



**USAID**  
FROM THE AMERICAN PEOPLE

TECHNICAL REPORT:

## **Lessons Learned from Implementation of IMCI in Kazakhstan and other Central Asian Republics**

**April, 2005  
Almaty, Kazakhstan**



**ENSURING ACCESS TO  
QUALITY HEALTH CARE  
IN CENTRAL ASIA**

This publication was produced for review by the United States Agency for International Development. It was prepared by Malika Baiserke, Public Health Programs Coordinator; Erin McCormick, Consultant; and Asta-Maria Kenney, Regional Deputy Director for Programs, for the ZdravPlus Project

TECHNICAL REPORT:

**Lessons Learned from Implementation of  
IMCI in Kazakhstan and other Central Asian  
Republics**

**April, 2005  
Almaty, Kazakhstan**



The views of the author(s) expressed in this publication do not necessarily reflect the views of the United States Agency for International Development or the United States Government.

## Table of Contents

I. Acronyms and Abbreviations .....	2
II. Introduction.....	1
A. What is IMCI and Why is it Important?.....	1
B. Kazakhstan’s Health Care System: a Different Arena for IMCI.....	1
III. The Beginnings .....	3
A. Laying a Foundation for IMCI.....	3
B. Fitting IMCI into the System.....	4
C. Reviewing the First Pilot .....	5
IV. Expanding IMCI’s Reach.....	8
A. New Pilots .....	8
B. Community Education Launched .....	9
C. Systems Issues Emerge.....	12
V. Assessing the Results.....	14
A. Clinical Practice.....	14
B. Community Understanding.....	16
C. Shifting Care from Hospitals to PHC .....	17
VI. Lessons Learned .....	19
VII. Quality Improvement: A New Systems Approach to IMCI.....	20
VIII. Conclusion.....	24
Bibliography.....	25
Annex 1: Has IMCI had an Impact on Mortality? .....	26
Annex 2: IMCI Implementation in Tajikistan and Turkmenistan .....	28

## **I. Acronyms and Abbreviations**

ARI	Acute Respiratory Infection
CME	Continuing Medical Education
FGP	Family Group Practice
FMTC	Family Medicine Training Center
IMCI	Integrated Management of Childhood Illness
KSMIRCE	Kyrgyz State Medical Institute for Retraining and Continuing Education
MOH	Ministry of Health
PHC	Primary Health Care
QI	Quality Improvement
QIP	Quality Improvement Pilot
TOT	Training of trainers
UNICEF	United Nations Children’s Fund
USAID	United States Agency for International Development
WHO	World Health Organization

## II. Introduction

### A. What is IMCI and Why is it Important?

Each year more than 10 million children die in low-and middle-income countries before reaching their fifth birthday. Alarming, seven out of 10 of these deaths are caused by conditions that could be readily prevented or treated: pneumonia, diarrhea, measles, malaria, and malnutrition. The World Health Organization (WHO) and The United Nations Children’s Fund (UNICEF) have sought to combat this unnecessary child mortality on an international scale by arming nations with Integrated Management of Childhood Illness (IMCI): a simple, yet comprehensive strategy for assessing the health of a child, recognizing danger signs and treating using evidence-based practices, in the most effective and efficient manner possible. IMCI emphasizes preventive care and home care for children who do not need professional medical attention. Children with more serious symptoms are treated as outpatients at the primary health care (PHC) level. Only in the most severe cases are children hospitalized. IMCI is now being implemented in more than 100 nations around the world.

Once adapted to a country’s language and specific needs, IMCI’s PHC component offers health care workers a complete, self-contained system for managing a child’s health for the common conditions it is designed to address. It includes algorithms for determining when a child needs hospitalization, drug prescription guidelines, key information to give to parents or caretakers and even forms for managing child consultations. The program is based on approaches demonstrated to be effective and efficient and appropriate to low-resource settings.

The ZdravPlus (officially the Central Asia Quality Health) project has embraced IMCI as a vehicle to update health workers’ practices and reduce morbidity and mortality among young children. ZdravPlus is funded by the United States Agency for International Development (USAID) to support the governments of the five Central Asian countries in their health reform agendas. The project works to improve the quality and efficiency of health services, with a special emphasis on strengthening PHC. It has worked with Ministry of Health (MOH) counterparts throughout the region to implement IMCI and seek to institutionalize its evidence-based approaches in the health system and medical education. In the process many valuable lessons have been learned.

This report follows the evolution of IMCI in Kazakhstan—from the early programs focused almost entirely on training PHC workers, through expansions to encompass community education and more rational drug use, and finally to the current approach, which seeks to address health *systems* issues to allow IMCI to become truly integrated into Kazakhstan’s health care system. This report highlights key accomplishments, outlines obstacles discovered along the way and launches a discussion of the steps needed to reach greater success with IMCI in the future. It also includes vignettes from other Central Asian countries, where they made unique contributions to IMCI or where their experience differed significantly from that in Kazakhstan.

### B. Kazakhstan’s Health Care System: a Different Arena for IMCI

Since the start of the IMCI program in Kazakhstan, ZdravPlus has partnered with health care providers, communities and government agencies to help incorporate evidence-based strategies for recognizing and combating the conditions that most commonly lead to childhood deaths. Since 1998, ZdravPlus has supported training for more than 1,500 physicians and a number of IMCI’s key interventions have become common practice in Kazakhstan. Yet fitting the complete strategy of IMCI into the complex infrastructure of Kazakhstan’s health system has proven difficult in many ways.

IMCI was originally designed for use in regions like Africa and Latin America with poorly or under-developed health systems and extremely scarce medical resources. When Kazakhstan's MOH decided to adopt IMCI as a pilot strategy for preventing childhood deaths in 1998, it was breaking new ground in the Central Asian region. After enlisting the help of the ZdravPlus\* project, Kazakhstan became one of the first countries of the former Soviet Union to begin implementing the program.

Introducing IMCI in Kazakhstan meant adapting it to a health care system dramatically different from those in the developing nations for which the program was originally designed. Kazakhstan has a huge, highly-developed, complex and heavily regulated health system that is largely a remnant of the former Soviet Union's expansive health care programs. The system has the huge advantage of offering everyone access to government-supported health care. The ample supply of low-paid health workers means that every child has ready access to clinics, doctors and hospitals. And usage is pretty much universal—even in rural areas.

Unfortunately, lack of exposure to western clinical practices and updated information in the Soviet era, followed by the collapse of government infrastructure after the Soviet break-up in 1991, left Kazakhstan with some outmoded medical practices. Every day, thousands of parents seek health care for their sick children, taking them to hospitals, clinics, and doctors—but the protocols for management of dangerous conditions like pneumonia and dehydration are outdated and not evidence-based. Follow-up surveys, observations of treatment and interviews reveal that many sick children are not properly assessed and treated by their health care providers, and that their parents are poorly advised.

Unlike IMCI, Kazakhstan's health care system has traditionally relied heavily on the use of referrals to hospitals and specialists, rather than encouraging treatment by PHC doctors. Those facilities that treat the most patients and make the most diagnoses, have traditionally gotten the most money. This still-existing financial incentive often means that children are over-diagnosed, over-treated, over-drugged and over-hospitalized, sometimes to the detriment of their health. Many treatments—such as injections of vitamins, and extensive use of injectable antibiotics—are over-used and increase both costs and risks for patients. Furthermore, many of the existing practices for managing childhood illnesses are enforced by rigid government regulations and inspection systems that can result in fines or punishment for doctors who try to implement new ideas.

Thus, while children in Kazakhstan have remarkable access to doctors and medicine, the need for IMCI is still great:

- In 1998, when the first IMCI pilot programs were planned, Kazakhstan reported to WHO that nearly 7,000 children under the age of five died in Kazakhstan each year.
- More than one out of five of those 1998 child deaths were due to pneumonia, according to Kazakhstan's death registry.
- While no reliable data are available on deaths due to diarrhea in Kazakhstan, the nation's MOH recognized that this was also a problem. It is thought that the death rate from diarrhea is similar to that experienced in other areas of the world—where 19 percent of child deaths are related to diarrhea.
- According to WHO's Health For All Database, child and infant deaths in Kazakhstan have declined in recent years, but still pose a problem. The infant mortality rate in 1998 was 22/1,000 live births and this fell to 17 in 2002. The under-five mortality rate declined from 29/1,000 live births to 22 in the same time period. It should be noted, however, that

---

\* The ZdravPlus project began in June 2000, and was preceded by the ZdravReform project. Work on IMCI began under ZdravReform and continued under ZdravPlus. For purposes of simplicity, both projects are referred to as ZdravPlus in this document.

Kazakhstan reports to WHO using Soviet definitions which differ from international definitions that indicate much higher levels mortality. The 1999 Kazakhstan Demographic and Health Survey estimates the infant mortality rate for the period 1994-99 at 62/1,000 live births and the under-five mortality rate at 71/1,000 live births.

### III. The Beginnings

#### A. Laying a Foundation for IMCI

In the early 1990's, WHO and UNICEF introduced small-scale programs in Kazakhstan to educate health workers on the treatment of diarrheal diseases and, separately, on managing acute respiratory infections (ARIs) in children. ZdravPlus, which began working on health reform in Kazakhstan in 1995, was an advocate for these early programs, which were the precursors to IMCI. In the mid 1990's, as the IMCI approach began to be tested in countries around the world, WHO encouraged the Government of Kazakhstan to develop a pilot to introduce this more integrated system for addressing child health issues. In 1998, the MOH took the first step by enlisting ZdravPlus to team up with national and local health authorities to run an IMCI pilot in the East Kazakhstan city of Semipalatinsk and UNICEF to do the same in Almaty Oblast.

Getting the pilot going required cooperation between a host of government bodies and health organizations. UNICEF agreed to provide the basic drugs necessary for IMCI to health workers who had been trained in the pilot sites. WHO provided the training materials, translated into Russian. A panel of national pediatric experts convened to begin adapting the IMCI guidelines and training materials to the needs of the country. They created a list of available drugs suitable for IMCI and a list of recommended foods that reflect the traditional diet in Kazakhstan.

