



Immunisation Data Quality Audit

Tajikistan

28 July – 17 August 2002

Prepared by: The LATH Consortium*
On behalf of: Global Alliance for Vaccines and Immunisation (GAVI)
9 September 2002

*

**Euro Health Group (EHG)
Deloitte and Touche Tohmatsu, Emerging Markets Group
Liverpool Associates in Tropical Health (LATH)**

1. Introduction

The Data Quality Audit (DQA) is part of the Global Alliance of Vaccines and Immunisation (GAVI) programme. It has been designed to assist the countries receiving GAVI support to improve the quality of their information systems for immunisation data. In addition, it calculates a measure of the accuracy of reporting, the country's 'verification factor' for reported DPT3 vaccinations given to children under one year of age (DPT3 <1). In 2002, the DQA is being performed in 16 countries. It is hoped that participation in the DQA will assist each country in understanding the extent and details of the audit while providing guidance on how the country's system for recording and reporting immunisation data can be improved. It is the explicit goal of the DQA to build capacities in the participating countries.

This DQA, the first for Tajikistan, was undertaken from 28th July to 17th August 2002 by two external auditors, Knut Wallevik and Valerie Remedios and two national auditors, Ibod Sharifi and Nurullo Boyakov. The team worked at the national level, Republican Centre for Immunoprophylaxis (RCIP) before going to the Rayons (districts) and Health Units (HU). A regional (Oblast) level exists between the Rayons and the national level, and the team were also required to visit two of these centres.

It must be emphasised that the audit year is 2001 and some of the observations may no longer be relevant in 2002. Recommendations made from these observations may already be in the process of being introduced.

A summary analysis worksheet was created for each site visited (the National Office, 4 Districts, and 19 Health Units) and can be found in Annex 1.

The team were able to present their findings at the ICC meeting on 15th August and at a Debriefing meeting on 16th August where they were able to discuss the issues in more depth. The ICC meeting included National EPI staff, representatives from the Ministry of Health, UNICEF, WHO and other partners in EPI. The meeting was chaired by the Director of the RCIP. The Debriefing meeting included key staff from all the four selected Rayons visited and key EPI staff from the National and Regional levels. A number of the main issues covered in this report were raised during the meetings including: denominators, style of supervision, reporting structures, wastage, SOPs, etc.

A list of the persons met during the DQA including the ICC and Debriefing meetings can be found in Annex 2.

The team were made aware of a forthcoming review of the immunization programme by experts from WHO, UNICEF and the World Bank, planned for September 2002. It would be useful if the review team could take up some of the issues raised by this DQA.

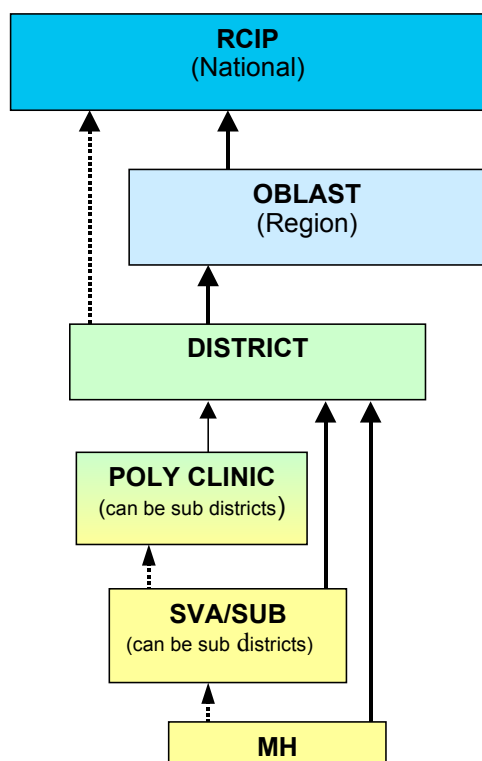
The team are enormously grateful to the national counterparts, translators and drivers for ensuring the smooth running of the DQA, and the wonderful warmth and hospitality of the Tajik's was very much appreciated.

2. Background

Tajikistan is a landlocked country, with a population of approximately 6 million people. Since the break up of the Former Soviet Union (in 1991), followed by civil war (1992-3), the health service has become increasingly strained, salaries of staff are very low and range from USD 1-2 month. In addition the infrastructure has deteriorated, particularly electricity supply, telephones, transport and the postal service. The supply of EPI vaccines and safe injection materials (AD syringes and safety boxes) is fully covered through UNICEF.

Immunization data management structure (see reporting structure figure below)
Tajikistan's immunisation programme is managed and coordinated by the Republican Centre for Immunoprophylaxis (RCIP), the National centre based in Dushanbe. This unit reports to the Ministry of Health. Alongside this unit is the Republican Sanitary and Epidemiological Station (RSES), responsible for disease control activities, who also report directly to the MOH. Below this level is the Regional level and consists of three roughly equivalent structures, the Oblasts (Khatlon, GBAO and Sogd), the City of Dushanbe, and the Republican Rayons of Subordination (RRS). Khatlon Oblast is further divided into two sub-regions, Kurgan-Tube zone and Kulob zone. At each of these levels is a CIP (Centre for Immunoprophylaxis) who report to the RCIP.

Reporting structure



Below this level are the districts or Rayons¹. Each District has Sanitary and Epidemiological Station with staff responsible for immunisation activities who report, in general, to the CIP at the Regional level.

The health units or primary vaccination centres vary and are classified according to their staffing and activities, the lowest being the FAPs (Feldsher Akoucher posts) now renamed Medinski Dom (Medical House, MH), followed by the SVAs (ambulatory care clinics), SUBs (village hospitals) and Polyclinics.

Districts are fairly autonomous in planning and implementing their health programmes with regional and national level roles in policy formulation, overall planning, resource mobilisation, advocacy, supervision and monitoring. Funds allocated from national level to districts are sent through the regional

level, this also applies for immunisation associated commodities (forms, manuals, vaccines, syringes, etc). Immunization managers at all levels are responsible for planning and coordination of health programme activities including immunisation.

¹ For the purpose of this report we will refer to the Rayons as districts.

UNICEF continues to support national immunisation programme, through vaccine supply, printing materials and cold chain activities.

Since the support from GAVI, a number of efforts have been made to strengthen the immunisation services, in recording and reporting (forms for individual recording of vaccinations and monthly reporting have been re-produced and circulated widely), education (various WHO manuals have been translated and copies produced for each HU), training (for the first time in ten years, courses on different aspects of immunization have been held at regional and rayon/city level, 30 trainers and 2000 vaccinators trained), monitoring (has been undertaken down to District level), cold chain logistics (procurement of fridges, icepacks, cold boxes), safety including procurement of AD-syringes, safety boxes and building of low cost incinerators, and research activities initiated (safe injection survey).

A coverage survey is planned to take place in Sogd and Khatlon Oblasts in the coming months. Refresher training of regional and District level immunisation managers will also be taking place from August to October 2002.

Tajikistan does not vaccinate pregnant women with tetanus toxoid.

