<td>17</td>
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</table>

All reported cases are virologically dinied for wild polio
### ANNEX 11

## Reported Vaccine Preventable Disease Case, 2000-2001

<table>
<thead>
<tr>
<th>Notifiable Disease</th>
<th>Reported 2000</th>
<th>Reported 2001</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tuberculosis</td>
<td>2,988</td>
<td>3,413</td>
<td>Extra-pulmonary tuberculosis included</td>
</tr>
<tr>
<td>Diphtheria</td>
<td>4</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td>Pertussis and Neonatal tetanus</td>
<td>0</td>
<td>0</td>
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</tr>
<tr>
<td>Hepatitis B</td>
<td>831</td>
<td>829</td>
<td>Sero-diagnosis not available at the Aimag level</td>
</tr>
<tr>
<td>Measles</td>
<td>925</td>
<td>10,677</td>
<td>Outbreaks among infant and teen ages</td>
</tr>
<tr>
<td>AFP</td>
<td>17</td>
<td>9</td>
<td>A total 129 cases since 1996, no wild polio identified</td>
</tr>
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</table>
EPI Review in Darkhan-uul aimag

Health facilities visited include Darkhan-uul health center, Orkhon Soum hospital, Khongor Soum hospital, Sharin gol Soum hospital.

Staff interviewed include EPI manager, cold chain, logistics officer, vaccinator, general paediatrician, family doctors, parents, aimag governor.

Darkhan-uul Aimag has population of 85,600; 4 Soums, 22 bags, 10 family clinics, 3 Soum hospitals.

The Aimag has a policy and plan for the EPI, aimag EPI staff monitor Soum EPI activities every 3 months.

Well-trained and dedicated EPI staff were present at both the Aimag and Soum level. Registered nurses administer all vaccines. There is a dedicated EPI manager at the Aimag level. Immunization is provided at three sites, Aimag hospital, Soum Hospital and outreach services from both Aimag and Soum. The Aimag provides vaccinations 5 days per week, and the Soum provides immunizations 2 days per week. Number of immunization sessions per week in past few years increased from 2 to five at the aimag level. Both Aimag and Soum provide measles vaccine only one day per week to reduce wastage. Birth doses of Hepatitis B, BCG and OPV are provided at the maternity ward. The aimag provides outreach services two times per week and the Soum two times per month. Vaccine wastage is recorded at Aimag and Soum level. The vaccine wastage rate in Aimag is 18.7%. Aimag and Soum open vial policy extents for 2 days only. Coverage rates at Aimag and Soum level for all EPI vaccines are reported above 96% in 2001. In the last two years no EPI diseases reported in Darkhan-uul aimag. Good immunization coverage, timing and record keeping were recorded at the Aimag and Soum level. Children born in October 2000 were fully immunized. During NID approximately 30 migrant, unregistered children were detected.

All facilities had adequate well functioning cold chain equipment. Temperatures were recorded two times a day at both sites. Vaccines are received from the national level every three months, and include a 25% buffer level. Vaccines are distributed to the Soum level is maintained. Accurate stock records were kept at both sites for all vaccines, with frequent stock takes. Parents have good knowledge of importance of immunization and diseases. Vaccinators provide information to parents about diseases, schedule, AEFI and the date of next visit at the time of vaccination.

Good records of doses of vaccine given were recorded at the Aimag and Soum level. Immunization figures are reported from the Soum and Aimag, and from the Aimag to the national level each month.

Aimag and Soum have sufficient number of needles, syringes and safety boxes. Disposable syringes and needles are used and collected in safety boxes. Destruction is by burning at the facilities level (burned and buried).
Annex 12

Challenges:

- Migration and difficulties to access unregistered children
- Lack of administrative policy on migrants from western aimags (Khovd, Uvs, Govi-Altai)
- Insufficient amount of petrol for outreach settings at the Soum level
- Lack of technician for repair of the cold chain

Team members:

N. Dondog (Senior Epidemiologist, Advisor, NCCD), Team Leader
W. Antkowiak (WHO)
O. Ariuntuya (Epidemiologist, NCCD)
Aimag Vist: Arkhangai

EPI review team visited Arkhangai Aimag, Ikhtamir, Erdenemandal and Khotont soum. During the visit six doctors, four vaccinators and 24 parents were interviewed using four kinds of questionnaire. Duration of the visit was from 23 to 28 September 2002.

