

Towards a Grand Convergence for child survival and health:
A strategic review of options for the future building on lessons learnt from IMNCI

COUNTRY ASSESSMENT: KAZAKHSTAN

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List of abbreviations

AIDS	Acquired Immune Deficiency Syndrome
ARI	Acute respiratory infections
CIS	Commonwealth Independent States
CPAP	Constant Positive Airway Pressure
DHS / MICS	Demographic and Health Surveys / Multiple Indicator Cluster Survey
EPC	Effective Perinatal Care
EPI	Expanded Program on Immunization
ETAT	Emergency Triage Assessment and Treatment
HWs	Health Workers
HMIS	Health Management Information System
HIV	Human Immunodeficiency Virus
HRH	Human Resources for Health
IMCI	Integrated Management of Childhood Illnesses
ICATT	IMCI Computerized Training and Adaptation Tool
KFP	Key Family Practices
MCH	Maternal and Child Health
MOH\SD	Ministry of Health and Social Development
MDGs	Millennium Development Goals
NGO	Non-Governmental Organization
MPS	Making Pregnancy Safer
PHC	Primary Health Care
SDGs	Sustainable Development Goals
UNICEF	United Nations Children's Fund
UNFPA	United Nations Population Fund
USAID	United States Agency for International Development
UN IGME	UN Inter-Agency Group for Child Mortality Estimates
WHO/Europe	WHO Office for Europe
HQ WHO	World Health Organization Headquarter

I. Introduction

The Republic of Kazakhstan, an upper-middle income country, is a vast country (the 9th largest country in the world) with a very low density of population (6.4 inhabitants per 1 km²). The country's specific feature is large distances between settlements and uneven distribution of population across the country with the highly dense regions in the south and less dense in the west and northern-east. Kazakhstan consists of 16 regions represented by 14 oblasts (provinces) and 2 large cities with a special status. In turn, the regions are divided into 17 urban and 160 rural districts. Districts are divided into 2000 rural areas. 55% is urban population and 45% - rural population. The population is quite young; the median age is 29 years. The proportion of children under 15 is 25% of total population; 42% of them are children under 5 years old (1).

Table 1. Aggregate statistics describing health of children under 5 in Kazakhstan (*data from UN Inter-Agency Group for Child Mortality Estimates (IGME) and Statistical Agency of the Republic of Kazakhstan, 2015*)

Indicators	Values
Total population	17,400,000
Total children under 5 years old	2,108,437
Total childbirths/year	398,991
Neonatal mortality (per 1000 live births)	7.0
Neonatal deaths /year	2,350
Annual average decline of child mortality, 2000-2015	5.3
Child mortality (per 1000 live births)	14.0
Annual U5 children deaths	4,719

The commitment of Kazakhstan with regard to Millennium Development Goal 4 to reduce under-5 child mortality by two thirds was fulfilled (from 53 per 1000 live births in 1990 to 18 in 2015). According to the UN IGME's estimates, the child mortality dropped almost four times and amounted to 14 per 1000 live births in 2015 (2). While looking into the capacity of the country to reduce child mortality, we should note a steady and significant progress in the last decade from 2011 on.

Figure 1. (Source: IGME and MoH)

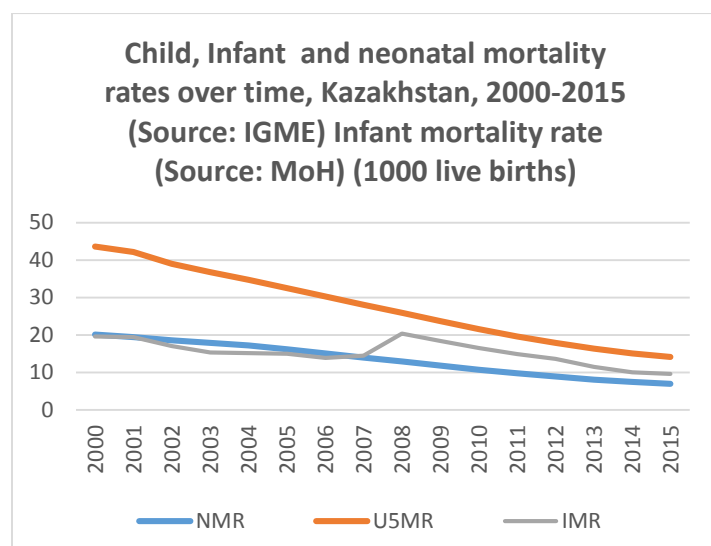
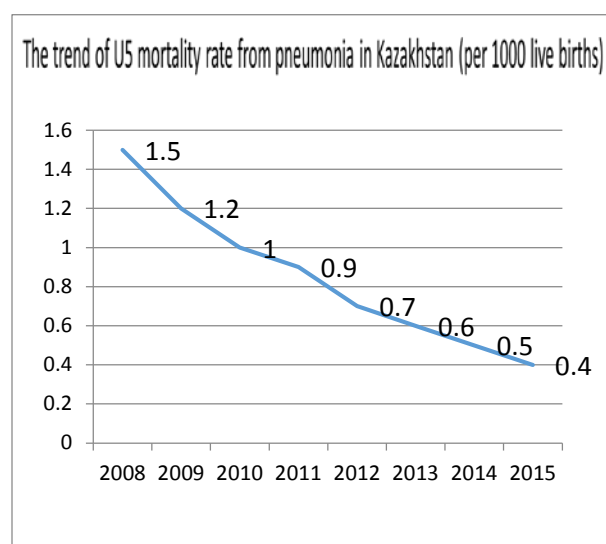
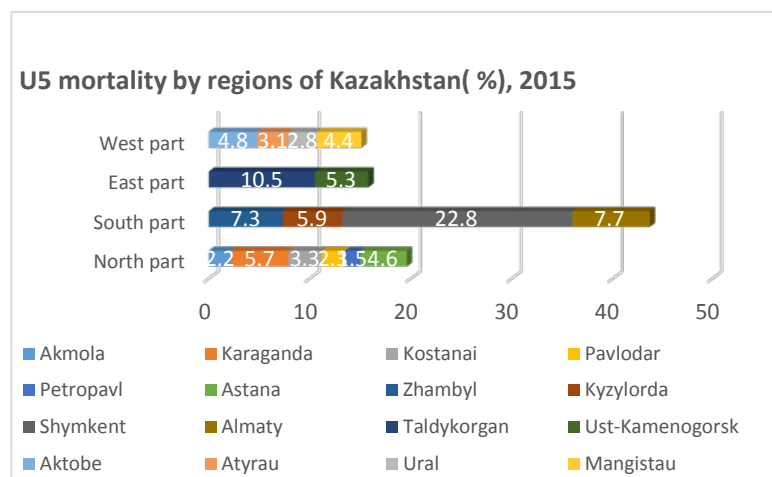