Vaccine management system

Vaccine supply at the national level is under the responsibility of the Cold Chain Manager in the RCIP who is responsible for supplying the Regional level with vaccines, AD syringes, safety boxes and other commodities, who then supply the Districts. Each District is responsible for vaccine supply and cold chain management in the district.

Information flow

In several countries audited, a dual system exists for reporting EPI data. In Tajikistan, only one line of information exists from HU upwards regarding immunization data, no other system reports immunisation information.

The operational level is the health unit (HU), which can be a MH, SVA, SUB or Polyclinic (mostly in urban settings).

The primary health units (MHs) report to the Districts (SES) either directly or through another health unit usually a SVA or a SUB, which then could be termed as a sub-district (sub-rayons), and are handled as such in this report. Similarly the SVAs can report through a Polyclinic or directly to the District. In some places the reporting channels are changing but there does not appear to be a consistent manner of reporting that is homogenous throughout the country.

HUs report monthly using a standard pre-printed EPI form "Form 2". If a HU reports to a sub-rayon (as they did in two of the districts we visited), they do not fill in the F2 form but carry their Form 63 (individual vaccination cards) or vaccination registers to the sub-rayon, who then compile the information together with their own figures and report monthly to the Districts using "Form 2".

Districts aggregate the data and also report on "Form 2" to the Regional level, however Districts in RRS report directly to the national level (RCIP). The Oblasts/zones/RRS level aggregate the information and report to the national level

(RCIP). At each level a copy of the report should be kept at the institution. The Districts report monthly, quarterly and half yearly to the upper level.

National level feedback, monitoring and reporting including annual report and “Joint Report Format” to WHO/UNICEF is generated by the RCIP based on the “Form 2” reporting system.

Tools

HUs record immunisations on individuals using a standard pre-printed form, “Form 63”, the individual child vaccination card. This is retained at the HU. In theory, if a child migrates from the HU, the contents of the Form 63 are copied onto a piece of paper and given to the mother for presentation at the next HU. The original Form 63 is still kept at the HU.

In some HUs, a “Register” was found for recording individual child immunisations. This register is not a standard or pre-printed form, but prepared individually by the HU. RCIP are in the process of introducing a new standard permanent register.

The “Birth registers” provide the data used for the denominator estimation. All new births in the catchment area served by the HU are registered in the Birth Register. “Patronage” workers collect this information following routine “house to house” visits and the register is retained at the HU.

“Form 2”, a standard pre-printed form is used for monthly reporting. The format was revised to include reporting for hepatitis B and combined DTP reporting (instead of the individual components) and became operational from January 2002. This form has further been revised to differentiate between reporting from the different levels, from Health Unit to the Rayon (Form 2B) and from the Rayon to the Oblast and Oblast to the RCIP level (Form 2A). The main revisions are different reporting instructions and stock information. The new forms will be operational from August 2002 onwards.

Large UNICEF style “stock ledgers” have been issued for use at national, regional and district levels to maintain inventory on vaccines, safety boxes, AD syringes, etc.

3. KEY FINDINGS

Based on the Districts’ reported DPT3<1 for the audit year at national level a random selection of four Districts was carried out in advance and the following were selected: Khojamaston in Kurgan-Tube Zone, Kofarnihon in RRS (Republican Rayons of Subordination) and Aini and Chkalovsk in Sogd Oblast. Six HUs plus one “reserve” HU were selected randomly based on reported DPT3<1 for the audit year at District level in Khojamaston and Aini Districts. The “reserve” HU was to be visited only in the event that one of the first six was unreachable due to impassable roads.

As total DPT3<1 was not available for HUs (MHs) at Kofarnihon SES office level, two Sub-Districts (SVAs) were selected randomly (also based on reported DPT3<1 for the audit year), followed by a visit to the selected Sub-Districts. At the selected Sub-District levels in Kofarnihon, two HU in first and one in the second automatically qualified as DQA HUs. Only one Sub-District existed in Chkalovsk with one reporting HU, both automatically qualified for the DQA. As the SVAs were the main vaccinating

unit in the Sub-District they were also incorporated in the DQA, which created some recording problems for the DQA as the SVAs only work on the aggregated reports and not separate reports for their own activities. The vaccination activity for 2001 for the 2 SVA's in question were calculated from the aggregated monthly reports by subtracting the data reported to the SVA's (subdistricts) from the respective HU's. Altogether 4 districts and 19 health units are reported in this DQA. This is below the normal 24 health units required by the DQA.

Information normally found at the National level was not available for three Districts and had to be obtained at the Regional level, for Aini and Chkalovsk from Sogd Oblast and for Khojamaston from Kurgan-Tube Zone.

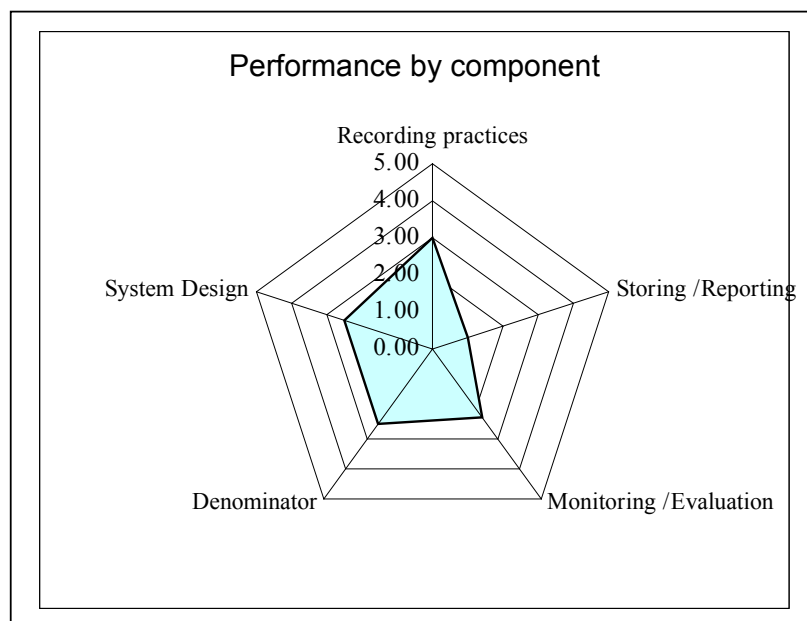
In Aini District, the reserve HU was visited as one of the selected HU's (Guzari Bod) had not been operational for the past 3 months, its only member of staff had left the country for employment in Russia. Apart from this HU, 10 further HU's were identified as 'Not Eligible' during the selection process due to the very poor road conditions following earthquakes which would necessitate more than 5-8km walking 'off road' to reach the HU.

4. KEY FINDINGS

4.1 NATIONAL LEVEL

Part of the DQA is a Quality Index based on, for national level, five components with a number of observations/issues per component. The DQA Quality Index for national level is **47.9%** (see *Annex 2 for the analysis worksheet*).

