A review of health system barriers to implementation of the strategy of integrated management of childhood illnesses in Uzbekistan

November - December 2008

WHO/Europe jointly with the Ministry of Health of Uzbekistan and the Republican Centre of Paediatrics, Uzbekistan

ABSTRACT

A study was conducted in Uzbekistan in 2008 to review the barriers in the health system to implementing the IMCI strategy, assessing the quality of care delivered to sick children attending outpatient health facilities, caregivers' understanding of home treatment and key messages after visiting these facilities, and health system supports and barriers for quality care. The study found that, in general, health workers trained in IMCI correctly assess, classify and treat sick children. However, assessment and counselling on child feeding and growth require substantial improvements that can be addressed through enhancing the quality of undergraduate and postgraduate training of health professionals. Health facilities have a minimal list of equipment and supplies, but consistent and full availability of essential medicines for children remains a problem. The reasons for that are complex and derived from inadequate funding and drug distribution, and lack of some basic IMCI medicines in the essential drug list. Support for the implementation of IMCI in health facilities is sporadic and not sufficient. Health managers do visit health facilities but in most cases they do not directly observe sick child management and they lack problems analysis and practical support. Most supervisors are not aware of the principles of IMCI strategy. The capacity of management staff in programme planning, management, monitoring and evaluation needs to be strengthened. The policy and tools for supportive supervision in child services should be revised and developed.

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LIST OF ACRONYMS

ADB	Asian Development Bank
WHO	World Health Organization
GP	General Practitioner
WHO/Europe	WHO Regional Office for Europe
MCH/RH	Maternal and Child Health /Reproductive Health
IMCI	Integrated Management of Childhood Illnesses
MoH	Ministry of Health
MPP	Multi-profile polyclinic
UN	United Nations
ARI	Acute Respiratory Infection
OPC	Oral solution
PHC	Primary Healthcare
PHS	Primary health services
UNDP	United Nations Development Program
RHC	Rural Health Clinic
CDC	Centre for Disease Control
SES	Sanitary and Epidemiological Service
CDH	Central District Hospital
CSEC	Centre for Sanitary Epidemiological Control
UNICEF	United Nations Children's Fund
USAID	United States Agency for International Development

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Research summary

The main goal of health reform in Uzbekistan is improvement of the quality, accessibility, and economic efficiency of the services which are the backbone of the primary health system: those activities which further the prevention and treatment of illnesses that contribute the greatest to morbidity and mortality in the country.

In health institutions the IMCI strategy facilitates the appropriate management of childhood illnesses at outpatient level, provides optimal combination of the treatment of all major diseases, improves counseling for caregivers, promotes preventive activities, and facilitates timely referral of gravely ill children to inpatient care. This strategy is also focused on rationalization of the quality of care on primary inpatient institutions. In the domestic environment the IMCI strategy facilitates establishment of the appropriate behaviour in parents and other family members to provide health services for the children, improve nutrition and prevention of diseases, and appropriate treatment. The Ministry of Health of Uzbekistan recognized IMCI strategy as the platform for provision of health services for children in primary healthcare (prikaze # 484 of MoH dated 03.11.2003).

Despite the range of activities in support of IMCI in outpatient healthcare, problems were found in the implementation of the strategy. In the course of the discussion of the problem, donor organizations and the officials of the Ministry of Health voiced many arguments and explanations of the essence of the problem. But full-scale research had not been conducted into the effectiveness of implementation, assessment of the barriers to implementation, and the availability of key elements essential for management of sick children such as equipment, supply of medications, vaccines, and control in the healthcare system. To this end, WHO in Uzbekistan and the Ministry of Health planned the study.

The study was conducted to identify the main barriers in primary healthcare for implementation of the strategy of Integrated Management of Childhood Illnesses. The group of experts of the Ministry of Health proposed to conduct a study in 2 regions of Uzbekistan – Ferghana and Syrdarya oblasts, where the strategy had already been implemented for 6 years.

Sampling of the health institutions was based on the methods described in the WHO guidelines "Health Facility Survey". The questionnaires recommended for the study were translated into Russian and Uzbek and tested. The analysis was done using EPI Info software application. The specialists recruited for the study were trained. The study was conducted on November 25 - December 6, 2008. 3 focus group studies were conducted in each oblast by the end of the study (health workers, parents of the children and administrative workers of health institutions).

The study covered 57 RHCs, 2 family polyclinics and 1 district multi-profile polyclinic, 70 doctors of primary health system, and 309 children aged from 2 months to 5 years.

The priority indicators were estimated based on the data generated in the study:

1.	Child checked for three general danger signs	46.6%
2.	Child checked for the presence of cough, diarrhoea and fever.	76.4%
3.	Child weight checked against a growth chart.	33%
4.	Child vaccination status checked	51.1%
5.	Index of integrated assessment. Mean of assessment	6.8

	tasks performed per sick child assessed	
6.	Child under two years of age assessed for feeding practices.	29.5%
7.	Caregiver of sick child is advised to give extra fluids and continue feeding	58%
8.	Caregiver of child who is prescribed ORS, and/or an oral antibiotic and/or knows how to give the treatment.	56%
9.	Child not needing antibiotic leaves the facility with out antibiotic	45%
10.	Child needing referral is referred.	75%
11.	Child needing an oral antibiotic is prescribed the drug correctly.	41.1%
12.	Index of availability of essential oral treatments	1.4
13.	Index of availability of injectable drugs for pre-referral treatment	0.6
14.	Health facility has the equipment and supplies to support full vaccination services	43.3%
15.	Health facilities with at least 60% of workers managing children trained in IMCI	73.3%.
16.	Health facility received at least one supervisory visit that included observation of case management during the previous six months.	26.7%

Also additional indicators were estimated, which helped to review situation at the health institutions covered by the study in detail. Based on the data received, a detailed analysis was conducted and recommendations were drafted to support the health system to improve maternal and child health system at PHC institutions including the practices of managing sick children, providing essential equipment, medications, and provision of consumables, supervisory practice, and human resources.

1. Health status of the child population in Uzbekistan

In Uzbekistan health system reform is of primary importance. Serious changes have taken place in primary healthcare, particularly in the rural areas: instead of ineffective feldsher-midwifery centres and outpatient clinics, rural health clinics were established where general practitioners provide primary health services. Substantial changes have taken place in maternal and child health care and health services for women. The technical infrastructure and resources of the maternity facilities have been strengthened. [1,3].

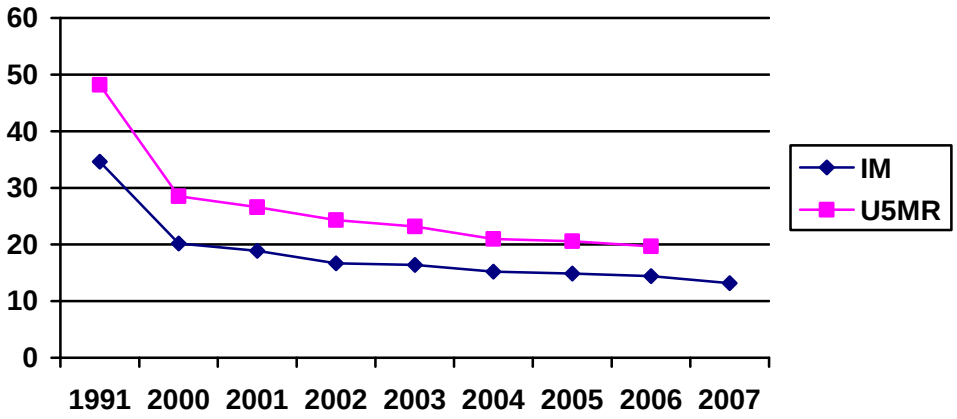
The main attention is on training health workers to master new knowledge and skills based on international standards and principles of evidence-based medicine. The goal of this approach is improve the quality of health services for children under five. In this process the IMCI strategy plays an important role in enhancing the quality of health services for children on primary level.

Today the number of children under 5 in Uzbekistan is 2,630,048 or 9.8% of total population, which is significantly lower than in 1991 (3,317,782). Analysis of under-5 child morbidity illustrates the trend of increasing general morbidity from 630/1,000 in 2003 up to 721/1,000 in 2007. Respiratory diseases (43%), blood-related diseases (26.7%), endocrinological system disorders (6.3%), and infectious and parasitic diseases (3.5%) dominate the composition of morbidity. [2,3]

Multi-profile polyclinics provide outpatient care to the children in the cities. Rural residents receive this care at more than 3,000 multi-profile polyclinics and RHCs. Annually circa 11,000 children under 5 die in Uzbekistan, of which 72% die in the first year of life. Under 5 child

morbidity and mortality is determined by several major diseases. For instance, in 2006 acute respiratory infection and pneumonia accounted for 41% of infant mortality and 42% of under 5 child mortality. Diarrhoea is the cause of child mortality in 6% of cases, while in 80% of cases these diseases were combined with malnutrition. 3,4.

Figure 1. Trends of infant mortality (%) and under 5 child mortality indicators (%) in Uzbekistan (IM-infant mortality; U5MR – under 5 child mortality).



In 2007 the official rate of infant mortality amounted to 13.2%, which is substantially lower than in 1991, when the rate of 34.6% was registered (Figure 1). A similar trend is found in the mortality of children from 0 to 5, where the fall from 48% in 1991 to 19.7% (Figure 1) was registered in 2006 [1,5,12]. The mortality indicator fell by more than 2.5 times. [9,10] The highest indicators of child mortality are found among rural children. [1,7,8,10]

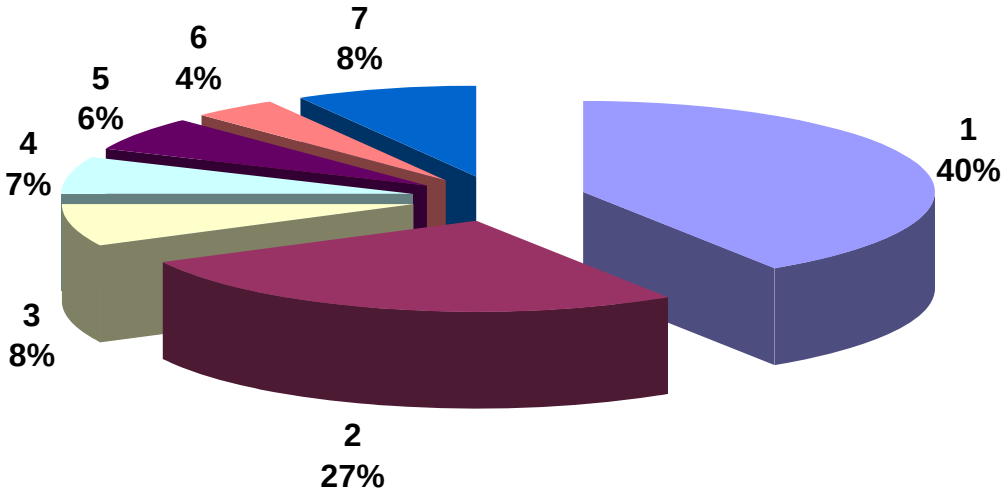


Figure 2. Composition of child mortality at the age of 0-4 disaggregated by the cause of mortality in 2006 (1 – respiratory diseases; 2 – prenatal causes; 3 – injuries and poisoning; 4 – congenital diseases; 5 – infectious pathology; 6 – nerve system disorders; 7 – other reasons).

Malnutrition remains a problem for the child population. The findings of a national study[6] showed that 21% of children under 5 are suffering from moderate and expressed stunting (height-to-age) and 7% suffer from moderate or serious malnutrition (weight-to-height). The most frequent cases of malnutrition is found among rural children and low income families. The study illustrated that anaemia of different stages is found in 49% of the children aged 6-59 months. In Ferghana oblast, vitamin A deficiency was found in 53% of children. [6]

According to the data of independent studies, the percentage of children on exclusive breastfeeding under 6 months showed a growth trend from 4.6% in 1996 up to 26.4% in 2006. However, the issue of early supplemental nutrition and miscellanous supplemental feeds with artificial mixes or cow milk is still a problem for Uzbekistan. [2,4,6]

2. Background to implementing the IMCI strategy in Uzbekistan

Analysis of the global burden of disease in 2006 indicated that diseases such as pneumonia, ARI, and diarrhoea will continue to be the main causes of child mortality until 2020 unless major control efforts are undertaken (WHO). The fact that most cases of child morbidity and mortality in Uzbekistan are primarily caused by these diseases is by itself a reason for the implementation of Integrated Management of Childhood Illnesses.

WHO Regional Office for Europe and the Ministry of Health of Uzbekistan started their joint efforts for implementation of the IMCI strategy in 1999. WHO/Europe took steps to provide financial and technical support for the process of adaptation and planning IMCI strategy in Uzbekistan. Attempts were made at all meetings of WHO/Europe to involve donors in providing financial and technical assistance for implementation of IMCI, initially in the pilot regions, and then nationwide. Inter alia, representatives of WHO, UNICEF, USAID, Project HOPE, BASICS, ABT Associated, International Red Cross, World Bank, Asian Development Bank, CDC, and UNDP attended the meeting which established the regional working group in Central Asia, and development of regional IMCI strategy. The outcome of the meeting was adoption of the resolution, which included the main steps for collaboration with international organizations.