Team: B. Enkhtuya (NCCD), Hiroko Tanaka (WHO), C. Anand (NCCD)

Background and demographics

Arkhangai Aimag is 480 km from Ulaanbaatar. Total population is approximately 97,000. Total number of children 0-1 yr is 2000 and 0-15 yrs, 38,189.

Policy, planning and finance

The aimag has a policy and plan for the EPI. The aimag Immunization programs receive strong political support from governors at the aimag and soum level.

Staff, training and supervision

Well-trained aimag and soum EPI staff. Aimag staff participate in national training than train Soum staff. Also, national team conducts training for aimag family doctors, soum doctors and vaccinator nurses. Local Health office and EPI staff monitor Soum EPI activities one to two times per year.

Service delivery

Immunization is provided at immunization units and outreach services from aimag and soum. The aimag provides immunization five days per week, and the soum provides immunization three to five days per week. Both aimag and soum provide outreach services. The aimag provides outreach services one to two times, and soum four to five times per month. At the soum level, 30% of immunization is conducted in outreach services, and 70% is conducted in immunization units. Nomadic people are located from 10 to 70 km from the soum center.

Reported coverage rate at the aimag level for all EPI vaccines are reported above 95.6%. Compared to the previous year's coverage, the rate increased from 1.7%-3.6%.

Cold chain, logistics and stock control

All facilities had adequate well functioning cold chain equipment and temperature were recorded two times a day. To compare is physical stock matched up with stock record at aimag and soum level. Vaccine reports are regulated at all levels. All soum of the aimag provided ice-lined refrigerator, staff knowledge of vaccine cial monitor (VVM) was high and all vaccines inspected that had VVMs were found to be good.
Annex 13

There were no case vaccines out of stock in the last year. Vaccines are received from the national level every three months, and distributed to the soum every month. Accurate stock records were kept at both sites for all vaccines frequent stock takes.

Vaccine wastage is recorded at aimag and soum level. Main source of wastage is the discarding of opened vials due to the use of the multi dose vial policy for two days only.

Social advocacy and community knowledge

Family and soum doctors provide information on immunization importance and prevention of diseases. Vaccinators give information to parents after immunization about the next visit at the time of following dose, side effects and diseases.

Data reporting and management

Good records of doses of vaccine given were recorded at the aimag and soum level.

Immunized children's number, and vaccine stock figures are reported from the soum to the aimag, and from the aimag to the national level every month. Vaccine is received as ordered and there are no problems with the order and supply process. Estimated vaccine projections are based on statistics data and reported needs from family and soum doctors.

Diseases control and surveillance

Aimag and soum had weekly telephone reporting system for the EPI target diseases. There are no unreported cases.

Immunization program was found to be effective in preventing EPI diseases and reducing numbers of incidence, except measles.

Safety injection and disposal practices

Single use syringes and needles are used for all immunizations. Used syringes and needles are collected in a safety box. When the box is full destruction is done by burning at the health center and soum hospital. Safety boxes are supplied from the center (donor).

Strengths:

1. Increased immunization coverage of all antigens in the aimag and soum level.
2. Vaccine stock is well managed.
3. Well-trained aimag and soum staff.
4. Cold chain equipment adequate and appropriate for needs of EPI.
5. Community and parents had good knowledge of importance of immunization.

Challenges:

1. Provide cold chain equipment repair training and supply of spare parts for motorcycles.
Aimag Visit: Orkhon

TEAM

Ch. Munkhtsetseg  NCCD
N. Lubsandash    ADRA
R. Wiwat        WHO
R. Duncan        WHO

Health facilities visited

Orkhon aimag hospital
Jargalant soum hospital
Background and demographics

Orknon aimag is 400 km from Ulaanbator. Total population is approximately 78000. 71000 peoples live in Erdenet city, 4000 Jargalant soum. Total number of births is estimated to be 1420, of which 99.0% are delivered in a hospital.

Policy, planning and finance

The EPI receives strong political support from governors at both the aimag and soum level.

The aimag has a policy and plan for EPI, which is reported to surpass stated targets.
Service delivery

Immunizations are provided at three sites, aimag hospital, soum hospital and outreach services from both aimag and soum.