This panel, in consultation with WHO, made numerous adaptations to IMCI to make it compatible with Kazakhstan's needs. Fortunately, several of the conditions that IMCI is designed to treat, do not pose major health problems in Kazakhstan. Malaria is rare enough that it was decided to eliminate it from the nation's IMCI program. Malnutrition is not a major cause of death for children in Kazakhstan either, but anemia *is* often a problem. So Kazakhstan's program was designed to focus on treating diarrhea and ARIs (including pneumonia,) with an additional emphasis on nutrition as well as the overall health of the child. It also was decided that the pilot would focus on the primary care level, and not include the hospital level.

Semipalatinsk was chosen as an initial pilot site because it was perceived as having numerous child health problems and a health system eager to introduce reforms. It had already made major strides towards converting the old Soviet system of specialized polyclinics into a new network of PHC clinics staffed by family doctors and called Family Group Practices (FGPs.) These reforms and Semipalatinsk's openness to new methods made it a good environment for the first IMCI trainings, which focused exclusively on doctors and other health care workers at the PHC level. At around the same time, UNICEF and the World Bank were each starting separate IMCI pilots in rural areas of Almaty Oblast, in consultation with ZdravPlus.

#### Key Components of IMCI in Kazakhstan

Acute respiratory infections (ranging from coughs and colds to pneumonia)

Diarrhea

Fever (including measles)

Throat problems

Ear problems

Nutritional status (including anemia) and breastfeeding advice

Immunization status

#### Components eliminated or de-emphasized

Malaria

Malnutrition

For the pilot supported by ZdravPlus, Semipalatinsk's health department set the goal of training 100 people, including physicians and midlevel health care workers known as "*feldshers*" (similar to physician's assistants.) The pilot began in February 1999 with an international course conducted by WHO in collaboration with ZdravPlus to train the first set of nine trainers. The trainers, who included six practicing pediatricians and three medical school professors from Semipalatinsk, met in the commercial capital of Almaty for that first training. To facilitate subsequent trainings, ZdravPlus set up a training center in the Semipalatinsk Children's Hospital and equipped it with training materials, including video equipment, white boards, overhead projectors and the timers needed for teaching doctors how to do breath counts to assess whether a child has pneumonia.

The four trainings for this pilot, which trained 77 doctors and 20 feldshers, followed the WHO/UNICEF format. Each course was designed to last 11 days and train 18 people in two groups. Each trainee got a set of seven training manuals, including a chart book designed to be used by doctors as a desktop reference to help assess and treat various symptoms correctly. Additionally, they each received a laminated "mother's card" to use when counseling parents on the rules of home care for sick children and on healthy feeding and childrearing practices. The trainings were designed to engage healthcare workers with a lively mix of lectures, discussions, videos, work groups and role plays. Most importantly, trainees spent half of each day practicing and observing the actual use of IMCI techniques for treatment of children in local clinics. The first two training sessions were followed by additional five-day programs to teach the most enthusiastic and promising students to become future trainers.

The program also sought to monitor and assist each participant by having trainers make one or two follow-up visits to each trainee's work site in the months after the course to observe how the providers were implementing IMCI and to answer questions and provide support.

One of the challenges in the early training courses was to overcome the preconceptions of participants, who were in some cases skeptical of whether IMCI could be helpful in a country with an already-developed health system. Other participants were shocked by the interactive teaching techniques, which differed dramatically from the old Soviet system of teaching by lecture only. But typically, the course organizers were able to overcome the participants' initial skepticism and, by and large, the courses went off successfully and most participants left as enthusiastic converts to IMCI.

## **B. Fitting IMCI into the System**

Training health workers is at the core of IMCI. They need to be able to recognize and treat childhood illness correctly, to help the family understand and do what needs to be done, and to solve specific problems, particularly around feeding at home, and referral of the severely ill child to hospital. However, there are also two other critical components of IMCI:

- The program promotes actions in the community to support key family practices that promote child health, such as improved nutrition or community education;
- It also promotes changes in the health system to make it easier for families to care for their children, for example making drugs available for children or job aids to help health workers follow correct procedures.

At its inception, the Semipalatinsk pilot was primarily focused on training health care providers. Initially, there was no public education component, except for the basic training that doctors received on how to counsel parents and caregivers. At the time, no specific components were envisioned to address systemic issues related to IMCI. But, in order to set up the trainings and make it possible for health care workers to practice what they learned, a number of systems issues had to be addressed:

- At the beginning, Kazakhstan’s MOH established a national IMCI “secretariat,” appointing a group of government health workers to coordinate the pilot. This body eventually evolved into the National IMCI Center which was placed under the National Institute of Pediatrics and Pediatric Surgery. This center’s director and its employees were devoted full time to implementing IMCI. The center worked with ZdravPlus to serve as the primary organizer for the trainings. It was also given the responsibility of overseeing follow-up evaluations and monitoring the success of the program. In addition, the center’s director served as an advocate for IMCI within the government. Governmental IMCI coordinators were also appointed at the oblast and local levels. Having these national and regional coordinators has proven to be a tremendous asset to the IMCI program.
- The first pilot – and the ones that followed -- were authorized by prikaz or government order. These orders, which were issued on the national, oblast and local levels, had several important functions. Most importantly, they gave health workers involved in the pilots permission to follow IMCI techniques when seeing children, instead of strictly following the old practices mandated by government regulations. This is crucial because in Kazakhstan’s health system, clinical practices were highly regulated and doctors diverging from standard practice could be subject to investigation for practices such as, for instance, failing to hospitalize a child with diarrhea. By contrast, IMCI techniques recommend treating most children with diarrhea with oral rehydration therapy and sending them home with instructions to the parents to return to the doctor if the condition worsens.
- Additionally, while the IMCI trainings are designed for frontline, PHC doctors, IMCI advocates realized right away that knowledge of the program and its importance would be needed by personnel up and down the health system’s chain of command. If frontline physicians were trained to do things their supervisors didn’t support, the whole program would be undermined. So, early trainings included department heads and supervisors in the pilot regions. Eventually, even the doctors working as governmental inspectors, whose jobs are to check that health workers are following proper protocols, were included in the full training sessions. Not only did this broaden the base of support for IMCI, it created a number of high level enthusiasts who went on to become leaders and advocates for the program.
- UNICEF agreed to provide the basic drugs necessary for health care workers to implement IMCI, but at this early stage no provisions were made for exactly how those drugs would be handled once they arrived in-country to ensure that they reached the pilot sites safely, promptly and in appropriate quantities.
- ZdravPlus supplied trainees with timers to use for breath counts and encouraged the local health department to provide other basic equipment needed in clinics, such as good, working scales.
- Because of cost and distribution issues, the standard IMCI forms were not provided to trainees, except for the sample form included in training materials. It was assumed at that time that each primary care clinic involved in the IMCI pilot would copy and stock the form for use by the doctors.

### **C. Reviewing the First Pilot**

In 2000, five days of meetings were held to review the progress of the first IMCI pilot. The meetings were organized and attended by representatives of Kazakhstan’s MOH, the nation’s medical and research institutes, WHO, UNICEF and ZdravPlus. The attendees declared the project a success. The first follow-up reviews showed that, in the presence of observers, between 94 and 100 percent of the health workers trained could demonstrate proper use of IMCI techniques, including assessing danger

signs, providing appropriate treatment, assessing the overall health of the child and counseling mothers. In addition, doctors who participated in the IMCI training reported being more comfortable working with children after attending the course. Reviewers praised IMCI for reducing the level of hospitalization for minor illnesses. Government officials were pleased that the program offered a direct way to combat infant mortality. If anything, the biggest complaint of participants in that 2000 review meeting was that they wanted to expand the practice of IMCI in the country. They wanted to see it taught to students in medical schools. They wanted it to reach out into the community, to educate parents and others. And, they said, they wanted the rules and practices of the existing health system adjusted to make it easier to integrate the new IMCI techniques. At the time, the meeting participants didn't elaborate on exactly how they planned to achieve this better integration. But this was the first mention of the need to address systemic problems in the way IMCI fit with Kazakhstan's current health system – an issue that would, in future years, become a major concern for both ZdravPlus and other project participants.

## **Kyrgyzstan's Strategy for Sustainability: Integrating IMCI into Family Medicine Training**

After independence, Kyrgyzstan decided to introduce family medicine throughout the country. This effort has involved re-training almost all of Kyrgyzstan's general pediatricians, obstetrician-gynecologists and internists to become Family Group Practice (FGP) physicians, able to treat a mixed group of patients using evidence-based medical practices. Over an eight-year period, the Kyrgyz State Medical Institute for Retraining and Continuing Education (KSMIRCE) has provided four months of retraining for almost all of the country's 2,700 primary care doctors, using a four-month curriculum.

Training in IMCI was not originally included in the re-training program, but the national re-training system provided the ideal opportunity to extend IMCI principles throughout Kyrgyzstan. Through its network of oblast Family Medicine Training Centers (FMTCs), the KSMIRCE extended IMCI training countrywide. Initially, USAID's ZdravPlus project provided 'TOT' courses for the KSMIRCE's family medicine teachers. During 2000-2001, these teachers trained 384 FGP doctors using a modified five-day IMCI course as part of the four-month retraining curriculum. In May of 2002, this was expanded to eight days. Since then, another 830 FGP doctors from around the country have completed IMCI as part of the retraining course. By the end of the national retraining process in December 2005, another 70 FGP doctors will have completed the eight-day course. The World Bank covered FGP doctors' expenses for this widespread training, since it was fully integrated into the national health reform program, "Manas." By the end of 2005, 1,453 physicians, including a number trained through the USAID-funded Child Survival Project, will have completed IMCI training. Most of the remaining FGP doctors missed the IMCI training because they completed the re-training course in the late 1990's, before IMCI was added. Most of these doctors are in the capital city of Bishkek, where it is hoped to provide IMCI training as part of a new Continuing Medical Education (CME) system, which is being established for urban FGP doctors.

Although the IMCI course was abbreviated for financial reasons—eight days as opposed to the 11 of the full course—it includes all the essential IMCI information and key messages. The KSMIRCE leadership felt that since the trainees were practicing physicians being trained in international evidence-based practices, they could internalize a condensed curriculum during a briefer time period. The trainees are also given an IMCI summary chart to help them remember and use the information.

