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Organization

BETTER HOSPITAL CARE FOR CHILDREN

Improving quality of paediatric care at first-level referral
hospitals in Angola, Ethiopia, Kyrgyzstan and Tajikistan

Final Technical Report 2012–2015

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**Improving quality of paediatric care at first-level referral
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I Abbreviations

ETAT	emergency triage assessment and treatment
GIZ	German Agency for International Cooperation
HIV	Human Immunodeficiency Virus
JICA	Japan International Cooperation Agency
KFW	German Development Bank
MDG	Millennium Development Goal
MHIF	Mandatory Health Insurance Fund
MNCH	maternal, newborn and child health
MoH	ministry of health
MoHSPP	Ministry of Health and Social Protection (Tajikistan)
QI	quality improvement
SDG	Sustainable Development Goal
UNICEF	United Nations Children's Fund
USAID	United States Agency for International Development
WHO	World Health Organization

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I Executive summary

In many low- and middle-income countries, deficiencies in the quality of paediatric care at district hospitals are a major factor limiting reductions in child mortality.

In 2012, the Russian Federation funded a US\$ 3.7 million three-year tripartite initiative with the World Health Organization (WHO) and the governments of Angola, Ethiopia, Kyrgyzstan and Tajikistan to address this lacuna and accelerate progress in reducing child mortality. The initiative aimed to:

1. improve the quality of paediatric care in selected first-level (district) referral hospitals (up to ten hospitals per country);
2. expand implementation to a national level through capacity building, adoption and introduction of up-to-date national norms and standards in paediatric care, based on international guidelines (*WHO Pocket book for hospital care for children: guidelines for the management of common childhood illnesses*);
3. update national and international guidelines and tools based on experience gained and data collected during project implementation;
4. introduce the concept of paediatric care standards into the national education and training of health professionals to sustain project results.

The process was initiated through national orientation workshops in all four countries. Based on the *WHO Pocket Book of hospital care for children*, each country subsequently developed or updated national treatment guidelines and national standards for quality of care. The countries carried out assessments against these standards in the participating pilot hospitals as well as in some non-pilot hospitals. Based on the results, the countries identified areas for improvement and conducted a total of 60 training courses covering nearly 1500 health workers in pilot hospitals. All participating hospitals introduced emergency triage and treatment systems and job aids. Countries developed or updated materials and tools and staff received supportive supervision. The countries also received equipment, principally for emergency care, such as resuscitation equipment, oxygen concentrators, training manikins, intravenous supplies and basic biochemistry laboratory equipment.

The results of reassessments in 2014 and 2015 showed consistent improvement in the quality of care in the majority of the participating hospitals as well as a trend of declining child mortality rates. Specifically, they showed an improvement in clinical case management of severe diarrhoea, of pneumonia and of conditions with fever, in addition to care for newborns. The frequency of unnecessary hospitalizations and unjustified and painful paediatric procedures were reduced in Kyrgyzstan and Tajikistan. The assessments also showed that in most participating hospitals, hospital stays were shortened. There was also a more rational use of medicines with a significant reduction in polypharmacy and unnecessary infusions and injections, saving significant hospital resources. Overall, as a result of the project, children are receiving better care and hospitals are better organized.

The WHO framework for improving quality of care, with its comprehensive implementation model, provided a process through which the countries could build national capacity and establish consistent and effective collaboration among stakeholders. The initiative also fostered strong working relationships between staff in the national ministries of health and experts from the Russian Federation and WHO.

The initiative catalysed the introduction of the concept of quality improvement (QI) and increased national and partner investments in QI processes. The expansion of the project model to a national or regional scale is essential to ensure high coverage of quality child health interventions and to improve child health outcomes. Countries are now looking to develop and implement long-term plans and budgets for effective scale-up.

Implementation presented a number of challenges. In general, all countries experienced delays in the purchase and distribution of equipment as well as the establishment of centres of excellence, and only Kyrgyzstan had sufficient resources to conduct project evaluation studies. In Angola, only half of the activities planned by the 11 hospital teams were implemented, due to lack of human resources, limited implementation capacity and changes in hospital management during the course of the project.

Key outcomes of the project:

A systematic approach to implementing the framework for quality improvement lead to improved quality of care and better health outcomes for children in hospitals:

- Overall, children are receiving higher-quality care and child health outcomes in pilot hospitals have improved.
- Participating countries institutionalized the quality improvement process and have built national capacity for improving the quality of paediatric care.
- All participating hospitals reported significant improvements across the full spectrum of their paediatric patient care, facility organization and operations.
- The considerable reduction in unnecessary hospitalizations, unjustified and painful paediatric procedures and prolonged hospital stays saved significant hospital resources.
- Hospital expenditures were greatly reduced in countries that monitored expenditures, due to a more rational use of medicines and improved quality of care for children.
- The initiative helped to increase partner and country investment in improving quality of care and the establishment or operationalization of quality control or assurance units.
- Consistent and effective collaboration was established among all stakeholders, including ministries of health, the Russian Federation and the World Health Organization.
- The expansion of the project model to a national or regional scale is essential to ensure high coverage of quality child health interventions and to improve child health outcomes.
- Effective scale-up will require the commitment and participation of partners in developing and implementing long-term plans and budgets and in mobilizing resources.

I Background

In 2014, some 5.9 million children under five years of age died from common childhood illnesses (mainly pneumonia, diarrhoea and malaria), neonatal causes (prematurity, low birth weight, neonatal infections and birth asphyxia) and severe acute malnutrition.¹ Nearly half of these deaths occurred in Africa.

In low- and middle-income countries, between 10% and 20% of all children brought to a primary care facility for consultation are severely ill and at risk of dying². These children require treatment at the first-level referral (district) hospital. However, the quality of paediatric care at this level is often neglected in favour of preventive and disease-specific interventions at the primary care level. Advanced curative medicine and funding are concentrated at the tertiary hospital level. Deficiencies in the quality of paediatric care at the district hospital are a major limiting factor to reducing child mortality in many developing countries.

In 2012, the Russian Federation funded a US\$ 3.7 million three-year tripartite initiative with the World Health Organization (WHO) and the governments of Angola, Ethiopia, Kyrgyzstan and Tajikistan to address this lacuna and to accelerate progress in reducing child mortality. The initiative aimed to:

improve the quality of paediatric care in selected first-level (district) referral hospitals (up to ten hospitals per country);

expand implementation to a national level through capacity building, and adoption and introduction of up-to-date national norms and standards in paediatric care, based on international guidelines (WHO *Pocket book for hospital care for children: guidelines for the management of common childhood illnesses*);

update international guidelines and tools based on experience gained and data collected during project implementation;

introduce the concept of paediatric care standards into the national education and training of health professionals to sustain project results.

The initiative introduced the concept of improving the quality of care in referral hospitals, based on the WHO framework shown in Fig.1. Countries sought to institutionalize this concept at national, subnational and facility levels, develop national paediatric standards and guidelines of care, build capacity of health workers, adapt and develop tools and implement QI processes. National scale-up was informed by the experiences gained and the best practices identified.