The individual components are shown in the following radar-graph:



Recording Practices:

- The management of the Immunization programme seems to be functioning well. The level of consistency of data at national level is commendable with only a minor difference between reported DTP3<1 in the JRF 2001, the National tabulation and the district tabulated figures. However, the system may be less robust than desired in that the processes, operations and data handling are not well documented with written authorised procedures (SOP's)
- The national vaccine ledger is well maintained and includes monitoring of batch number and expiry date as well as other immunisation commodities (AD syringes, safety boxes, ice packs, etc).
- In a robust data management system it is important to register the time (i.e. date) on reports and other data information that are received at the various levels and this seems to be carried out well at the national and oblast levels.

Storing (filing)/Reporting :

- The management of immunisation data processing is not yet fully computerized. Several computers are available at RCIP some of which are currently used to enter processed immunisation data, but are not yet used in the processing of raw data. There are plans to fully computerize the processing of immunisation data and to train staff on the appropriate software. During this time it will be important to develop written procedures and guidelines for data handling between several computers including the identification of master files, timing of different versions vis-à-vis generated reports and archived files as well as appropriate back-up procedures.
- Computers were also present at the two Regional levels visited (Sogd Oblast and Kurgan-Tube Zone), but in neither of these places were they used to routinely process data.
- Reports for the audit year are not optimally stored and filed at national level. Currently reports are filed by reporting period but are not always found in the same order and retrieving information is not easy. Ideally each reporting unit should have it's own sub-file and be filed by month.

Monitoring/Evaluation:

- Charts on immunisation performance were well displayed, however, it would also be useful to maintain a table on the performance of the reporting units and the time when their reports are received at national level.
- The wastage is presented in the JRF as a rate of wastage rather than a percentage. The rate of 1.2 can be converted to a combined national administrative and system wastage (global wastage) of 18%.
- Formalised feedback does occur to the lower levels and does include an analysis of the performance of the reporting units.

Denominator:

- The national definition² of the denominator for child immunisations is not consistent with the WHO definition. The auditors were given conflicting information at all levels as to how the denominator was calculated and who

² Denominator = Average number of children <1 for the last 2 years + children not immunized for the last 3 months of the previous year. This figure is adjusted twice a year, after 6 months and at the end of the year.

was responsible for calculating it. It would be useful to obtain a common approach to calculating the denominator and disseminating this widely. From the national data all the coverage rates appear to be good with only a few above 100%, however values over 100% were seen at some HUs. This perhaps exemplifies the problems in the calculation of the denominator.

- The system of recording all births in a catchment area using patronage nurses still operates but the auditors were not able to evaluate how well the system was working.
- The auditors were made aware of a national census that had been carried out in 2000 and obtained a copy. However the census does not give information on the number of children less than one year old and therefore has no value for the calculation of this denominator.

System design:

- Authorised, proper SOPs for various levels for key procedures were not presented when requested.
- Two different versions of the Form 2 have been introduced in 2002. But the current Form 2 (A and B) does not include a space for reporting Adverse Events Following Immunization (AEFI), for recording how many HU have reported for a reporting period or for reporting of wastage from closed vials (expiry, breakage, cold chain failure, etc) of vaccines.
- Plans are underway to introduce a permanent child vaccination ledger for the HUs. There are various versions of these ledgers that are currently being used throughout the country and it might be useful to carry out some research and undertake a pilot test before introducing a new register.
- Reporting systems and channels are not homogenous throughout the country. Different systems for reporting are acceptable as long as each reporting unit is able to identify (record and report) their own activities separately from another (see the District level).
- The policy on Form 63 as regards its retention in the HU may need to be revisited (including migration). A copy of the vaccination card should perhaps routinely follow the child.
- Refresher training is recommended on how to complete the Form 2B, i.e. how to transfer information from the F63 or register (in future) to the Form 2B.

Performance Indicators:

Seven Performance Indicators are included in the DQA. The final table is shown below followed by specific comments to selected indicators:

Calendar year	Reported DTP3 <1 in	Change DTP3 <1	DTP3 <1 coverage rate	%Districts DTP3 <1 coverage >= 80%	%Districts DTP1 <1 to DTP3 <1	%DTP dropout < 10%	Quality of the vaccine system wastage	System Index Score
2000	160,817		95.9%	98.3%	2.4%	98.3%		
2001	155,738	-5,079	96.7%	98.3%	1.2%	100.0%	missing	47.9%

Change in reported DPT3<1 (2000 to 2001):

- The negative figure could be attributed to a decrease in the birth rate.

Drop-out DPT1<1 to DPT3<1 (2000 and 2001):

- Encouraging to see such low dropout rates.

DPT3<1 coverage rate (2000 and 2001):

- The denominator in 2000 was higher than in 2001, the calculated values indicate a very good coverage rate in both years.

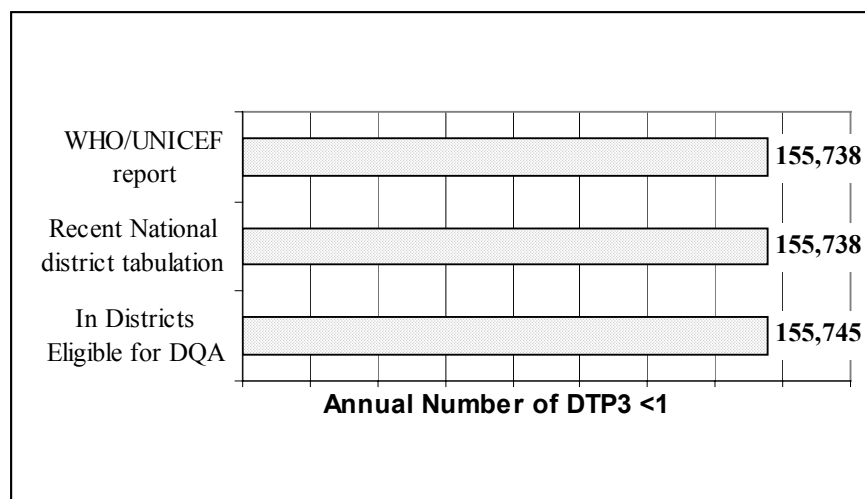
DPT vaccine system wastage (2001):

- This indicator cannot be calculated as no system wastage in 2001 has been reported. The current reporting system does not allow for system wastage to be recorded. At District level it was noted that some stocks of DTP and other antigens have been damaged in 2002, it will be important to measure this indicator taking into account these damaged stocks as well as system wastage throughout the system.

Completeness and timeliness of reporting from Rayons/Oblasts (here defined as "Districts") to national level:

Date on WHO /UNICEF report	Districts reporting rate to National Level	% Districts reports on time at National Level
18/04/2001	97.7%	70.2%
10/04/2002	96.9%	86.0%

There seems to be a definite improvement from 2000 to 2001 in that the number of Districts reporting on time to the National level rose from 70.2% in 2000 to 86% in 2001. There is also a high level of reporting, with 96.9% of the District reporting to the National level. These are excellent results considering the difficult working conditions for so many health workers in the country.