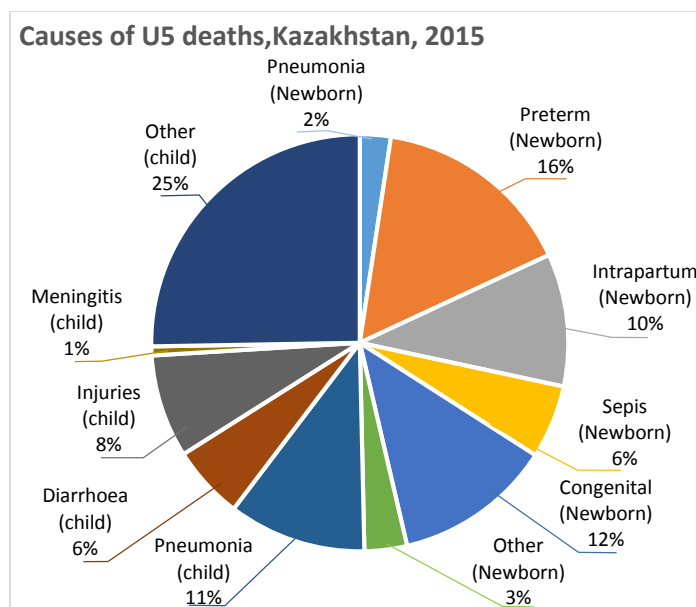
Figure 2. (Source: MoH)



Traditionally, the southern regions of the country are distinguished for high birth and child mortality rates; however, the pace of child mortality reduction does not demonstrate tangible regional gaps. But such gap exists in mortality rates between poor and rural population. The western and southern regions are leading in number of poor population.

Figure 3. U5 Child mortality in Kazakhstan by regions, *Source: Ministry of Health, 2015*

Neonatal mortality is the leading (50%) cause of child mortality. The proportion of newborns with standard weight (< 2500 gr) is 53% of total neonatal deaths. Neonatal deaths are followed by congenital malformation, pneumonia and injuries (2).

Figure 4. Causes of child mortality (0-5 years) in Kazakhstan, 2015. *Source: IGME*

The decline in mortality in the last decade is due to the improved welfare of people (*poverty reduction from 35% in 1996 to 4% in 2012*) and increased health expenditure per capita from

US\$ 50.9 in 2000 to US\$ 393.1 in 2013) (4). Along with the regionalization of perinatal care in progress from 2007, this enabled supply of necessary medical equipment, medicines, vehicles to obstetric facilities in each oblast, and improvement in outpatient and inpatient facilities with a focus on rural regions) (5).

Hospitals for level I referrals for young children were equipped in accordance with recommendations of the Pocket Book of hospital care for children, and respective regular trainings were delivered. In addition, from 2011 the Integrated Management of Childhood Illnesses (IMCI) and Making Pregnancy Safer (MPS) strategies that include effective perinatal technologies, confidential enquiry “Beyond the Numbers” (*confidential enquiries into maternal deaths at national level and near miss cases review in all perinatal centers of the country*) and regionalization of perinatal care were scaled up across the country in the framework of the national healthcare development program for 2010-2015. According to the Ministry of Health, the improvements in referral and re-referral system with the use of specialized vehicles enabled concentration of up to 70-80% pregnant women and newborns with a high risk of obstetric/neonatal complications and premature births at level III perinatal facilities. At present, there are 25 perinatal centers and 6 obstetric facilities of level III in 14 oblasts and 2 special-status cities. From this time on, an essential decline of early neonatal and post-neonatal mortality (mainly caused by pneumonia) has been observed, primarily due to improved emergency care for newborns and young children. Despite significant decline, the child deaths from preventable causes remain relatively high in Kazakhstan; the country has not used yet its potential in full to reduce under-5 mortality.

Currently, in overall U5 deaths (Figure 2) childhood infections, which are in the focus of IMCI, constitute 17% among other causes. Therefore, IMCI in Kazakhstan along with its impact on mortality reduction is primarily viewed as an efficient intervention to address better quality of health services and satisfaction of users with provided services. At present, IMCI is the only strategy in pediatrics to improve primary and secondary health care for children and enhance knowledge and skills of families and communities in young child care. According to IMCI country adaptation prevention and treatment of acute respiratory diseases, including wheezing, diarrhea, malnutrition, and measles were included.

In the framework of the global study this overview intends to assess IMCI country strategy implementation in for more than fifteen years, define factors contributing to successful implementation, barriers and further improvement of child care in terms of access and quality of services delivered to children population at large.