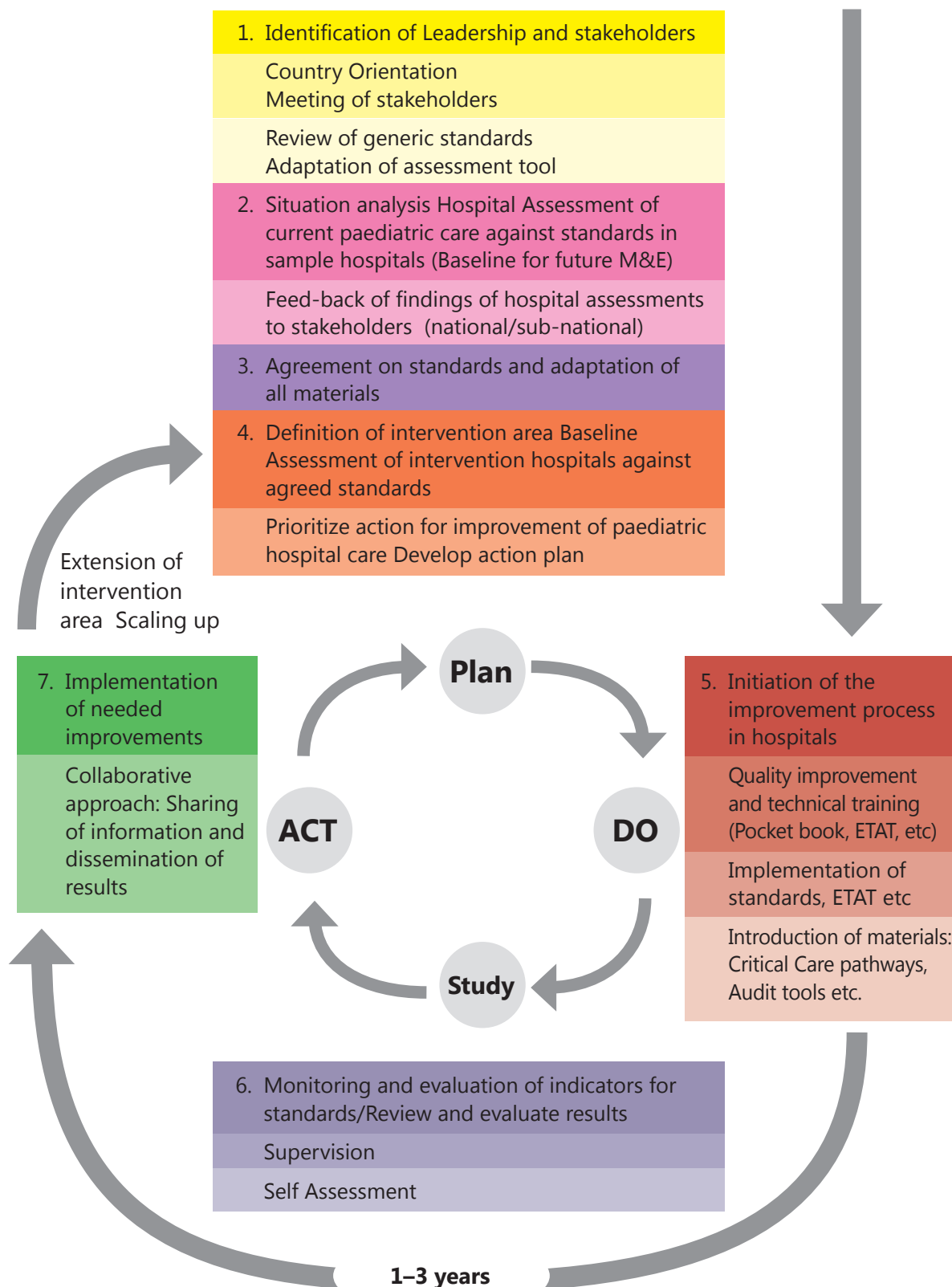
The project was implemented as planned from January 2012 to December 2014, with the exception of Angola where activities started somewhat later and ended in September 2015. This document is the final report of the project. It describes key achievements, including outcomes and impact, and key implementation processes, provides a list of tools and products that were

1 UNICEF, WHO, World Bank, UN-DESA Population Division. Levels and trends in child mortality 2015. New York: UNICEF, 2015

2 Simoes EA, Peterson S, Gamatie Y, Kisanga FS, Mukasa G, Nsungwa-Sabiiti J et al. Management of severely ill children at first-level health facilities in sub-Saharan Africa when referral is difficult. Bull World Health Organ. 2003; 81:522–31.

developed by the countries, offers lessons learnt, and includes a brief highlight from each country. Comprehensive national reports are available on request.

Fig. 1. Framework for quality improvement of paediatric hospital care



Adapted from: Global initiatives for improving hospital care for children: state of the art and future prospects. Campbell H, Pediatrics. 2008 Apr;121(4):e984-92. doi: 10.1542/peds.2007-1395.

Key achievements

This initiative acted as a catalyst for introducing the concept of quality improvement, and it increased national and partner investments in QI processes. The results showed an overall improvement in quality of care in the majority of the participating hospitals, better child health outcomes and a decline in paediatric hospital death rates. The end-of-project assessments showed an improvement in clinical case management for diarrhoea, pneumonia, and conditions with fever, and in care for newborns, with a trend towards fewer hospital child deaths. There was tremendous improvement in the rational use of medicines and a significant reduction in polypharmacy and unnecessary infusions and injections, particularly in Kyrgyzstan and Tajikistan. Emergency triage and treatment was introduced in all participating hospitals, and clinical monitoring was significantly improved, particularly in Angola and Ethiopia.

Outcome and impact of the project

Baseline assessments of quality of care in the 50 participating hospitals revealed substandard care in all 17–20 areas that were assessed (details can be found in the section on situation analysis and quality of care assessments). The average scores at baseline were particularly low in the area of case management. However, end-of-project assessments showed significant improvements in all assessed areas in all participating hospitals. Assessments were carried out by joint teams consisting of national assessors, Russian experts, international consultants and participants from the WHO country office, the WHO Regional Offices for Europe and for Africa and WHO headquarters.

Significant improvements were seen in the quality of paediatric care in all four countries

In Angola, all hospitals significantly improved the care of newborns and the management of severe acute malnutrition

In **Angola**, the average baseline scores varied across the areas assessed and among the eleven pilot hospitals (Fig. 2), with one hospital (Sumbe) having relatively higher scores compared with the others. On a scale of 5, the lowest scores of 3.0 or less were in the care of sick newborns, management of severe acute malnutrition and patient monitoring, indicating the areas that required substantial improvement to comply with

international standards. Baseline summary scores were 4.0 or above for availability of medicine and equipment, laboratory support and HIV care.

The end-line assessment showed significant improvement in all areas, in particular for newborn care, management of severe acute malnutrition, paediatric emergency care and patient monitoring. One of the priority activities identified at baseline was training of staff in emergency triage assessment and treatment (ETAT). As a result, triage and emergency treatment were improved from an average score of 3.2 in 2012 to 4.2 in 2015. Another area that significantly improved was patient monitoring, from 2.8 in 2012 to 3.8 in 2015 (Fig 2). The average summary scores of all 17 areas assessed increased from 3.3 in 2012 to 3.8 in 2015 in all pilot hospitals (Fig. 3).