The IMCI strategy proposed by WHO/UNICEF has become one of the most effective mechanisms to improve the quality of treatment of sick children on primary level. Due to the lack of any experience on IMCI strategy in the European region, a pilot approach for implementing the strategy - drafted back at the international meeting on IMCI strategy in Copenhagen (July 1997) - was attempted.

Adaptation of IMCI clinical guidelines to the context of Uzbekistan started in June 1999 after the national meeting where possible options of adaptation of IMCI schemes, technical issues, and essential key information were discussed and determined.

Subsequently, the expert groups held meetings where the required adaptation of clinical guidelines were reviewed and adopted. In 1999 during the consensus-building meeting these adaptations were proposed for discussion and approved by the national IMCI working group. As the implementation of the IMCI strategy is a long-term policy in line with the main dimensions of the health system reforms, the adaptation was based on the systemic principle in collaboration

with the programmemes to improve maternal and child health, nutrition, child growth and development, measures to reduce infectious diseases, and promote sustainable environment. Adaptation of training materials for the outpatient clinical course was finalized prior to the start of the first training course. Subsequently, with the support of the aforementioned donors all IMCI study materials were translated into Uzbek.

Implementation of the IMCI strategy started in Uzbekistan in 2000 with the support of WHO, UNICEF, Zdravplus, HOPE Project, and the World Bank (*early implementation phase*). The first regional international course was conducted by the representatives of WHO/Europe in Tashkent in August 2000. Training courses were held in Navoi, Syrdarya, Kashkadarya, Surkhandarya, Ferghana, Khorezm, Andijan oblasts, and Karakalpakstan during implementation of the strategy.

Emphasis was given to implementing IMCI into the curricula and programmemes of higher and secondary special medical educational institutions. After conducting an orientation meeting for the representatives of pre- and post-diploma training, the decision was made to incorporate the IMCI strategy into the academic process at the Council of the rectors of medical universities in 2003. This process included development of a textbook for medical universities and a textbook on IMCI strategy for training of mid-level health workers. Today approximately 100 faculty members of Tashkent Medical Academy, Tashkent Pediatrics Institute, Tashkent Post-Diploma Training Institute, Bukhara, Andijan, and Samarkand medical institutes teach IMCI strategy at miscellaneous departments.

In 2002 an orientation meeting on the third component of the strategy on *Improving child care at family and community level* was held with the technical support of WHO. For successful implementation of this component, a study package was designed for patronage nurses with joint involvement of the staff of Paediatrics Research Institute, UNICEF, and Project Hope. In March 2003 the Ministry of Health of Uzbekistan jointly with the partners conducted the meeting, wrapping up the outcomes of early implementation of IMCI strategy. Successful completion of the early implementation and transition to the expanded implementation of the strategy in Uzbekistan was announced at this meeting.

Training courses were conducted for health workers of pilot districts with the support of international organizations and in agreement with the Ministry of Health, Republican IMCI Centre under the Paediatrics Research Institute. The most promising candidates for training trainers were selected at these trainings. The entire training process was based on the cascade training method, i.e. the method where national trainers (master trainers) train the regional trainers, then help as supervisors or facilitators in training other health workers.

The programmeme of activities for implementation of IMCI strategy includes:

- Training of trainer courses;
- Training the doctors of outpatient institutions for management of sick and healthy children (11-day trainings).
- Training for monitoring specialists and follow-up observations;
- Training for patronage nurses for counselling parents in domestic care for children (4-day courses);
- Training for doctors of primary inpatient health institutions for inpatient management of children (10-day courses).

Oblast centres for implementation of IMCI strategy were established at the oblast and child hospitals of Navoi, Ferghana, Kashkadarya, and Surkhandarya oblasts and Karakalpakstan. These centres were equipped with all the essential equipment and materials required for training and monitoring of the strategy. Management of the oblast health departments and health workers, particularly primary health level doctors rated the comprehensive approach to training highly: in most cases it covered both theoretical knowledge and practical skills and abilities.

In the course of implementation of IMCI strategy, international organizations such as UNICEF and USAID organized the delivery of a minimum set of equipment and medications essential to provide quality care to the child population.

In order to promote sustainability, improve the quality of services to safeguard child health and implement international standards based on the principles of evidence-based medicine, the ministry of health and other international organizations focused particularly on training patronage nurses. Patronage nurses were trained in the methodology of counselling parents as well as domestic care for children. Jointly with the Republican IMCI Centre and UNICEF, guidelines were drafted for patronage nurses. The trainees had the opportunity to practice their counselling skills both at theoretical sessions in the auditorium and in practical sessions. In order to facilitate the process of counselling and informing the parents on key practices, Hope/Healthy Family Project developed the algorithm of counselling, which is successfully applied by patronage nurses.[7]

During implementation of the strategy, there was a felt need to ensure succession in the work of primary outpatient health institutions and inpatient health institutions. To this end, *Healthy Family Programmeme* jointly with WHO Country Office, Uzbekistan, and ZdravPlus project adapted the WHO guidelines for *Providing Inpatient Care for Children*. A 10-day training programme and training package were developed. These guidelines were approved by the prikaze # 155 of the Ministry of Health of 10.04.2007. Similarly, the guidelines and curriculum were approved by the Centre for Development of Medical Education and the head of Main Department of Research and Academic Institutions of the MoH of Uzbekistan in December 2007.

Monitoring is an essential component of implementation of the strategy in the country. Experts trained in follow-up care conducted subsequent observation (monitoring), after having attended the main course on IMCI strategy. Follow-up observation followed 1-1.5 months after training at workplace. The experience of the programmes showed that training of health workers only does not guarantee application of the skills gained in practical work. Outcomes of follow-up observation showed that many health workers apply the skills obtained in the practical work. But the principles of management of sick children were not always implemented according to the IMCI strategy.

The main reasons are lack of motivation, outdated stereotypes in the thinking of health workers, lack of appropriate premises and equipment. The issues related to the health worker himself were addressed with the help of feedback. New monitoring tools were developed for monitoring the effectiveness of the performance of patronage nurses. Special attention was paid to the component of improving the skills and care for the child in the family and community. The guiding principles and provisions of the national strategy to improve family practice on child health and development were defined. Key practices and the priorities of their implementation (national and regional meetings) were determined. The country has accumulated positive experience in working with the residents of Navoi, Ferghana, Kashkadarya, Surkhandarya

oblasts, inter alia, in public educational campaigns. A national breastfeeding policy was adopted. With donors' support, information and educational materials were developed for training parents in providing care for the sick and the healthy child in the framework of IMCI strategy.

The implementation of the IMCI strategy in Uzbekistan was supported by the following regulations:

- Steering Council for implementation of IMCI strategy and working groups for adaptation of IMCI materials was set up according to the Prikaze # 542 (on Development of the Plan for Implementation and Adaptation of the Materials of IMCI Strategy) of the Ministry of Health of Uzbekistan;
- Republican IMCI Centre under the Pediatrics Research Institute was established with the Prikaze 268 of the Ministry of Health issued on 14.06.2001;
- Oblast IMCI centres were established in Navoi, Ferghana, Kashkadarya, Surkhandarya, Khorezm oblasts and Karakalpakstan based on the prikazes of the oblast health departments;
- Steering Council for public activities under the Institute of Health was established with the prikaze # 106 of 11.03.2003.
- Prikaze # 484 *on Expansion of Implementation of IMCI strategy in Pre- and Post-Diploma Training* of November 3, 2003.

Policy support

- Inclusion of IMCI into the *Soglom Avlod* Government Programmeme based onthe Government Resolution # 42 dated February 15, 2002;
- Inclusion of IMCI in the Ona va Bola (Mother and Child) State Programmeme based on Resolution # 68 dated February 5, 2001;
- Inclusion of IMCI in the State Resolution # 242 on *Enhancement of Health Culture of Families, Improvement of Women's Health and Promotion of Birth and Upbringing of Healthy Generation* of July 5, 2002;
- Orientation meetings were held on national and regional level with involvement of local authorities.

Despite the whole range of activities listed above, problems were observed in implementation of IMCI in outpatient healthcare in the last three years. In the course of the discussion, donor organizations and the officials of the Ministry of Health voiced many arguments and explanations describing essence of the problem. But a full-scale study had not been conducted into the effectiveness of implementation, assessment of the barriers in implementation of the strategy, and assessment of the existence of key elements required for management of sick children in the healthcare system such as equipment, supply of medications, vaccines, and oversight. One of the recommendations of the meeting on *Strengthening the health system support for improving child health* conducted on October 17-18, 2006, was to conduct a study on assessment of barriers in implementation of IMCI strategy in Uzbekistan.

To this end, the WHO Country Office, Uzbekistan, and the Ministry of Health planned the study.

3. Goals and objectives of the study

The study was conducted to identify the main barriers in primary healthcare for implementation of the strategy of Integrated Management of Childhood Illnesses.

The goals of the study were:

- Assessment of the quality of health services for sick children at primary health institutions;
- Assessment of the quality of counselling at health institutions and understanding of caregivers of how to provide home care to a sick child;
- Assessment of the existence of key elements essential for management of sick children such as equipment, supply of medications, vaccines, and oversight (supervisory visits);
- Identification of the principal barriers to the effective and integrated management of sick children;
- Estimate of main indicators for assessment of the progress towards the objective;

Information received in the course of the study will be also used for:

- Prioritizing and planning the activities focused on greater support for the health system in order to improve maternal and child health services at PHC institutions including the practices of management of sick children, supply essential equipment, medications, and supply consumables, mentor practices, and human resources;
- Planning and strengthening trainings for health workers;
- Improvement or development of the strategy of monitoring and supervision of PHC institutions.

4. Research methodology

4.1. Identification of the regions for the study

A group of the experts of the Ministry of Health proposed to conduct a study in 2 regions of Uzbekistan – Ferghana and Samarkand oblasts. The facts outlined further served as the platform for the choice of the oblasts. Implementation of IMCI had started in Ferghana oblast in 2001. Implementation of the IMCI strategy was piloted by Zdravplus project and UNICEF. Donors supported the training for health workers based on 11-day programmeme, and assisted the oblast IMCI centre in the monitoring visits. In addition to education, UNICEF provided 13 free medications recommended by the strategy to the pilot districts. Overall, 9 of 19 rayons were covered by health worker training with the support of the donors. According to the healthcare reform programme, primary health workers of Ferghana oblast were trained at 10-month GP training courses in Tashkent city and Andijan oblast. A 10-day IMCI course for doctors is included in the 10-month GP training course.

Syrdarya oblast is one of the first where implementation of healthcare reform programme started with the support of the World Bank. Rural health clinics in the oblast were equipped by the World Bank loan. Training of health workers at 11-day courses was supported by the *Health* project and 10 courses were held. The bulk of the oblast primary health workers were trained at 10-month GP training course in Tashkent.

It is expected that the review of the barriers for implementation of IMCI strategy in two regions in Uzbekistan, where the strategy was implemented utilizing miscellaneous approaches, will provide the most comprehensive information on current situation to the researchers and enable the development of fully-fledged recommendations for successful implementation of the strategy.

4.2. Sampling of health institutions

Health institutions were sampled based on the method described in the WHO guidelines for the review of health institutions. [5] Oblast health departments in Syrdarya and Ferghana provided the list of all primary health institutions. The same list contained information on the number of enrolled doctors trained in the IMCI strategy on 10-month course or 11-day training courses. The health institutions where doctors were not trained in the IMCI strategy were excluded from the list received, as the goal of the study was to identify the barriers in strategy implementation. Similarly, the health institutions of Ferghana oblast located in the territory of enclaves were removed from the list, as the study could be at risk due to the need to cross the state border of Uzbekistan and neighboring countries. As outpatient health services for children are provided at miscellaneous health institutions (SVPs, family polyclinics, and multi-profile hospitals), the percentage was calculated for each type of institution from all health institutions in the general list. Further, health institutions were determined by the random sampling methods described in the research guidelines. Overall, 60 health institutions were selected (30 in each oblast) including 57 RHCs, 2 family polyclinics, and 1 district multi-profile polyclinics (list of health institutions – Annex 3).

It was planned for each health institution to assess at least 4 cases of admission of sick children. Thus, the number of children covered by the study in each oblast would exceed 120. The aforementioned sample ensured statistical reliability of the study with confidence intervals of 95%.

4.3. Preparation for the study

In preparation for the study, a number of meetings were held with the involvement of WHO Country Office, Uzbekistan, the Paediatrics Research Institute, and the research consultant. Issues such as procurement of essential materials, logistics, selection of interviewers, trainings, and other research-related issues were discussed at the meetings. The questionnaires recommended for the study were translated into Russian and Uzbek. The study's consultant conducted field-testing of the questionnaires and made the appropriate changes based on the results obtained. The final version of the questionnaire was replicated in the adequate number (study questionnaires – Annex # 4). *EPIInfo* software specialist prepared the electronic form of the questionnaires. Similarly, the consultant drafted the questions for the focus groups. The Ministry of Health prepared the order and provided the administrative support in recruitment of interviewers and fieldwork.