The analysis was made using WHO methodology developed by experts Global IMCI survey team by two phases:

1. Desk review of all available studies, analytical reports, overview of statistics, research publications, completed in late April 2016;
2. Interviews of key experts from the national and sub-national levels, as well as from international organizations involved in IMCI implementation that took place during May 2 - 6, 2016. It included 16 individual interviews conducted with national and regional/district specialists in Astana city, Shymkent city (1st visiting site) and Tolebi district (2nd visiting site) of South-Kazakhstan oblast and 3 group discussions in Shymkent city with (1) trainers and staff of the oblast IMCI Centre, (2) oblast health authority representatives, PHC and hospital administrators and health care professionals from the oblast and few districts and (3) teaching faculty from Medical Universities and medical colleges.

Data analysis took place between national consultant and WHO/Europe staff, using following methods: systematic extraction of key themes from interviews using an Excel spreadsheet, triangulation between written sources and interviews and amongst key informants, and debriefing of preliminary results with Ministry MCH department staff at the last day of data collection.

II. IMCI organization and management

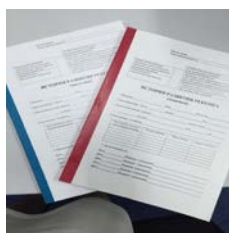
Kazakhstan was the first of CIS countries that started IMCI implementation in 1999. Over 16 years, the country has passed through strategy implementation process from piloting to dissemination across the country due to significant political support from the government and basic technical assistance of the three international organizations: WHO, UNICEF and USAID (ZdravPlus Project). IMCI implementation in Kazakhstan may be conventionally divided into three phases:

Phase 1: *Introduction and early pilot implementation (1999-2002)*, which focused on adaptation of clinical guidelines and training modules, training of trainers, clinical instructors and supervisors, obtainment of political support and pilot introduction in selected districts. A critical mass of healthcare professionals in these districts was trained during this period, expansion of pilot districts was initiated, and preparation for implementation of the third IMCI component – engagement of families and communities in improvement of child health – took place along with incorporation of IMCI into pre- service training. In 2000, a national IMCI Review meeting took place with a wide involvement of all key stakeholders to review the strategy early implementation progress (6).

Phase 2: *Expansion of IMCI implementation to oblast level and strengthening of health system (2003-2009)* to support IMCI in the framework of health system reform undertaken by the Ministry of Health that included creation of health services standardization system,

implementation of guaranteed basic benefit package, as well as optimization of hospital care by rundown of small-scale hospitals and changed approaches to unjustified hospitalizations and overstay of patients in hospitals. At this phase, IMCI was integrated into training curricula of 7 Medical Universities and 14 public medical colleges; children under 5 were supplied with free of charge IMCI standard medicines, national clinical guidelines were developed for pneumonia and diarrhea management, and healthcare professionals in hospitals were trained to use the Pocket Book; efforts were made to engage local communities to decision-making on mother and child health. Built on the experience and lessons learnt, the approach to implementation of the pilot model was adjusted to cover the entire oblast/province as regional administrative unit at the expense of international organizations and public funding. In 2006, the Ministry of Health and international organizations (WHO, UNFPA, UNICEF) initiated a joint program to improve mother and child health services by introduction of IMCI and MPS strategies in South-Kazakhstan oblast. The program continued to be implemented in the next years yielding results on the high level. Successful regional experience was instrumental for development of the National Program on reduction of maternal and infant mortality, 2008-2010 approved by the Prime-Minister of Kazakhstan where IMCI and MPS were **endorsed as the main national strategies** to improve mother and child health and reduce maternal and infant mortality in Kazakhstan (9).

Phase 3: Expansion of activities and geographic coverage (2010-2016) Country-wide implementation of the strategy was prepared in the framework of the joint WHO European Office (WHO/Europe) and Ministry of Health's project "Support to Mother and Child Health in Kazakhstan" financed by the European Union (2009-2011). The project supported development of the National Healthcare Development Program for 2010-2015 and further financing of IMCI and MPS on the national level. The national strategy for in-service training of healthcare professionals on IMCI and Efficient Perinatal Care was developed in the framework of the national program. **16 regional training centers** were created with a coordinator and team of trainers. The national standard form *Child Record Card* for PHC facilities was amended in line with updated WHO IMCI and child growth charts, and ICATT was customized for the country (7).



Kazakhstan ICATT DVD cover page and Individual Child Record form



IMCI Training and Resource Center

At present, **in-service training** of health workers continues in all regions and is **fully funded from the public budget**. Full financing of these initiatives was confirmed in the new cycle of the National Healthcare Development Program for 2016-2020.

In Kazakhstan, PHC pediatricians, general practitioners, medical assistants and nurses, as well as pediatricians and nurses from hospitals and ambulance service are subject to IMCI training. According to legislation of the country, only physicians and medical assistants are allowed to provide clinical management of children and, therefore, training was divided into 4 basic courses (compulsory):

- 1) 5-day ICATT course on sick child management for PHC physicians and medical assistants;
- 2) 4-day course on the Pocket Book for hospital and ambulance physicians;
- 3) 5-day course on healthy child care, including nutrition, assessment of growth, care for development, follow-up of treatment of sick child, and hygiene aspects of care for all PHC and hospital healthcare professionals, including nurses;
- 4) Training course for facilitators and supervisors on follow-up visits.

Additional courses include:

- 1) A separate course for hospital healthcare workers on Emergency Triage Assessment and Treatment (ETAT), including practice with medical simulation dummies;
- 2) Introductory IMCI course for managers of healthcare facilities;
- 3) Training course on IMCI with HIV, using ICATT HIV in context of IMCI



The courses have evolved in the process of optimization of financial costs and country needs with reference to pilot implementation of IMCI. The cost of one course for the government is \$ USD 70-100 per trainee. Training is delivered at IMCI training centers on oblast level in specially equipped computer classrooms and simulation dummies and manikins for ETAT classes. All IMCI training centers are established in central oblast pediatric hospitals that include both out-patient and in-patient clinics. Coordinators and trainers are full staff employees of these facilities and payment for training comes to the hospital from two sources: local health budget (municipal or district) and additional facility's budget that used to support training of its employees and paid from so called "incentive component for quality services"; the last funding comes from the republican budget. Coverage with IMCI training is part of criteria for facility accreditation and is supervised by the National IMCI Coordinator, who was approved in 2011 for coordination of the strategy implementation at the national level. The National IMCI Coordinator is an employee of the National Research Center for Mother and Child Health and co-leads a national IMCI and MPS coordination Center. The center is reporting to Mother and Child Health

unit of the Health Services Department of the Ministry of Health and Social Development which is responsible for mother, child and adolescent health, including neonatal period.