Scoring used in Angola and Ethiopia:

5	Good practice complying with standards of care
4	Little need for improvement to comply with standards of care
3	Some need for improvement to comply with standards of care
2	Substantial need for improvement, or services totally inadequate
1	Urgent need of improvement or potentially life-threatening practices or services not provided

Fig. 2. Improvement in patient monitoring in pilot hospitals in Angola

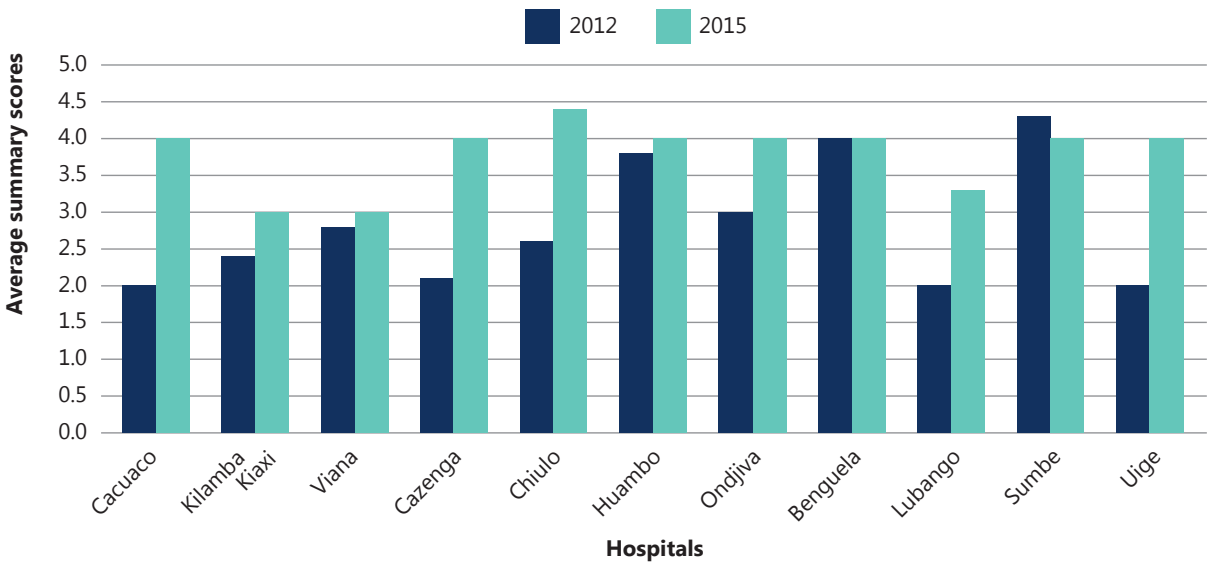
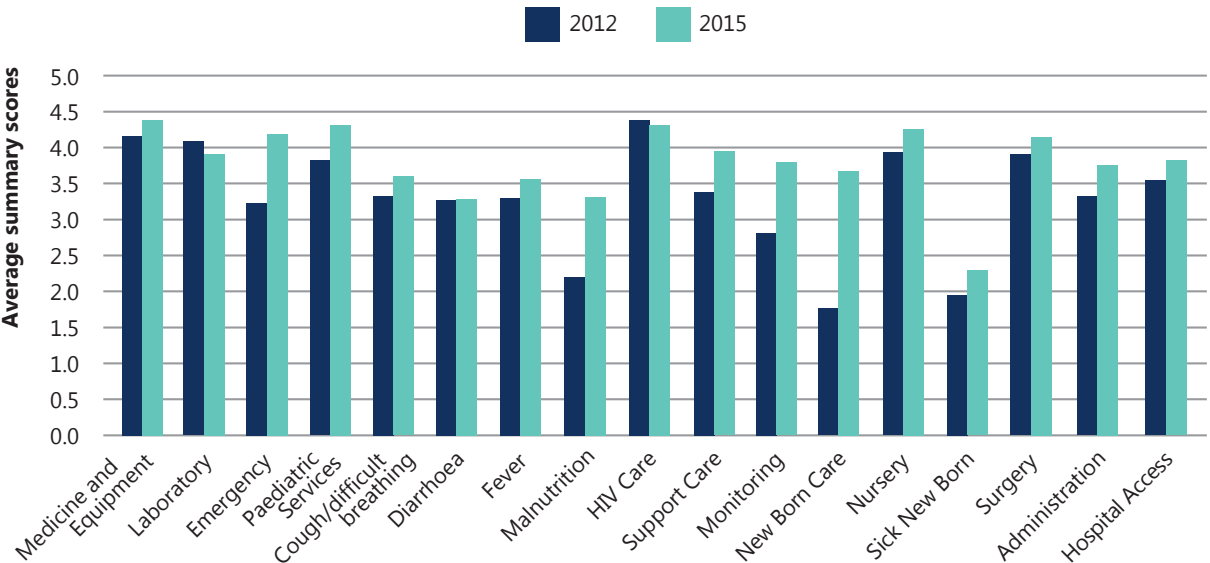


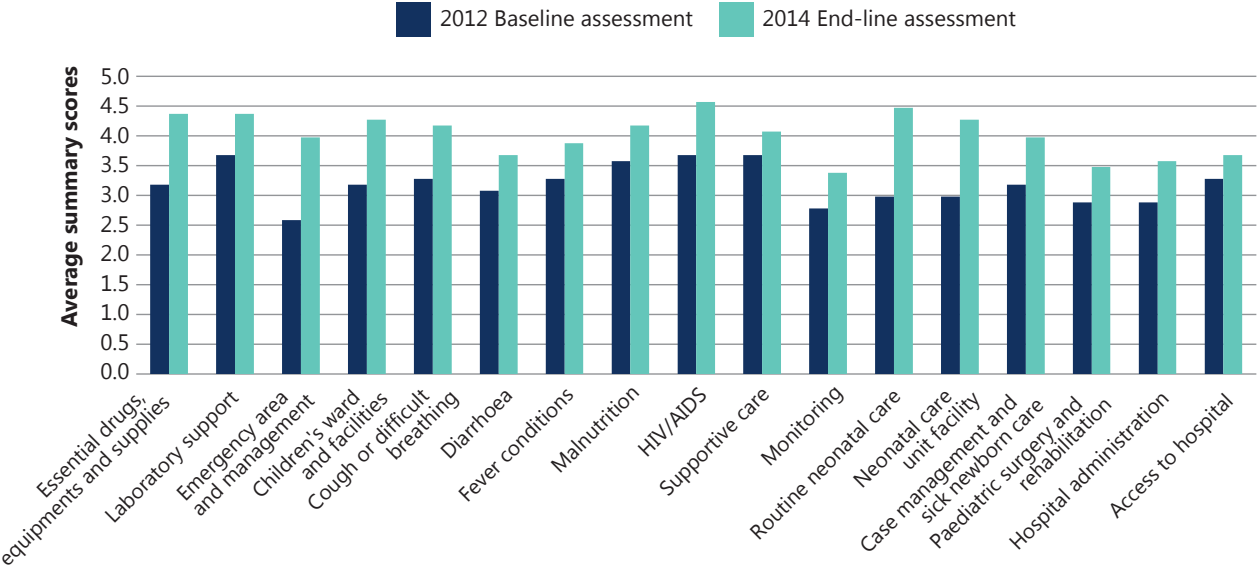
Fig. 3. Overall summary scores in pilot hospitals in Angola.



In **Ethiopia** the overall performance increased for all assessed areas (see Fig. 4). The number of outpatient visits and admissions increased, while neonatal and under-5 mortality decreased, as did mortality at all ages (0 to <15 years). The overall summary score of performance in the ten participating hospitals increased from 3.3 to 4.1 on a scale of 5. This indicates significant progress but leaves room for further improvement in order to reach optimal standards of care.