4.4. Training for Interviewers

In order to promote quality assessment, it was decided to promote experienced trainers/IMCI monitoring experts as interviewers from miscellaneous regions of the country. Experts from Tashkent city, Ferghana oblast, Kashkadarya, Surkhandarya, and Navoi oblasts were recruited.

(List of interviewers and supervisors in Annex 5). Although the recruited experts had the experience of follow-up observation, a 4-day training was conducted for them where they were trained in the research methods (training agenda – Annex 6). The programme outlined in the guidelines for survey of health institutions served as the platform for the training.[5] The participants discussed the questionnaires and random sampling methodology in detail in the course of the training. Practical sessions on filling-in questionnaires were held in the family polyclinic # 59 in Tashkent city. Also the interviewers were given detailed guidelines for completing the questionnaires, which were discussed. Separate sessions for supervisors were held along with discussion of their responsibilities as well as organizational aspects of field work and focus groups. An *EPI-INFO* software expert trained the responsible staff in data entry.

4.5. Conducting the study

Trained experts were divided into 6 teams with 3 persons in each (1 supervisor and 2 interviewers). Three teams were sent to each of 2 oblasts. The experts from Ferghana oblast were sent for field work to Syrdarya oblast to prevent conflict of interest. Each team was tasked with assessing 10 health institutions in 10 days. Each team was provided with a vehicle, questionnaires, and a set of medications recommended in the IMCI strategy for examination of children, and first aid kits. Thirty health institutions in each oblast were divided among three teams.

The study was conducted from 25 November to 6 December, 2008. During fieldwork, the teams encountered certain difficulties. For instance, on visiting a health institution it was established that a trained health worker had resigned or was absent for extenuating reasons. In these cases the health institution was replaced by another one according to the earlier scheme, where a trained health worker was available. Replacements of health institutions were documented by the supervisors. Availability of the main equipment and medications were assessed at each health institution along with collection of the data on visits, the children served, the number of children, number of health workers, etc. The researchers observed the admission of a sick child, talked to caregivers, and the expert re-examined the child. The supervisor verified the quality daily after filling-in the questionnaires.[8] Every three days the filled questionnaires were sent to Tashkent for data entry. Three focus groups were conducted at the end of the study in each oblast (health workers, parents of children and staff of healthcare institutions).

The data were entered in Tashkent under the oversight of the expert responsible for data entry and analysis. *EPI-INFO 6* software application was used for data entry, tabulation, and analysis.

5. Research findings

5.1 Background Information

The study covers 60 health institutions (30 in each oblast) including 57 SVPs, 2 family polyclinics and 1 district multi-profile polyclinic. Overall, 70 doctors of primary health institutions (29 in Syrdarya and 41 in Ferghana oblasts) were involved in admissions of sick children. 27 of them (38.5%) were trained in 11-day IMCI courses, 40 (57.1%) were trained in 10-month GP courses, and 3 (4.4%) were trained in both courses (Annex 1, Table 1). Notably

the feldsher can also manage the sick child. But doctors were available at all health institutions, thus feldshers were not involved in admissions of sick children.

In total there were 309 sick children were admitted in the course of field work, 158 children in Ferghana oblast and 151 children in Syrdarya oblast. Most children were examined at RHCs (Annex 1, Table 2).

The sick children covered in the study were aged 2 months to 5 years. The sample included the children whose mothers complained to health institutions with one or several of following symptoms; cough/difficult breathing, diarrhoea , temperature, nutrition, and problems with ears (symptoms adopted in IMCI strategy). More than 40% of children were aged under one and more than 66% were under two. Of the children covered by the study, 49.5% were males.

Table №1. Number of Examined Children Disaggregated by Age, Gender, and Region

Age	Oblast					
	Syrdarya		Ferghana		Total	
Up to 1 year	61	40.3%	64	40.5%	125	40.6%
1	38	25.1%	42	26.5	80	25.8%
2	28	18.5%	26	16.4	54	17.4%
3	15	9.9%	15	9.4	30	9.7%
4	9	5.9%	11	6.9	20	6.4%
Total	*151*	*100%*	*158*	*100%*	*309*	*100%*
Boys	73	48.3%	80	50.6%	153	49.5%
Girls	78	51.6%	78	49.4%	156	50.5%

305 interviewers with caregivers were undertaken. Mostly those were mothers responsible for children in the family.

5.2. Description of prioritized and additional indicators

Research indicators were based on the generally recognized guidelines. The list of indicators was discussed among partners and includes the most essential and prioritized ones. The list includes indicators which demonstrate the skills of health workers to assess the sick children; their skills for classification; and their ability to determine treatment and prescribe medications in grounded manner. Likewise, the list includes the indicators which reflect the knowledge of the mothers and availability of resources at the health institution. Furthermore, this list of indicators may be divided into qualitative and quantitative ones. Qualitative indicators primarily indicate the skills of the health workers, while quantitative ones reflect availability of medications, equipment, and procurement of consumables at the health institutions.

Research indicators were divided into two groups. Group One includes prioritized indicators, and Group Two includes additional indicators. Prioritized indicators reflect important elements of the quality of management of sick children, availability of resources at the health institution, and provide information on the utilization of IMCI guidelines. Additional

indicators reflect more detailed information and reflect specific aspects recommended in the IMCI guidelines. They were used in addition to the prioritized indicators for detailed description of the elements of management of cases and for more detailed elements of case management and more detailed review of all factors, which reflect the quality of health services.

The list of indicators is based on WHO standard indicators and adapted to the context of the country and training agenda. They were selected reflecting the following characteristics:

- Assessment of important elements of the agenda;
- Assessment of integrated management of sick children;
- Assessment of implementation of the health worker skills obtained;
- Assessment of the caregivers' knowledge;
- Assessment of the availability of resources at the health institution.

The indicators are described below with a detailed outline of their significance, to help all experts reviewing the report, understand and interpret the obtained data appropriately.

5.2.1. Prioritized indicators

Indicators of sick child management skills

This group includes the following indicators:

1. Child checked for three general danger signs – 46.6%. The strategy of integrated approach to management of sick children starts with the assessment of danger signs found in grave forms of the sicknesses of upper respiratory tract, diarrhoea, sicknesses related to fever and other diseases often found among children under 5. For sorting sick children with these signs and providing ambulance services, the PHC health worker should assess 3 danger signs: can the child drink or suck the breast, does it vomit after any food or drink and does it have convulsions. [9]
2. Child checked for the presence of cough, diarrhoea and fever - 76.4%. The statistical data indicate that children under 5 often fall sick with diseases accompanied by specific symptoms. For integrated management of every sick child, the health worker must assess/survey the existence of these symptoms and upon finding them examine the sick children according to the steps in the IMCI guidelines.
3. Child weight checked against a growth chart – 33%.
   Child malnutrition is one of the main factors aggravating illnesses and increases the risk of fatalities. Thus, assessment of weight gain by children and comparison of the data with the schedule informs the health worker about the child's growth and development, existence of nutrition problems. Based on the outcomes obtained, the health worker must provide nutrition recommendations according to the age of the child. The indicator reflects the percentage of children weighed on the day of the visit and their weight checked against growth chart.
4. Child vaccination status checked – 51.1%. The health workers must make maximum use of the visit of the child to the health institution. At the time of the visit, along with provision of appropriate services related to the problems that the child faces, the health worker must be sure that this child received all vaccinations according to the approved calendar.

5. Index of integrated assessment. The mean of assessment tasks performed per sick child assessed is 6.8. The IMCI strategy has the golden standard of 10 objectives, which are mandatory in the examination of the child. The standard contains the assessment skills. Every health worker must assess by 10 points (review of 3 general danger signs, examination against 3 major symptoms, the child is weighed and the weight is checked against the growth chart, vaccination status is checked, and child's palm is visually examined) at the time of admission of the sick child to promote integrated approach to the patient assessment.[9]

Indicators of Caregiver Counselling Skills

6. Child under two years of age assessed for feeding practices – 29.5%. Rational nutrition of children under 2 is an important factor in child growth and development. Transition of the newborn from exclusive breastfeeding to mixed nutrition is critically important. Many caregivers have difficulties in starting supplemental feeding in the right time and manner. Lack of knowledge and skills on frequency of feeding and types of products essential for fully-fledged nutrition leads to malnutrition and shortage of micronutrients. Feeding in the period of sickness is particularly important, as inadequate consumption of nutrients in this period may lead to weakening of the body and serve as the factor complicating the disease and affecting children's nutrition status. The health worker must fully examine the child nutrition practices and assess the compliance of the identified nutrition practices with child's age.

7. Caregiver of sick child is advised to give extra fluids and continue feeding – 58%. Children's appetite is lower at the time of sickness. The body of the sick child needs additional liquids and nutrients, particularly when the sickness is accompanied by fever and dehydration. In order to maintain adequate amount of nutrients and liquids in the body, parents should provide additional food and liquids. The health worker should explain to the mother about the need for additional nutrition and liquids. Similarly, using communications skills, the health worker needs to ensure that she will follow the recommendations.

8. Caregiver of child who is prescribed ORS, and/or an oral antibiotic and/or knows how to give the treatment – 56%. The health worker who prescribed the oral medications for the sick child must train the parents in how to give oral preparations using all counselling rules (explain, show, enable the mother to practice, and check whether the mother understood him, asking open-ended questions). The accuracy of implementation of a health worker's recommendations depends on this. The caregiver of the child should accurately name the dosage of the medication, and explain how many times per day and when she will give it.

Indicators for assessment of the tactic, grounded and appropriate treatment

9. Child not needing antibiotic leaves the facility with out antibiotic – 45%. IMCI strategy clearly stipulates under which classifications (which diseases) the child needs the antibiotics. The health worker should adequately classify and based on the classification determine, whether the child need the antibiotics. This indicator reflects the information whether the health worker adequately assessed child's health and

avoided unnecessary prescription of antibiotics. When the child should not be prescribed antibiotics, the health worker should explain to the mother the treatment methods recommended by the strategy.

10. Child needing referral is referred – 75%. The health worker should appropriately select sick children, identify the signs dangerous for life, when the child needs to be referred to inpatient care immediately. Timely and fast referral to the inpatient care with appropriate pre-referral treatment is a major factor in reducing child mortality.

11. Child needing an oral antibiotic is prescribed the drug correctly – 41.1%. This indicator reflects the treatment map for children with non-acute pneumonia and ear infection. These two classifications are determined as the conditions which require treatment with antibiotics in home environment. Amoxicillin is recognized as the first-line antibiotic in Uzbekistan. Upon prescribing amoxicillin, the health worker should explain to the mother how to give one-time dose, give the definition of one-day dose, and a daily dosage, and longevity of the course.

Indicators of availability of resources at health Iistitutions

12 Index of availability of essential oral treatments - 1.4. IMCI strategy includes minimum set of preparations essential for effective outpatient treatment of some diseases. Oral antibiotics are required for treatment of pneumonia and acute ear infection, ORS – for treatment of dehydration, and iron preparations for treatment of anemia. Every health institution should have stock of these oral preparations. In Uzbekistan this list includes oral antibiotic (amoxicillin), ORS, paracetamol, and iron. Overall, these are 4 preparations and ideally the index should equal 4.

13 Index of availability of injectable drugs for pre-referral treatment – 0.6. The child with acute disease must receive the first dose of injected antibiotics prior to inpatient hospitalization. This tactic of managing sick children at the health institutions reduces the risk for development of complications and fatalities. According to the IMCI strategy adapted for Uzbekistan, every health institution must have the stock of injected preparations. This list includes the penicillin, gentamitsin, bicillin, chloramfenicol - four preparations, and ideally the index should equal four.

14 Health facility has the equipment and supplies to support full vaccination services – 43.3%. The fridge or the cold container, disposable syringes and needles, autoclave are essential tools for vaccination. Every health institution must have this equipment. This indicator reflects the percentage of health institutions where this equipment was available at the moment of study.

15 Health facilities with at least 60% of workers managing children trained in IMCI – 73.3%. The number of health workers trained for IMCI should be 60% as a minimum. The availability of a critical mass of trained health workers at the institutions will be the additional factor in changing the skills of health workers for managing sick and healthy children. The indicator enables assessment of the coverage by training, and it is essential for planning new training activities.

16 Health facility received at least one supervisory visit that included observation of case management during the previous six months – 26.7%. Supervisory visits to health institutions should be arranged. The goal of the visits is to consolidate the skills obtained in the training courses, assistance in addressing the problems, and support in practical issues. An important element of a supervisory visit is observation of the

admissions of the health worker, which is essential for full-fledged assessment of the quality of health services. The indicator reflects the quality of the supervisory visit rather than the number of supervisory visits.