Due to the large scale of this IMCI training effort, it has not been possible to monitor all the trainees as frequently as would be ideal. All of them take a written test at the conclusion of their training. For doctors, on site IMCI monitoring has been integrated, to some extent, into the annual FGP site visits done by FMTC trainers as part of the CME system for FGP doctors. At most, though, this can be done once a year because of limited finances and personnel. On-site monitoring about two months after completion of IMCI training in Naryn and Talas oblasts, revealed mixed results. Some of doctors felt that the amount of clinical experience during the course was inadequate. The conclusion was that more frequent monitoring and support would improve the FGP doctors' implementation of IMCI practices. As a result, the MOH is considering a proposal to have rayon chief pediatricians take responsibility for monitoring the implementation of IMCI in their rayon

The national scope of IMCI implementation also resulted in some problems regarding the availability of IMCI drugs. This has been addressed in part by the efforts of the Mandatory Health Insurance Fund and the NGO CitiHope International, through the Outpatient Drug Benefit package. Similarly, regulatory barriers to full IMCI implementation are gradually being addressed by the MOH.

While IMCI in Kyrgyzstan is facing barriers similar to those found in Kazakhstan, the nationwide network of FMTCs is proving to be a viable method of getting the IMCI message out to the country's FGP physicians.

## IV. Expanding IMCI's Reach

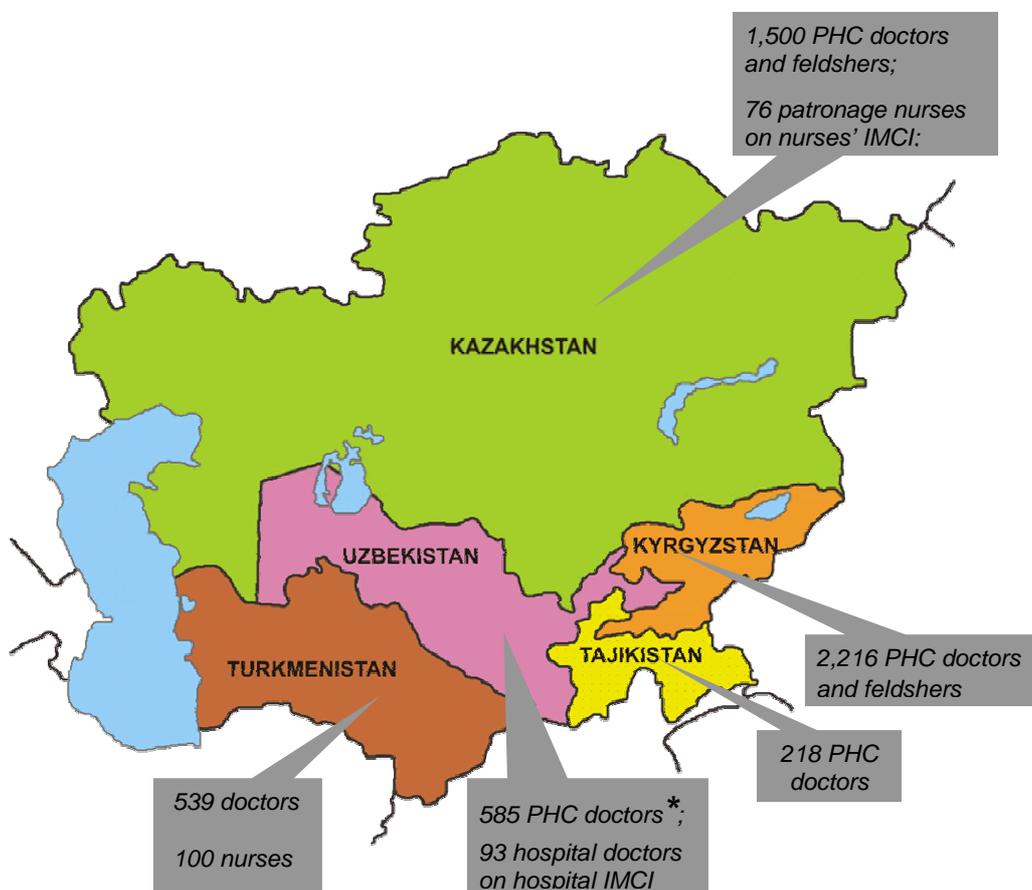
### A. New Pilots

Despite being pleased with the initial pilot, the Government of Kazakhstan could not allocate funds to IMCI. It asked donors for help initiate a second round of pilots. So in 2000, ZdravPlus launched a new round of pilots focusing on eight rayons (rural districts), in Karaganda and East Kazakhstan Oblasts. These hard-to-reach settings ranged from rural communities bordering China, where Kazakh was the only language spoken, to a small iron-mining town in the middle of the steppe. It was believed that rural health workers, who often had to handle the needs of a whole community with scant resources, would benefit the most from learning IMCI skills. It was also hoped that rural doctors would be less resistant to IMCI and find it easier to integrate it into their day-to-day practice.

In planning for this second round of IMCI pilots beginning in 2000, ZdravPlus and other partners wanted to expand not only the geography of the project, but also its focus. Whereas the first pilot had concentrated primarily on improving the practices of health care workers, the new pilots added components to address the other two prongs of IMCI: educating parents and other caretakers of young children and addressing systemic problems in health care delivery.

The work and enthusiasm of government IMCI coordinators in Karaganda and Ust-Kamenogorsk, allowed ZdravPlus to quickly set up efficient training centers in those cities. And the training of hundreds of health care workers soon began. ZdravPlus eventually assumed responsibility for an additional IMCI training pilot in Almaty Oblast, which had been started by the World Bank.

**Numbers of Health Workers Trained by ZdravPlus in Central Asia**



\* Training of 160 faculty in medical institutes resulted in almost 2,000 students being taught IMCI the following year alone.

Having heard some complaints that health workers were having trouble integrating the practice of IMCI into the existing health system, the government announced it would take several steps towards making the process easier in 2002. It said it would start collecting statistics on children under age five (instead of amalgamating them for all those under 14) to make them useful for monitoring IMCI. It issued an order requiring health administrations to do IMCI follow-up visits. And it set indicators for assessing how well each FGP was doing, including immunization rates, rates of exclusive breastfeeding for children under six months, and appropriate use of antibiotics. This showed that the government recognized that broader, systemic changes were needed to facilitate the implementation of IMCI. But these ideas were never translated into rules and procedures that could be applied by service providers. The new statistical and monitoring system envisioned never came into being.

## **B. Community Education Launched**

In 2000 and 2001, ZdravPlus launched the Keeping Children Healthy population education campaign, designed to teach parents and other community members healthy strategies for caring for children and infants. The pilot programs were initiated in Karaganda and Zhezkazgan cities. The topics followed the main themes of IMCI. They were conveyed to the public in IMCI pilot areas through printed materials, such as posters and brochures, and in a series of radio, television and print advertisements. The key messages of the first campaign covered a broad swath of topics including breastfeeding, nutrition, how to care for children with diarrhea and ARIs. In 2002, as the result of a Knowledge, Attitude and Practices survey conducted by ZdravPlus, the program tried to hone the messages by dividing the campaign into two parts. In the summer, messages taught strategies for handling children with diarrhea, and in the winter, the campaign focused on ARIs. In its most recent iterations the campaign has developed some innovative strategies for getting the message out. In 2003, ZdravPlus initiated community skit contests in Semipalatinsk and Zhezkazgan which proved to be both effective and popular. PHC clinics were encouraged to work with patients to put on skits illustrating the key messages of the Keeping Children Healthy campaign for their friends and neighbors. Competitions were then held for the entire community with prizes going to those who gave the best skits.

The Keeping Children Healthy campaign went a step further in the most recent pilot in Astana in 2004. In a new cooperation between the city health and education departments, teams of health care workers and parents staged skits on diarrhea and ARIs at local kindergartens. (See box on Global Development Alliance.)

In 2004, a new strategy was adopted. At this point it was decided that patronage nurses represented a group which could be incredibly important in educating the community on IMCI topics. Physicians trained in IMCI have a keen awareness of the importance of patient education but often do not have enough time with each patient to really utilize this aspect of their IMCI training, thus, they tend to focus largely on treatment. The main job of patronage nurses in Kazakhstan is to make home visits – mostly to families who have recently had a baby, children who were just treated for an illness, and some general visits to check on patients in their catchment area. Why not then, use this existing resource, the patronage nurses, women who are trusted in their communities, to educate the population on key IMCI topics?

Based on the UNICEF/WHO publication ‘Facts for Life’ and selected WHO IMCI modules, ZdravPlus worked with the National IMCI Center and experienced IMCI trainers to create a training curriculum specifically for patronage nurses. The course covered nearly all of the IMCI key messages (excepting those sections regarding drug therapy, since nurses do not actually treat patients) with a heavy emphasis on providing counseling to caretakers of young children. Through individual study, role-plays, games, discussions, debates, and case studies, the nurses learned about breastfeeding, nutrition and growth, hygiene, immunizations, what to do when children get diarrhea, coughs and

colds, and the danger signs indicating that the child should be immediately taken to a doctor. It also included some simple skills, like demonstrating proper attachment of an infant to the mother's breast for breastfeeding and taking a temperature. In addition to these IMCI messages, the trainees were trained in how to appropriately counsel caretakers of young children in order to effectively get across the IMCI key messages.

### **Global Development Alliance: A New Model of Public-Private Collaboration for IMCI**

In 2004, the ExxonMobil Corporation joined with USAID, ZdravPlus and the Kazakhstan Association of Family Physicians (KAFFP) to bring IMCI to Astana, the nation's capital. Eighty-three primary care doctors were trained on IMCI and thousands of parents were educated on how to keep their children healthy, how to treat minor illness at home, and when to seek professional medical care. The project was funded by ExxonMobil and USAID through a Global Development Alliance partnership, and received significant ongoing support from the Astana City Akimat (mayor's office) and the City Health Department.

The project's lively population involvement component was launched in the early summer, with an open-air event during the Astana City Day festival. Actors performed skits to educate passersby on treatment and risks of diarrhea in small children, and the audience was invited to answer questions in a game-show format on the related topics of danger signs, recognizing and treating diarrhea at home, breastfeeding, and antibiotic use. Prizes, contributed by both ExxonMobil and USAID, were given to participating families.

Later, ZdravPlus and KAFP staff visited the FGPs and polyclinics that had expressed interest in educating their communities on these topics. Volunteers—including patients and health workers—were given short scripts on diarrhea, breastfeeding, and antibiotic use, and invited to form small groups and prepare their own skits.