The aimag provided outreach services two times per week and the soum two times per month. Nomadic people are located from 20 to 250 km from the aimag centre and from 5 to 70 km from the soum center.

Reported coverage rates at the aimag level for all EPI vaccines are reported above 96%.
Cold chain, logistics stock control

All facilities had adequate well functioning cold chain equipment. Staff knowledge of VVM was high and all vaccines inspected that had VVMs were found to be good. Accurate stock records were kept at both sites for all vaccines, with frequent stock takes.

Social advocacy and community knowledge

17 parents were interviewed regarding the EPI and knowledge of the programmer was reported to be high.
Disease control and surveillance

Immunization programmer was found to be effective in preventing EPI diseases with a reduction in child mortality over the last five years.

No EPI diseases reported in the soum in the last five years, and 2 cases of Hepatitis B reported at the aimag level in the last 12 months.
Strengths

Strong support for EPI national and local government.
Well trained and dedicated staff with close supervision and monitoring
Good equipment and vaccine supply
Majority of population live in aimag town with allow easy access to immunization facilities and birth center
Challenges

Population movement and difficulties accessing children that are not registered

Difficulty accessing remote nomadic people, especially during winter months
Aimag Visit: Ulaanbaatar Health District

VISITS: Ulaanbaatar district health corporations
Period: 2002.09.23-09.28

Health facilities visited

Ulaanbaatar city:
1. 1. Sukhbaatar district Health Corporation; Dispansery No1,
2. 2. Songino-khairkhan district Health Corporation; Dispansery No2,
3. 3. Nalaikh district Health Corporation; Family hospital “Ami-erdene “.
4. Bagahuur district Health Corporation; Family hospital “Bevaangerd”.

ANNEX 15
Background and demographics

According to official statistics total population of Ulaanbaatar city is 790,898. However due to the high rate of internal migration around 1 million people live in Ulaanbaatar city. Administratively Ulaanbaatar city has 9 districts: 6 districts are concentrated and 3 are in remote area in around 45-138 km from Ulaanbaatar. One third of population of Mongolia is located in Ulaanbaatar city.

A review has been conducted in 4 selected area: population in Sukhbaatar district-98,000, Songinokhairkhan district-162,413, Nalaikh and Bagahuur districts 22,000-25,000. About 32% of population of Ulaanbaatar city is covered by review.

Policy, planning and finance

Immunization activity carried out by 17 EPI units through 5 Medical Health facilities. Ulaanbaatar city has developed its immunization programme for 2002, has a policy and plan for EPI and describes a special target for each year. All EPI activity at district of Ulaanbaatar city are monitored, coordinated and supervised by National Centre for Communicable Diseases (NCCD). The EPI receives strong political support from the city Governor.
**Staffing, training and supervision**

At this district's 128 family hospitals, 212 family doctors, 206 nurses, and 8 EPI managers are involved in EPI activity. Health Corporations staff capacity was adequate for maintaining EPI activity except Nalaikh district. Immunization is provided by well-trained staff. Workshop for EPI officers is conducted twice a year. Total 198 family nurses have been trained on EPI. However, an additional training is needed for family doctors.

Supervision is conducted every week by city's and health corporation's epidemiologists for surveillance, cold chain, coverage. Feedback information to EPI unit is provided in quarterly information bulletin.

**Service delivery**

Immunizations are provided by Districts Health Unit, Dispensary and Family Hospitals including outreach services. Most units provide vaccinations in 5 days per week and in remote areas provide immunization 1-3 times per week. Most units carried out measles vaccination 2-3 times per week in order to reduce vaccine wastage. Service area for outreach immunization is approximately in 14-168 km from the district centre. Nalaikh district due to shortage of transport means meets difficulties with immunization delivery in service area.

Reported coverage for all EPI antigens above 95.6%. However, difficult economic situation and recent winter disasters had caused a high rate of internal migration. Many of migrants in this districts are not registered on arrival in new area; as a result, each year about 3,000 children do not receive their scheduled vaccination. This unregistered children mainly immunized during NID.
Cold chain, logistics and stock control

Districts EPI unit has adequate ice lined refrigerators, freezers, thermometers, vaccine carriers and ice packs. EPI units maintains an inventory list of cold chain equipments. The temperature are monitored and recorded twice daily.