Initially, IMCI included healthy and sick newborn management from the date of discharge from maternity hospitals (from 7th day of life). In Kazakhstan, almost all children are born in maternity hospitals (99% according to MICS, 2011). Due to implementation of perinatal technology and current early discharge of healthy newborns (no later than the 3rd day) and revised WHO algorithm for sick newborns 0-2 months, national IMCI modules and chart booklet were respectively updated in 2008.

III. Implementation of IMCI and other child health strategies

To secure access of population to first referral level facilities and taking into account long distances and low density of population in Kazakhstan, almost 70% of healthcare facilities are located in rural areas to cover approximately 17% of overall population (1). At present, training of healthcare professionals at basic IMCI courses achieved slightly more than two thirds of the eligible group. According to the National IMCI Center, in 2015, the coverage achieved 69% PHC physicians and medical assistants and 60% nurses. Pocket book training covered almost 59% hospital pediatricians and nurses. In general, the coverage grew from 15% at initial phase to 70% after opening training centers in 16 regions. However, in the last three years this indicator dropped due to growing outflow of healthcare professionals from the health system; consequently, a significant number of trained workers are lost every year. In 2008-2015, 6000 healthcare professionals were trained at South-Kazakhstan IMCI training center, and now only half of them are still in services. Deficit of human resources is most evident in primary health care. In 2015, only 32% PHC facilities and 48% hospitals have achieved 60% coverage with training (National IMCI Center data). High turnover of HRH and retention problems are the consequence of incompetent management with punitive approaches, swollen external control, low prestige of the profession and low wages. In Kazakhstan in the health sector, an average salary for physicians and nurses is 80% and 40% of average country salary, correspondently (1).

Regional diverse in training coverage is not significant, with some success in certain regions where training achieves 85%. Quality of training varies as well and depends on trainers' level despite strong follow-up and support from the national coordinator who observes training during regular visits. According to the IMCI Center, it takes almost 2.5 months to train a trainer in all approved IMCI courses and training under master-trainer's supervision. Regular meetings take place to discuss strengthening of regional trainers and coordinators capacity at the expense of the government funding, and a standard approach is used to training of trainers in all regions according to the Administrative Order of the Ministry of Health (№ 656, 2008; № 165, 2011).

Frequent change of trainers and lack of efficient incentive mechanisms is another problem of the training centers.

At the same time, inadequate quality of pre-service medical education (universities and colleges) represents a significant challenge. According to the interviews, university teachers supported an essential need to introduce IMCI and noted that “integration of IMCI into the last year of trainee’s curriculum was not a problem; however, its fragmented incorporation across the various subjects was problematic”. Also, the respondents noted that “teaching methodology and availability of trained teachers in universities and colleges were challenging contrary to strategy recommendations, as well as quality arrangement of IMCI course with sufficient practical sessions” (K0505b). The respondents agreed with the “need for IMCI course wisely tailored to the pre-service education and education system”. They think that “existing materials for pre-service training are not sufficient for successful IMCI introduction and more reference literature is needed” (K0505b).

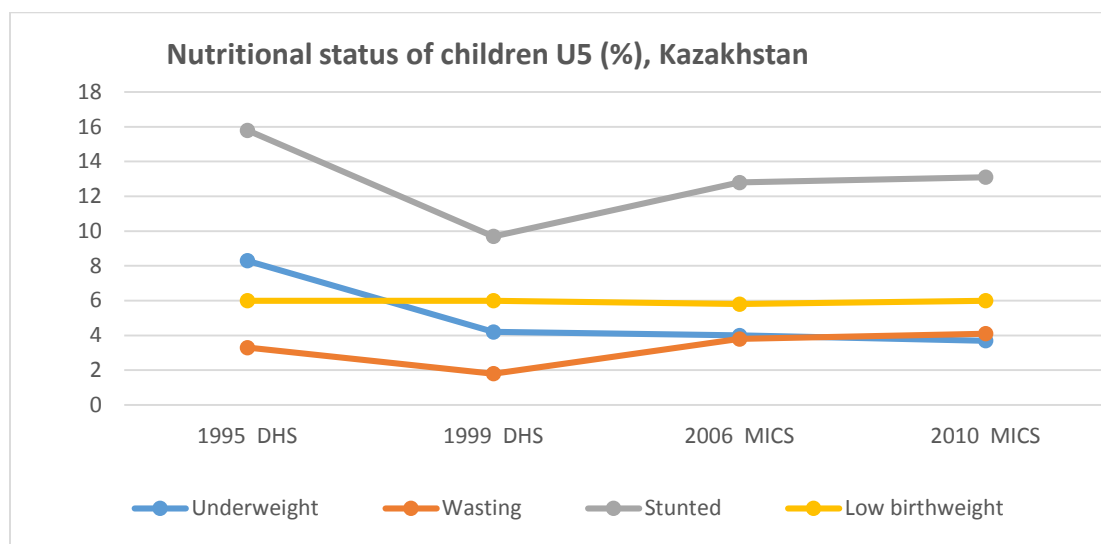
The government funding is not available for follow-up visits of trained healthcare professionals, as well as further supportive supervision. This is imposed as an unpaid task on regional IMCI centers. Consequently, the follow up coverage is 25% and usually ends with a single visit.