The groups were extremely creative. Scenarios included a family with a sick child traveling on a train, with a grandmother who recommends not giving any food to the child with diarrhea, and a doctor sitting in the next seat stepping in to explain the correct treatment for diarrhea and what danger signs to look for. Another FGP featured a TV commercial between skits, in which one mother dressed up as 'breast milk' and another as a 'brain' to show the importance of breastfeeding to health child development. One family doctor even donned a diaper to play the role of a sick infant.

The teams of volunteer "actors" performed their skits for parents and teachers at kindergartens near their FGPs/polyclinics. All in all, 27 performances on diarrhea and related topics took place at 15 different kindergartens.

The volunteer teams then had an opportunity to perform in a talent show at the Gorkii Theater in central Astana. The event also provided an opportunity for audience participation, with quiz-show style questions and creative contests to test the knowledge of the audience on diarrhea in young children, breastfeeding, and antibiotic use. An even wider audience was reached as TV, radio, and newspapers in Astana highlighted the event throughout the weekend and into the coming week.

In autumn, the volunteer groups added new skits, on ARIs, to their repertoires. While the groups had planned to concentrate solely on ARIs in the fall, an outbreak of dysentery in Astana prompted the City Health Department to request that the groups continue to educate parents about diarrhea—the danger signs and symptoms, how to care for a sick child at home, and when to seek professional medical help—in addition to the new topic of ARI.

The project officially came to an end in December 2004, but trained doctors will continue to use their new skills in IMCI to more effectively diagnose and treat ill children, and parents will be more alert to the danger signs of common childhood illness, more prepared to care for their children effectively at home, and aware of when it is necessary to seek professional medical assistance. This partnership has been a model of the type of public-private cooperation USAID hopes to encourage with its Global Development Alliance Program, which seeks to build collaboration between businesses and government programs.

The nurses' IMCI training program was developed late in the project so there is no data as yet to assess the impact of the training. However, feedback from the nurses and anecdotal evidence suggests that the program has been very well received and is being implemented by the trainees. Kenzhebike Mazhitova, a nurse from Zhezkazgan who was trained as a trainer, had much to say about implementing IMCI. She reports that she has been counseling mothers on IMCI topics and considers

it a personal success that the mothers in her catchment area are now aware of the dangers of anemia and have been asking that they and their children get blood tests. Laur Sharipzhanov, a nurse who participated in the first course, said that “There was just recently a measles and rubella immunization campaign for adults in Astana. Since I was educating patients on this, I also took the opportunity to tell parents about the importance of immunization for their children—something we learned about during the IMCI course.” And a doctor whose nurse went through the training reported, “I noticed that the nurse I work with has become more confident in her actions and has started to take the initiative in counseling patients.”

Something that many of the nurses reiterated was that their new knowledge gave them more confidence. They can now see and counsel patients independently from the doctors they work for. This raises their self-esteem, as they are empowered by their new knowledge, and has a huge potential in terms of improving the health of the population as nurses are able to spend more time with patients, educating them on issues like nutrition and when they need to take their to see a doctor. Several nurses also stated that they now understand how important it is that the population know for themselves about health topics and how to keep their children healthy.

### **C. Systems Issues Emerge**

Throughout the second round of pilots, ZdravPlus initiated and assisted in many efforts to address systemic issues to make it easier for health care workers and families to practice IMCI on a day-to-day basis. The difficulties of getting these changes approved at various levels of government and then adopted in actual daily practice highlighted the challenges of making systemic change.

Making the necessary drugs available is a key element of making IMCI work. UNICEF’s agreement to provide the drugs needed for the pilots promised to get the project off on the right footing. But, in the long term, IMCI planners knew a more permanent and sustainable solution would have to be developed. Yet even the issue of getting donated drugs to the patients proved to be challenging. The first shipments of drugs were delivered by UNICEF to a central location in Almaty in 1999 and 2001. ZdravPlus helped resolve problems getting the drugs to the pilot oblasts where they were needed. The drugs were delivered to the oblast health departments, with instructions that they should be used only by doctors and other health care workers who had completed IMCI. It quickly became clear, however, that the oblasts did not have mechanisms in place to manage the distribution and use of the drugs. Some regions quickly ran out of drugs – leaving the question of whether they had been distributed to the right doctors and patients. When supplies ran low there was no stocking procedure in place to reorder them, so the availability of drugs in the pilot sites was sporadic.

With these and a host of other issues in mind, ZdravPlus also began providing short training courses on the management and rational prescription of common drugs for health workers in the pilot areas. The courses addressed rational drug use for both adults and children, including the principles of prescribing drugs in accordance with IMCI. The programs focused on such issues as treatment of ARIs, proper use of antibiotics and drug supply management. ZdravPlus also worked with the Karaganda Oblast Health Department to set up a Drug Information Center to promote evidence-based pharmaceutical decision-making by doctors, health administrators and the public.

The problems that arose with the third shipment of drugs were even greater. In early 2004, UNICEF sent Kazakhstan a huge shipment of drugs -- 30 tons of pharmaceuticals donated by various nations around the globe. However, the shipment never made it into the drug supply. It was held up by Kazakhstan’s customs department because several of the donor nations had not filed registrations to distribute those specific drugs in Kazakhstan. There were 15 or 16 drugs that needed to be registered to those specific nations and each registration cost \$3,000 – making it uneconomical to go through

the process. During months of negotiations, pleas and publicity, the drugs remained in a customs warehouse and, as their expiration date approached, it was decided to destroy them.

The World Health Organization and ZdravPlus have long encouraged Kazakhstan to develop its own funding and distribution system for IMCI (and other) drugs. Currently outpatients must purchase their own drugs, which makes it harder for doctors to implement IMCI and creates incentives for patients to seek unnecessary admissions to hospital, where drugs are generally provided free of charge. So it was encouraging in 2003, when the MOH asked ZdravPlus to help it develop a government-funded outpatient drug benefit for young children. ZdravPlus provided technical assistance in identifying the costs of such a program and coming up with a list of drugs that should be covered. The government decided to start in 2004 with a limited program that provided a drug benefit to children under age one. When the MOH approved the budget for the program and sent the money needed for the first year to the oblasts, it seemed the program was well on its way. Then, inexplicably, the process stalled. The MOH never issued the order identifying the drugs that oblasts were authorized to purchase and distribute. Pharmacists voiced concern about the reimbursement rates for the drugs. So the drug benefit has been only sporadically implemented. Nevertheless, moves are underway to resolve these early teething problems and it can be hoped that the outpatient drug benefit will become a reality for all children around the country. With significant increases in the budget for health planned for the coming years, the outpatient drug benefit holds the promise of offering a more workable solution to the problem of ensuring the availability of IMCI drugs.

While drugs have presented a particularly thorny problem, a number of other systems issues have also arisen; one of these centers on the follow-up visits to trainees that are an integral part of the IMCI protocol. The IMCI Center conducted such visits several weeks after training, using WHO follow-up tools and seeking to help health workers implement the new practices, in the spirit of supportive supervision. However, not all head pediatricians responsible for pilot sites were prepared to use IMCI follow-up tools when they visited PHC facilities to monitor their performance. Some continued to do inspections as before, punishing providers for following IMCI protocols with respect to hospitalizing children with minor illnesses or drug prescribing practices. Some were pushed by higher authorities to adhere to the old procedures. Understandably, under these circumstances, many providers hesitated to follow IMCI.

Over the years, ZdravPlus has also made various attempts to help doctors solve the issue of completing the IMCI form, which is an important “job aid” to help providers manage child care appropriately. However, it is not a part of the standard medical chart required in Kazakhstan, completion of which cannot be waived. Thus, doctors already heavily burdened with paperwork have to complete two forms. And even keeping doctors supplied with IMCI forms has proven a problem because they lack resources and authority to reproduce the form. One solution was to make a rubber stamp of the form, which doctors could then stamp into their standard government form, effectively allowing them to complete both forms at once. Another approach was to create a new, longer record that combined the IMCI form with the questions on the standard medical chart. Some doctors enthusiastically adopted use of the rubber stamp, but the longer records were not so eagerly accepted. More work is needed to address the problem of integrating IMCI forms with the government’s record keeping requirements.

ZdravPlus has also worked to encourage the government to issue a *prikaz* authorizing a national IMCI program. From the inception of the program in Kazakhstan, the expectation has been that eventually the government would move beyond the pilot stage to make IMCI a national program applied throughout the country. A *prikaz* creating a national program would mean that all doctors would be authorized (or even required) to use IMCI and would launch a series of government-sponsored trainings. In 2001, donors were delighted when the MOH announced it was drafting a

step-by-step plan to introduce IMCI throughout the country. It seemed likely that a national IMCI *prikaz* would follow. But, since then, little progress has been made. Early in 2004, in a meeting with ZdravPlus representatives, the head of Kazakhstan's Mother and Child Health Department said efforts to issue a national IMCI *prikaz* have been suspended. He said the government wants to wait to see more results of the pilots, particularly for community IMCI. So, the goal of getting a *prikaz* adopting IMCI protocols as the norm for management of key child health conditions in Kazakhstan remains elusive.

The Government's long-run strategy on IMCI is, on the one hand, to include it in undergraduate medical education and, on the other hand, to ensure that drugs are covered. Since ZdravPlus also would like to see IMCI protocols integrated into undergraduate medical education, project staff helped to organize a series of meetings aimed at developing pre-service curriculum to train the next generation of health workers on IMCI principles before they qualify to go out and practice medicine. Representatives of the MOH, WHO and various medical schools in Kazakhstan began meeting in 2002 to develop an IMCI curriculum for pre-service training of doctors and other health workers. The committee developed a plan to teach IMCI in a 36-hour medical school course and a 112-hour course for nurses and feldshers. Not all of the medical school professors supported the idea of IMCI training, however. And there was no agreement among committee members on how and when to implement the training courses. As these discussions were under way, efforts to completely restructure medical education in Kazakhstan emerged and the IMCI pre-service training initiative stalled—a victim of wider restructuring.

## V. Assessing the Results

### A. Clinical Practice

In 2002 and 2003, two rounds of follow-up visits conducted by the National IMCI Center brought some of the first statistical indicators of how the pilots were doing. The first set of follow-up reviews was conducted in 2002 with 399 health workers trained in pilots in Karaganda and Almaty oblasts. Another review, in early 2003, looked at 35 trainees in Zhezkazgan and Satpaev cities. The reviews brought both good and bad news.