Ethiopia significantly improved the quality of managing the five common causes of child mortality in pilot hospitals

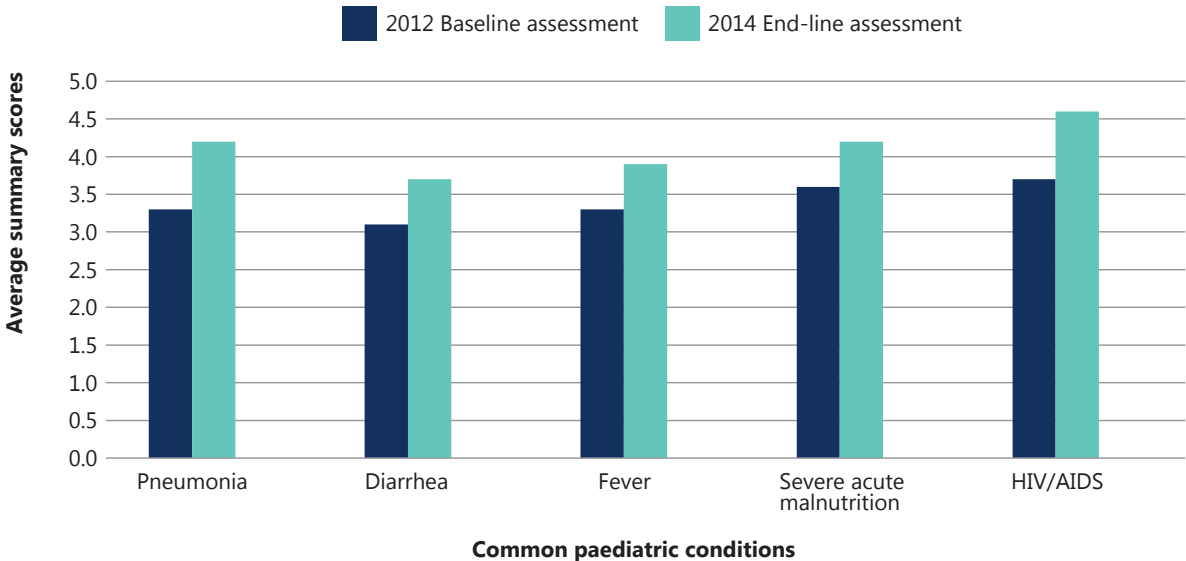
Fig. 4. Quality of care in the pilot hospitals pre- and post- intervention in Ethiopia



Overall, the average scores at baseline showed relatively little variation across the 10 pilot hospitals. No area of care complied with national standards. Laboratory support, management of HIV/AIDS and patient supportive care had the highest scores, 3.7, and emergency care and patient monitoring scored lowest at 2.6 and 2.8 respectively. Six areas had an average score equal to or less than 3.0, but none had an overall average score of 2.0 or less.

The end-line assessment showed marked improvement, with ten out of 17 areas having an average score of 4.0 or more; none of the areas scored 3.0 or below. Significant improvements were made in the management of the five common causes of child mortality in hospitals (Fig. 5). However further improvement will be needed to fully comply with national standards of care.

Fig. 5. Summary scores of case management of common conditions pre- and post-intervention in the ten hospitals in Ethiopia.

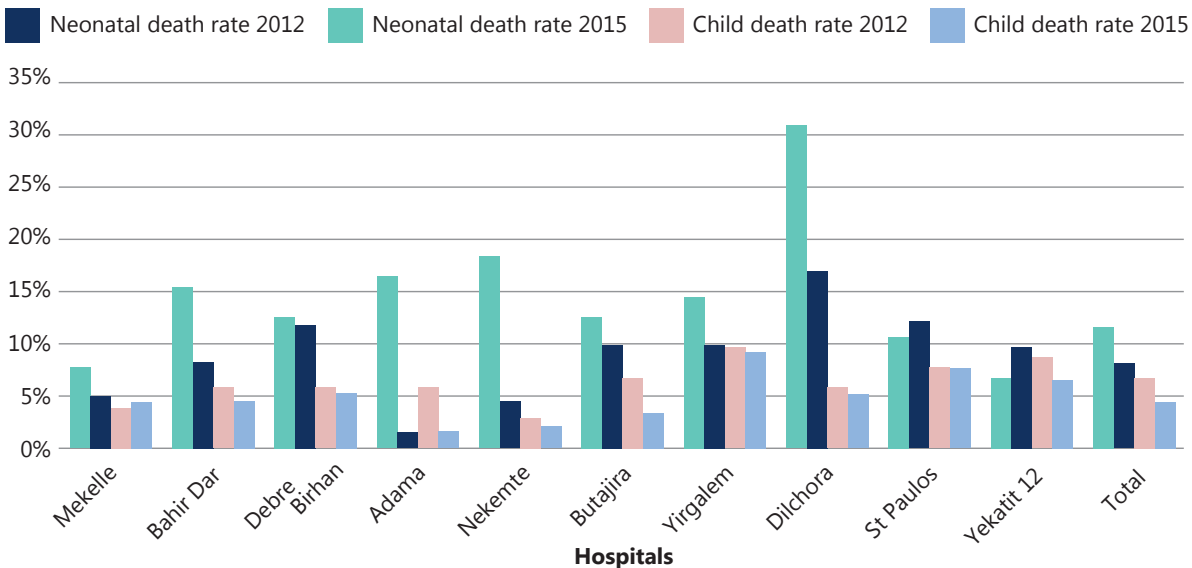


Ethiopia greatly reduced neonatal and under-5 mortality in pilot hospitals

In **Ethiopia**, neonatal death rate decreased by 4% (12% at baseline and 8% at end-line). Under-5 hospital deaths decreased by 2% (7% to 5%). Nevertheless, most of the six participating hospitals still had double-digit inpatient neonatal death rates and the situation worsened in two of the hospitals (St Paulos and Yekatit 12) (Fig. 6).

Expansion of the project to a national and regional scale is needed to increase coverage of the interventions and to improve child health outcomes.

Fig. 6. Reduction in neonatal and child death rates in participating hospitals in Ethiopia



In Kyrgyzstan, there was significant improvement in the quality of care in all pilot hospitals and deterioration in control hospitals.

In **Kyrgyzstan**, the baseline and end-line assessments covered the 10 intervention hospitals and the 10 additional non-participating hospitals; this second set served as a control group. Overall, average scores at baseline showed relatively little variation across all the hospitals assessed. No area of care complied

with national standards (score 3). On a scale of 3, laboratory support and medicines and equipment had the highest scores at 2.0 or more. Case management of pneumonia, diarrhoea and fever had the lowest scores of 1.0 or less, indicating the need for substantial improvement to comply with international standards.

The end-line assessment showed major improvements in all areas in the intervention hospitals compared with the control hospitals (see Fig. 7 and 8). In the intervention hospitals 16 out of the 17 areas assessed had an average score higher than 2.0, while in the control hospitals only the laboratory had a similar score. The pre- and post-intervention summary scores indicate significant improvements in all assessed areas for the intervention hospitals, and a general deterioration in the situation in the control hospitals.

Scoring used in Kyrgyzstan and Tajikistan

- 3** Practice complies with standards of care

- 2** Some improvement needed to comply with standards of care (suboptimal care but no significant hazard to health)

- 1** Substantial improvement needed to comply with standards of care (suboptimal care with significant health risks, for example omission of evidence-based interventions and use of diagnostic and treatment that are not effective and/or may be potentially harmful to children)

- 0** Very substantial improvements needed (wholly inadequate care and/or harmful practice with severe risks to the health of children).