Over the last 5 years, national health finance system has undergone a significant reform that included standardization of health care, supporting the IMCI implementation. A new national system of incentive capitation rate enables extra pay to salary of PHC health workers for quality services that include a few IMCI-related indicators. Accreditation in line with international standards and case-based financing of hospital care has enabled reduction of unjustified and lengthy young children’s hospitalization. In addition, the national program 2010-2015 allocated resources to the inventory and equipping of level I hospitals. Following the inventory, hospitals were provided with basic equipment that used to be ignored in pursuit of expensive diagnostic ones. At present, hospitals are equipped with oxygen concentrators, Ambu-bags, laryngoscopes, CPAP for primary respiratory support of newborns; while the perinatal centers received specialized vehicles (mobile intensive care units) for transportation of premature and sick newborns.

From 2005, IMCI is implemented along the UNICEF program on strengthening existing patronage nursing system for children under three years old. A health care worker (PHC physician and/or nurse) visit a child at home and provide regular healthy child check-up during this age in PHC facilities (8). Under this program, the IMCI component was strengthened due to increased availability of information on complementary feeding, additional adaptation of nutritional recommendations and updated IMCI record form for healthy children from 6 months old (with regard to complementary feeding), as well as development of additional information

for nutrition counselling (job aids). Complementary feeding was emphasized because of high prevalence of micronutrient deficiency (Fe, Iodine) and prevalence of stunting among young children (9, 10).

Figure 5 (source: DHS, 1995, 1999 and MICS, 2006, 2010)



In accordance with the country socially oriented policies as well as objectives of the national healthcare development program 2010-2015, the Ministry of Health has strengthened PHC through introduction of social workers and increasing a number of home visiting nurses in 2011. From this time on, a new innovative approach to early child care is implemented through the development of universal-progressive model which is currently piloted in 3 oblasts of the country (8).

In the framework of the 2-year project of WHO/Europe funded by the European Union in 2009-2011, efforts were made to engage families and communities to decision-making on improving of mother and child health in Suzak district of South-Kazakhstan oblast. This initiative was quite successful and appreciated by the local residents and local government as well. However, due to the absence of financing the developments remained a one-time pilot experience (12). The efforts of the Ministry of Health and financing were focused on the IMCI components, linked to clinical management and health system strengthening, while the third component remained the least developed in Kazakhstan. The main causes along inadequate financing include the absence of interested parties, international and national NGOs in the country and inadequate skills of

national specialists to undertake such initiatives. According to the respondents, “anything that was non-existent before is difficult to implement, and requires strong technical support (tools, training) and additional efforts” (K0503a).

All respondents on the national and sub-national level noted that “at present, IMCI is the only strategy in pediatrics that encompassed many other programs such as nutrition, early development, neonatal care, emergency pediatrics, HIV, etc. The strategy may serve as the basis for future development of pediatrics with potential expansion in line with the today’s challenges and priorities”(K0502e, K0502d, K0506b). Table 2 below demonstrates a summary of key contributing factors to IMCI implementation and barriers as a synthesis of the interviews.

Table 2. Factors contributing to IMCI implementation and key barriers in Kazakhstan

Contributors	Barriers
<ul style="list-style-type: none"> • Long-term national health programs with the government budget to support IMCI implementation. • Regulations of the Ministry of Health on IMCI policy and guiding principles as the national standard of sick and healthy U5 child management. • Availability of IMCI Coordinators on the national and sub-national levels; monitoring of IMCI strategy implementation included in responsibilities of Chief District Pediatrician. • Availability of equipped training centers for IMCI and Effective Perinatal Care (EPC) courses for healthcare professionals in all 16 regions of the country. • Free-of-charge IMCI medicines for all children under the guaranteed basic benefit package. • Regular national monitoring of IMCI implementation by the Ministry of Health 	<ul style="list-style-type: none"> • Inadequate quality of IMCI training in pre-service training curricula in medical universities and colleges • Inadequate quality of internal supervision, mentoring and facilitation of healthcare workers at health facility level. • Inadequate general program management knowledge and skills of managers of healthcare facilities due to absence of relevant training. • Lack of guidelines/tools and dedicated budget on the national level for external supportive supervision. Low coverage with on-site follow up of trained healthcare workers by supervisors. • High outflow of healthcare workers from health system and retention problems, especially in PHC. • Inadequate development of the third component on engagement of families and communities. Few and weak NGOs available in area of mother and child health. • Inadequate monitoring and evaluation: IMCI indicators are not fully integrated into the

<p>jointly with the National IMCI Center (regular data collection, field visits to regions, feedback to the Ministry of Health and local health authorities)</p> <ul style="list-style-type: none"> • Government support to standardization of healthcare (national center for the development of standards and guidelines) and initiation of quality assurance (accreditation based on adopted best international standards from 2016, financial incentives for primary care workers from 2011). • Ministry of Health initiated a strategy to increase role and capacity of nurses (from 2016). • Nation-wide implementation of free-of-charge updated Individual Child Record Card for each child updated in accordance with IMCI forms and WHO child growth charts 	<p>national information system and the collected data are not always used for management decision-making. In-depth assessment/survey of IMCI efficiency is almost not available in the country.</p> <ul style="list-style-type: none"> • Insufficient visual aids for parents on early child care and development (in particular video films)
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IMCI materials were adapted in line with technical recommendations, new WHO modules, experience and needs for efficient training of healthcare workers. The Ministry of Health set up a national technical group for adaptation of materials consisting of leading pediatricians responsible for neonatology, infectious diseases, nutritional science and breastfeeding program coordinators, AIDS Center specialists, TB experts. See below the history of all IMCI adaptations in Kazakhstan (6).

1998: The first national adaptation of IMCI clinical guidelines and training materials. Since Kazakhstan was the first country in the region the adapted materials were used by other countries to pursue their respective national adaptation goals.