The majority of the medical workers trained in the program were able to demonstrate that they knew how to use IMCI in the presence of observers during follow-up visits. Seventy-four percent checked patients for the four main danger signs of IMCI: inability to drink or breastfeed, lethargy, vomiting after food or drink, and convulsions. Eighty-six percent checked for the three main conditions covered by IMCI: cough and cold, fever and diarrhea. Eighty-four percent of health care workers also followed the IMCI practices of assessing the child's overall nutritional status and 77 percent properly counseled mothers on breastfeeding and nutrition during the monitoring visits. Anecdotally, the reports stated that many doctors told the monitors that the trainings had made them feel more comfortable treating children. They also said mothers reported being very happy with the extra counseling they received from the doctors. And the follow-up monitors said they believed IMCI was reducing unnecessary hospital referrals and over-prescription of antibiotics.

Next, at the request of ZdravPlus, the follow-up monitors conducted an audit of patient charts to see what was happening when evaluators weren't present. The results of these audits, which covered 146 charts, were less encouraging. It should be kept in mind, though, that not all the doctors whose charts were reviewed had received IMCI training. Even so, it was clear that, when they weren't under the watchful eyes of observers, many doctors (82 percent of those in Satpaev and 52 percent in Zhezkazgan) were not actually using the IMCI system and forms for evaluating and treating young children on a day-to-day basis. Auditors found that, in two out of four cases of diarrhea, health

workers made no record of assessing the child for dehydration. In six out of eight asthma cases, doctors didn't use the recommended approach of administering salbutamol spray to quickly determine whether the child needed to be referred to the hospital, even though the spray was available in the facilities at the time. In Satpaev, two FGPs out of seven were practicing unjustified antibiotic use. Most notably, health workers appeared to be doing a poor job of assessing patients' nutritional status. In 82 percent of the cases where charts indicated that a child was probably suffering from anemia, there was no indication that doctors identified and treated the problem.

Two additional chart audits conducted by ZdravPlus suggested that doctors were implementing some aspects of IMCI, but far from all of them. These audits were done in PHC clinics in IMCI pilot regions, but again included both doctors who had received IMCI training and those who hadn't.

A random assessment of medical records in Zhezkazgan and Satpaev FGPs found a doubling of the use of breath counts for children with ARIs from 30 to 60 percent from 2001 to 2003. It also noted a doubling of checks for thirstiness in children with diarrhea to 43 percent in 2003. But the chart audit also found many instances of over-use of antibiotics and hospitalization of children with diarrhea. Antibiotic prescription for ARI cases declined from 26 to 20 percent between 2001 and 2003, but still represented an overuse of the drugs. There is a rigid instruction requiring immediate hospitalization of any case of "acute intestinal infection," which typically describes diarrhea, likely explaining the audit's finding that almost 100 percent of cases diagnosed by FGP doctors as "acute intestinal infection" were hospitalized in both of the observed periods.

Furthermore, in many cases doctors demonstrated a misunderstanding of IMCI diagnoses by failing to classify children with coughs as ARI patients. After the first audit in 2001, one of the lessons learned was that the selection of charts with a diagnosis of ARI led to a significant under-selection of all ARI charts. So for the second audit in 2003, the charts were selected by "cough in child" as well as ARI. All possible diagnoses manifesting with cough were covered, ranging from colds to pneumonia. The second audit found many more charts with cough than with ARI, suggesting that doctors didn't understand the critical point that all cases of cough should be classified and managed as an ARI. In addition, the way doctors managed cases with coughs was markedly different from the way they treated those classified as ARIs. For cases diagnosed as ARIs, antibiotics were not prescribed in the majority of cases; while for cases diagnosed as bronchitis, laryngitis, or tracheitis—also manifested with cough—in 50 to 70 percent of charts doctors prescribed antibiotics, which runs counter to IMCI practices.

A separate set of ZdravPlus chart audits, examining prescribing practices in FGPs in three cities of Karaganda Oblast in 2001 and again in 2002, showed a reduction in overuse of antibiotics for childhood ARIs. The percentage of children with ARIs prescribed antibiotics dropped from 47 to 27 percent. The audit also showed a positive overall reduction in the number of prescriptions given to children (a drop from an average 3.2 prescriptions per visit to 2.7.) But it noted an increase in the use of injections, as the percentage of medications administered by injection rose from 5.8 to 8.2 percent. Subsequently, information about the desirability of using tablets rather than injections has been incorporated into IMCI training.

New chart audits are under way and, now that most family doctors in Zhezkazgan/Satpaev and many in Karaganda City have been trained on IMCI, hopefully the results will be better.

These evaluations, as well as discussions and interviews with health workers, suggest numerous reasons why it is very difficult for doctors to integrate IMCI with their daily practices, ranging from problems with the forms that need to be filled out to fear of punishment by various inspectors. These obstacles are discussed in the section on barriers to IMCI implementation below.

## **Preventing Diarrhea Deaths: A Case Study in how IMCI is Helping to Save Lives**

Until fairly recently, significant number of children in Kazakhstan were dying from routine cases of diarrhea. It wasn't that they weren't getting enough medical treatment—they were getting too much treatment. The problem was that the medical community lacked information about one of the key rules of IMCI: children with diarrhea need to be rehydrated immediately.

Under Kazakhstan's health system, the standard practice for managing children with diarrhea—much of which is dictated by strict government protocols—is to send them to the hospital and begin an exhaustive search for dangerous infectious agents that might have caused it. If there is blood in the child's stool, doctors face strict requirements to hospitalize the child, alert the nation's Sanitary Epidemiological Services and begin testing the child's family members and classmates for infectious disease. While these protocols require a huge amount of work by the doctor, there is no mention of the need to administer liquids to the child. So children who were moderately dehydrated when they visited the doctor were sent to the hospital without being rehydrated first. Some of these children had life-threatening cases of dehydration by the time they reached the hospital—and sometimes they died at this stage.

Once they get to the hospital, children with diarrhea are typically given intravenous fluids and antibiotics and vitamins. The fluids do help to rehydrate the child. But the administration represents an overuse of those drugs, which can actually worsen the child's diarrhea. Children with diarrhea often spend a week or more in the hospital—hospitalizations that could easily be avoided by prompt use of oral rehydration.

IMCI's recommended treatment for a child with diarrhea is much simpler, less expensive and more effective at preventing deaths. Health workers are taught to assess the severity of dehydration by looking for sunken eyes and problems drinking, and by pinching the skin of the abdomen to see how long it takes to return to its original position. If the child is dehydrated, the health worker is taught to immediately begin giving fluids by mouth—a simple, yet incredibly lifesaving, intervention. If the dehydration is not severe, the health worker can counsel the mother on how to orally administer rehydration therapy. In most cases, mothers are taught to treat the child at home and return to the doctor if the condition doesn't improve—saving money for the health system. Only in cases where infectious diseases like dysentery or cholera are suspected are antibiotics given.

Kazakhstan health workers have not yet totally adopted the IMCI treatment methods. Children are frequently still hospitalized for non-severe diarrhea. But IMCI's main message on diarrhea appears to have gotten out. Doctors throughout the country are seeing the need to immediately hydrate patients with diarrhea. It is extremely rare for children with diarrhea to die of dehydration in Kazakhstan.

## **B. Community Understanding**

Each year since 2001, ZdravPlus has contracted with the social marketing agency BRIF to conduct population surveys in selected sites to assess public knowledge on a number of health topics, including child health.

Surveys conducted in 2001, 2002 and 2003 showed that the Keeping Children Healthy campaigns had significant impact on the level of knowledge about key child health issues in the pilot oblasts. The percentage of respondents in both Zhezkazgan and Karaganda who could identify the symptoms of diarrhea increased each year – starting at 70 percent in Zhezkazgan and increasing to 89 percent, while starting at 86 percent in Karaganda and increasing to 93 percent. Over the three year period, the proportion of respondents who knew that a child with diarrhea should be given increased liquids also grew in both pilot areas. It started at 73 percent in Zhezkazgan and increased to 86 percent. In Karaganda, it started at 67 percent and increased to 74 percent. In both cities, the percentage of respondents who correctly reported that infants under six months should be exclusively breast fed increased dramatically too.

In other areas, including knowledge of the danger signs indicating that a child should be taken to the doctor, the results were more mixed. Of the six danger signs publicized in the campaign, respondents in Karaganda could list only 2.1 in 2003 and respondents in Zhezkazgan only 2.9. These results suggest a need for further refinement of the campaigns' target messages.

### **C. Shifting Care from Hospitals to PHC**

In 2002, ZdravPlus conducted a study to look at the effects of IMCI on hospitalization rates in Maikuduk district of Karaganda City. While IMCI training was concentrated at the PHC level, it was hoped that improving treatment of minor conditions at that level would result in fewer children being hospitalized. The study, which took place only a year after the IMCI pilot began in Maikuduk, compared changes there to Prishakhtinska, a similar district of Karaganda, in which no IMCI had been implemented. The study showed that, contrary to expectations, hospitalization rates had increased at both sites: in Maikuduk, they increased by 37 percent, while in the control site they increased by 62 percent.

A panel of experts consulted for the study found no clear explanation why hospitalization rates increased, but went on to note that rates increased substantially less in Maikuduk than in the control site. Looking at the relative hospitalization rates in the two sites, before IMCI was introduced, children in Maikuduk (where the city's children's hospital is located) were 22 percent more likely to be hospitalized than those in Prishakhtinsk. After the first year of IMCI implementation, children in Maikuduk were only three percent more likely to be hospitalized.

The results of this study were seen as evidence of successful implementation of IMCI. The panel of fifteen health policymakers and physicians in Karaganda concluded that the slower growth in hospitalization rates in Maikuduk than in the comparison site can be attributed at least partially to the introduction of the IMCI strategy. The panel also concluded that the implementation of IMCI can only have a limited impact on pediatric hospitalization without more fundamental changes in the organization of service delivery, the incentives in the health system, household economic constraints, and public knowledge and attitudes related to the management of childhood illnesses.

It is worth noting that this study did not examine other indicators at the hospital level that might have shown more positive results.