Fig. 7. Quality of care in pilot hospitals pre- and post- intervention hospitals in Kyrgyzstan

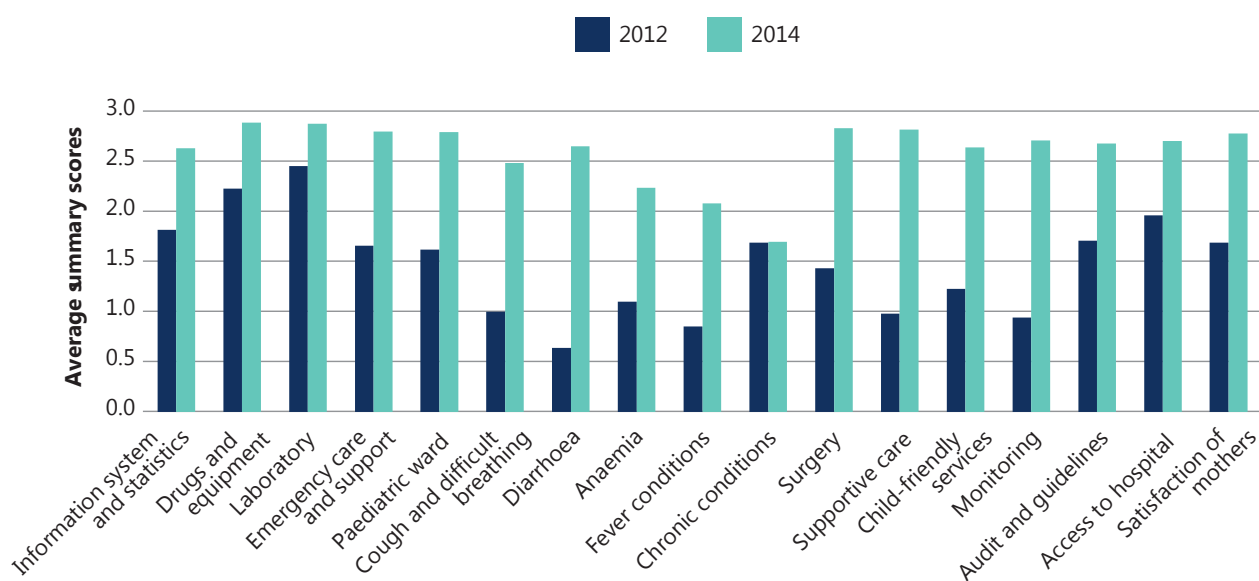
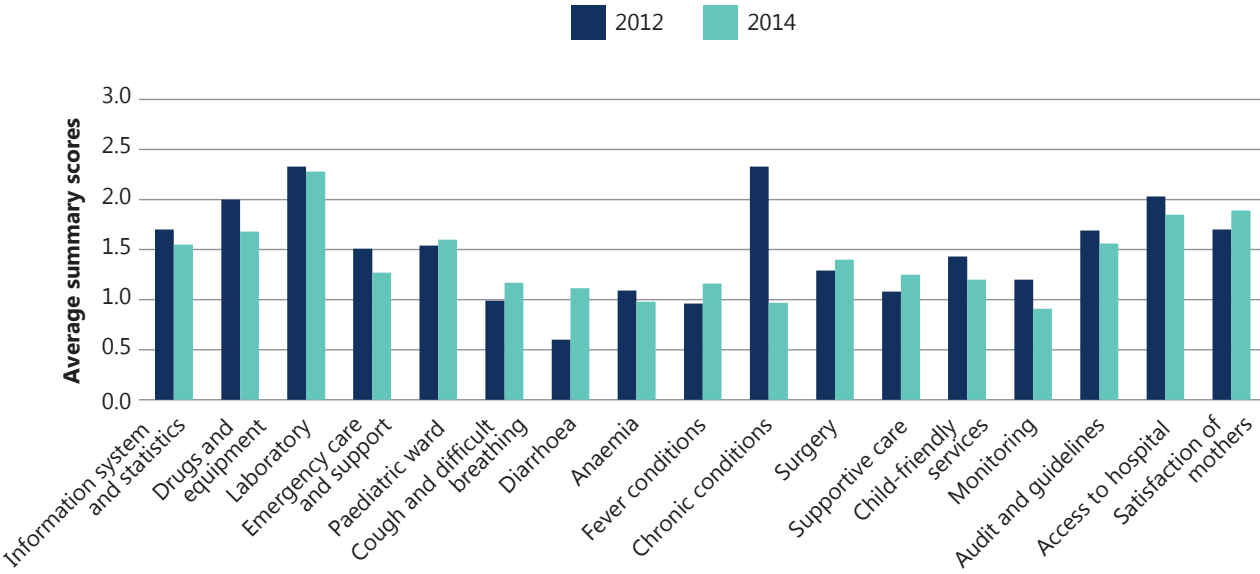


Fig. 8. Quality of care in control hospitals pre- and post- intervention in Kyrgyzstan

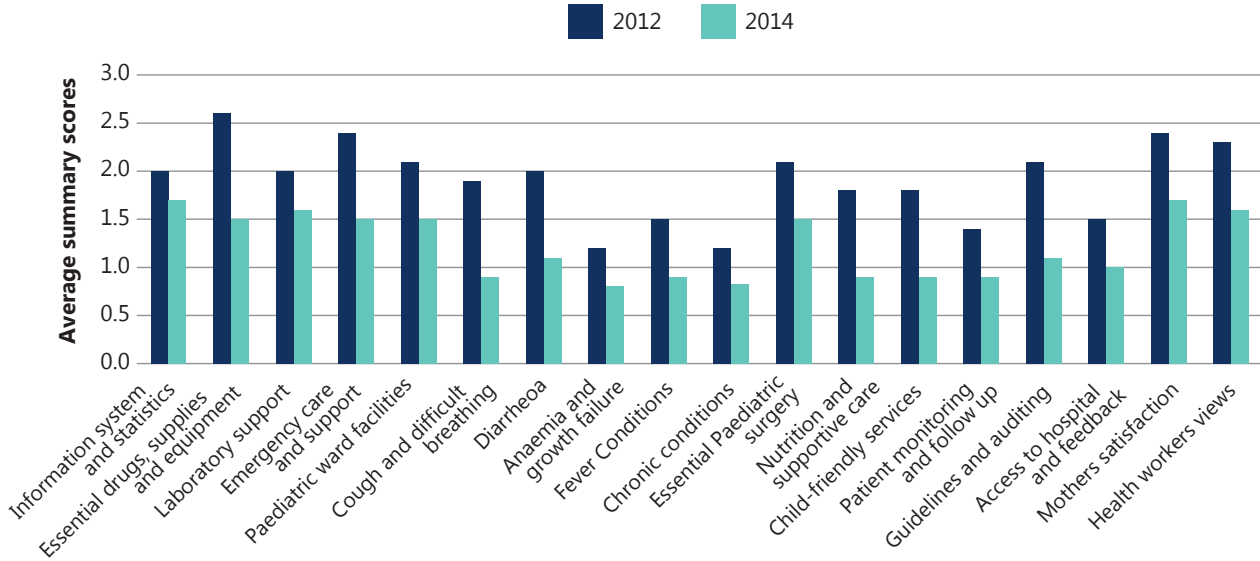


All areas assessed showed significant improvement in quality of care in Tajikistan

In **Tajikistan**, the summary scores for the ten intervention hospitals before and after the intervention show significant improvements in all assessed areas (see Fig. 9). Overall, baseline scores showed relatively little variation across the 10 pilot hospitals. No area of care complied with national standards. All areas assessed were found to

have an average score of less than 2.0. Eight areas, most of which concern case management had an average score of 1.0 or less, indicating the need for substantial improvement to comply with international standards.