2000: Amendments to clinical guidelines such as elimination of Ceclor as a second-line antibiotic in pneumonia cases and replacement of referral by hospitalization.

2003-2004: Adaptation of *Care for Development* module (incorporated in IMCI chart booklet and training materials).

2006: Revision of antibiotic therapy of pneumonia, diarrhea, ear infection and fever. Updated section *Infant Feeding* and new model *Care for Development* are added. Development of a 5-day

course *Early Child Care at the Family: Feeding Practice* (breastfeeding and complementary feeding), *Care for Development*, growth assessment as an additional IMCI healthy child course.

2006: First adaptation of WHO Pocket book and 4-day training course on child case management at first-referral hospitals.

2008: Update of IMCI materials on HIV/AIDS management with updated algorithms of newborn management (0-2 months old), newborn jaundice added, updated child growth charts in line with new WHO recommendations.

2010: 11-day training course was replaced by a 6-day ICATT course (training in classrooms and clinical practice) with the use of software adapted to the context of Kazakhstan) with additional 5-day training course for healthy child “Early Childhood Care in the Family” developed with UNICEF support.

2015: IMCI training evolved from 6-day ICATT course and 5-day course on Early Childhood Care in Family into two separate 5-day courses on management of Sick and Healthy child.

2015: Update of the national Pocket book according to WHO book 2nd edition by sections: emergency care: triage and treatment; intensive care of newborns; classification of pneumonia and treatment; supportive therapy; a new chapter on rheumatoid disease management was added.

Data from MICS regularly delivered by the National Statistical Agency and supported by UNICEF, UNFPA every five years were used to assess progress of IMCI implementation. The recent MICS, 2015 has been finalized now; final report is under preparation and to be released in September 2016. In 2003, along with a few countries Kazakhstan was included in the WHO analytic review of the Integrated Management of Childhood Illness strategy, conducted by WHO (13).

No assessment of IMCI implementation effectiveness was carried out in the country; however, an analytical review of early phase of strategy implementation (6) was undertaken as well as national meetings on review of IMCI implementation and strengthening the health system support took place:

1. Assessment of health system (2005), including assessment of hospital care to children (2002, 2009 and 2011) and supportive supervision (2010) (15, 16, 17); National meeting on inter-sectoral collaboration for mother and child health (2011).
2. Review of IMCI training at pre-service and post-graduate medical education in universities and colleges (2006) (18)
3. Assessment of key practices on early child care at the family and community (2002, 2004) (19).

New WHO materials were presented at such meetings to discuss potential for adaptation and implementation in Kazakhstan.

Biannual project of WHO/Europe *Improvement of Mother and Child Health in Kazakhstan* 2009-2011 financed by the European Union was instrumental for preparation to country-wide IMCI implementation. The project supported development of the national strategy for continuous IMCI and EPC trainings of healthcare workers on the sub-national level from public funds and formalization of such types of training. Until 2011, post-graduate training of healthcare workers existed in the country only in form of primary and recurrent specialization to improve knowledge and skills of healthcare workers on basis of leading universities and colleges of the country every five years. The outcomes of the biannual project were published in the European Magazine on Sexual and Reproductive Health “Entre Nous” in 2011 (7).

No a separate in-depth assessment of IMCI implementation and its impact on child health was conducted in Kazakhstan. However, BASICS Project carried a Health Facility Assessment in the framework of child survival program implementation in 1998 in Kazakhstan. The project showed a positive impact of integrated approach on management of acute respiratory and diarrheal diseases, as well as efforts to support breastfeeding in Dzhambyl oblast along with social mobilization in communities (20). In 2015, UNICEF in the framework of multi-country assessment of UNICEF program contribution during 2000-2012 made a comprehensive assessment of all programs with regard to achievement of MDGs on reduction of child mortality. UNICEF has provided support for IMCI at early stage of implementation and further focused technical efforts on better parenting skills through improvement of patronage nursing services at primary care level, existing from Soviet times (11).

IV. Lessons Learnt

After 16 years of IMCI strategy implementation we may confidently prove that IMCI has contributed to **reduction of U5 child mortality** in Kazakhstan and led, along with vaccination against pneumococcal and hemophilus infection, to reduction of pneumonia morbidity and mortality, especially its severe forms. This strong message was repeatedly made by all interviewed informants. In addition, healthcare workers highly appreciated IMCI as a convenient and efficient approach to clinical management of major childhood illnesses and early child care on outpatient polyclinic level and level I hospitals. All respondents, especially medical assistants and family doctors, emphasized that after IMCI clinical training they felt confident in infant and young child case management. IMCI in-service training courses enabled the country to **significantly upgrade knowledge and skills of PHC workers**. IMCI proved especially useful for ex-Soviet countries, where at that time health workers had outdated knowledge of sick child

management with primary focus on treatment (prescription of multiple medicines and dominated hospital treatment) and superficial approach to work with families and communities on improvement of child care. According to the respondents, IMCI sections on counselling, assessment of common danger signs, treatment of wheezing and acute respiratory diseases are the most eminent strengths of the strategy. It helped to **address critical problems of the health sector**, such as unjustified hospitalizations, polypragmasy and unnecessary antibiotic therapy, inefficiency in improving of parents' child care knowledge and skills".

It was noted that "strong advantage of IMCI is its **technically sound** clinical and training guidelines and clear, well-weighted implementation strategy that helped the country a lot" (K0503c). Respondents noted that "the proposed comprehensive approach with definition of all three integrated components of impact that focused on health system, capacity of healthcare professionals and family and community practices is a prerequisite to achieve better health and development of children" (K0503c, K0503a, K0505a). **Lessons learnt** from IMCI implementation in Kazakhstan showed that strengthening only two IMCI components without due consideration of the third one keeps away from complete successful strategy implementation. Also, respondents emphasized that "strengthening of the **third component is vital** but the country does not have enough specialists and organizations that able to promote development and implementation of comprehensive communication strategy that might be proposed to the central or local government as an action plan supported with public financing"(K0502d, K0506b). One of the **innovative examples** in this field is implementation of universal-progressive model of child home visits based on IMCI and ECD by nurses, and strengthening of outpatient polyclinics by means of social workers as well as by additional patronage nurse for catchment area. This approach is based on assessment of health and social risks and intersectoral collaboration in addressing problems in mother and child health. A conceptual model is developed followed by revision of job descriptions of health and social workers. In 2015, UNICEF supported piloting of the model in 3 oblasts.