## Pioneering IMCI in Hospitals in Uzbekistan

In the course of four years of training rural PHC doctors on IMCI, the ZdravPlus project in Uzbekistan became increasingly aware that leaving the hospital doctors out of the equation was negatively impacting the implementation of IMCI by the rural doctors. This is partly because the hospital staff do not understand the principles of IMCI, and therefore do not encourage the rural doctors to use it—even at times disparaging or preventing its use. In addition, the hospital doctors' own management of simple childhood illness follows antiquated practices, placing children at risk.

Working in close collaboration with the Pediatric Research Institute of the MOH, WHO, the USAID-funded Healthy Family project, and North West Medical Teams, ZdravPlus created an IMCI course for hospital physicians. The World Health Organization's book, "Management of the Child with a Serious Infection or Severe Malnutrition", is the foundation for the course.

The course focuses on emergency care—managing airways and respiratory distress, circulatory collapse, loss of consciousness and coma, and severe dehydration—through clinical cases, group work exercises, a DVD with multimedia clinical cases, a set of pre- and post-test questions, and real-life case scenarios with Objective Structured Clinical Examination-style (the OSCE is a widely used method of assessing health workers' clinical skills) assessments. The physicians were also provided a pocket sized job aid book, based on the WHO text, to be used as a daily reference manual. In addition to overall IMCI concepts, the key elements of the steps in hospital management of a sick child and discussions of how to implement and monitor IMCI in the hospitals where the doctors work were also included. The initial trainings in hospital IMCI took place in rayon hospitals in Ferghana Oblast with 20 participants at each site.

Conducting the training in a hospital setting, thus showing the effectiveness of IMCI in practical usage, went a long way to overcoming initial skepticism toward medical practices advocated by the WHO modules. In an actual case presenting to the hospital unit during the training, a child with respiratory distress was given oxygen alone—according to hospital IMCI principles—and improved considerably after several minutes. This real-life scenario convinced the participants that some of the drugs they used before were not needed, and that the simple WHO recommendations are very effective and do not harm their patients.

As a result of Quality Improvement principles embedded in the course, a number of changes were made in the practice of emergency pediatrics at every site where the course has been held. In one rayon, the head doctor of the pediatric unit fitted an oxygen cylinder with a flow-speed regulator the day after the practical training on this topic. Also, participants compared the cost of the antibiotic they had been using (ceftriaxone) with that recommended by this course (chloramphenicol) and found that they could save 65 percent. Based on this evidence they decided to start procuring the less expensive drugs. In addition, children with diarrhea are being treated without using enemas, avoiding further dehydration, and patients with minor problems are counseled and sent home, reducing unnecessary hospitalizations.

Participants left the course with improved knowledge and, more important, improved skills, as demonstrated by OSCE results. OSCEs measured the doctors' practical emergency resuscitation skills—not only for individual skills, but for the combination of skills needed to treat complete simulated clinical cases from the point of admission to discharge, including identifying the diagnosis and treating the condition (where appropriate, with the correct types and dosages of medications). Participants' closing OSCE scores averaged 85 percent, meeting the desired target. Since the hospital IMCI course was conducted toward the end of ZdravPlus, information was not available at the time of writing this report about the doctors' performance a few months after the training.

At this point, it is too early to say how widely the IMCI strategy will be implemented by the trainees but initial experience is highly positive. Some of the comments of the participants were: "this program helped us to systemize all our knowledge and skills" and "it is a great shame that after many years of practicing as a physician I have only now received such clear, practical teaching."

## VI. Lessons Learned

The experiences of the pilot projects have led ZdravPlus staff to conclude that it is relatively easy to train health workers, but that truly implementing IMCI requires systemic changes that encompass not only PHC providers, but also the government, hospitals, the medical education system and the community. Observations, discussions and evaluation have brought to light a whole host of systemic barriers that make it difficult to integrate IMCI into the existing system.

Many obstacles to efficient and effective treatment for children are engrained in the way the health system operates:

- The system's practice of paying hospitals by the number of beds they fill means that hospitals eagerly accept cases that could easily be treated at home. PHC physicians are often pressured to hospitalize children. This results in a poor use of health care resources that runs counter to the IMCI philosophy. Also, since efforts to introduce hospital-level IMCI have barely started in Kazakhstan, hospitalized patients often get treatments that are ineffective or sometimes even harmful. The flipside of this over-hospitalization for minor illnesses is that hospitals can't afford the equipment, training and resources needed to treat serious conditions.
- Kazakhstan's health system requires doctors to make and record diagnoses in every case, while the IMCI system teaches a less-time-consuming, syndromic approach to assessing children. In practice, these dual standards mean that, in order to comply with both government rules and IMCI, doctors must do everything twice. First they must go through the traditional routine of diagnosing the patient (using government-mandated lab tests and lengthy investigations of conditions), and only then can they assess the patient's symptoms in compliance with IMCI.
- Likewise, the standard patient charts that doctors must fill out are completely different from the IMCI forms. Thus, in order to comply with both systems, health workers must, in essence, fill out all the forms twice – a time-consuming redundancy.
- Since the Soviet health system did not encourage doctors to counsel patients or do preventative medicine, adopting these key aspects of IMCI has been particularly challenging for health workers. In general, doctors have an easier time improving their treatment practices than learning to counsel mothers or take preventative steps like checking the nutritional and immunization status of a child.
- Doctors fear—often rightly—that they will be fined or punished, if they follow the IMCI procedures instead of traditional government protocols.
- The absence of a national *prikaz* means that doctors outside the IMCI pilot sites are not authorized to practice IMCI, leaving them vulnerable to fines and punishments if they take the initiative to follow the new approaches.
- Kazakhstan's IMCI Center has not been as successful as had been hoped in influencing MOH policy, possibly because it does not have sufficient stature in the MOH. It has been further weakened by frequent staff turnover. And, while its employees are well versed in IMCI issues, their monitoring and evaluation skills need to be strengthened to provide reliable data on program results.

Other barriers to IMCI implementation are deeply rooted in societal attitudes:

- Traditionally patients have been prescribed medicines, including antibiotics, for almost every condition – including many for which no medicine is needed. Doctors who don't issue prescriptions frequently face complaints from patients.
- In the past, PHC has been little more than a “triage” point, sending patients to the right specialist. So people don't have confidence in PHC doctors and prefer to go straight to the hospital. Many parents simply bypass PHC physicians and call an ambulance to take a child with a minor condition like a cough, a cold or diarrhea to the hospital.
- There is an important incentive for hospitalization, because drugs are free for hospitalized patients, while outpatients must pay for their own drugs.
- Peer pressure from colleagues and supervisors not trained in IMCI can discourage doctors from implementing it. In the hierarchical system inherited from the former Soviet Union, specialists traditionally established clinical protocols and PHC doctors were expected to follow those protocols. If they didn't do so, they were considered by those higher on the totem pole to be practicing “wrongly” and often criticized openly in front of colleagues and patients. In the current system, many of these hierarchies and peer relations still remain.
- It has long been considered unprofessional in Kazakhstan for doctors to be seen consulting any sort of reference material for guidance on conditions or medications. This not only discourages doctors from using the IMCI chart books as a desktop reference, but makes it difficult for health workers to prescribe the most appropriate drugs or implement evidence-based practices.
- As within any system, many people – be they doctors, patients or government administrators – are simply resistant to change.

In addition, some barriers with the structure of IMCI itself have become apparent:

- IMCI is a ready-made system for managing child health problems, which does not take into account the rigidities inherent in the post-Soviet system. In this way, it seems more suitable for countries where access to health services is an issue and there is not yet much of a health system in place. It is much more difficult to fit the IMCI program into a large, complex, bureaucratic system—even though its protocols are much-needed to improve the quality of care.
- The cost of IMCI -- with its 11-day training sessions, six trainers, and requirement that each trainee receive seven manuals – is high, placing constraints on the ability of governments and donors to roll out training on large scale. When Karaganda Oblast began paying for its own training courses, it provided only one set of manuals for all the trainees, but gave each trainee a copy of the IMCI chart book to take back to his/her practice.

## **VII. Quality Improvement: A New Systems Approach to IMCI**

Despite the many barriers, both the MOH and ZdravPlus want to make the changes needed to fully integrate IMCI concepts into the Kazakhstan health system. It is felt that such reforms can dramatically improve the quality and efficiency of health services for children. So ZdravPlus has introduced a Quality Improvement Project designed to combine traditional IMCI techniques with a broader problem-solving strategy to identify and address obstacles to effective implementation of IMCI at all levels of the system.

The Quality Improvement approach begins by using data to identify a key problem – such as over-hospitalization of children. Then, a team of health workers uses root-cause analysis to identify the underlying causes of the problem and develop ways to solve it – whether in people’s homes, at the PHC level, in the hospitals or at the government level. A set of changes and interventions are made. Then data are used to assess whether the solutions have actually worked. If not, another solution is tried.

ZdravPlus introduced this approach in a pilot project to try to improve the entire health system for children in Maikuduk district of Karaganda City. A former coal-mining community, Maikuduk is particularly plagued with health problems. It also has its own self-contained health system, with clinics and hospitals, including a children’s hospital, thus making it a convenient pilot site for creating a model. In addition, oblast and local health authorities overseeing the pilot are enthusiastic about health reform and are determined to do whatever it takes to improve the system.

The project began in 2003 with seminars on the theory of Quality Improvement. It continued in 2004 with an intensive effort to identify and solve systemic problems and weekly monitoring of statistics.

First, oblast health officials worked to identify a host of problems – both big and small – that were contributing to the poor quality of health services for the district’s children. For example, they found that, while most PHC doctors had been trained in IMCI, many were not following the program’s protocols. Nor were they completing the IMCI forms, designed to help them work through the protocols. One reason for this was that doctors did not have copies of the form and, instead, were required to record their notes on a government-mandated chart. To help address this problem, the team responsible for the Quality Improvement effort in Maikuduk developed a rubber stamp of the IMCI form, which doctors could stamp into the government chart. That way they could work through the IMCI algorithms as part of completing routine charts. This small change—along with the encouragement of regional health authorities—resulted in a large increase in the doctor’s use of IMCI protocols. Use had been very low at the start of the project, but chart audits conducted after the stamp was introduced, showed 94 percent of PHC doctors using the stamp to record their work through the IMCI protocols. Additionally, increased attention by the health department to IMCI compliance increased adherence to IMCI protocols from 67 percent during a two-week period at the end of March 2004 to 81 percent for four weeks in April.