5.2.2. Additional indicators

1. Child checked for other problems. The percentage of sick children delivered to the health institution after testing for "other problems" – 31.1%. The IMCI strategy, along with assessment of 5 main symptoms, does not neglect other conditions found in children (e.g. surgical, skin diseases, burns, etc.). Asking questions on other problems, the health workers should follow the principle of integrated assessment of the sick child. The indicator provides information on the extent of care provided by the health worker to the child and attempts to identify all problems related to his health.
2. Child with very low weight is assessed for feeding problems. Percentage of underweight sick children whose malnutrition was assessed – 21.7%. Every child classified as underweight has some nutrition-related problems. Having determined the low weight of the child, the health worker should assess child's nutrition and provide recommendations according to patient's age. Non-compliance with this protocol may lead to worsening of the problem of child's growth and development. The indicator enables to assess the compliance with IMCI protocol for assessment of nutrition problems.
3. Percentage of children with low weight, who were accurately classified – 42.5%. Child's low weight is determined with the child growth and development standards developed and recommended by the WHO. The health workers should have the skills for utilization of these graphs, interpret the data obtained, estimate indices, accurately classify child's conditions, and determine the degree of malnutrition. Accurate classification will enable to assess nutrition practices and counsel the parents accordingly.
4. Child is correctly classified. Percentage of children, whose classifications established by the health worker, correspond to the classifications set by an IMC trained surveyor (validated classification) – 58.7%. Having assessed the condition of the sick children with the help of detected symptoms, the health workers should accurately classify the sick child based on all existing major symptoms for appropriate treatment and follow-up. Each classification set by the health worker was compared with the classification determined at the time of repeated examination by the researcher (expert). The indicator provides the information on the accuracy of evaluation of child's conditions and appropriate classification by the health workers.
5. Child with pneumonia correctly treated. Percentage of children with pneumonia, who were prescribed appropriate antibiotic therapy – 25%. Based on the IMCI protocol, every case of pneumonia detected upon examination of the child requires prescription of an antibiotic. Prescribing appropriate one-time, daily, and total dosage is the responsibility of the health worker.
6. Child with anaemia correctly treated – 66.6%. Every case of anemia found at the time of examination of the child is treated by iron preparations. Prescribing appropriate one-time, daily, and total dosage is the responsibility of the health worker.

7. Child receives first dose of treatment at facility. Percentage of children who did not need urgent hospitalization and needed antibiotics, and received the first dose at the health institution – 8.8%. The health worker should effectively use the visit of the sick child to the health institution. For an early and timely start of treatment of the child who is prescribed antibiotics, the first dose should be given at the hospital. The second and equally important reason for giving the drug at the health institution is that the health worker instructs the caregiver on how, when and how much of antibiotics should be given.
8. Child with severe illness correctly treated. The percentage of children with severe classification in need of urgent hospitalization who received appropriate treatment and referral – 0%. Every classified child in need of urgent hospitalization prior to referral to inpatient care should receive the first dose of injected antibiotics. This tactic of managing the sick child enables to start treatment in timely manner, ensures entry of antibiotics to the body, and helps to prevent complications if they had not yet arisen.
9. Child prescribed oral medication whose caregiver is advised on how to administer the treatment. Percentage of children who did not need urgent hospitalization and who received or were prescribed antibiotics and/or ORS, received at least two pieces of advice for treatment – 31.6%. Caregivers whose children were prescribed oral preparations should know about and be able to give these preparations to sick children. To do this, the health worker should counsel the parents and explain how, when, and how much preparation should be given.
10. Sick child whose caregiver is advised on when to return immediately. Percentage of sick children whose parents received at least three messages about the urgent need to return to the health institution – 46.2%. Every mother should know, which signs are hazardous for child's life, and what she should do upon finding these symptoms. The responsibilities of the health worker are to explain clearly these signs to the caregiver and explain that a child with these symptoms should be urgently hospitalized for health services.
11. Child leaving the facility whose caregiver was given or shown a mother's card. Proportion of children, who do not need urgent referral, whose caregivers have a mother's counselling card with them at departure, or report having been shown a mother's card by the health worker – 22.3%. One of the most effective means of counselling the parents is utilizing visual aids (mothers' card), which contain the information such as age-specific nutrition-related recommendations, danger signs and what to do if they are found. Notes for mothers are visual aids, which ease the job of the health worker, help to understand the information obtained better, and recommended for daily use with IMCI guidelines.
12. Health facility has essential equipment and materials – 36.7%. Every health institution should have its minimum set of equipment and materials to provide quality health services to child population. According to the IMCI guidelines, for provision of health services to children, the health institution must have operational scales, timers, medical history records, materials for preparation of ORS as well as source of clean drinking water. The indicator reflects the availability of aforementioned materials and equipment on the day of research.
13. Health facility has IMC chart booklet and mothers' counselling cards - 26.7%. Chart booklet is a standard, which describes the procedure of examination of the child, helps to classify the state of the patient, and provides specific information on treatment and follow-up observation. mothers' counselling cards, ready-made visual aid for counselling, which contains all key information on dangerous symptoms,

follow-up visits, and child nutrition. These materials contain the essential information for the health worker and mother.

Detailed information on prioritized and additional indicators in contained in Annex 2, Table 1 and Table 2.

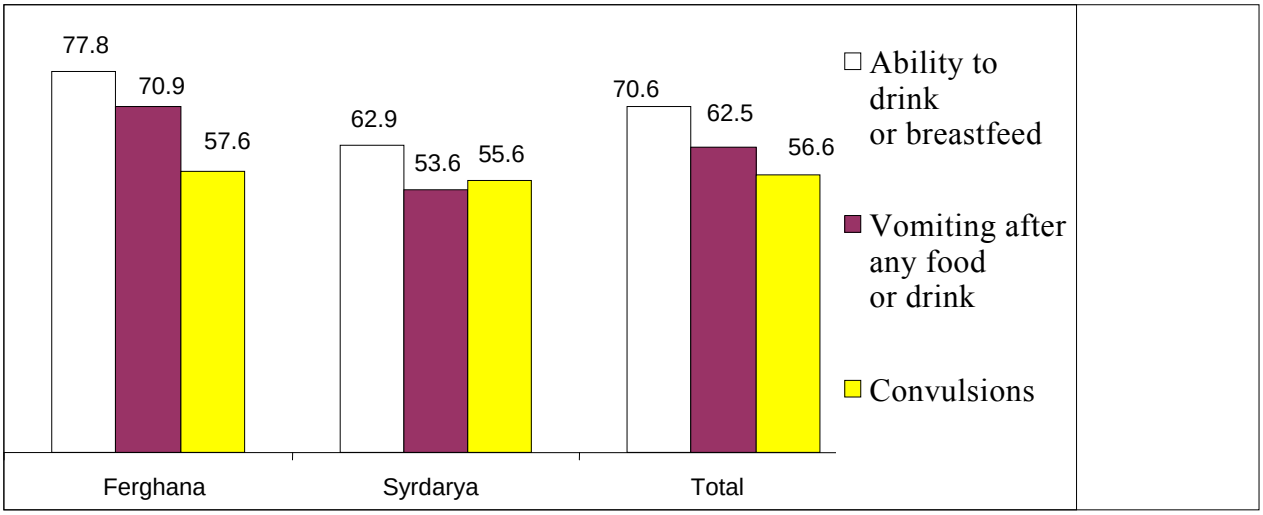
5.3. Analysis and interpretation of the findings

5.3.1. Indicators of Sick Child Assessment Skills

The sick child management process is given in the IMCI strategy as a series of schemes demonstrating succession of the steps and providing information on their implementation. These schemes are similar to those used in the traditional practices of care for sick children. The scheme on "Child Assessment" implies collection of anamnesis and physical examination. The scheme is drafted to help the health worker to adequately assess the state of the child and determine subsequent actions.

The integrated approach to sick child management starts with description of danger signs found in acute forms of upper respiratory ailments, diarrhoea , diseases related to fever, and other diseases found in children under 5. For sorting sick children and providing urgent care, the primary health worker must assess three danger signs ("Can the child drink or suckle a breast? Does he vomit after any food or drink and does he have convulsions?). The children with these symptoms may need vital treatment which may not be available at this health institution. The analysis of the data obtained showed that 46.6% of children from those 309 covered by the study were assessed for all three danger signs (Ferghana oblast – 48.1%, Syrdarya oblast - 45%). Although all these three signs were assessed in half of the children, each sign was assessed in most children. 70.6% of children were assessed for ability to "drink or suckle a breast". 62.5% of children were assessed for the symptom of "vomit after any food or drink", while 56.6% were assessed for convulsions of this episode of sickness (Figure 3).

Figure 3. Assessment of General Danger Signs



The statistical data indicate that children under 5 are often vulnerable to acute respiratory infections and diarrhoea, accompanied by symptoms such as coughing, watery stool, and fever. For complete integrated assessment of each sick child, the health worker should survey or assess the existence of symptoms typical for these diseases and upon finding them, examine the patient according to the steps described in the IMCI standards. The state of the child who may have one or several symptoms may worsen substantially and lead to lethal outcome if medical aid is not provided in timely manner.

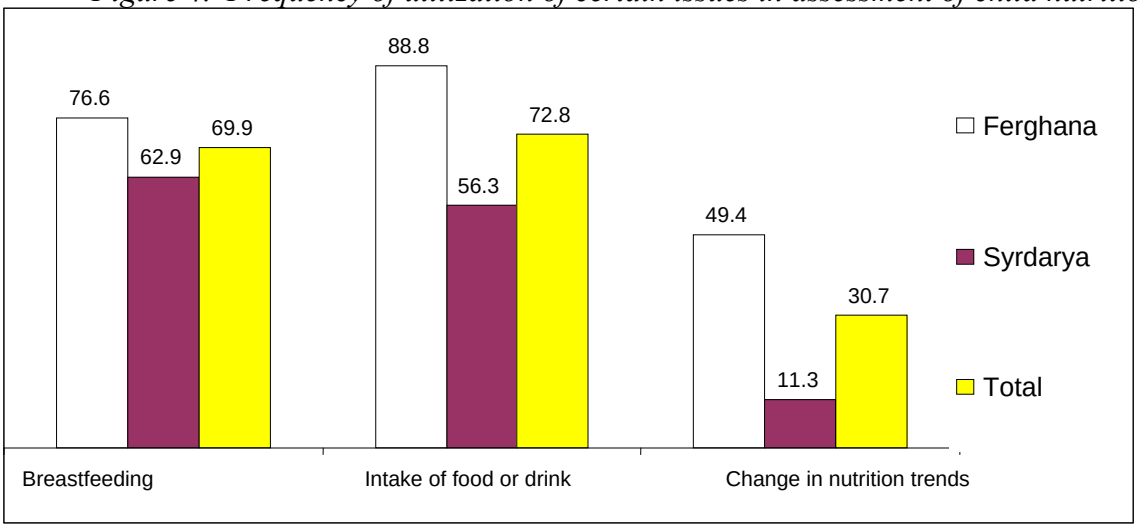
Thus, the core of IMCI is the assessment of the main symptoms mentioned above. 76.4% of children were examined for all 3 major symptoms (coughing, diarrhoea , fever) (Ferghana- 79.1%, Syrdarya – 73.5%). The analysis of assessment of each symptom individually demonstrated the following picture. The health workers asked about cough in 95.6% of cases in Ferghana oblast (Syrdarya oblast – 95.4%). 80.3% of children were surveyed or assessed for diarrhoea (Fergana – 83.5%, Syrdarya – 76.5%). 94.2% of sick children were surveyed against fever (Ferghana- 97.5%, Syrdarya – 90.7%). Good indicators of assessment of three main symptoms can be explained by the fact that caregivers indicate the aforementioned symptoms in the survey. In turn this leads the health worker to conduct more detailed survey or assess the complaints, which caused the visit. The data on the causes of visits by caregivers to the health institution may prove this cause. 71.2% of mothers referred to health institutions on the day of study, and 22% came with fever.

Child malnutrition is a major factor in gravity of all diseases and increases the risk of death. Thus, assessment of growth and development, comparison of the data obtained with standard curves recommended by WHO are among major skills for assessment of the sick and healthy child. The findings of the study demonstrated that two-thirds of health workers ignore this scheme of child assessment. Only 33% of children were weighed on the day of admissions and the data obtained were assessed using the recommended child growth curves (Ferghana – 44.3%, Syrdarya – 21.2%). Notably 75.4% of children were weighed and appropriate records were made in the medical history but when it went up to the growth curve, compliance rate with the standard went sharply down. Respectively, every second underweight child was inaccurately classified. It is particularly notable that 93% of health institutions had functioning scales but despite this only 75% of children were weighed. More than 70% of weighed children were under 2, and 46% were under 1. This once again reaffirms that health workers are used to the stereotype of the need to weigh children under 2 and focus less on the issues of growth of older children.

Assessment of nutrition problems of the underweight children is considered to be another difficult skill. As noted above, the health workers do not always duly assess the nutrition status of children, and as a result, nutrition problems are not determined. The process of assessment of physical development and assessment of nutrition practices based on the data obtained constitute a continuous and mutually linked process. It is particularly important to identify nutrition problems when the child has the signs of low weight. Unfortunately, only every fifth child (21.7%) was assessed for nutrition-related problem. Notably health workers tried to investigate the child nutrition practices of only 9.3% of children in Syrdarya oblast, and 34.6% of children in Ferghana. According to the focus group report, health workers noted that the skills for assessment of physical development status, particularly nutrition assessment and counselling are the most problematic standard. One of the reasons for this is that previously health workers did not undertake procedures for assessment of child nutrition

and did not provide practical nutrition-related recommendations to the mothers. Also the nutrition issues are in the background of the disease.