Reporting consistency for Audit year (2001):

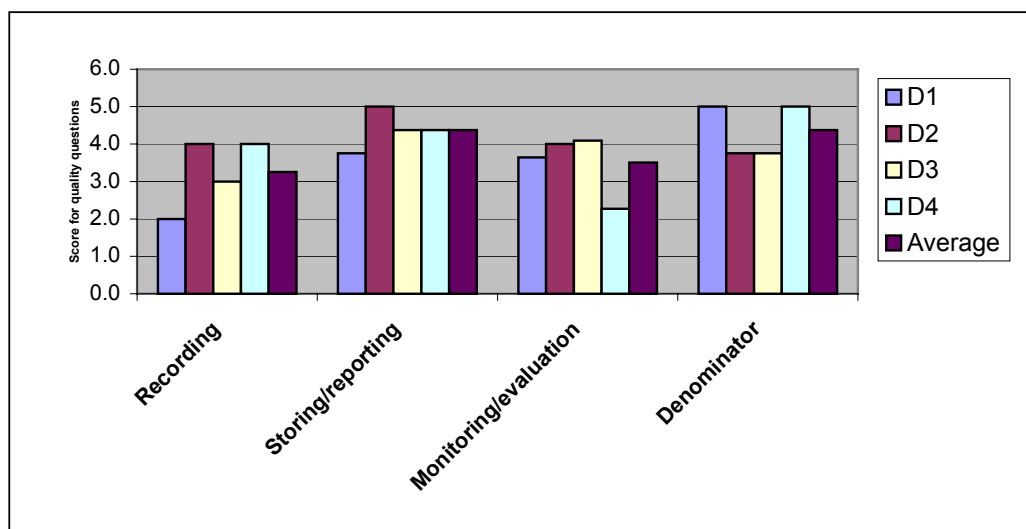
A high level of accuracy is seen between the three levels (the negligible difference can be ascribed to a transcription error which was found during the audit).

4.2 DISTRICT LEVEL

See Annex 2 for each District level analysis worksheets.

Quality of system

Each District was evaluated according to the criteria set below for recording, storing / reporting, monitoring/evaluation and on the denominator and a score was derived. For the four Districts the average score was 75.65 with a range from 70.4 to 84, which is quite an acceptable score.



Recording:

Vaccine ledger keeping: In all 4 districts the ledgers for 2002 were in perfect order, both with regard to vaccines and utensils and all followed the UNICEF recommended format. Refrigerators were well kept and the physical stock control for DTP was in accordance with the ledger.

Vaccine wastage: See special section on vaccine wastage 4.5.

Reporting adverse reactions: For the audit year there is no system for reporting adverse events following immunisation from health unit to District level or from Districts to higher level.

Handling of received reports: None of the District offices (SES's) visited had computers and all recording, data processing and reporting is carried out manually.

The revised procedures introduced for 2002, one of them being that all vaccinating HU's are supplied with the F2 reporting format and shall report separately does not seem to be fully functioning. This is exemplified in one of the Districts visited where reporting from the vaccinating MHs to the Sub-Districts (SVA) still follows the old "home made" procedure.

Reports are hand carried to the District by hand (usually by the chief doctors of the HU's) on a fixed date. For two of the districts the reports for the year 2002 were registered in a table by the SES office, this was not observed for the audit year.

For the audit year all 4 districts reported to the upper level using the F2 form, however the way they collected the data from the HUs varied from District to District and for Sub-Districts. Although the various systems function reasonably well it is not always sufficiently transparent to be easily evaluated (audited)³. The recording and reporting routines within the Districts/Sub-Districts has in the past been created by skilled and dedicated health workers to fit and function in practice within the de facto organisation of HU's in the district⁴.

The creation of authorized Standard Operation Procedures (SOP's) for recording and reporting of immunisation data at all levels of health institutions would assist in making the system more transparent and less dependent on individuals.

Storing/reporting

Districts submit monthly, quarterly and annual reports which are sent to the Regional level. Copies of District reports for the audit year were available and complete at the 4 districts and they were all signed (of up to 3 authorities) and dated. Also at sub district level all copies of monthly reports sent to the district level were presented, 53% were dated and 78% signed.

Filing and processing

For the audit year the Districts/Sub-Districts filed their HU reports by month, none had their own sub-file. In the largest of the Districts visited, with 91 functioning HU's, the 2001 HU reports were not even stored by month. Keeping reports in an organised manner assists in monthly reporting, monitoring and in follow-up.

Monitoring & Evaluation

All Districts/Sub-Districts had charts on display of the current year's immunisation performance and two of the Districts had tables on the reports received and dates of

³ In Khojamaston, up to the year 2002 the heads of the HU's carried the F63 cards filled during the month to the SES and the epidemiologist in charge created the monthly report for the HU, based on the presented cards. As the epidemiologist is skilled and punctual this system worked well. In general the monthly reports for 2002 from the HU in that particular district do not have the same quality as in 2001 as most of the chiefs of the HU are still not familiar with filling in the F2 forms.

⁴ The reporting system is different for the 3 sub-districts visited:

- 1) Child Polyclinic, Chkalovsk: Vaccination registers from the SVA are taken to the Polyclinic monthly and the vaccinations incorporated into the report from the Polyclinic. No separate report is available for the SVA or Polyclinic.
- 2) SVA Chilamazor, Kofarnihon: The MH fill out the Form 63 and create the Form 2 which are kept at the MH. At the end of the month the Form 63s are taken to the SVA where the number of vaccinations recorded are aggregated into the monthly SVA report. The SVA retain the Form 63 cards of the MH. No separate report or record is made for the vaccination activity of the SVA.
- 3) SVA Hoikatagon, Korfarnihon: Monthly reports are sent from the 2 vaccinating MHs to the SVA on "home made" report formats. The F63 cards are kept at the MH. The SVA incorporate the data into their monthly report. No separate report or record is prepared for the vaccination activity of the SVA, but can be deducted from the recorded data of the MHs. In general no Form 2 formats were available at the MH level.

receipt for the year 2002. Annual reports or newsletters on achievements within the immunisation programme were not published from the Districts for the audit year.

Feedback

There is extensive feedback at weekly to monthly meetings at the SES offices and at the Sub-Districts and neat handwritten minutes were taken at 3 of the districts visited, but not distributed to the participants. This is understandable taking into account the absence of office equipment and stationary. Lack of written feedback is a problem and other ways of providing written feedback should be sought. For example, the format of the meetings could be organised such that concise conclusions are made at the end of each meeting. These conclusions could either be read out or put on a blackboard and the participants encouraged to take notes and to file the notes in HU. At the next regular meeting the conclusions minutes from the previous meeting can be reviewed and further discussed.

Supervision

Supervisory visits are made regularly (mostly monthly). Only one District had a written schedule available in the audit year. In two Districts neat hand written reports were made following the visit to the HUs and retained at the District, no copy was left with the HU. At one Districts, hand copied reports are only sent to the supervised HU when serious problems are encountered, but no regular report was made on the outcome of the visit to the HU's.