In an example of a larger systemic problem, the Quality Improvement team noted that children weren’t getting the benefit of IMCI at the PHC level in Maikuduk, because they were often taken directly to the hospital, even for minor cases of coughs or diarrhea. One review found that in 64 percent of the cases for which children were hospitalized, the hospitalization was unwarranted under IMCI protocols. Of these unjustified hospitalizations, the largest group, 41 percent, bypassed PHC, coming directly to the hospital—with 38 percent brought by ambulance and three percent by their parents. Ambulance workers—many of whom are PHC doctors—were simply bypassing outpatient care for minor conditions and taking children directly to the hospital. So, local health authorities provided IMCI training to the ambulance workers in the district and gave them a supply of basic IMCI drugs, so that they could administer simple treatment to patients at home. Complete results of this intervention are not yet available, but it appears that the problem has not yet been completely solved. The ambulance workers apparently prefer to take children to the hospital, rather than be responsible for their health and survival, possibly because they have ever-shrinking resources to work with and are less and less involved in care for patients. From the hospital’s perspective, that isn’t a problem, since it is in their interest to accept children with even the most minor conditions. So the next step may need to be to put systems in place for hospital workers to accept only those cases that truly need to be hospitalized—sending others back to PHC. Karaganda has been working to remove financial incentives that encourage hospitals to admit patients who could be treated at the PHC level.

But other pressures to over-hospitalize children still exist. There is an unwritten rule that no child under five should be turned away from the hospital to prevent deaths from occurring at home. And parents have numerous incentives to seek hospitalization of their children, including free drugs, free meals and a warm, safe environment. It is too early yet to tell whether the Quality Improvement Project can affect the kinds of sweeping changes needed to dramatically improve the health system for children in Kazakhstan. But the participants in Maikuduk's Quality Improvement Project are encouraged to be working with an approach that directly targets the deep-rooted problems in the system.

## How Quality Improvement Methods Improved IMCI in Ferghana, Uzbekistan

In an effort similar to the Quality Improvement Pilot in Maikaduk, ZdravPlus has been using a Quality Improvement (QI) approach to improve care provided to children in Ferghana, with the expectation that it would result in lower mortality over time. The QI effort aims to close the gap between what is known—that IMCI is effective in decreasing child mortality—and what happens in reality. Three activities were specific to this effort:

- First, some simple standards were extracted from the IMCI guidelines in order to make explicit what the providers should do and how the child's health would benefit from it (i.e. outcomes of care);
- Then, a quality monitoring system was developed, with facility-based teams measuring their compliance with these standards, through 11 indicators collected monthly and recorded on run charts to interpret trends over time;
- Finally, weekly rayon meetings and monthly oblast-level meetings to discuss the results, identify barriers to improvement, generate ideas for changes and interventions to improve care and then assess their impact.

After 18 months of QI, providers' performance against IMCI standards for ARI rose from 60 percent to 95 percent—in other words, *all* 11 indicators reached a level of around 95 percent. The main change that occurred was that providers began using the IMCI form as a job aid during consultations. In Yozyavon, one of three rayons to participate in the QI pilot, health workers' success in achieving these results came from a combination of factors and interventions:

- They received performance-based training in IMCI;
- The IMCI form, used to record care, served as a constant reminder of health care delivery standards; and
- A self-assessment monitoring system provided teams with information on their performance. Because they themselves assessed their performance against explicit standards, providers came to fully appreciate the importance of the IMCI form and guidelines. In addition, results were discussed at regular meetings, and poor performers were motivated to match the performance of the best performers.

The best practices identified in the pilot rayons are now being rolled out oblast-wide—with continued monitoring against standards—and will then be integrated into continuing medical education, so doctors and patients nationwide may benefit.

Despite the clear improvement in providers' adherence to IMCI guidelines, major issues remain unsolved—issues that are outside the providers' span of control but rely on changes at the national level. The main issues are:

- The need for providers to collect two different sets of information—on the IMCI forms and on the old medical records still required by the government;
- Difficulties in families obtaining IMCI drugs due to inconsistent availability; and
- The hospital budget system that leads those facilities to pressure the SVPs to refer patients who do not actually require hospitalization.

## VIII. Conclusion

IMCI has helped to promote several important life-saving strategies in Kazakhstan. In particular, ZdravPlus believes the program's emphasis on rehydrating children with diarrhea improved the care dehydrated children receive. Similarly, using a breath count to identify pneumonia may be improving the recognition of that potentially deadly disease.

More than 1,500 health workers in Kazakhstan now have the training to implement IMCI. For many of these health workers, the IMCI program was their first introduction to evidence-based medicine. Many of them became enthusiastic converts to the program and have worked to spread the ideas and techniques to staff and colleagues.

This was made clear in a letter of thanks ZdravPlus recently received from 19 participants in an IMCI course in Karaganda City. "The IMCI strategy not only armed us with knowledge, but also gave us a second breath for working...to achieve our main goal: to decrease morbidity and mortality in the children of Kazakhstan," the trainees wrote. "We believe that this program will help to save thousands of children's lives."

ZdravPlus's campaigns to provide community education on child health issues and training to health workers on proper use of prescription drugs have also had a demonstrable impact.

Yet, over the evolution of its five-year program to introduce IMCI in Kazakhstan, ZdravPlus has come to believe that simply training health workers isn't enough. In order for Kazakhstan to enjoy the full benefit of the effectiveness and efficiency of IMCI, deeper changes to the system are needed. From medical schools to the halls of government regulators, from the PHC clinics to hospitals—where children currently receive much of their care—such reforms could bring dramatic health benefits to the children of Kazakhstan and savings to the health system.

Significantly, after years of collaborating with ZdravPlus, the highest levels of Kazakhstan's government have recognized the need for reforms. In August 2004, the Government of Kazakhstan officially adopted a new National Program of Health Sector Reform and Development for 2005 – 2010. The first objective of the new strategy is to improve PHC; the second is to make changes in health management. While the government hasn't spelled out exactly how these reforms will be accomplished, both these arenas are integral to improving child health care. Hopefully, the lessons learned from five years of implementing IMCI can inform these reforms and facilitate improved health services for children.

## **Bibliography**

*Report on Care in Family Group Practices in Zhezkazgan Region: Based on Quality Assessment of Medical Services*, Vladimir Boborykin, Grace Hafner, Hilda Kuter, David Kuter, Azhar Nugmanova, Damilya Nugmanova, ZdravPlus project, July 2002

*The Impact of Primary Health Care Development on Patterns of Hospitalization: The Case of Integrated Management of Childhood Illness (IMCI) in Karaganda City, Kazakhstan*, Malika Baiserke, Cheryl Wickham, Grace Hafner, Nadezda Khe, Askar Nurbaev, Olga Zues, ZdravPlus project, December 2002

*Drug Prescription Practices in Primary Health Care Facilities in Central Kazakhstan*, Alexander Gulyaev, Hilda Kuter, David Kuter, Talgat Nurgozhin, ZdravPlus project, June 2004

*Kazakhstan Demographic and Health Survey 1999*, Academy of Preventive Medicine, Almaty, Kazakhstan and Macro International Inc., Calverton, Maryland, USA, November 2000.

## Annex 1: Has IMCI had an Impact on Mortality?

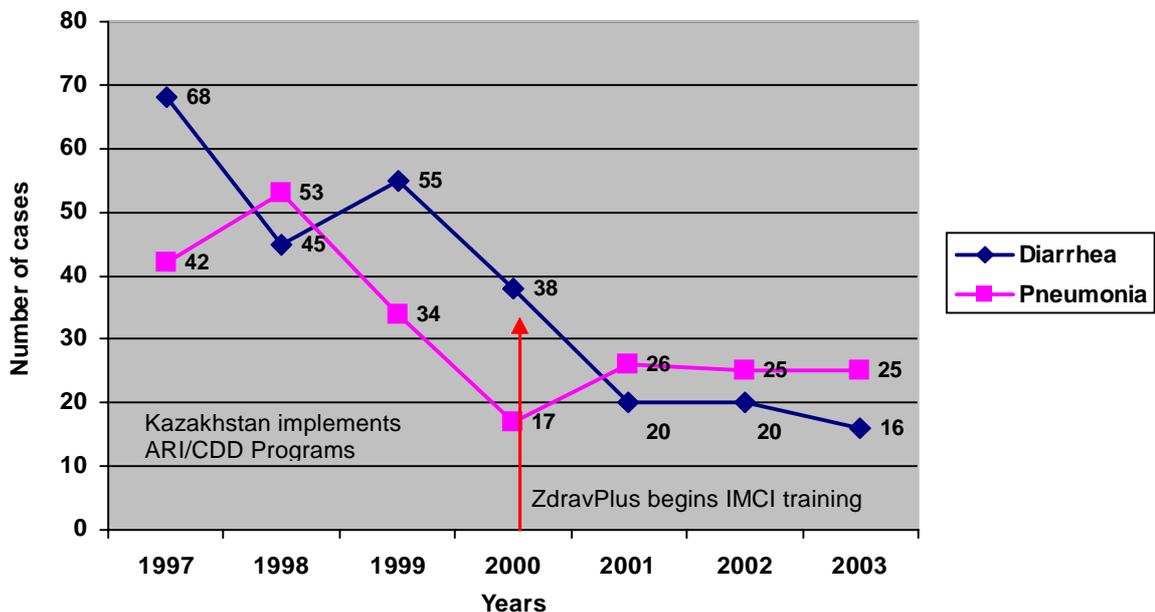
The question is often asked whether there is any evidence of IMCI's impact on key child health indicators, particularly infant and child mortality. This annex addresses these issues. The focus is on Karaganda Oblast, since that is where ZdravPlus has worked most intensively on IMCI.

To look at whether IMCI has had any impact on health outcomes, it is important to put the program into context. The IMCI pilots in Karaganda trained 623 health care workers—more than in any other oblast—but this is only a small proportion of the primary care physicians seeing children in such a large oblast. In addition, infant and child deaths are—fortunately—rare events, so that a very large population base is required to show any change in these crucial indicators. Thus, even if statistics show declines in infant or child mortality, this cannot be fully attributed to IMCI—although IMCI may well have been a contributing factor.