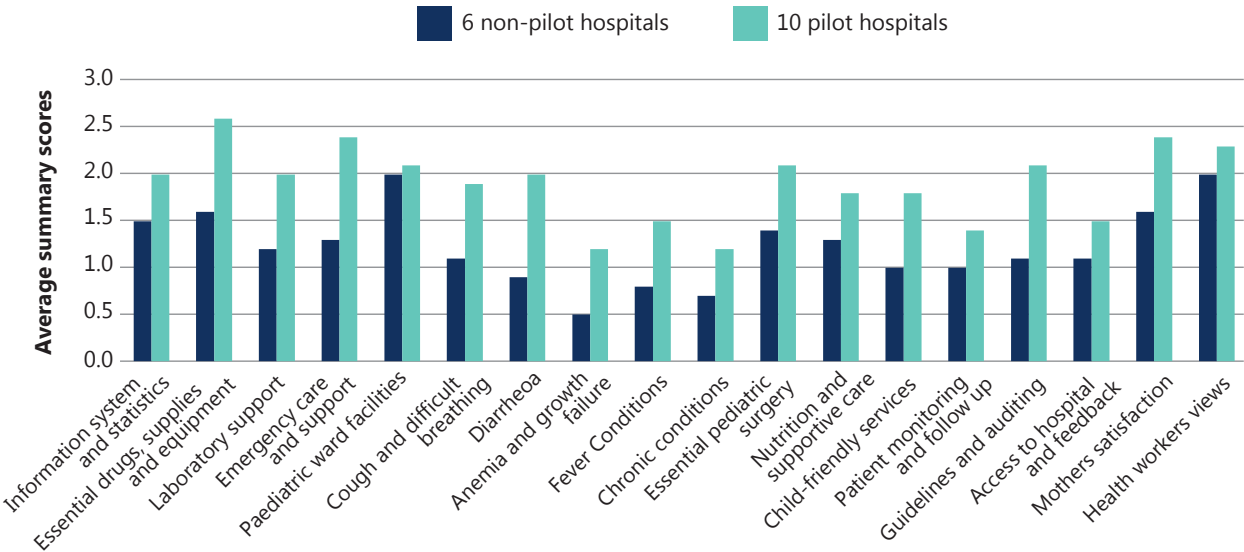
Fig. 9. Overall improvement in quality of care in Tajikistan



The end-line assessment revealed major improvements in all areas. Ten out of the 18 areas had an average score of 2.0 or more, which is a significant improvement over baseline. However, although case management areas improved significantly, more effort will be required for compliance with international standards.

In addition to the 10 intervention hospitals, six control hospitals were assessed at the end-line assessment. The results of the control were comparable to those in the pilot hospitals at baseline in 2012, suggesting that the intervention was responsible for significant improvements (Fig. 10).

Fig. 10. Improved and better quality of care in pilot hospitals compared to non-pilot hospitals in Tajikistan: 2014 reassessment after intervention.



In **Kyrgyzstan** and **Tajikistan** hospitals carried out a systematic review of patient records as part of the project evaluation and compared them to predefined indicators.

Unnecessary hospitalization, IV fluids and painful procedures were reduced in the care of children in Kyrgyzstan

In **Kyrgyzstan**, all indicators showed significant improvement in the intervention group, compared with little change over time in the control group (see Table 1). Unnecessary hospitalizations decreased from 47.6% to 13.2%; children whose nutritional status was not assessed decreased from 75.9% to 5%; and inconsistent diagnosis and treatment was decreased from 70% to 16.3%. There was also a significant reduction in the unnecessary use of IV fluids and painful procedures, including injections.

Table 1. Indicators of quality of care by review of medical records from pilot and non-pilot hospitals pre- and post-intervention in Kyrgyzstan

Indicator	Pilot hospitals (intervention)		Non-pilot hospital (control)	
	2012	2014	2012	2014
Number of reviewed medical records	N= 648	N= 759	N= 648	N= 759
1 Hospitalization – <i>unnecessary</i>	47.6%	13.2%	49.7%	62.2%
2 Diagnosis – <i>incorrect</i>	49.7%	14.7%	45.2%	63.7%
3 Treatment – <i>incorrect</i>	77.9%	15.7%	80.9%	95.7%
4 Diagnosis/treatment – <i>inconsistent</i>	70.0%	16.3%	57.7%	95.5%
5 Iatrogenic risk – <i>increased</i>	83.8%	14.5%	81.6%	94.7%
6 Pain – <i>unnecessary</i>	73.6%	15.8%	80.3%	96.9%
7 Monitoring – <i>inadequate</i>	74.6%	8.7%	73.8%	93.1%
8 Nutritional status – <i>not assessed</i>	75.9%	5.0%	85.9%	97.5%
9 Use of IV fluids – <i>incorrect</i>	64.5%	2.8%	59.0%	78.9%

Unjustified hospitalization, iatrogenic risk and harmful procedures were reduced in Tajikistan

In **Tajikistan**, unjustified hospitalizations decreased from 60% to 18%, inappropriate case management from 96% to 40%, iatrogenic risk from 93% to 53%, and the incorrect use of IV infusions or harmful procedures from 96% to 30% in the pilot hospitals. Intervention hospitals performed much better than control hospitals for all indicators (see Table 2).

Table 2. Indicators of quality of care by review of medical records from pilot hospitals post-intervention compared to non-pilot hospitals in Tajikistan

Indicator	Pilot hospitals		Non pilot hospitals	
	N=240		N= 144	
Number of reviewed medical records	Number	%	Number	%
1 Hospitalization – <i>unnecessary</i>	43	17.9	34	23.2
2 Diagnosis – <i>incorrect</i>	57	23.7	43	29.9
3 Treatment – <i>incorrect</i>	101	42.1	81	56.3
4 Diagnosis/treatment – <i>inconsistent</i>	96	40.0	84	58.3
5 Iatrogenic risk – <i>increased</i>	129	53.8	112	77.8
6 Pain – <i>unnecessary</i>	57	23.8	89	61.8
7 Monitoring – <i>inadequate</i>	139	57.9	109	75.7
8 Nutritional status – <i>not assessed</i>	43	17.9	40	27.8
9 Use of IV fluids – <i>incorrect</i>	72	30.0	83	57.6