Figure 4. Frequency of utilization of certain issues in assessment of child nutrition



The significance of this indicator in Ferghana oblast is noteworthy, where the individual programme on child growth and nutrition has been actively implemented in the last few years and trainings were held in all districts. Also there is the prikaze # 145 of the Ministry of Health of 30.03.2007, where the growth and development assessment methodology is described and approved as an individual standard of child management on PHC level. This fact once again shows that the prikaze, training for health workers, and even monitoring do not ensure routine implementation of child management standards.

Checking the vaccination status of every child is also an element of integrated sick child management. High vaccination coverage of children reduces the risk of diseases such as measles, diphtheria, pertussis, parotitis, rubella, and others. These infectious diseases and measles are particularly difficult for children to bear, producing acute complications and reducing a child's immunity. Every health worker, taking the opportunity of the visit of the caregiver with the child to the health institution, should check whether the child has received vaccinations according to the national calendar. Every second child (51.1%) visiting the health institution was checked for vaccination status (Ferghana – 65.8%, Syrdarya – 35.8%). Meanwhile, the coverage rate of vaccinations in Uzbekistan has been consistently high and the coverage is higher than 90% for most vaccinations. The health workers analyze the data on vaccinations in their areas every month, submit reports to the local sanitary and epidemiological control centres. SECS conduct monitoring of the immunization coverage of child population, and in case of the group beyond coverage, penalizes the health workers including financial sanctions. These facts suggest that the health workers consciously miss the assessment of vaccination status as it is a separate standard of sick child management which is well-implemented thanks to strict and effective control. Its indirect proof is the fact that upon assessment the experts identified that 82.1% do not need vaccination on the day of visit to the health institution. Incomplete coverage (about 18%) of children can be explained

by the fact that vaccinations are done once or twice a week or month depending on the type of health institution.

Every health worker must assess the children by 10 points (3 general danger signs checked, 3 main symptoms checked, child weighed and weight checked against growth chart, vaccination status checked, child palm visually examined) upon admission of the sick child to ensure integrated approach to patient's assessment. As a result, the health worker can classify (diagnose) the state of the child, fully determine further tactic of treatment and recommendations. In general, health workers assess the condition of the child by 7 points (index - 6.8) of 10 (Ferghana – 7.7, Syrdarya – 5.9). Analysis of the index of assessments separately shows that the points such as palm examination and weight check based on the growth curve are not implemented. Health workers in the focus groups noted that the chart booklet is the algorithm of actions and significantly helps them in appropriate assessment of child's conditions and determine the subsequent steps.

Comprehensive management of a sick child includes not only assessment of the main diseases found in children but also assessment of other problems for which caregivers turn to health institutions. Sick children with other issues may be left unattended. The children with other problems may need special care. The responsibility of health workers is to identify these problems and provide consultative care or referral to an expert. Of 309 sick children only one-third or 31.1% were checked for "other problems" (Ferghana – 32.9%, Syrdarya – 29.1%). Based on the outcomes in hand you may conclude that the health worker focuses only on the main problems of sick children. The reasons for failing to examine for other problems can be poor communication of assessment skills during training, and infrequent assessment of other problems due to the lack of complaints from caregivers. Also it should be considered that mothers prefer to go to special health institutions with other problems.

Conclusions

In the course of training of health workers, special attention is paid to training based on the scheme, which includes assessment of the signs and symptoms of disease, nutrition status, and vaccination status. In training the health workers consolidate the knowledge obtained with situational assignments and practical sessions. In addition, by the end of the course the health workers should obtain the modules, booklet scheme, and records for sick child management. In addition, at the time of monitoring or supervisory visits they should have received practical assistance in consolidating sick child assessment skills. Identified practice of sick child assessment at health institutions of the regions under study facilitated the following conclusions:

- Health workers often use a particular skill for assessment of a sick child. For instance, 70.6% of children were assessed for their ability to drink or suckle a breast, and 80.3% of children were surveyed for diarrhoea ;
- More than 70% of children visiting health institutions were weighed, and their weight is reflected in the growth chart;
- Overall every child is assessed by 7 of 10 assessment criteria, indicating good retention of the knowledge obtained during training, relatively sustainable application of the knowledge received in training and relatively sustainable use of the knowledge received in practice;

- Upon implementation of IMCI strategy, the principle of integrated approach to assessment of child's conditions suffers first. Only half of the children were assessed against all three general danger signs.
- Assessment of a child's physical development based on the recommended growth charts is the most significant problem in child assessment despite the fact that most children are weighed upon visit to a health institution. Only every fifth underweight child is assessed for malnutrition. The situation in Syrdarya oblast is much worse than in Ferghana oblast. But the situation in Ferghana oblast requires comprehensive analysis, as there are still many missed opportunities despite the training and piloting of the growth monitoring programme.
- Assessment of the main symptoms individually and lack of consistency in sick child assessment indicates that the health workers do not use or have the IMCI scheme as well as the record forms. These documents provide entire information for assessment of the sick child and help the health worker to assess all signs according to the gold standard.
- It was established that assessment of child nutrition status is the weakest link in implementation of IMCI strategy. Only every third child was assessed according to the standards. Health workers acknowledged that this skill is new and given little attention, particularly upon admission of a sick child.

5.3.2 Indicators for assessment of tactics, rationale, and accurate treatment

After evaluation the health worker should undertake the following steps – *Classification of Disease, Determine Treatment and Treatment.* The health worker selects the category or classification for each of the main symptoms of the child and the gravity of his conditions. Classifications are not diagnoses of specific disease. They merely constitute categories, determining and referring for treatment. The guidelines contain appropriate treatment for each classification. Proposed treatment forms are most effective for main diseases included in certain classification.

The study included re-examination of sick children with experts to compare the skills of evaluation, classification, treatment, and counselling among researchers and health workers. This tactic enabled analysis of the accuracy of application of IMCI guidelines by the health worker. Inter alia, the analysis showed that 58.7% of health workers accurately set the classification (Ferghana – 58.0%, Syrdarya – 59.4%). Respectively, the conditions of every second child were accurately classified. As it could be concluded from previous data on sick child assessment that every second child was evaluated according to the IMCI guidelines, it becomes clear why only every other one was accurately classified. In the course of discussion of the issues related to classification, health workers involved in the focus groups believed that lack of definition of classification in official records and the need for setting diagnosis negatively impacts the skill of "*classification of the conditions"*.

Quotes from Focus Groups (Health Care Providers)
It is double work, we fill medical histories and record forms. We are writing one thing two times. Also a big problem is difference between classification and diagnosis. We use classification for daily work and diagnosis for monthly statistical reports. We have been waiting for final design.

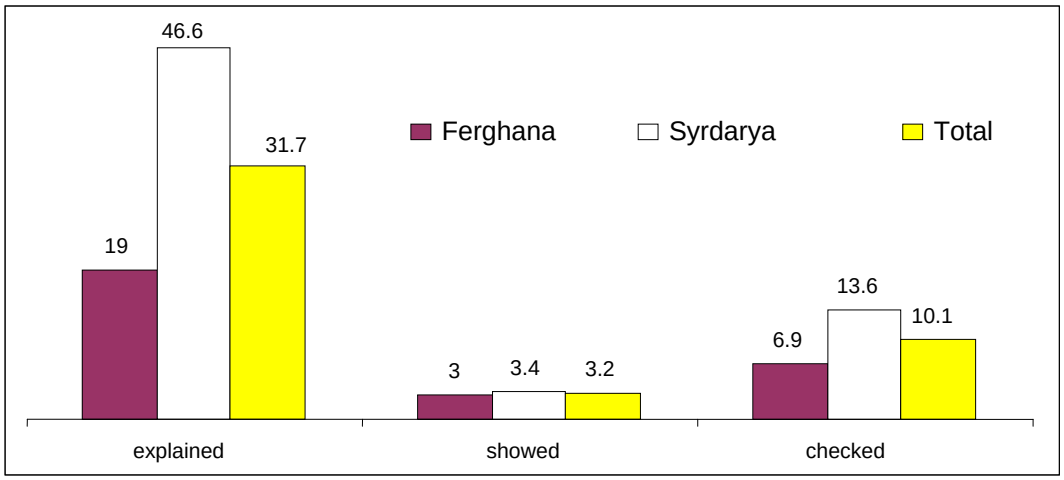
In practice there are conditions that do not require inpatient hospitalization of children. These children may need outpatient treatment using antibiotics. According to the IMCI strategy adapted for Uzbekistan, in the case of pneumonia and/or acute ear infection, the child may receive oral

antibiotic and get outpatient treatment. Appropriate prescription of antibiotics in case of pneumonia prevents complications and ultimately reduces mortality from pneumonia of children under 5. When antibiotics are prescribed, the health worker should choose appropriate single, daily, and overall dosage according to child's weight and/or age. On the days of the study 41.1% of children with pneumonia and/or acute ear infection received appropriate antibiotic treatment (Ferghana – 31.2%, Syrdarya 50%). Only 25% of children with pneumonia received antibiotics according to IMCI standards. This low indicator may be explained by the fact that health workers prescribe injected antibiotics (8%) or oral antibiotics not recommended by the strategy (28.5%), or prescribe the wrong dosage – 50% (single, daily, total).

Numerous factors such as distrust of oral antibiotics and pursuit of quick-acting or fast effect prescription of injected antibiotics or oral antibiotics come into play here. The diversity of information has a similarly large impact on pneumonia treatment provided to health workers at miscellaneous training courses and by pharmaceutical firms. Inadequate awareness of health workers about evidence-based medicine and strong stereotypical thinking of the need to treat pneumonia with several drugs has an adverse impact on management of the sick child in general.

IMCI guidelines recommend giving the first dose of antibiotics to a sick child at the health institution. This tactic has two objectives: 1) Early start of treatment; 2) Training for caregiver. For this every health institution must have a stock of antibiotics. The number of these children who needed the first dose of antibiotics was 34 at the time of study (including 24 pneumonia and 10 ear infection cases). Only 8.8% of children in need of first dose of antibiotics received it at the health institution. This situation can be explained by low availability of antibiotics at the primary health institutions (number of health institutions with antibiotics on the day of the visit – 16.7%). Non-implementation of this standard affects the quality of the counselling for caregivers and the parental knowledge, as a result, with regard to the antibiotics prescribed.

Figure 5. Implementation of oral antibiotic policies training for mothers



Another important indicator, which reflects justified and appropriate treatment is treatment without antibiotics. Only 45% of children, who did not need antibiotic treatment, left the health institution without prescription of antibiotics. Every second child in Ferghana oblast

and every third in Syrdarya oblast were prescribed unnecessary therapy based on antibiotics. There are evidence-based and effective methods of treatment of non-complicated acute respiratory infections, diarrhoea, and fever which require only appropriate home-based care including additional liquids and frequent feeding. These recommendations in the IMCI guidelines are new and difficult to perceive for health workers. Health workers see a potentially gravely ill child in every sick child with ARI or diarrhoea , particularly if the child is under the age of one. Thus, many doctors prescribe antibiotics to children to "prevent onset of infections" without thinking about the negative implications. Other reasons are stereotypical thinking of health workers and the fear of punishment for improper management of the sick child.

Thanks to implementation of the standards for assessment of the child, health workers can identify sick children classified as a patient in urgent need for hospitalization. Four sick children in need of urgent hospitalization were identified in the course of the study. Three out of four children were referred by health workers to the inpatient facilities. An early start of treatment of any disease facilitates favorable outcome. The IMCI strategy envisages that the child classified from the red line will be given his or her first dose of oral antibiotic or intramuscular injection at the health institution. However, no child received the first dose of antibiotics at the primary health institution. The cause of this situation may be an unsatisfactory supply of injected antibiotics of health institutions, reinforced by the study.

Conclusions

The use of the classifications recommended by the strategy helps to determine follow-up actions and patient's treatment. The guidelines are designed in such a manner to help health workers to manage children effectively. The study enabled identification of the real picture of application of the skills to determine the tactics and treatment of sick children. Based on the data received, the following conclusions can be made:

- Every second child coming to a health institution in the course of the study was classified and reflected the child's health;
- Health workers experience difficulties in application of the scheme of "classification of conditions". The factors contributing to this problem include shortage of knowledge and skills for assessment of child's conditions; lack or non-application of booklet scheme and recording forms on admission, and finally but still importantly, official requirements to include the diagnosis, not classification in the medical forms;
- Determination of treatment is directly linked to classification. About half the children received or were prescribed treatment according to IMCI standards;
- Timely, necessary and appropriate prescription of antibiotics is an acute problem in the management of sick children. Unnecessary use of injected antibiotics or prescription of medications not recommended by the strategy is a major problem. Errors in prescribing one-time, daily, and overall dosage of antibiotics are also a cause for concern. The main factors impacting this situation are outdated stereotypes, aggressive advertising of antibiotics, miscellaneous information received during training courses, re-insurance practices, interest of the parents in obtaining effective treatment in the form of injections or several medications and finally, a lack of integrated standards of treatment of sick children at the outpatient healthcare level.

- The availability of medications at the health institutions has an impact on non-implementation of the standard for first dose of antibiotics at outpatient institution. As the study indicated, in general all the health institutions are experiencing acute shortages of medications, and this has direct impact on compliance with the standard. But it is not the only factor and the knowledge and skills of health workers for parental counselling also merits attention.