Checklists have been developed to monitor the Regional, District and HU levels, and the upper level checklist has recently been introduced. It is important that a record on the outcome of the supervision, written during the visit, is left at the HU and checked and discussed at the next supervisory visit.

Denominator

The District Denominator of children < 1 year of age is calculated on basis of the monthly reports sent by the HU's on new born children in their catchment area. The knowledge of how the denominator is calculated seems to vary at Districts and Oblasts. The Denominator does not seem to be adjusted for death rate of children < 1. The target number of children to be vaccinated within a year is the number of surviving children in the year plus the children not immunised and under one year of age from the previous year (see National Level).

Completeness/timeliness of reporting:

Reporting "in time" was declared satisfactory, late incoming reports being reported on the next months' report. Although all districts follow-up on late reports, two districts used a 'penalty' system. If reports do not show up, a standard pre-printed letter is sent to the chief doctor of the HU. If the report has still not arrived, the chief doctor is penalised and fined from between 1 - 3 USD. For Kofarnihon district, 3 such letters were sent out in 2001.

Change in reported DPT3<1, coverage and drop-out rates:

Drop out from DTP1 to DPT3<1 for the 4 Districts for 2001 varied from 2 to 16%. With the functioning patronage system in operation the higher value is somewhat unexpected.

4.3 HEALTH UNIT LEVEL

Nineteen HUs were visited and included the following: 1 Child Polyclinic, 6 SVAs, 2 SUBs and 10 Medical Houses (*see Annex 2 for the individual analysis worksheets*).

Unfortunately, the auditors were not able to observe any child being vaccinated because there were no vaccination activities taking place during the time of the DQA visits.

Quality of system

Each HU was evaluated according to the criteria set below for recording, storing and reporting and monitoring and evaluation and a score was derived. For the nineteen HUs the average score was 62 with a range from 39 – 83.

Use of registration cards and other primary records used for EPI

“Form 63” are generally available in the majority of HU visited and appeared to be completed properly, however in the audit year, 6 out of the 19 HUs visited did not have complete records. According to the national policy, these forms should remain in the HU even if the child leaves the catchment area. For some HU this is the only permanent record of the immunisation activities. The system is vulnerable also for the recount, which is dependent on the presence of all cards, unless an alternative can be used, i.e. a Child Vaccination Register.

- “Child Vaccination Registers” were available in 84% HUs visited and appeared to be well used although in some cases overly complicated. Their format is not standardized and each is tailored to the individual HU’s needs. In some HUs the register is used to plan monthly vaccinations where each child is listed under each antigen and in other places the register is used to record routine immunizations as and when they occur. (A new national standard vaccination register will be introduced in September 2002).
- The “Birth Register” was found in all but one HU.
- The new revised version of the “Form 2” are generally being used by the HUs but in some places were either not found or were in short supply.

Recording:

- Vaccine Ledger: these were often missing for year 2001 and could only be found in 37% of the HUs visited but this had improved to 53% at the time of the audit. However, the ledgers do not follow a standard format and are not always consistently maintained (incomplete entries for vaccines, missing batch numbers and expiry dates, and missing inventory for AD syringes, safety boxes, etc). As a result, administrative wastage could only be calculated in 8 HUs (see section 4.5 on Wastage). Without ledgers it is not possible to calculate wastage. This could be part of a regular monitoring routine by the HU itself as well as the District. Considering the introduction of new expensive vaccines (hepatitis), it becomes critical to enhance good practices in regard to stock keeping.
- Maintaining ledgers for vaccines is not dependent on having a fridge. The HUs obtain syringes and safety boxes as well as vaccines, all should be routinely maintained in a simple standard ledger.

- As no observations of immunisation were possible, an assessment of the vaccinators knowledge of the vaccination schedule was conducted. This exercise involved the use of 20 surrogate children (pre-filled “Form 63”). Twenty-nine vaccinators were interviewed and scored an average of 16.8 for correctly responding to the questions (ranging from 13 – 20). The knowledge of some staff is clearly lacking which could result in inefficient immunizing practices. These staff would benefit from some refresher training.
- A common problem was identified when a child presented one week before the appointed vaccination date for measles and was not vaccinated. This is clearly a missed opportunity and has serious implications. The vaccination schedule requires that a child be vaccinated at 12 months, but it would seem appropriate to build some flexibility into the scheduling.
- Most of the visited facilities displayed a poster on the vaccination schedule.

Storing/reporting:

- Storage and filing of ledgers, individual vaccination cards and monthly reports is generally well managed in the majority of HUs. However, not all documents are kept for 3 years and some HU staff were not aware of this requirement.
- The reports found at the HU and Districts were not always consistently signed and dated which posed difficulties in assessing the timeliness of reporting.
- A major problem noted in some HUs is the transfer of data from the “Form 63” cards to the monthly report in that the monthly reported figures bear no resemblance to the monthly recounted figures. This was often seen across all the antigens.

Monitoring & Evaluation:

- In general the issue of denominators and targets is not well understood by the HU (see comments made at National level).
- The use of monitoring charts for 2002 was seen in 53% of the HUs, using the UNICEF designed coverage manual (distributed to most vaccinators). The concept was generally understood although in some cases coverage was seen to be over 100%. This could not be explained satisfactorily, but migration was offered as a possible explanation. This clearly relates to the setting of realistic targets. None of the HU could provide annual figures on their vaccination performance, although the completion of the coverage charts would assist them in doing this in the future. This is important and builds a sense of performance monitoring into their activities.
- Supervision appears to take place regularly and monthly feedback meetings take place at the Rayon level. Supervisory reports at the HU level and feedback notes from the upper level are generally lacking (see District comments). However, with these regular meetings and visits one would expect the staff to be well informed, but this was not necessarily the case. Some HU staff had taken notes at the feedback meetings which was exemplary. Supplying the HU staff with a diary to record these notes may be useful.

Completeness/timeliness of reporting:

- Completeness of data reporting seems to vary. It was not always possible to assess this indicator as it was not always clear if a monthly report had been issued. In 63% of HUs it was not possible to find all the monthly reports (12) for the audit year. This may partly be attributed to the fact that monthly reports may not have been completed for every month⁵, or that the HU lacked sufficient "Form F2" to retain copies of the monthly report. To maintain data integrity, copies of all reports should always be kept at the HU and both originals and copies should be signed and dated.
- The system of reporting monthly, irrespective of immunisation activities needs to be discussed further. It is important that the District can differentiate between HUs not performing immunisation activities and those that are just defaulting on submitting their monthly reports. This can sometimes be done by monitoring vaccine supply, if ledger book is complete.
- Timeliness could only be assessed for 47% of HUs where receipt dates were recorded at the District level. In only one of these cases had all the reports from the HU to the District been received on time. In the others between 16-75 % of the reports submitted had been received on time. For the remaining HUs, timeliness could not be assessed since the receipt dates were not recorded at the upper level (Rayon / sub-rayon).