Table 3. Indicator definitions

Indicator	Not complying with recommendations from the WHO "Pocket Book":
1 <i>Unnecessary hospitalization</i>	<ul style="list-style-type: none"> • The child had signs of "non-severe pneumonia" but was hospitalized. • The child has signs of "mild dehydration" but was hospitalized.
2 <i>Incorrect diagnosis</i>	<ul style="list-style-type: none"> • The child had signs of non-severe pneumonia but was diagnosed as severe pneumonia. • The child had signs of mild dehydration but was diagnosed as severe dehydration.
3 <i>Incorrect treatment</i>	<ul style="list-style-type: none"> • The child had signs of mild pneumonia but was treated for severe pneumonia. • The child had signs of mild dehydration but was treated for severe dehydration.
4 <i>Inconsistent or lack of diagnosis and treatment</i>	<ul style="list-style-type: none"> • The child was diagnosed with mild dehydration but was treated for severe dehydration. • The diagnosis was not made explicit in the chart.
5 <i>Increased iatrogenic risk</i>	<ul style="list-style-type: none"> • Any unnecessary use of: <ul style="list-style-type: none"> – antibiotics for diarrhoea – sedative drugs – steroids – cardio-tonic • Any unnecessary poly-therapy (use of two or more unnecessary drugs)
6 <i>Unnecessary pain</i>	<ul style="list-style-type: none"> • Any unnecessary injection such as intramuscular/intravenous antibiotic that could be given orally, or an IV line in a child who could be rehydrated orally. • Any other invasive procedure, such as unnecessary lumbar puncture or other invasive procedures.
7 <i>Inadequate monitoring</i>	<ul style="list-style-type: none"> • The child had a respiratory infection and the respiratory rate was not monitored at least twice a day. • The child had diarrhoea and the weight was not monitored at least twice a day. • The child had meningitis and the neurological status was not monitored at least twice a day.
8 <i>Lack of nutritional status assessment</i>	<ul style="list-style-type: none"> • The child's weight and height not recorded at least once in the patient chart. • The child had a problem of acute or chronic under-nutrition; this was not made explicit in the patient chart.
9 <i>Incorrect use of IV fluids</i>	<ul style="list-style-type: none"> • Intravenous fluids were prescribed when they were not needed, such as when the child was able to drink. • When IV fluids were needed, a wrong type of fluids was given (such as an hypotonic solution) or a wrong quantity was given (either too much or too little).

Key implementation activities

Table 4 provides an overview of the key implementation processes and activities based on the WHO framework for quality improvement of paediatric hospital care.

Table 4. Overview of the key implementation processes and activities

Steps in quality improvement	Key implementation processes and activities
1. Getting started	Identification of leadership and stakeholder and national orientation
	Review of the generic standards and adaptation of the assessment tool
2. Situation analysis	Desk review of policy, guidelines and available quality of care data
	Hospital baseline assessment of current paediatric care against adapted national standards of care
	Feedback of assessment findings to sub-national/ national (dissemination workshop)
3. Standards	Agreement on national standards and adaptation of relevant materials
	Development of guidelines and tools
4. Definition of interventions and planning	Prioritization of actions based on assessment findings
	Definition of interventions
	Development of facility quality improvement action plans
5. Improvements	Initiation of the quality improvement process in hospitals
	Quality improvement activities and training
	Implementation of standards, ETAT, standard case management
	Introduction of materials: critical care pathways, audit tools, job aids, flow charts etc.
6. Monitoring and reassessment	Monitoring and evaluation of indicators for standards/ Review and evaluation of results
	Supportive supervision and mentoring
	Self-assessment
7. Documentation and dissemination	Implementation of needed improvements
	Collaborative approach: sharing of information and dissemination of results
	Scaling up: extension of intervention area and integration into pre-service training (update/revision of curricula)

1. Getting started: Identification and orientation

An institutional base and leadership at different organizational levels of the health system are essential to initiate, take forward and ensure the sustainability of hospital quality improvement processes. At the outset of the project, all four countries identified partners and implementers, established national steering or working groups and conducted national orientation workshops

on quality improvement of paediatric hospital care. National steering or working groups provided technical guidance and oversaw implementation under the guidance of the respective units in the ministries of health. During orientation workshops, participants discussed existing standards and plans, and adapted quality of care assessment tools.

2. Situation analysis: Baseline assessments and national dissemination

Baseline assessment of the quality of paediatric care in selected hospitals was conducted in all the four countries. Although the initial plan was to assess ten hospitals in each of the four countries, a total of 51 hospitals were assessed at baseline (see Table 5).

The findings of the baseline assessments were presented and discussed at national dissemination workshops involving country stakeholders. Countries subsequently developed national and facility quality improvement plans that addressed specific gaps and deficiencies.

Table. 5 Baseline assessment

Country	Year Conducted	Number of hospitals
Angola	2013	11
Ethiopia	2012	10
Kyrgyzstan	2012	20
Tajikistan	2012	10
Total		51



Pictorial action plan to reduce newborn and under 5 deaths in one of the pilot hospitals in Ethiopia, with desired targets

In addition, Kyrgyzstan and Tajikistan conducted two rounds of assessments that focused on improving quality of care and promoting the respect, protection and fulfilment of children’s rights. Following the recommendations of the assessment in Tajikistan, 45 banners reflecting statements from the Convention on the Rights of the Child and 500 copies of the Convention were printed and disseminated in the project’s pilot hospitals during supportive supervisory visits.

Respect and fulfilment of children’s rights to quality care were assessed and promoted in Kyrgyzstan and Tajikistan

3. National standards: review, development and introduction

Paediatric care standards and corresponding guidelines are critical to ensuring quality of care for children in hospitals. Through this initiative countries had the opportunity to review, develop and update national paediatric standards of care based on the recently updated international guidelines (WHO *Pocket book for hospital care for children* and WHO ETAT materials). Countries translated the paediatric care guidelines into national languages, which were then printed and distributed to all hospitals, even beyond those implementing the initiative. In addition, national training workshops and capacity-building activities were used to more widely introduce the standards of care to health workers.

Based on the WHO generic materials, **Angola** translated and adapted national ETAT guidelines and developed flowcharts for addressing common clinical conditions (fever, dyspnoea, diarrhoea, coma, seizures in newborns and seizures beyond the neonatal period).

Ethiopia developed national “ETAT Plus” guidelines based on the WHO generic ETAT materials but including, among other things, common surgical emergencies. Additional topics covered are paediatric emergency trauma care, management of burns, management of common poisonings, management of common airway problems (croup, asthma attack), newborn resuscitation, management of anaphylactic reactions and management of diabetic ketoacidosis. ETAT Plus guidelines and corresponding training materials were reviewed by 18 senior paediatric experts; 400 copies were distributed to seven university medical schools.

Following the publication of the second edition of the WHO Pocket Book, Ethiopia also updated their national paediatric guidelines, tools and job aids which were then distributed to 116 hospitals.

In **Kyrgyzstan**, the MoH steering group, with support of international consultants and WHO, adapted the WHO Pocket Book for use as the official national paediatric guideline. Its use as the standard clinical guideline for paediatric care in hospitals was approved by the Order of the MoH #464 dated 5 August 2013. The Mandatory Health Insurance Fund (MHIF) under the Government has been informed, for further use and implementation by MHIF staff in the regions.

Kyrgyzstan printed and distributed 525 copies of the national Pocket Book, including to. Copies were sent to all pilot hospitals as well as other institutions, including the National Centre for Mother and Child Health, the Kyrgyzstan State Medical Academy and the Kyrgyzstan State Medical Institute of Postgraduate and Continuous Training. Organizations including UNICEF and USAID have also printed the Pocket Book for use in other hospitals in the Osh, Jalal-Abad and Batken regions and for health facilities in Bishkek, including the Republican Infectious Diseases Hospital. Charts were developed in two sets to be used by health workers at the pilot hospitals and medical education institutions. Copies of the large wall charts, were placed in the admission departments and reception wards, whereas copies of smaller job aids for bedside use were placed in paediatric departments, infectious disease departments and resuscitation and intensive care units of hospitals.

*Countries distributed over 1
300 copies of paediatric care
guidelines to frontline health
workers*

With the support of WHO and Russian experts from the Scientific Centre for Children’s Health, **Tajikistan** updated the national paediatric care standards and guidelines. These were then approved by the MoH by Order #296 dated 17 May 2013 for their use as a standard guideline for paediatric care in hospitals. Over 300 copies of the book were printed in Russian and disseminated during capacity-building activities, and the updated version has been translated into Tajik.