### Karaganda Oblast

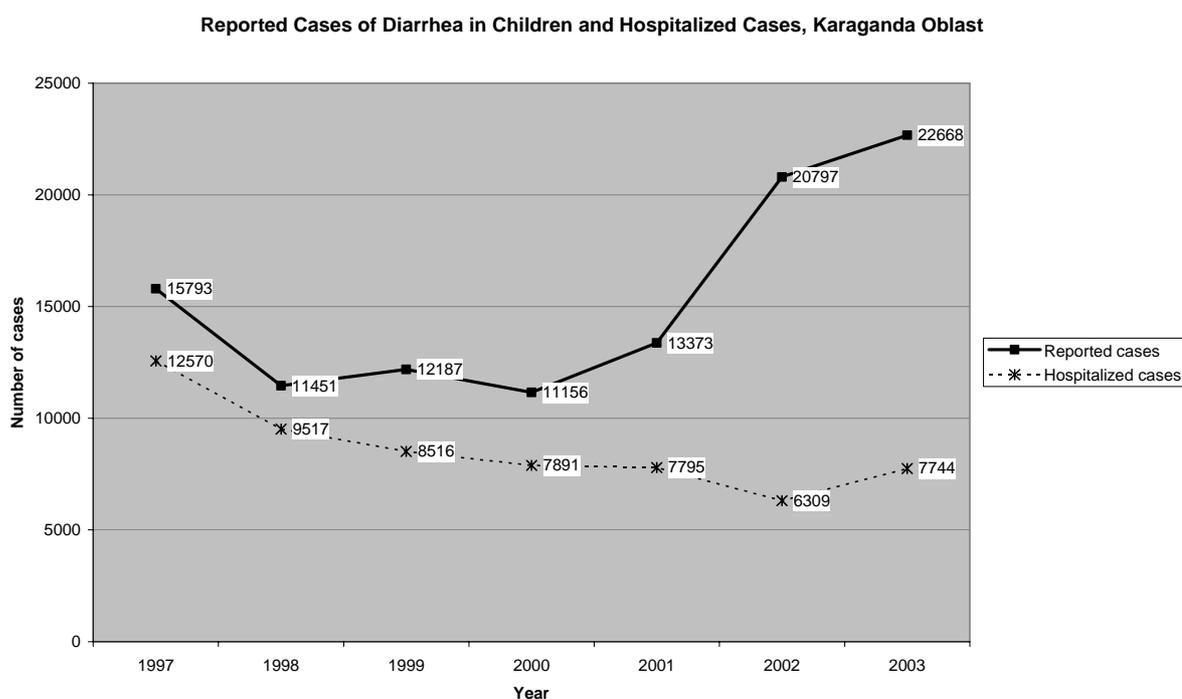
Mortality data from Karaganda Oblast show that childhood deaths caused by some of the conditions treated under IMCI have declined dramatically in the region—see the graph below. Since 1997, the number of infants who die each year from diarrhea-related problems (classified in oblast statistics as gastro-intestinal tract conditions) in the oblast has dropped sharply from 68 deaths a year to 16. The number of infant deaths caused by pneumonia has fallen from 42 in 1997 to 25 in 2003.

**Number of Infant Deaths from Diarrheal Diseases and Pneumonia, Karaganda Oblast, 1997-2003**



There are many possible explanations for these encouraging trends. One possibility is that some combination of the early training on management of diarrhea and ARIs and the subsequent IMCI training are having an impact. It may be that some core treatment concepts, such as rehydrating children with diarrhea and using a breath count to properly diagnose pneumonia, have become accepted practice for many Kazakhstan doctors. It is also possible that evidence-based practices, which are common in other parts of the world, are beginning to take hold in Karaganda. Improved availability of effective drugs could also be a factor. And non-medical considerations, such as economic and social conditions, may also have played a part.

Data in the graph below allow for a somewhat deeper analysis. They show that the number of reported cases of diarrheal disease in children increased by over a third between 1997 and 2003, from 15,793 to 22,668. However, during the same time period, the number hospitalized for diarrhea fell by almost a third, from 12,570 to 7,744. This indicates that more children are being treated at the PHC level, rather than in the hospital, in accordance with IMCI protocols. These data also indicate that the declines in mortality related to diarrhea shown in the previous graph are even more impressive, since there were larger numbers of sick children. This decline in mortality could be due to improved care in the health system and/or in the community.



### Zhezkazgan and Satpaev

Mortality figures for children under age five in the pilot areas of Zhezkazgan and Satpaev in Karaganda Oblast, where 82 percent of primary care doctors have been trained in IMCI, show declines in deaths related to both diarrhea and ARIs (see table below). For the same reasons outlined above, however, it is not possible to attribute these trends to implementation of IMCI.

### Mortality and Hospitalization of Children Under Five in Zhezkazgan and Satpaev Cities

	1999	2000	2001	2002	2003
Total deaths	36	32	33	30	29
ARIs					
Children hospitalized	548	439	497	605	515
Deaths from ARIs	4	2	1	2	1
Diarrhea					
Children hospitalized	285	255	289	225	138
Deaths from diarrhea	2	2	1	2	0

## **Annex 2: IMCI Implementation in Tajikistan and Turkmenistan**

The story of IMCI in Tajikistan and Turkmenistan is much shorter than that of Kazakhstan; training in IMCI began in Tajikistan in 2000, and in 2001 in Turkmenistan. Despite the short time that IMCI has been implemented in both countries, a significant success has been achieved: both countries' Ministries of Health have been convinced of the importance of the IMCI strategy and are supporting its implementation nation-wide.

### **Tajikistan**

The Tajikistan MOH began implementing the IMCI strategy in 2000, with the help of the WHO and UNICEF, by first adapting IMCI materials on ARIs, diarrhea, malaria, measles, malnutrition and anemia, conditions in which account for a high level of morbidity and mortality in children under five in Tajikistan, to the local environment. ZdravPlus became involved in supporting IMCI implementation in 2002 as a part of the government's over all health care reforms. With funding from AED, ZdravPlus conducted both a training of trainers and roll-out trainings for medical workers in Varzob and Leninsky Rayons in early 2003, which were followed up by population education campaigns that summer; conducted jointly with UNICEF.

In addition to educating primary level health care workers and the population on IMCI topics, ZdravPlus also recognized the importance of educating policy makers and gaining support of this strategy at the ministerial level. Thus, MOH representatives and staff from the Healthy Lifestyles Center went on a study trip to Uzbekistan to in October of 2003 to study the impact of IMCI in Tashkent and Ferghana, especially that of the population involvement component of the IMCI strategy.

Since this initial implementation, the MOH in Tajikistan decided to expand IMCI nation-wide. An additional TOT and subsequent roll-out trainings for medical workers have taken place in the two districts of Khatlon Oblasts; along with further population education campaigns on diarrhea and ARIs in Temuralik, Vose, Jomi, and Khurson Rayons. It is significant to note that the MOH participates in conducting these campaigns and creating health promotion materials, when they are needed. This will further their ability to conduct population education campaigns on their own in the future. The MOH's commitment to rolling out IMCI is also evident in that it is not only working with ZdravPlus on the national roll-out but also in that they are engaging with other international organizations to extend IMCI beyond Khatlon Oblast and to begin implementation of IMCI's second component – the provision of drugs.

While it is significant that the MOH has not only embraced the IMCI strategy but also knows how to fully implement IMCI population education campaigns, problems with IMCI still exist in Tajikistan. The most immediate is the need for correct Monitoring and Evaluation system, the MOH does not have accurate statistics of IMCI indicators for those two pilot districts where IMCI was first implemented in 2003. This makes it difficult to report the impact that IMCI is having on reducing child morbidity and mortality in those IMCI targeted diseases in Tajikistan.

### **Turkmenistan**

IMCI implementation began in Turkmenistan with a National Level TOT in September, 2001, followed by the first physician trainings in the pilot etraps of Farab and Serdar. IMCI strategy development and implementation has been jointly supported in Turkmenistan by ZdravPlus project, WHO (training, policy dialogue), and UNICEF (drugs, policy dialogue, some training). The National MCH Institute has provided national level trainers for this program and taken the responsibility of overall coordination of IMCI, including monitoring and evaluation of physicians implementing the new IMCI approaches.

In late 2002, the Ministry of Health reviewed the initial IMCI program in the first two pilot etraps and declared IMCI to be a valuable strategy for Turkmenistan after finding that IMCI demonstrated a reduction in the hospitalization of children for respiratory illness and that the strategy is widely supported by trained pilot etrap physicians. The Ministry of Health authorized the expansion of the program into four new pilot etraps, bringing to total to six pilot etraps: Balkhan Velayat, Serdar Etrap; Dashoguz Velayat, Gubadag Etrap; Akhal Velayat, Rukhabat Etrap; Mary Velayat, Sakarchaga Etrap; Lebap Velayat, Serdarabat and Farab Etraps. In the last four years, ZdravPlus, along with Project Hope, has taken an active, primary role in supporting IMCI physician training in all six pilot etraps in Turkmenistan. Additionally, ZdravPlus has supported the implementation of the third component of IMCI, community involvement, which has been supported in the pilot etraps through “Keeping Children Healthy” education campaigns aimed at mothers and other caretakers of young children.

These pilot sites guarantee that at least one etrap is covered by IMCI trained physicians in each of the five velayats of Turkmenistan, and every family doctor in each of the pilots has now been trained in IMCI. The rapid scaling-up of IMCI coverage has meant that the MOH has had to devote significant resources to IMCI. This included more time from personnel at the national Maternal and Child Health Institute, additional logistical and administrative support from the Ministry of Health, and a major commitment from local health authorities. Despite these challenges, the Government of Turkmenistan has shown great enthusiasm for this strategy, with the MOH willingly building its capacity to take on expanded work in IMCI. ZdravPlus continues to work closely with the Government of Turkmenistan to develop their capacity in all forms of IMCI implementation.

Following the December 1<sup>st</sup>-3<sup>rd</sup> 2004 seminar on the introduction of IMCI into the pre-service curriculum supported by WHO and ZdravPlus, it was recommended to the MOH that the introduction be approved. As of March 10<sup>th</sup>, 2005, IMCI has been officially approved by the MOH of Turkmenistan for permanent introduction into the curricula of Turkmenistan medical teaching institutions beginning with the 2005-2006 academic year. The introduction includes IMCI training for physicians, nurses and feldshers and the national MCH Institute has also expressed interest in IMCI expansion into hospitals. Through the continued commitment of various partners in Turkmenistan, the pilot IMCI trainings have led to rapid expansion and institutionalization of the IMCI program.