The required vaccines are received from the central storage room every month. Vaccines are distributed to the immunization units monthly. No discrepancy for stock monitoring records and number of vaccines in the refrigerator. Wastage rate was high for BCG, Measles vaccines due to the small number of immunized children and discarding of opened vials due to implementation of multi dose vial policy. VVMs for OPV, Hepatitis B and BCG vaccines in the refrigerator have been in good condition. Staff knowledge on VVM was adequate.

Established suitable reporting system for vaccine stock.

Social advocacy and community knowledge

24 parents were interviewed about knowledge of the EPI and was found to be high. The main sources of the information are TV, radio, and vaccinators. The EPI staff provides information to parents about diseases, schedule, AEFI and the date of next visit at the time of vaccination. But it is difficult to deliver the information for the unregistered and migrants people.
Disease control and surveillance

Disease surveillance is carried out by the family doctors and they also send daily reports on diseases to the centre. However, records quality is poor. High number of unregistered people and migrants families in this districts makes a disease surveillance system with relevant problems together with insufficient knowledge of family doctors on disease surveillance.

During 2000-2002 has been registered measles and rubella outbreaks. Other vaccine preventable disease are registered at same level of the last 3 years except viral hepatitis.

Safe injection and disposal practices

Sterile needles and syringes are used for all immunizations and collected in safety boxes after usage. Immunization units are provided with adequate safety boxes. Liquidation of used injection equipments is completed by burning.

Each EPI units established good monitoring and reporting system on Adverse Events Following Immunizations.
Annex 15

Strengths

1. Maintained high immunization coverage for all EPI antigens.
2. Immunization units were properly equipped with well functioning cold chain for vaccine storage.
3. Established good registration system for vaccine and equipment.
4. EPI officers are well trained on general EPI.

Problems

1. High population movement and difficulties in accessing children that are not registered.
2. Weak disease surveillance system with zero reporting due to a lack of budget and weak knowledge of family doctors.
3. High vaccine wastage for BCG and measles in remote area.
Investigation group

Investigation group:

Headed by: S. Naryad MD, MOH/NCCD

Members: J. Mendsaikhan MD, PhD, WHO
          N. Suvdmaa MD, NCCD
Aimag Visit: Sukhbaatar

Trip report

MOH / WHO / UNICEF joint EPI review team

Sukhbaatar aimag, Mongolia
20-27 September, 2002

Dr L. Dashtseren, NCCD/MOH
Dr H. Takahashi, WHO
Dr R. Arslan, UNICEF

SITES OF MOH / WHO / UNICEF EPI REVIEW IN SUKHBAATAR AIMAG
Soums visited

Out of 12 soums 4 soums were selected for EPI review:
- Baruunurt (aimag center)
- Tuvshinshiree
- Asgat
- Erdentsagaan

Staff interviewed

- Baruunurt
  - Aimag EPI manager: 1
  - Chief-Pediatrician: 1
  - Family doctor: 1
  - Nurse -vaccinator: 1
- Tuvshinshiree
  - Physician (chief-phys.): 1
  - Nurse -vaccinator: 1
- Asgat
  - Physician (chief-phys.): 1
  - Pheldsher -Vaccinator: 1
- Erdentsagaan
  - Physician: 1
  - Pheldscher-vaccinator: 1

Total: 10
Immunization service

- The number of sessions at aimag center and soum levels in 2001 varies from **1-3/week**
- No reduction of sessions in last three years.
- The number of outreach services at soum level in 2001 was **1/month-1/quarter**.
- The percentage of total children under one in soum, who were provided immunization was: at the immunization unit **24.3-40%**, and through outreach services **60-75.3%**.

EPI Planning & Achievements

- Aimag Health department and all soum hospitals had EPI plan for 2002 with objectives to achieve for DPT3 95% at aimag level and 90% at soum level, which has been achieved.
- Coverage with EPI vaccines in 2000-2001 was **94-100%**
**NIDs**

- Number of unvaccinated children <1 y. identified during NIDs ranged between 0-6
- Number of children with missed opportunities was only - 6
- NIDs importance: is considered important for political advocacy and enhancing awareness on EPI, however views were not unanimous among the respondents.