Change in reported DTP3<1, coverage and drop-out rates:

- The change in reported DTP3 between 2000 and 2001 was often a negative figure or only a small increase for those HU reporting 2000 data (13). Indicating that more children were vaccinated in 2000 than 2001 for DTP3.
- Dropouts percentages in 2001 for DTP3 is calculated to be from minus 71% to 13.8% with an average of minus 4% which in principle should be impossible. The negative dropout seen in a number of cases might indicate that some children vaccinated with DTP1 and DTP2 from other HU's had migrated into the catchment area of the audited HU and/or less children are born in 2001 than in year 2000 but could also be a reporting error.

4.4 VACCINE AND INJECTION SAFETY**AEFI reporting**

There is no current national policy within the immunisation programme for the recording, reporting and monitoring of Adverse Events following Immunisation (AEFI). A strategy should be developed for injection safety with guidelines for monitoring injection safety and AEFI should be included in the monthly reporting forms from the HUs accompanied by training on how to complete the forms⁶.

⁵ Some HUs reported that they did not vaccinate every month and it is not clear if a HU should complete a monthly report if no immunisation activities have been undertaken, i.e. 'zero' reporting.

⁶ The auditors were informed that this strategy is included in the National Immunisation Programme 2001-2010 but were not presented with this document during the DQA. During the de-briefing the auditors were informed that AEFI are reported through the Disease Control information system, but no data on AEFI for 2001 were presented.

Injection safety

Safety boxes for discarding used syringes were found in 17 of the 19 HUs visited. In the 2 HUs where they were not found, they were available at the SES. The AD-syringes used for vaccinations are issued by the SES together with the vaccines ordered for a vaccination session. 10% more than the vaccinations scheduled are usually supplied. At the SES offices special ledgers for utensils were kept in the UNICEF Ledger format. However at the HU level no registers were found for recording the receipt of syringes and safety boxes. In addition there is no procedure to show that filled safety boxes can be accounted for and that they have been safely destroyed.

The filled safety boxes are usually burnt on site, however there is a comprehensive plan for construction of low cost De Montfort incinerators, built locally at the Rayon SES's and larger medical institutions. The expenses will be covered by GAVI funding, and 6 such incinerators are already in place; a total of 65 incinerators are planned for construction in 2002-2003 funded by GAVI and other International agencies.

Used safety boxes will be transported from the HU's to the incinerators for destruction. A procedure should be developed to ensure that filled safety boxes are accounted for and safely destroyed.

4.5 VACCINE WASTAGE

In the calculation of vaccine wastage a distinction is made between **System Wastage** and **Administrative Wastage** where:

'System' wastage is doses of Vaccine damaged by breakdown in the cold chain, poor management (expired vaccine) or accidents (breakage etc). DTP 'system' wastage calculation is applicable for National and District level.

'Administrative' vaccine wastage is the unavoidable waste due to the administration of multi-dose vaccine vials where "left overs" will have to be discarded.

Global wastage is the combined 'system' and 'administrative' wastage.

Vaccine wastage is calculated as a percentage wastage: (No of doses issued) minus (No of doses used for vaccination) times 100, divided by (No of doses issued).

'System' wastage is not reported through the reporting hierarchy (system) in Tajikistan and can therefore not be calculated at National or District levels. In the Districts visited, the auditors were informed that no 'system' wastage had been encountered in the audit year but in one of the districts an appreciable loss of vaccines (2260 doses of DTP, 10,090 doses of measles and 9810 doses of BCG) has occurred in 2002 because of a 45 day's power break.

A condition for calculating 'administrative' wastage is 1) a proper vaccine stock registration, with registration of stock balance for DTP vaccine at the beginning and

the end of the year and registration of incoming and delivered vaccine 2) reliable recording of all DTP vaccinations given within the health institutions covered.

When receipt of vaccine is registered in the ledger book or equivalent and the total number of DTP vaccinations are reported it should be possible to calculate the 'administrative' wastage for the HU. 'Administrative' wastage estimation for 7 of the 19 HU visited can be regarded as reliable and is calculated to a mean of 44% (range 20 – 71 %) The wastage for the remaining 12 HU cannot be determined because of lacking ledger books or incomplete registration of incoming vaccines.

For the audit year, 2 of the 4 district ledger books were complete with regard to DTP vaccine. As none of the Health Units connected to one of the districts visited have properly functioning (authorised) refrigerators and accordingly keep no vaccine stock, it has been possible to calculate the 'administrative' vaccine wastage at district level for the one district where the ledger book was complete and the total DTP vaccinations were recorded for year 2001. The 'administrative' wastage for Khojamaston District for 2001 is calculated to 20%.

Vaccines wastages are routinely calculated at Oblast/Rayon level and reported to National level. The national vaccine wastage, which must be regarded as the Global wastage, is recorded for year 2001 to be at 18 % (range 15-49 %).

As a target for multi-dose vials, GAVI recommends countries to aim for a maximum wastage rate of 25% with a plan to gradually reduce it to 15% by the third year of support.

It is recommended to record 'system' wastage separately on the F2 form, and to encourage the HU's to keep a proper ledger book where all received doses and outgoing doses (e.g. doses lent to a neighbouring HU) are registered.

4.6 DATA ACCURACY

The verification factor is the ratio between the DPT3<1 recounted from "Form 63" or "Child Vaccination Registers" at the HUs visited during the DQA and the reported DTP3 figures from the District to the National level in the monthly reports. The verification factor for Tajikistan is **1.064** (with a 95% confidence interval of 0.908 – 1.161).

A verification factor over 1 indicates that the recounted value of actual immunisations exceeds what was actually reported. With the obtained confidence interval the deviation from 1 of the verification factor can be regarded as insignificant. The verification calculated on the basis of the 19 HUs audited is extrapolated to be the verification factor for the country.

The VF confidence interval (0.954 – 1.173) is narrow, but is based on a relatively small number of observed/reported vaccinations.

It is expected that some Form 63 will be missing, however this would probably cause a lowering of the recounted amount, but this was not always the case. This could be attributed to migration, i.e. if a new child entered the catchment area an F63 form would be completed noting the vaccinations already given, even if the child has not

received all the immunisations at the particular HU. When recounting, these immunisations would be counted as though they were issued from the HU, when in fact they were not. It is also clear that human error can play a role. The team noted some transcription errors, errors in compilation of monthly figures, and several errors with reported figures over what could be recounted for the reporting period. Double cards were seen in some places and some cards could not be found for some children but had been entered into the vaccination register.

The team looked at consistency between reported figures from HU to the Rayon, from the Rayon to the Oblast and from the Oblast to the National level. This information can be seen from the summary sheets for each of the districts (in Annex 2). In the cases of Chkalovsk and Aini confirmation was sought from Sogd Oblast where monthly reports are submitted, and likewise for Khojamaston at K Kurgan-Tube Zone.

Data from two of the districts are presented below. The table below illustrates inconsistencies between reported figures at various levels (National, Rayon and HUs). However from the district level upwards, the differences are small and probably due to transcription errors. At the district level the situation is different. For D1 the figures for 'Reports from the HU found at the district' were taken from a monthly tabulation. For D4 the figures were taken from an annual tabulation. The reasons for the discrepancies cannot be explained and are probably due to a combination of transcription errors, data recorded at different times by different people, lost reports (due to an earthquake), and errors with monthly compilation.