One of the lessons is that demonstration of successful regional (South-Kazakhstan oblast) experience of IMCI implementation with real improvement of child health and quality of care indicators and positive feedback of the population served as a basis for the Ministry of Health decision on **nation-wide implementation of the strategy funded from governmental budget**.

Experience of the strategy implementation on the national level showed that **further strengthening of supportive supervision** that includes external and internal supervision and health worker self-assessment is critically needed. According to the respondents, "external support only, without supportive supervision and mentoring at facility level cannot secure sustainability in improving quality of care and rational use of health system resources (financial, human, medicines, supplies, transport, continuous training and staff development) especially in context of large distances to settlements and healthcare facilities"(K0502d, K0503b, K0506b).

Ineffective program management at facility level, including quality improvement management was defined by the Ministry of Health as a problem. Its addressing is priority for the healthcare development in Kazakhstan. However, taking up a right choice of directions, the Ministry of Health is limited in technical support for appropriate implementation of such initiatives. The country does not have a sufficient number of trained specialists and developed training courses on advanced and effective management of programs and care in facilities.

At this stage of IMCI implementation an appropriate **quality of pre-service training** in medical universities and colleges is critical. Regional in-service IMCI courses proved to be more efficient than pre-service training of healthcare professionals. As a result, health system spends additional resources for recurrent training of university and college graduates, and significantly increases burden on existing regional IMCI training centers.

V. Perspectives for the future

In summary of results of IMCI implementation in Kazakhstan we should note that key achievement of the government was creating normative, policy and financial support for sustainable IMCI implementation through:

- **Political commitment and leadership of the country in strategy implementation.** The Regional IMCI Coordinator in South-Kazakhstan oblast said: “Now, we can definitely say that **IMCI strategy implementation is irreversible**. The issue is how to support and coordinate the process in right way, manage emerging problems and maximize efficiency”(K0503b);
- **Sustainable public financing at national scale:** set up of training centers on the oblast level, free-of-charge medicines and updated standards of entries in individual records;
- **Government investments into better quality of health services with a focus on primary and secondary care:** financial incentives, accreditation of health facilities based on internationally accepted standards and training of managers (in 2016-2017). Introduction of quality control positions in management structure of each facility: deputy director on quality of care and quality of care experts (1 per 200 hospital beds and 1 per 20,000 patients served by PHC facilities);
- **Programmatic approach to better IMCI implementation:** a) continuous training with external supportive supervision on oblast level; b) monitoring by national, regional coordinators with regular visits to health facilities to assess the progress, as well as implementation of IMCI indicators on the national, oblast and facility level.

The ongoing outflow of human resources from the health system, inadequate technical and financial support to supportive supervision and mentoring, absence of training for managers of

healthcare facilities on support got improving of quality of services is **the areas for further improvement**.

According to interviewed national and regional trainers, “at this stage of IMCI implementation it is necessary **to maintain existing system of in-service training** of healthcare professionals and **strengthen pre-service training** as well” (K0502c, K0503c, K0505a). Trainers think “that separation of training course on healthy and sick child seems reasonable with the ideal duration up to five days”. The existing separation of course into compulsory basic course and optional one offered by training centers is an opportunity for health care facility managers to improve clinical capacity of their staff. Trainers mentioned that “the use of ICATT assists teaching and reduces the costs of courses” (K0506d). Five-year experience of **ICATT use** proved its efficiency and convenience. In addition to training in classes, the training centers provided all polyclinics with USB drives with ICATT to ensure continuous training and reference for trained professionals. In the framework of the national development program, all health facilities connected with web portal of “e-government”. District health facilities are equipped with computers, software, TVs and DVD players. Healthcare workers positively received news of expected mobile application of the WHO Pocket book. Due to universal use of mobile phones in the country Kazakhstan will be able to disseminate this innovation as a practical tool for better routine use of national clinical job-aids. To strengthen pre-service training, the interviewed teachers of visited region noted “a need of technical support to universities and colleges. Successful experience of some of them might improve the situation” (K0505b, K0502c).

As it was noted, technical support to IMCI implementation in Kazakhstan initially was provided by limited number of international organizations and at limited timeframe. As a result, there are almost no surveys of IMCI efficiency in the country. The only source is monitoring of some indicators by MICS. It is necessary to explore potential for such surveys in close future.

VI. Actions needed at country level

Despite the policy and strategic approaches to successful implementation of IMCI in Kazakhstan, as well as its active dissemination across the country over the last five years, **other remained barriers** need to be addressed. Vertical coordination from the national to oblast level was strengthened. However, little attention was turned to **capacity development of managers of healthcare facilities**. In the framework of reforms undertaken by the Ministry of Health and the World Bank on creating a system conducive to better quality of care, **accreditation system is being improved**. There is planning to initiate training of health managers. Incorporation of IMCI into this action will further improve motivation of healthcare professionals and managers to implement IMCI and strengthen internal facilitation. Another important area is **improvement of methodology for supportive supervision and dissemination** across the country with a

dedicated public budget. Strengthening of existing monitoring and evaluation of IMCI implementation is needed. Joint efforts of the National IMCI Coordination Center and World Bank programs on creation of unified e-health system will enable collection and analysis of statistics to make management decisions on oblast and facility levels.