**EPI funding/Budget/Vaccine supply**

- All soum manage provide immunization with approved budget, using some resources from Health insurance, if needed.
- There was no shortage other than BCG and reagents for PPD.
- All soum hospitals have a vehicle (ambulance) and EPI motorcycle. Asgat soum hospital 1998 motorcycle was operational thanks to private spare parts.
Vaccine management policy

- The staff is familiar with use of VVM.
- There were good records of vaccine management, which was in conformity with actual doses found in refrigerators and freezer.
- There were no cases, when DPT, HepB, DT vaccines were frozen. However, few DPT vials showed remaining sedimentation, indicating exposure to sub-zero temperatures during transportation or storage.
- OPV vaccine destroyed in 2001 according to the existing policy were: in Tuvshinshiree 685, Asgat 145, Erdentsagaan 250, Barunurt 491 doses.

Monitoring & Evaluation

- In last 3 months there were 2-7 supervisory visits from aimag level.
- EPI problems identified were related to:
  - utilization of motorcycle, daily recording of temperature inside fridge, availability of room for administration of vaccine.
  - Problems were corrected or eliminated, except electricity supply restrictions or shortages, and Honda generator operation
Staff training

• The number of staff participated in training in 2001-2002 was 0-3 in one year

• All staff receives salary regularly

EPI IEC

• Awareness among the general public is created mainly through: verbal communications, distribution of printed materials, radio, wall newspaper and visuals.

• Aimag spent ~100000MT for EPI billboard set at the aimag center main cross road.
Injection safety

- EPI injection equipment is not reused, there is instruction on disposal of syringes and needles used for immunizations.
- Interview: the main method of disposing is collection in safety boxes and burning them, when filled.
- Reality: used syringes (non-EPI) were seen around the public garbage (Tuvshinshiree) or safety boxes with syringes thrown away to garbage pit (2m deep) without burning (Asgat).

Injection safety (continued)

- Although cardboard was seen at the injection site, it remained unclear if the used needle and syringe are appropriately collected and burned.
- Safety box is not available for outreach services, because vaccine nurse can’t carry.
- The Director of Health Dpt. promised to consider installation of high temperature incinerator at aimag center level.
Annex 16

Vaccine, cold chain and other equipment

- Inventory is done regularly, records are available.
- Cold chain system has been established and functioning well at aimag and soums visited.
- However, common problems were:
  - repair of motorbikes and Honda generator
  - lack of spare parts for motorbikes.

Vaccine and other items order and use

- Vaccine, syringes/needles, safety boxes, cold chain equipment, icepacks are in sufficient quantities.
- There is a system of informing at the national and aimag level about the arrival / distribution of vaccine. Soum hospitals pick up themselves from aimag.
Electricity supply

Only 3 soum, including Baruunurt out of 12 has connected to the permanent electricity supply high-voltage line and have 24-hour round electricity. Other soums, if local diesel generator does not work, need operate Honda generator twice daily: in winter time 1 hour, and in summer 2 hours.

AEFI surveillance

No cases of Adverse Events Following Immunization (AEFI) have occurred in recent years in soums visited.
Disease reporting

- Vaccine-preventable diseases incidence in 2000-2001:
  - Diphtheria $1.3 / 10000$ (Baruunurt, 2001) and $5.3 / 10000$ (Asgat, 2002)
  - Measles $10.6 / 10000$ (Baruunurt, 2002).
- No reported cases for other EPI targeted diseases

Surveillance of vaccine-preventable diseases

- AFP - only one case of AFP was reported, investigated, and confirmed as non AFP
- Diphtheria and measles - only few were reported. All have been investigated and conformed.
Outbreak response

Typhoid
8 cases were detected in summer 2000 with one lethality.
The NCCD advised mass vaccination campaign among children 9-12 years of age during NIDs, but destruction of the suspected contaminated water source was not carried out.

Preliminary conclusions

• EPI performance in Sukhbaatar aimag is in satisfactory level.

• Although fuel was in chronic shortage, the cold chain is well maintained.

• Safety injection is not yet reached the national goal.
Preliminary conclusions (continued)

• Disease surveillance, including AFP, could be improved.

• Immunization was over-emphasized for non-EPI disease outbreak. Improvement of hygiene (i.e. protected water source, clean and safe latrine, etc.) should be prioritized.