Source of Data	D1	D4
	DPT3<1 2001	
National tabulation	1559	5311
District reports at national level	1579	5306
District reports at district	1557	5309
District tabulation	1559	5315
Reports from the HUs found at the district	1376	5025

The team did not see any obvious signs of inflated reporting more the opposite of under reporting.

5. RECOMMENDATIONS

In general the immunisation infrastructure is well established and operating well considering the trying conditions for the health workers. The challenge for the RCIP is to maintain the momentum of support and to strengthen the systems and procedures. As stated by a management expert in his publication 'The Goal', "if you can't measure it, you can't manage it" which is important in the management of any programme.

Recording practices:

- Develop standard operating procedures (SOP) for the handling of immunisation data at the national level including computerized data management at national and regional levels, i.e. back-up, master file manager,

archiving, time tracking, etc.

- Ensure that sufficient copies of all recording forms and ledgers (and the Instruction manual already developed) are available at all levels of the system, particularly at the primary vaccination points.
- Encourage the use of a standard stock ledger for vaccines and injection safety commodities at HU level including the recording of discarded unopened or broken vials. Ensure that the latter is also recorded at Rayon, Oblast and National levels. Encourage the calculation of wastage at HU level so that staff can monitor their own performance.
- As regards vaccination knowledge, it is recommended to thoroughly discuss the concept of lost opportunity (re: measles) and to use the supervisory visits to strengthen the knowledge on the vaccination schedule.
- Develop a system for recording the receipt of the filled safety boxes and their destruction.

Storing (filing) / Reporting

- Strengthen the filing of reports at all levels, ideally each reporting unit should have its own sub-file and be filed by month.
- Ensure the retention of all immunisation records for at least 3 years as stipulated by the national policy.

Monitoring/Evaluation:

- Agree on a common approach to calculate the denominator, defining who is responsible for the collection of information and who is actually responsible for calculating the denominator. Disseminate this information widely.
- Strengthen monitoring completeness and timeliness of reporting based on date report received, on time, complete, particularly for rayon and sub-rayon level. Introduce tables/charts indicating the timelines and completeness of reporting at all levels.
- Encourage the use and display of monitoring charts for all antigens at HU and Rayon levels.
- To aid feedback, consider using a common approach to the regular meetings (as described under the District level) and encourage participants to take notes, perhaps provide them with a diary.
- Ensure that realistic schedules of supervision are made with reports on the outcome of each supervisory visit, and that a record of the key issues is left with the HU and discussed at the next supervisory visit.

System design:

- Focus on the HU level in introducing improvements and training as this is where immunisations are taking place and the source of the raw data entering into reporting system.
- Develop a standard procedure for transferring data from the F63 card to the Form 2 and train staff on how to do this. The transfer should be regularly monitored during the supervisory visits through 'on the job' training.
- Review the reporting system and channels of reporting and introduce procedures to ensure that each reporting unit is able to identify (record and report) its own activities separately from another. Assess the need to report quarterly and half yearly as well as monthly.
- Introduce the recording and reporting of Adverse Events Following Immunization (AEFI) based on a national policy.

- Amend the current reporting system to record how many HUs have reported for a reporting period and for reporting of wastage from closed vials of vaccines.
- Consider the introduction of a standard permanent child vaccination ledger at all primary vaccination units.
- Refresh health workers on the policy as regards Form 63, its retention in the HU, and what to do with death and migration.
- Introduce recording of system wastage.

ANNEXES

- a. Key Informants (including those attending the debriefing)**
- b. Summary Worksheet (national, 4 district and 1 HU)**
- c. PowerPoint presentation**

INSTITUTION, DATE AND PERSON MET	POSITION
<i>RCIP (National Level), 29 July, 12, 15, 16 August 2002</i>	
Dr Klavdiya Olimova	Deputy Minister of Health, MoH
Dr D. Pirov	Head of Sanitary & Epidemiology Department, MoH
Dr Shamsiddin Jobirov	General Director, RCIP
Dr Zoya Kainaeva	Deputy General Director, RCIP
Dr Nurullo Boyakov	Director, CIP in Khatlon Oblast, Director, National Counterpart
Mr Ibod Sharifi	National Consultant to the RCIP, National Counterpart
Dr Tarek Hussain	Project Officer, UNICEF
Mr Mutrib Bakhruddinov	Project Assistant, UNICEF
Dr Sergei Deshevoi	Medical Officer, WHO (Almaty)
<i>Aini Rayon, 30 July – 2 August 2002</i>	
Dr Mirzoalim Okylov	Chief Doctor, RCH
Dr Mirsaid Ostonov	Chief Doctor, RSES
Mr Mirzo Akhmedov	Chief Epidemiologist, RSES
Dr Zuhur Murodov	Chief Paediatrician, RCH
Dr Mumin Bobojanov	Director of CIP, Sogd Oblast
Mrs Gulchera Saifullaeva	Deputy Mayoress, Ayni Rayon
<i>SVA Dar Dar, 31 July, 2002</i>	
Dr Khasan Azimov	Doctor in Charge
Dr Mirsaid Ostorov	Chief Doctor, RSES
Dr Mumin Bobojanov	Director of CIP, Sogd Oblast
<i>SUB Urmeton, 31 July 2002</i>	
Dr Abduvakil Khalilov	Chief Paediatrician
Dr Khushvakht Rasulov	Chief Doctor
Mr Narzikul Saidov	Feldsher, Vaccinator
Mrs Fazilat Gafarova	Nurse (Patronage and Vaccinator)
<i>SVA Fatmovud, 1 August, 2002</i>	
Mr Muhamin Yokubov	Feldsher, Vaccinator
<i>Medical House, Iskodar, 1 August 2002</i>	
Mr Isomiddin Akbarov	Feldsher, Vaccinator
<i>SUB Dizik, 2 August, 2002</i>	
Mr Dustmurod Mahadyorov	Feldsher, Vaccinator
<i>Medical House Khushekat, 2 August 2002</i>	