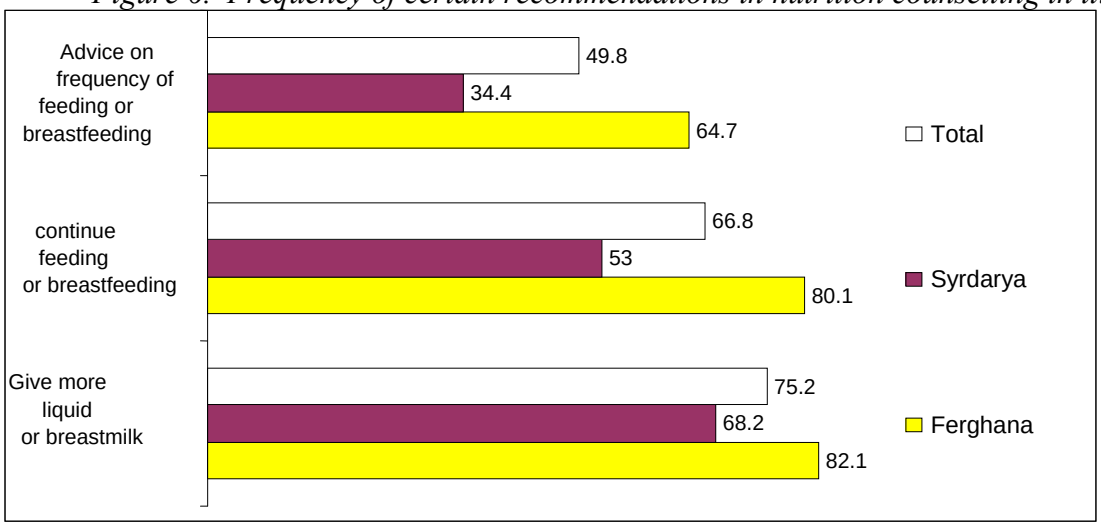
5.3.3. Caregiver counselling skills indicators

Continuing interpretation of the outcomes of the study, it makes sense to touch upon the indicators which describe counselling skills. An important element of integrated child management is counselling for caregivers. The health worker should survey the parents on child nutrition practices, teach them how to provide care to the patient at home, and provide other information essential for child care using interpersonal communication skills. The IMCI strategy includes a separate module dedicated to counselling issues. Without fully-fledged counselling for parents, it is impossible to reach quality health services.

The survey of the mothers with children under 2 on the nature of nutrition, particularly at the time of illness is essential for assessment of the child and subsequent counselling. Overall, 29.5% of health workers identified child nutrition problems (Ferghana – 40.7%, Syrdarya – 15.2%). Only every second parent with underweight child was counselled on nutrition according to his/her age. Neglecting this standard of managing a sick child is due to the inadequate counselling skills of health workers as well as perception of nutrition problems as secondary, while providing health services. Caregivers also do not recognize the importance of nutrition, whereas the problems related to nutrition become secondary at the time of sickness or considered by parents as natural.

Following IMCI guidelines, the health worker should particularly focus on counselling mothers on home care for a sick child. Young mothers, under the influence of other, particularly older, family members, foresee the stereotype that any sick child should be treated only with medications, sometimes in the inpatient care. Health workers prescribing miscellaneous medications for healing simple symptoms make their contribution to strengthening this mindset. Continued feeding and the need to provide the child additional liquids at the time of illness as the basis of home care, should be recommended to all caregivers with no exception. The findings of the study showed that more than half of health service providers performed this form of counselling (Ferghana – 71%, Syrdarya – 45%).

Figure 6. Frequency of certain recommendations in nutrition counselling in illness



Appropriate fulfillment of recommendations for medication-based treatment of children in home environment depends on whether the parents duly understood how to provide treatment. The knowledge of the mothers to provide treatment with the help of oral preparations depends on the quality of counselling provided by the health worker. Only 31.6% of caregivers received at least 2 pieces of advice on treatment. The outcome of the study showed that 56% of mothers could name the dosage of medications, and explain how many times a day and how many days she will be giving it. Detailed analysis showed that mothers know better how to give antibiotics in the right manner rather than ORS. This situation can be explained by the fact that antibiotics are used more frequently both by the health workers and mothers.

Parental knowledge of the signs indicating danger for a child's life and health is important for timely referral for health services. The health worker must explain at the time of counselling which symptoms in the children should cause mothers to return immediately . Of a total of 305 caregivers, 46.2% received at least 3 messages with regard to when to seek health services immediately. The health workers in Ferghana oblast more often implemented the standard (67.7%) than the doctors in Syrdarya oblast (24%). Detailed analysis of the signs explained by the health workers showed that primarily higher body temperature – 87%, worsening of overall conditions – 35.3%, and faster breathing – 15% were listed.

The workers of health institutions should use the "maternal counselling card" in the counselling process. Informing the caregivers using visual aids facilitates the memorization process. Only 22% of mothers confirmed the use of the guide in the counselling process (Ferghana – 31.6%, Syrdarya – 12.7%). The assessment of availability at health institutions demonstrated that 27% of the health institutions had the guide. Based on these data one can conclude that mere lack of essential visual aids is the main hindrance in implementation of this standard.

Conversation with the mothers of children under 5 demonstrated that the mothers noted changed attitudes of the health workers at the time of the meeting. Many mothers particularly noted the friendly attitude of the doctors. But the mothers also made their comments about the functioning of rural health clinics, with inter alia, lack of heating in winter causing the greatest amount of

Quotes from Focus Groups (Women with Children under 5)
I would like to know more on disease prevention, not only how to treat the sick child. It will be good if a nurse attending us at home would dedicate more time and train us.

criticism. It affects the quality of examinations, and it is among the reasons why the parents go to health institutions unwillingly. Mothers expressed willingness to obtain more information about home-based care, rational nutrition, and information on disease prevention. Inter alia, in response to the questions why parents turn up late for medical aid the following reasons were given, such as "we thought that the disease would pass without complications", "we do not pay attention to a child's sickness", "we turn to the healer or to religious leaders so that they pray" and "financial difficulties for purchase of medications". In response to the question "why do some mothers not follow doctors' recommendations?", the discussion participants answered that much time is spent for on-farm work, and there is a certain indifference to the illness of the child and to the advice of health workers. Many mothers think that diseases pass by themselves. Another reason cited was lack of pharmacies near the health institution.

The participants of the discussion proposed the following to improve mothers' knowledge and skills:

- ✓ Improve the quality of door-to-door visits by patronage nurses (nutrition and home-based care recommendations, etc. should be given during visits);
- ✓ Arrange meetings at the communities where the issues of child care, disease prevention, and other issues can be jointly discussed;
- ✓ Engage the community leaders in public activities. For instance, help health workers in hospitalization of acutely sick patients, when child's parents refuse hospital treatment.

Conclusions

Parental counselling is a new skill for health workers, as this issue is not given adequate attention in pre- and post-diploma education. The findings of the study enabled to conclude the following:

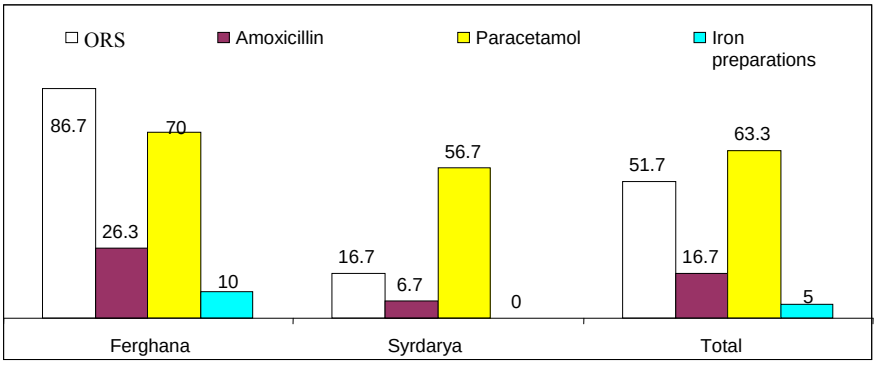
- Although counselling is a new skill, the health workers strive to implement this standard;
- The issues of child nutrition (assessment, counselling) are not given adequate attention by the health workers and parents;
- Despite incomplete counselling by the health workers, approximately half of the mothers remember the main information on child treatment with oral preparations in home environment;
- Lack of visual aids to improve the counselling process affects the quality of implementation of the standard;
- The main method for counselling parents, which is used most often by health workers, is the method of explanation or communication. Other methods, which must be used in counselling are ignored or used rarely.

5.3.4 Indicators of Availability and Procurement of Health Institutions

Health workers' knowledge and skills do not guarantee implementation of IMCI standards. For complete, effective, and timely implementation of all steps for assessment, treatment, and counselling, the health institutions should have the minimum set of equipment. In addition, the health workers should obtain the support of their supervisors and address emerging problems jointly.

Availability of medical drugs is a component of the strategy, which affects the quality of the services provided. Provision of 13 medical drugs included in the lists of IMCI strategy helps the health worker to start treatment at the health institution in timely manner. Of 13 drugs 4 are main oral drugs. The availability rate of these drugs at the health institutions covered by the study averaged 1.4 (Ferghana – 2, Syrdarya 0.8). Similarly, the list of 13 medical drugs includes 4 injected antibiotics, which are used in urgent hospitalization of children with acute classification.

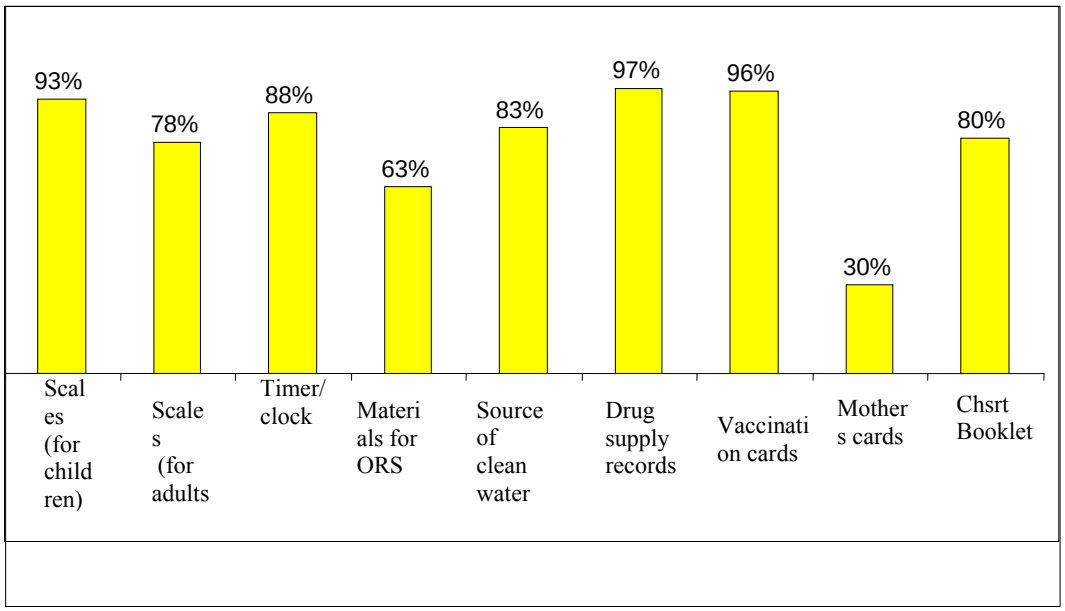
Figure 6. Availability of Oral Preparations recommended by IMCI Strategy at Health Institutions on the Day of Study



The study showed that the health institutions have a small supply of injected drugs. On average, at the time of the study, the index was 0.6 (0.7 in Ferghana and 0.5 in Syrdarya oblasts). The experts conducting the study noted that at some health institutions the health workers themselves prepare oral rehydratation solutiosn without observing essential proportion of ingredients. The healthcare reform under way in Uzbekistan enabled RHCs to procure medications under the regulations approved by the Ministry of Health. These regulations include 7 of 13 drugs essential for implementation of IMCI strategy. According to the information received from the officials of the Ministry of Health of Uzbekistan, prikaze # 535 on *RHC-related Regulations* of December 6, 2004, will be reviewed and it will include all medications recommended by IMCI strategy. The reasons for low index of availability of medications may be lack of awareness of the management of health institutions about the list of drugs essential for the IMCI strategy, inadequate knowledge and skills of health managers to estimate the essential medications, flaws of regulations related to procurement of drugs, and lack of some medications at the sellers of pharmaceutical products.

Main medical equipment and materials required for provision of services in the framework of IMCI strategy includes functional scales, timers (functioning clock with second hand), and materials for preparation of oral rehydration solution, source of clean drinking water, vaccination records, drug records, maternal guidelines, and booklet scheme. Figure 7 contains information on availability of aforementioned materials and equipment.

Figure 7. Availability of Materials and Equipment at Health Institutions



Overall, availability rate remains low – 36.7%, primarily due to the lack of maternal guidelines. Generally availability of equipment and materials is satisfactory. Management of health institutions can improve the supply of some materials, which can be covered by internal resources of the health institution.

Quotes from focus groups (healthcare managers)

All doctors must be trained, because of divergent views of caregivers. One mother said "*this doctor treats well, as he prescribed many medications for my child, while this doctor does not know anything, as he prescribed only one medication*".