The next phase should envisage **engagement of families and communities** to better child health and development, including NGOs in this field. With technical support from WHO, UNICEF and UNFPA, it is necessary to develop a comprehensive communication strategy for improving mother, child and adolescent health. The strategy should envisage local NGO capacity building. Considering the outflow of skilled healthcare professionals from the health system, it is necessary to **assess HR policy to retain personnel** and encourage implementation of best practices at local level.

VII. Activities needed at global level

Systematic surveys in ex-Soviet countries including Kazakhstan showed that one of the main reasons of unjustified and lengthy hospitalization and polypragmasy is **overdiagnostics of neurologic conditions** of newborns (up to 80%). Children labeled as “sick” were subject to intensive therapy, including potentially harmful medicines and were under lengthy monitoring and care by neurologists. According to international specialists, one of the key reasons of overdiagnostics is outdated guidelines and unawareness of physiological norms of child growth by local experts, especially in newborn period (21). Such situation along with potential harm for health brings additional expenses for family and health system and requires immediate actions. In addition, Kazakhstan is the top second country in WHO European region in child mortality from **unintended injuries and accidents**. Accidents are the third leading cause of U5 deaths in Kazakhstan (22). Therefore, integration of algorithms with regard to such conditions to IMCI and pre-service training of medical students might contribute to further decline of child deaths from preventable causes in Kazakhstan and other countries with similar epidemiological profile.

According to the interviewed respondents, “the child emergency care course should include intensive therapy of such conditions by using the respective chapter of the pocket book”. Also, they mentioned the need to develop **WHO guidelines and training courses on supportive supervision and mentoring**.

WHO module *Care for Development* was integrated into the training course on care of healthy child in Kazakhstan. Experience from implementation of this component raises the need for **additional information or reference literature on developmental and behavioral pediatrics** for elective training of healthcare professionals and teachers from medical education system. **Up-to-date materials should be developed for parents** (video films) on cooking skills for

complementary feeding, as well as early development of a healthy child with information on care for later stages that might considerably help in the development of parenting skills.

Changed name of IMCI strategy

The interviewed respondents **unanimously agreed** that the change of the strategy title was **not advisable** and brought the following arguments:

- A new name will be perceived as termination of support to IMCI strategy on the global level;
- New name will require additional efforts to advocate and explain that the new strategy is in substance the previous IMCI, which is absolutely wasteful;
- Over the last 16 years the IMCI strategy was continuously supplemented and expanded in the country. People got used to perceive IMCI as the key strategy encompassing other programs related to child health and development.

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Annex 1 Phases of IMCI implementation in Kazakhstan

Years	Activities	Milestones of strategy implementation
1999 - 2002	Introduction and early pilot implementation	Implementation in some (43) districts; adaptation of IMCI materials, training of national and oblast trainers and supervisors; adaptation of follow up materials
2000	Analytical review of early implementation stage	Preparation of report with recommendations for the Ministry of Health on IMCI scaling-up
2000	National meeting on IMCI implementation and planning in pre- and post-graduate medical education	Training of teachers of pediatric departments in leading medical universities at 11-day IMCI course. Development, approval and dissemination of 36-hour IMCI curriculum for teaching.
2000-2002	Assessment of key child care practices on family and community level	2000 – Situation analysis of child care practices and national meeting. 2004 – Follow up national meeting on implementation of child care practices on family and community level
2003-2004	Incorporation of <i>Care for Development</i> module into the IMCI chart booklet and training materials	Adaptation of module and incorporation into the chart booklet and training materials
2006	Update of IMCI guidelines	1. Revision of antibiotic therapy in

		<p>pneumonia, diarrhea, ear infection and fever management.</p> <p>2. Update of <i>Infant Feeding</i> section and incorporation of <i>Care for Development</i> module. Development of 5-day training course on Early Child Care in Family: Feeding Practice (Breast- and Complementary Feeding), Care for Development, Growth Assessment as additional IMCI course on healthy child care</p>
2006 - 2008	Introduction of WHO Pocket book	Adaptation and introduction of the pocket book and 4-day training course on child management in level I hospitals. National orientation and planning meeting
2003-2009	Scaling up of IMCI implementation	Increasing the number of oblasts for strategy implementation and achievement 15% coverage of healthcare workers with training
2005-2011	Assessment and strengthening of health system	<p>1. Assessment of health system support for IMCI and health system strengthening (2005, 2009)</p> <p>2. Quality assessment of child hospital care (2002, 2009 and 2011)</p> <p>3. Assessment of supervision (2010)</p> <p>4. National meeting on intersectoral collaboration for mother and child health (2009, 2011)</p>
2006	Overview of IMCI training pre- and post-graduate medical education in universities and colleges	
2007	Supply of free of charge medicines to young children	
2008	Update of IMCI materials in line with WHO recommendations	Update of IMCI guidelines and materials with regard to HIV/AIDS management, algorithm for newborn management during the first week, inclusion of jaundice in newborns, update of child growth charts in line with new WHO recommendations.
2009-2011	Preparation to implementation on the national level: development and implementation of the national	WHO/Europe project financed by the European Union

	strategy of continuous HRH training on sub-national level. ICATT adaptation and piloting 2010-2011. Pilot engagement of population to address mother and child health problems on district level (training on package of tools; assessment, implementation and preparation of district action plan)	
2011	Nation-wide implementation, IMCI is recognized as a standard for basic child care	Administrative Order and Policy (Prikaz) of the Ministry of Health
2015	Separation of courses by sick and healthy child	IMCI course was changed from 6-day ICATT course and 5-day Early Child Care in Family to two 5-day separate courses for sick child and healthy child
2015	Update of pocket book in line with new WHO recommendations	Update of sections: emergency care: triage and treatment; intensive care of newborns; classification and treatment of pneumonia; supporting therapy; a new chapter added on rheumatoid disease management.