Mr Salimsok Azizov	Feldsher, Vaccinator
<i>SOGD Oblast 5 August 2002</i>	
Dr Mumin Bobojanov	Director, CIP, Sogd Oblast
DrTursun Karimov	Epidemiologist, CIP, Sogd Oblast
Dr Mahmud Rabejanovich Rabejanov	Chief of Health Department, Sogd Oblast Hukumat
<i>Chakalvosk Rayon, 5 - 7 August 2002</i>	
Dr Dilorom Abbasova	Chief Epidemiologist, SES
Dr Tursun Karimov	Epidemiologist, CIP, Sogd Oblast
Dr Rahmonberdi Muhamadiev	Chief Doctor, SES
Mr Bakhtiyor Toshpulatov	Cold Chain Technician, SES
Dr Dilbar Burakova	Chief Doctor, City SES
Dr Mumin Bobojanov	Director, CIP, Sogd Oblast
Polyclinic, 6-7 August, 2002	
Dr Dilorom Abbasova	Chief Epidemiologist, SES
Dr Tursun Karimov	Epidemiologist, CIP, Sogd Oblast
Dr Rano Akhtamova	Director, Child Polyclinic
Dr Marifat Marufova	Director Paediatric Dept., Child Polyclinic
Dr Mumin Bobojanov	Director, CIP, Sogd Oblast
Mrs Svetlana Hafizova	Vaccinator
Mrs Habiba Gafarova	Vaccinator
<i>SVA Palas, 6 August, 2002</i>	
Dr Manzura Mirzoeva	Chief Doctor
Dr Sojida Gafarova	Chief Paediatrician
Mrs Shoiras Yuldasheva	Vaccinator
Mrs Sharofat Khojimatova	Vaccinator
Dr Mumin Bobojanov	Director, CIP, Sogd Oblast
Dr Dilorom Abbasova	Chief Epidemiologist, SES
<i>Khojamaston Rayon 30-07-02</i>	
Dr Nazarova Matluba Murodovna	Chief Doctor, Central district hospital
Dr Sattorov Mahmadsarif	Deputy of Chief Doctor, Central district hospital
Dr Ismatov Mahmadsarif	Chief Doctor, Sanitary and Epidemiology Station (SES)
Dr Doliev Sodiq Ruzievich	Deputy of Chief Doctor, Health of Department
Dr Nazirova Tuhfa Negmatovna	Deputy of Chief Doctor, Department of pediatrics
Magrunov Rakhmon	Deputy of Chief Doctor , Oblast SES

<i>FAP "Kirov", 31-07-02</i>	
Abdulloev Izzat	Chief Doctor
Zainiddinov Umar	Assistant of Chief Doctor
<i>SVA "Dusty" 31-07-02,</i>	
Gulyaev Parda Aliqulovich	Chief Doctor
Sharipova Gulrukhsor	Nurse
Bekmurodov Dilshod	Patronage
Oyeva Sanavbar	Nurse
<i>FAP "Karl Marks" 01-08-02,</i>	
Mahmadiorova Lutfia	Chief Doctor
Karimova Tuty	Nurse
<i>FAP "Gorky", 01-08-02</i>	
Turdiev Kholbobo	Chief Doctor
<i>FAP "Subtropic" 02-08-02</i>	
Rustamov Suhrob	Chief Doctor
<i>FAP "Rohi Lenin" 02-08-02</i>	
Kodirov Mengniqul	Chief Doctor
<i>Kofarnihon District 05-08-02</i>	
Dr Roziqov Nur Sherovich	Chief Doctor of SES
Mr Mirzoev Mahmadsho	Assistant of Epidemiologic Doctor of SES
Dr Karimova Alla Rakhmonovna	Head of Expanded Program of Immunization
Dr Tagoev Dosty Majidovich	Chief Doctor of Central District Hospital
<i>Sub-District SVA "Chilamazor" 06-08-02</i>	
Dr Rajabov Rustam	Chief Doctor of SVA
Mrs Turaeva Mamlakat	Assistant of Chief Doctor
Mrs Narzulloeva Firuza	Nurse of SVA
Mrs Rakhmonova Savri	Nurse of SVA
<i>FAP "Zargar" 06-08-02</i>	
Dr Muhtojova Sorokhon	Chief Doctor of FAP
Mrs Ismoilova Khaticha	Nurse of FAP
<i>Sub-District SVA "Hojikatagan" 07-08-02</i>	
Dr Abdukarimov Shariff	Chief Doctor of SVA
Mrs Sharipova Muqaddas	Nurse of SVA
Mrs Azizova Nozira	Nurse of SVA
Mrs Rajabova Mamlakat	Nurse of SVA
Mrs Nazarova Sharofat	Nurse of SVA
<i>FAP "Zafarobod" 07-08-02</i>	

Dr Hayoutova Saodat	Chief Doctor of FAP
Mrs Kholikova Gulbahor	Nurse of FAP
<i>FAP "Machiton" 08-08-02</i>	
Dr Orifjonova Mehri	Chief Doctor of FAP
<i>Separate Meetings with UNICEF, WHO and RCIP, Monday 12 August</i>	
Dr Tarek Hussain	Project Officer, UNICEF
Mr Mutrib Bakhruddinov	Project Assistant, UNICEF
Dr Nazira Artykova	National Professional Officer, WHO Liaison Office
Dr Zoya Kainaeva	Deputy General Director, RCIP
<i>ICC Meeting 15 August 2002</i>	
Dr Shamsidin Jobirov	General Director, RCIP
Mr Ibod Sharifi	National Consultant to the RCIP, National Counterpart
Dr Yukie Mokuo	Head of Mission, UNICEF
Dr Tarek Hussain	Project Officer, UNICEF
Mr Mutrib Bakhruddinov	Project Assistant, UNICEF
Dr Cedric Yoshimoto	Medical Co-ordinator, Merlin
Ms Esther Moring	Emergency Coordinator, MSF
Ms Husnia Dorgabekova	Health Programme Manager, Aga Khan Foundation
Dr Nazira Artykova	National Professional Officer, WHO Liaison Office
Mrs Sanabar Rakmantullaba	National Coordinator Somoni Group
Ms Valerie Remedios	GAVI Consultant
Dr Knut Wallevik	GAVI Consultant
<i>Debriefing Meeting 16 August 2002</i>	
Dr Shamsidin Jobirov	General Director, RCIP
Mr Ibod Sharifi	National Consultant to the RCIP, National Counterpart
Turkov Sohbnazar	Epidemiologist, RCIP Dushanbe
Ganieva Nazokat	Paediatrician, RCIP Dushanbe
Mazarkhudoeva Marina	Epidemiologist, RCIP Dushanbe
Shomudinov Boir	Epidemiologist, RCIP Dushanbe
Budridinov Mutrib	Assistant Program Officer, UNICEF
Bobojanov Mumin	Director, Sogd Oblast, CIP
Sharipov Karim	Chief Epidemiologist, Sogd Oblast, CIP
Ostonov Mirsaid	Chief Doctor, Sogd Oblast, Aini Rayon SES
Boyakov Nurullo	Director, Khatlon Oblast, CIP
Turaev Sadridin	Chief Epidemiologist, Khatlon Oblast, CIP
Ismatov Sharif	Chief Doctor, Khatlon Oblast,

	Khojamaston Rayon SES
Tagaikulova Ktya	Epidemiologist, Khatlon Oblast, Khojamaston Rayon SES
Rozykov Nurmuhamad	Chief Doctor, Kofarnihon Rayon SES
Mirzoev Mahmadsho	Epidemiologist, Kofarnihon Rayon SES
Davlatov Said	Chief Doctor, Khatlon Oblast, Kulob SES
Olimov Tojiddin	Epidemiologist, Khatlon Oblast, Kulob SES
Rashidov Mahmadali	Director, Dushanbe Centre of Immunoprophylaxis