Training coverage is among factors which facilitate successful implementation of the strategy. It is recommended that as a minimum 60% of health workers responsible for child admissions at health institutions were trained on IMCI to create the critical mass to change routine practices. According to the findings of the study, more than 70% of the health institutions covered by the study had more than 60% of their staff trained (Ferghana – 60%, Syrdarya – 86.7%). The health workers trained in 11-day courses organized by donor institutions and trained on 10-month courses were considered trained.

Supervisory visits have an important role to play in strategy implementation. According to the study data, 26.7% of health institutions were visited by supervisors in last 6 months including observation of admissions of a sick child (Ferghana 43.3%, Syrdarya - 10%). This low indicator may be explained by the ultimate goal of the supervision visits to look into the outcomes of the work, analysis of indicators based on principle of search for shortcomings. The health workers received inadequate support from supervisors to beef up the skills and use of the knowledge obtained. The issues of managing sick children, quality of counselling, availability of essential medications and equipment were assessed by the supervisors periodically or were not assessed at all. The key officials of the district and oblast health departments are not familiar with the principles of supportive supervision, and did not use the methods of feedback in discussion of the problems with the service providers. Often the supervisors did not even have the idea about the goals, objectives, and main principles of IMCI strategy. Equally important is the lack of

uniform instrument for assessment of the quality of health services for children and decision-making to improve the situation.

At the time of meetings with focus groups, some participants noted that they had noticed the strategy limiting hyper-diagnostics and poly-pragmasy, making treatment more effective and affordable, saving family and government funds. Most participants underscored that the standards recommended by the strategy are ideal for general practitioners, particularly if they are trained among doctors, who had not worked as pediatricians. The participants noted incomplete training coverage, non-compliance of the prikazes regulating the operation of health institutions, disengagement of the SES (sanitary and epidemiological service) officials, ignorance of the key officials of health departments about the principles of the strategy and duplication of records as the barriers in strategy implementation.

An example that epidemiologist doctors, based on the prikaze # 181 of April 7, 2007, demand to hospitalize the diarrhoea patients and take test samples of feces of every child with diarrhoea for bacteriological inoculation and especially hazardous infections as the example of non-compliance of the prikazes and standards recommended by IMCI.

Availability of medications caused active discussions. The fact that many other drugs, which are rarely used were included in the list of vital drugs instead of essential medications, was named as the cause of shortage of medical drugs required for management of children, and the prikaze # 535 of December 6, 2004, which regulates the activities of RHC do not include all preparations recommended by the strategy. Also the opinions were voiced that rapid increase in prices constitutes the reason for the shortage of medications. While the managers of health institutions prepare contracts and other documents, the prices for medical drugs go up, thus, reducing the assortment and amount of medications procured.

The health workers and organizers particularly noted the importance of coverage of as many health workers as possible by training. Incomplete coverage in training produces the situation where doctors manage the same symptoms differently. This affects not only the sustainability of the strategy but also undermines doctor's authority in the eyes of caregivers. The importance of training for the doctors of private clinics was mentioned, as there the greatest number of medications for children is prescribed for children.

Quotes from focus groups (health workers)

Support from managers is inadequate. The system of supervision should be revived. Before there used to be this training method – supervision. Senior experts from superior institutions used to train us, help us, and resolved problems. Now there is a lot of work, the requirements are ever more stringent, and no practical support. My proposal is to revive the supervision or mentorship system and help in addressing the issues such as availability of medications and health records.

Health workers voiced many criticism and remarks about supervisory visits. The health workers expressed the opinion that the visits of supervisors are not supportive and not focused on addressing the problems. Numerous inspections related to miscellaneous themes often divert the attention away from routine work (notably monitoring visits are perceived by the health workers as inspections). The visits are not linked between each other and every visit pursues its own narrow agenda.

Discussion of shortcomings of the records and duplication of records on the child conditions came under special focus as a problematic subject, constituting a barrier in implementation of IMCI standards. The health workers do not have adequate number of records, the management of institutions are not able to provide them these forms due to the funding shortages. Often the

health workers have to make multiple copies at their own expense (particularly before the visit of a commission or monitoring). In addition, based on existing requirements, the health worker should make records about the state of the child in the medical records. As the record is not officially approved and does not enable to make records, if the record form is filled up, the health worker performs additional work duplicating the records. As a result, we observed the following situation at the time of the study. The health workers with the records do double efforts, and the health workers who do not, describe the state of the child according to the form, and the third option – health workers file these documents as before.

To the question as to what the group participants propose to do to address aforementioned problems, following opinions were voiced:

- ✓ Review the prikazes, which regulate medical care for children with diarrhoea ;
- ✓ For improvement of availability of medications, following was proposed:
  - Ensure availability of IMCI-recommended medications in the drugstores located near the health facilities via negotiations with the owners of private drugstores;
  - Review the list of medications in the prikazes related to the RHC activities;
  - Engage donors to provide low-osmolar ORS and zinc preparations.
- ✓ Train managers (supervisors) so that they would have an understanding of the strategy;
- ✓ Promote health workers, who successfully implement IMCI strategy;
- ✓ Develop the mechanism, who assess and improve succession between the work of PHC and inpatient health institutions;
- ✓ Increase training coverage to include the doctors of private clinics.

Conclusions

Analysis of the availability of equipment and medications at health institutions and the quality of supervisory visits resulted in the following conclusions:

- Health facilities primarily have the minimum list of equipment and materials. The availability of resources at the health institutions can be substantially improved with the efforts of the staff and support of the health system managers without substantial material costs;
- Availability of medications at the health institutions is the main problem in successful implementation of IMCI strategy in the routine practices of health services for children based on IMCI guidelines;
- Addressing the issues of availability of medications is feasible only by comprehensive activities on ministerial level (executive orders), oblast and district health departments (oversight and practical assistance), on the level of health institutions (training/informing the management) and through work with pharmaceutical companies (ensure availability of medications included in the list recommended by IMCI);
- More than 60% of health workers of primary health institutions are covered by training. GP training courses made substantial contribution to improved coverage. But in spite of these high indicators, training should be continued.

- The quality of supervisory visits should be improved. The goals and objectives of the visits should be reviewed, and health institution "inspection" methodologies should be defined and standardized. The "old" principles cannot be changed without involvement of the institutions responsible for training healthcare managers, changing policy documents, and instructions for quality assessment of health services for child population.
- Issues of non-conformity of requirements to determination of diagnosis in the official policy documents and the use of classifications in the IMCI guidelines, dual recording in the health records and forms recommended by the strategy have adverse impact on implementation of the guidelines and are the factor of misunderstanding and mistrust for strategy. Addressing aforementioned issues is extremely important for further sustainable application of IMCI guidelines in the routine practices of health workers.

5.4. Summary conclusions and recommendations

Acute respiratory infections, pneumonia, and diarrhoea cause more than 50% of all deaths in children under 5. Malnutrition is found in every second child death.[7] There are effective evidence-based methods through which outpatient health workers can treat these children and prevent fatalities from this cause. WHO and UNICEF incorporated the contemporary data on management of sick children into the strategy of Integrated Management of Childhood Illnesses. The health workers trained under the strategy may encounter difficulties in practice while attempting to use the knowledge and skills in routine practice. The conclusions and recommendations below are focused on removing the barriers in implementation of IMCI strategy identified in the study and focused on improvement of sick child management.

Conclusion # 1. Relatively low indicators of application of IMCI standards in the routine practice of management of sick children may be explained by inadequately reinforced knowledge and skills at the trainings and under-availability of chart booklets, mother cards, and record forms at the health facilities. Improvement of the training of health workers in the framework of medical university education may contribute to improved learning.

Recommendation. *It is essential to conduct comprehensive analysis of the quality of IMCI training on the level of post-diploma training for health workers. Training for health workers should be based on standard curriculum, which includes all IMCI standards, and conform to all WHO criteria for educational standards.*

Recommendation. *Conduct in-depth analysis of the quality of IMCI training at medical university education.*

Conclusion 2. Training for health workers should include adequate amount of theoretical and practical sessions. Reduced time for practical sessions may lead to incomplete implementation of skills in the routine practices for management of sick children.

Recommendation. *Practical sessions and all clinical IMCI courses should be organized in strict compliance with the IMCI training standards indicated in the training guidelines for outpatient and inpatient .*

Conclusion # 3. The study identified that some knowledge of health workers (nutrition assessment and counselling, classification, appropriate use of antibiotics, etc.) are unsatisfactory, which leads to inadequate and low quality examination and treatment of sick children.

Recommendation. *Based on the analysis of the quality of training at IMCI courses as well as based on the findings of monitoring and the data of aforementioned study, IMCI national centre should develop recommendations to improve the quality of teaching problematic sessions.*

Conclusion # 4. An inadequate regulatory framework for utilization of IMCI guidelines is a serious hindrance in implementation of the strategy. Today there is no regulatory document at national level which regulates the use of IMCI for outpatient health institutions. Certain orders which regulate the activities of the health institutions and the standards of the recommended strategies were found to be non-compliant (collection of samples for intestinal group and cholera in case of children's diarrhoea). Non-compliance of established classification with the diagnosis, which is incorporated in the official records, is particularly notable.

Recommendation. *It is essential to set up a working group with involvement of the experts from miscellaneous departments of the Ministry of Health of Uzbekistan. The working group should review the orders, which regulate the health services for children on the level of primary health institutions. Develop order, which regulates the use of IMCI guidelines and describes the methodology of monitoring, collection, and analysis of the indicators to assess the provision of health services for child population on the level of outpatient healthcare in Uzbekistan.*

Recommendation. *It is essential to enhance the technical capacity of the Republican IMCI Centre. Strengthening the IMCI centre will enable to improve the coordination of implementation of IMCI strategy. The ability of the centre to coordinate and provide technical support to the activities of the partners, conduct analysis of the monitoring data, identify main problems in implementation of the strategy, and seek solutions will positively affect the quality of implementation of IMCI.*

Conclusion # 5. Irregularity of monitoring of health workers trained for IMCI strategy is notable.

Recommendation*. Monitoring visits should be conducted regularly based on the recommendations for monitoring and follow-up visit in the framework of IMCI strategy. Special attention should be focused on training monitoring experts and follow-up observation on the regional level. The findings of monitoring visits should be analyzed and summarized by the Republican IMCI Centre and used to improve the process of training for health workers and remove the barriers for strategy implementation.*

Conclusion # 6. Sharp deficits of all recommended medications at the health institutions and the problems related to health records (mother cards, record forms) are observed. Not all

medications recommended by the strategy for management of child on outpatient level are included in the standardized form (list of main drugs) for emergency care at outpatient institutions and polyclinics. A shortage of these materials is also related to the shortage of funds at the health institution and lack of information of the healthcare managers.

Recommendation. *Addressing the issues of procurement of medications and materials is feasible only by comprehensive activities;*

- ✓ *On the level of the ministry of healthcare. Updated standardized form (list of main medical drugs) for urgent care at outpatient institutions and polyclinics based on IMCI guidelines;*
- ✓ *On the level of oblast and district health departments. Enhanced oversight of availability of medications at the health institution. Provision of practical support in the supply of IMCI medications and addressing the issues related financial institutions.*
- ✓ *On the level of health institutions. Training/awareness raising for RHC managers. Discussion of the needs with the health workers.*
- ✓ *Work with pharmaceutical companies (ensure availability of medications included in the list recommended by IMCI strategy).*
- ✓ *Engage the owners of private drugstores to facilitate availability of medications recommended by IMCI strategy at the pharmacies.*

Conclusion # 7. Visits of the healthcare managers to the health institutions occur regularly but in most cases these visits do not include direct observation of the admission of a sick child and are not based on the principles of practical and consultative care. Most supervisors are not aware of the principles of IMCI strategy and do not command the methods of supportive supervision. Although IMCI supervisory visits are developed and used in some regions, the standard methodology and instruments of supervision of pediatric service is not approved.

Recommendation. *It is essential to develop a statute on supportive supervision in the paediatric service. The methodology and instruments of supportive supervision should be optimized. Supervisory teams should be trained. The principles of supportive supervision should be included in the training courses for health managers. The potential of the trainers and monitoring experts trained in miscellaneous regions to conduct supervisory visits should be used.*

Recommendation. *It is essential to particularly focus on enhancement of the capacity of the management staff on oblast and district level. The managers responsible for maternal and child care services should command the knowledge and skills based on the management of child health and development programmes. Management of programmes for child health and development should be included in the standards for attestation and licensing management staff.*

Conclusion # 7. Counselling is a relatively new skill for management of a sick child, which leads to inadequate implementation of this standard. The health workers focus on raising parents' awareness and use other important elements of counselling to a limited extent.

Recommendation. *In training of health workers special attention should be given to practising counselling skills incorporating all elements both in theoretical and practical sessions. The experts who undertake follow-up observation should note and provide essential assistance to health workers in strengthening counselling skills. Fully-fledged inclusion of the parental counselling methodologies should be included in training programmes for the faculty of higher and secondary special educational institutions.*

Conclusion 8. Opportunities of information and educational materials (mother cards) are not fully used, which affects the quality of training for mothers. Other educational materials for the public available at the health institutions do not always contain the key information according to the IMCI recommendations. Some materials are published in Russian, which is an additional linguistic barrier on mastering the information.

Recommendation. *Based on local capabilities, ensure availability of maternal guidelines at all health institutions. The problem can be addressed by replication, production of a wall banner in doctor's office, laminated mother cards for demonstration to those being counseled. All educational materials for the residents available at the health institutions should contain the key consistent information. Materials for the public should be in local language.*

Recommendation. *District plans for implementation of IMCI strategy should include all three components of the strategy. Only comprehensive implementation of all approaches recommended by WHO can promote sustainable implementation of the strategy.*

Research limitations

Research limitations included to the small number of acute cases which required urgent hospitalization and lack of health workers for miscellaneous reasons (dismissal, sick leave, training at 10-month GP training courses). The absence of the multi-profile polyclinic in the list of selected health institutions in the Syrdarya oblast can be considered as another limitation. The reason for this may be that the health workers of these polyclinics were not trained under IMCI strategy, and there was no chance to compare activities of multi-profile polyclinics.

The research procedures lacked the ability to implement certain standards for examination of children with cough, diarrhoea , and fever (questionnaires do not contain provisions for implementation of standards such as breath counting, determination of chest cage retractions, detection of glottis spasms, skin elasticity, rigidity of neck muscles). Although the researchers observed the process of child examination by health workers and implementation of these skills, but this process was not documented. As a result, it was not feasible to analyse implementation of skills in practice.

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Annex 1. Tables on health workers and examined children

Table № 1. Distribution of Health Workers by Educational Status

Categories of health workers, who examined sick children	**Oblast**					
	Syrdarya		**Ferghana**		**Total**	
Trained doctors at 11-day IMCI courses	14	48.2%	13	31.7%	27	38.5 %
Trained doctors at 10-month GP training courses	15	51.8%	25	60.9%	40	57.1 %
Both courses	0	0	3	7.3%	3	4.4 %
Total	29	100%	41	100%	70	100%

Table № 2. Number of Examined Children disaggregated by Age, Gender, and Region

	Oblast					
	Syrdarya		Ferghana		Total	
Under 1	61	40.3%	64	40.5%	125	40.6%
12 months	38	25.1%	42	26.5	80	25.8%
24 months	28	18.5%	26	16.4	54	17.4%
36 months	15	9.9%	15	9.4	30	9.7%
48 months	9	5.9%	11	6.9	20	6.4%
Total	*151*	*100%*	*158*	*100%*	*309*	*100%*
Boys	73	48.3%	80	50.6%	153	49.5%
Girls	78	51.6%	78	49.4%	156	50.5%

Annex 2: Table of prioritized indicators

Table №1. Prioritized Indicators

№	Indicators	Ferghana oblast	Syrdarya oblast	Total
1	Child checked for three general danger signs	48.1% (76/158)	45% (68/151)	46.6% (144/309)
2	Child checked for the presence of cough, diarrhoea and fever.	79.1% (125/158)	73.5% (111/151)	76.4% (236/309)
3	Child weight checked against a growth chart	44.3% (70/158)	21.2% (32/151)	33% (102/309)
4	Child vaccination status checked	65.8% (104/158)	35.8% (54/151)	51.1% (158/309)
5	Index of integrated assessment. Mean of assessment tasks performed per sick child assessed	7.7	5.9	6.8
6	Child under two years of age assessed for feeding practices.	40.7% (24/59)	15.2% (7/46)	29.5% (31/105)
7	Child needing an oral antibiotic is prescribed the drug correctly	31.2% (5/16)	50% (9/18)	41.1% (14/34)
8.	Child not needing antibiotic leaves the facility with out antibiotic	56.8% (79/139)	32.5% (43/132)	45% (122/271)
9	regiver of sick child is advised to give extra fluids and continue feeding	71% (110/155)	45% (67/150)	58% (177/305)
10	Caregiver of child who is prescribed ORS, and/or an oral antibiotic and/or knows how to give the treatment	52% (15/29)	60% (26/44)	56% (41/73)
11	Child needing referral is referred	100% (3/3)	0% (0/1)	75% (3/4)

12	Health facility received at least one supervisory visit that included observation of case management during the previous six months	43.3% (13/30)	10.0% (3/30)	26.7% (16/60)
13	Index of availability of essential oral treatments (average for each health institution -4)	2	0.8	1.4
14	Index of availability of injectable drugs for pre-referral treatment (average for each health institution -4).	0.7	0.5	0.6
15	Health institution has full set of equipment and procurement for vaccination on the day of study	56.7% (17/30)	30.0% (9/30)	43.3% (26/60)
16	Percentage of health institutions where at least 60% of health workers responsible for admission of children are trained on IMCI standards	60.0% (18/30)	86.7% (26/30)	73.3% (44/60)

Annex 3. Table on additional assessment

Table №2. Additional Assessment

№	Indicators	Ferghana oblast	Syrdarya oblast	Total
1	Child checked for other problems	32.9% (52/158)	29.1% (44/151)	31.1% (96/309)
2	Child with very low weight is assessed for feeding problems	34.6% (18/52)	9.3% (5/54)	21.7% (23/106)
3	Percentage of underweight sick children accurately classified	56.6% (30/53)	29% (16/55)	42.5% (46/108)
4	Child is correctly classified	58.0% (87/150)	59.4% (92/155)	58.7% (179/305)
5	Child with pneumonia correctly treated	28.6% (4/14)	20.0% (2/10)	25.0% (6/24)
6	Child with anaemia correctly treated	59.2% (16/27)	77.7% (14/18)	66.6% (30/45)
7	Child receives first dose of treatment at facility	18.2% (3/16)	0% (0/18)	8.8% (3/34)
8	Child with severe illness correctly treated	0% (0/3)	0% (0/1)	0% (0/4)
9	Child prescribed oral medication whose caregiver is advised on how to administer the treatment	37.5% (12/32)	27.6% (13/47)	31.6% (25/79)
10	Sick child whose caregiver is advised on when to return immediately	67.7% (105/155)	24% (36/150)	46.2% (141/305)
11	Child leaving the facility whose caregiver was given or shown a mother's card	31.6% (49/155)	12.7% (19/150)	22.3% (68/305)
12	Health facility has essential equipment and materials	46.7% (14/30)	26.7% (8/30)	36.7% (22/60)
13	Health facility has IMC chart booklet and mothers' counselling cards	33.3% (10/30)	20.0% (6/30)	26.7% (16/60)

Annex 4. Classfication of sick children

Table №3. Classification of sick children based on repeated study by the expert on Golden Standard of IMCI Strategy

№	Classifications	Ferghana		Syrdarya		Total	
1	One or more danger signs	0	0	0	0	0	0
2	Acute pneumonia/grave disease	3	1.9%	1	0.7%	4	1,3%
3	Pneumonia	14	8.9%	10	6.6%	24	7.8%
4	No pneumonia	95	60.1%	108	71.5%	203	65.7%
5	Acute dehydration	0	0	0	0	0	0
6	Moderate dehydration	0	0	0	0	0	0
7	No dehydration	6	3.8%	4	2.6%	10	
8	Acute persistent diarrhoea	0	0	0	0	0	0
9	Persistent diarrhoea	1	0.6%	0	0	1	0.3%
10	Disentheria	0	0	0	0	0	0
11	Grave febrile disease	0	0	0	0	0	0
12	Extended fever	0	0	0	0	0	0
13	Possible bacterial infection	9	5.7%	5	3.3%	14	4.5%
14	Fever without complications	35	22.2%	29	19.2%	64	20.7%
15	Grave complicated measles	0	0	0	0	0	0
16	Measles with mouth and eye complications	0	0	0	0	0	0
17	Measles	0	0	0	0	0	0
18	Throat abscess	0	0	0	0	0	0
19	Streptococcal pharyngitis	0	0	3	2.0%	3	1,0%
20	Non-streptococcal pharyngitis	68	43.0%	80	53.0%	148	47.9%
21	Mastoiditis	0	0	0	0	0	0
22	Acute ear infection	2	1.3%	8	5.3%	10	3.2%
23	Chronic ear infection	1	0.6%	1	0.7%	2	0.6%
24	No ear infection	0	0	0	0	0	0
25	Grave malnutrition or acute anemia	0	0	0	0	0	0
26	Low weight or anemia	53	33.5%	55	36.4%	108	35.6%
27	No anemia or no low weight	105	66.5%	96	63.3%	199	64.4%
28	Other	7	4.4%	9	6.0%	16	5.2%

Annex 5. List of interviewers and supervisors

List of Interviewers and Supervisors

№	Full Name	Occupation
1.	Kuchkarov, Sh.B. (Supervisor)	Head of Health Department of Ferghana oblast
2	Sotvoldiev, Sultonali (Supervisor)	Deputy Chief Medical Officer of Dangara district
3	Muqaddas Khasanova	Kuva district of Ferghana oblast, pediatrician
4	Musallam Mirzasharipova	Ferghana oblast multi-profile centre, head of ward
5	Maqsudakhon Tojibaeva	Besharik district of Ferghana oblast, pediatrician
6	Mukharram Karimova	Besharik district of Ferghana oblast, pediatrician
7	Jurakhon Kodirova	Yazyavan district of Ferghana oblast, pediatrician
8	Khasanboy Karimov	Tashlak district of Ferghana oblast, pediatrician
9	S. Rakhmatullaeva (Supervisor)	Deputy chief medical officer, Ferghana oblast multi-profile centre
10	Akhmedova, I. (Supervisor)	Pediatrics Research Institute
11	Utepova, G.	Pediatrics Research Institute
12	Kim, O.	Pediatrics Research Institute
13	Boirov, Abdusattor	Muzrabad district, Surkhandarya oblast, head of RHC
14	Norqobilov, Abdusamad (Supervisor)	Surkhandarya oblast mult-profile centre, pediatrician
15	Aralov, Uraz	Kasbi district, Kashkadarya oblast, reanimotologist of child hospital
16	Ismoilova, Shoira	Pediatrics Research Institute
17	Bakirova, Anisa	Neonatologist, Navoi oblast
18	Eshonqulov, Yu. (Supervisor)	Pediatrician, Navoi oblast

Annex 6. Agenda of 4-day training for researchers

Date and Time	**Activity**	**Responsible parties**
Day 1 9.00-9.15	Opening of the Workshop, Welcome Remarks	MoH, WHO officials
9.15-9.45	Guidelines, administrative and background information for trainees	Umarnazarova, Z.
9.45-10.00	Introduction. Goals and Objectives of the Training	D. Urunova
10.00-10.15	Trainee's Expectations	Urunova, D.
10.15 – 10.30	Minutes and Technical Specifications of the Training	Umarnazarova, Z.
10.30 – 11.00	Organization of Research Team	Jointly
11.00 – 11.20	Break	
11.20 – 13.00	Instrument 1: Observation Checklist – Sick Child Role play on Instrument № 1	Umarnazarova, Z.
13.00 - 14.00	Lunch	
14.00 – 15.00	Instrument 2: Exit interview- Sick Child Role play on Instrument № 2	Urunova, D.
15.00 – 15.45	Instrument 3: Repeated examination of the sick child aged 2 months to 5 years Role play on Instrument №3	Urunova, D.
15.45 – 16.00	Break	
16.00 – 16.20	Registration map - review	Umarnazarova, Z..
16.20 – 18.00	Instrument 4: Checklist of Equipment and Supply Review. Role play on Instrument №4. Guidelines on Visit to Health Institution for Practice	Umarnazarova, Z.
Day 2 9.00 - 13.00 10.45 – 11.00	Visit to health institution. Practice of instruments № 1, 2 and 3 Discussion of filled-in instruments №1 and 2. Review of Registration Form Break	Trainees are divided into 2 groups, facilitators Umarnazarova, Z. Group 1 Urunova, D. Group 2
13.00 – 14.00	Lunch	
14.00 – 15.30	Visit to health institution. Practice of Instrument № 4. Checklist of Equipment and Logistics	Umarnazarova, Z. Group 1 Urunova, D. Group 2
15.30 – 15.45	Break	
15.45 – 17.30	Role play on Instruments № 1,2 and 3. Discussion of the visit to health institutions and filled-in forms № 1,2,3 и 4	Umarnazarova, Z. Urunova, D.

Day 3 9.00 - 13.00	Small group work Role plays on Instruments № 1 and 2	Umarnazarova, Z. Group 1 Urunova, D. Group 2
10.45 – 11.00	Break	
13.00 – 14.00	Lunch	
14.00 – 15.30	Role plays on Instruments № 3 and 4	Umarnazarova, Z. Group 1 Urunova, D. Group 2
15.30 – 15.45	Break	
15.45 – 17.00	Role plays for verification of accuracy in filling-in the questionnaires	Umarnazarova, Z. Group 1 Urunova, D. Group 2
Day 2 9.00 – 10.30	Role plays for verification of accuracy in filling-in the questionnaires	Umarnazarova, Z. Urunova, D.
10.30 – 10.45	Break	
10.45 – 13.00	General logistical regulations of a meeting. Discussion of open issues. Meeting with supervisors	Jointly
13.00 – 14.00	Lunch	
14.00	Travel to the sites	