4. Quality improvement activities and capacity building

Capacity building was central to achieving the objectives of this initiative. Countries trained health workers at various levels of the health system, provided regular regular supportive supervision, and established national centres of excellence.

All four countries conducted training courses for health workers in the pilot hospitals, university teaching hospitals and selected public hospitals beyond the project. The choice and type of training varied from country to country, focusing on areas that were found to be inadequate, with an emphasis on improving substandard clinical management and emergency care. Overall, a total of 60 training courses were conducted, covering 1491 health workers.

Sixty training courses were conducted and nearly 1500 doctors and nurses were trained on quality care for children in the four countries.

Table 6. Training courses

Country	Number of training courses	Number of health workers trained
Angola	11	177
Ethiopia	9	241
Kyrgyzstan	25	714
Tajikistan	15	359
Total	60	1491



ETAT training – Viana Hospital, Luanda, Angola

In **Angola**, priority areas identified for training were ETAT, health information systems, case management of common childhood conditions and newborn resuscitation. Angola conducted 11 rounds of National ETAT trainings, involving 177 health workers (42 medical doctors, 128 nurses, 7 administrators) from 11 hospitals. Health workers were also trained on the use of the patent care flowcharts, which address common clinical conditions.

In addition, staff of statistical departments of each of the pilot hospitals were oriented on the new health management information tools and electronic data management based on the EpiData 3.2 software.

Ethiopia conducted nine rounds of national ETAT training, thus building the capacity of 223 health workers from 52 hospitals plus 18 from the university hospital in Haromya. The first four trainings used the generic WHO training materials and the remaining five trainings used the adapted national ETAT Plus training materials. In addition, 25 national trainers of trainers were trained, and they are continuing to support the scale-up of the quality improvement process through both regional and national courses.



Training in newborn resuscitation in Kyrgyzstan

Kyrgyzstan carried out trainings at all levels: 23 national trainers were trained in a five-day workshop on the WHO Pocket Book. This included a technical update on the 30 new recommendations as well as supportive supervision methods. Medical doctors from all pilot hospitals participated in four-day training courses, resulting in 214 doctors being trained on the Pocket Book and standards of care. Additionally, two rounds of training on the emergency care of children were conducted for medical doctors from pilot hospitals and other hospitals.

A group of national experts adapted the training on the WHO Pocket Book to the level of nurses, and 328 nurses and mid-level staff in pilot hospitals were trained. Four-day training courses were also held for 26 teachers and professors from the Kyrgyz State Medical Academy, Kyrgyz State Medical Institute of Postgraduate and Continuous Training, Osh State University, and Kyrgyz-Russian Slavonic University. All participants received the national adaptation of WHO Pocket Book and protocols. Twenty-eight teachers of medical colleges participated in a three-day training course, and a three-day seminar on the newly-approved national adapted WHO Pocket Book was conducted for 45 medical experts from the MHIF.

Tajikistan conducted 15 training courses overall, resulting in the training of 359 health professionals, including doctors, nurses, and academic faculty. These courses included training of 20 trainers and 20 hospital supervisors on the use of the adapted national Pocket Book for hospital care for children, a one-day information workshop for 30 hospital managers and administrators of the pilot hospitals to gain their support for implementing the new standards. Eight capacity-building workshops on the use of the Pocket Book were conducted for 100 doctors and 97 nurses from the pilot hospitals. During these trainings each doctor received a personal copy of the Pocket Book. In addition, each hospital received three sets of the 14 charts for guiding providers' actions in triage and emergency care. In addition, 20 doctors and 20 nurses from the clinical department of the Republican Scientific Clinical Centre for Paediatrics and Child Surgery, and 22 faculty members of medical academic institutions were trained on the Pocket Book.

Integration into pre-service training

To ensure sustainability, it is crucial to include the concept of standards of evidence-based care in pre-service training. Ethiopia, Kyrgyzstan and Tajikistan developed pre-service curricula and training materials for use in medical and paramedical schools. Topics include emergency hospital care and management of common infections and conditions in children. Tajikistan developed a curriculum for

Ethiopia, Kyrgyzstan and Tajikistan integrated paediatric quality of care into pre-service training in medical and nursing training institutions

nurses and training centres and allocated specific time duration for theoretical and practical training in quality of care, as well as emergency care.

Supportive supervision

Supportive supervision is important for maintaining the clinical knowledge and skills of health workers and has been identified as a critical component of institutionalizing quality of care. Supportive supervision helps hospitals and staff to maintain good practices and improve weak areas. It also provides an opportunity to monitor quality improvement changes.

Ethiopia, Kyrgyzstan and Tajikistan have developed national supportive supervision checklists that are being used to support and monitor improvement in the quality of paediatric care in hospitals. These checklists, despite some differences, largely address the same key areas: organization of service delivery within the hospital, support systems, management of common childhood diseases, provision of emergency care, infection control and prevention and newborn care.

Angola held one round of supportive supervision. This visit showed that, overall, fewer than half of the activities planned by teams of the 11 hospitals were implemented. The action plans were updated accordingly.

Ethiopia conducted four rounds of supportive supervision for the 10 project hospitals, plus one round of “gap-filling” support for five other QI-implementing paediatric hospitals. A system of regular supportive supervision and reporting has been established and two rounds of integrated maternal, newborn and child health (MNCH) QI supportive supervision were conducted in 29 hospitals in the country. The focus was on QI for maternal, newborn and child care as part of the clean and safe hospital (CASH) initiative.

In **Kyrgyzstan**, six visits to hospitals for supportive supervision, mentoring and monitoring were conducted jointly with Russian experts and WHO consultants. Following the visits, the supervisory group met with the MoH and the national steering group to share the results, as well as to discuss and agree on possible solutions to defined obstacles.

Tajikistan completed five rounds of supportive supervisory visits to all project hospitals with the objectives of:

- tracking the progress of implementing the improvements agreed upon for each facility after the quality of care assessments;
- identifying strengths and weaknesses in providers’ practices after participation in capacity-building activities;
- identifying areas for improvement and providing support for implementing evidence-based practices.

The Ministry of Health and Social Protection (MoHSPP) conducted the supportive supervisory visits jointly with the WHO Country Office for Tajikistan, the WHO Regional Office for Europe and Russian experts. The supervisory group then held short debriefing meetings with the participation of the MoHSPP and the national steering group to share the results.

Establishment of National Centres of Excellence

Three model centres were established - one each in Ethiopia, Kyrgyzstan and Tajikistan - and one is under way in Angola

As part of the initiative, implementing countries identified hospitals to serve as model centres of excellence and technical collaborating centres with the Scientific Centre for Children's Health of the Russian Academy of Medical Sciences. The hospital staff of each of the centres were trained on the WHO Pocket Book and on emergency triage, and they participate in joint supportive supervision visits and training of other doctors.

Angola is currently in discussions to establish one hospital as a centre of excellence.

Ethiopia, identified a teaching hospital in Addis Ababa with a well-developed neonatal care unit, and restructured its paediatric outpatient department and emergency areas to make it a centre of excellence.

In **Kyrgyzstan**, the centre of excellence was established at the National Centre for Mother and Child Health Protection whose admission wards and outpatient departments were reorganized to make it compliant with best practices. Twenty-two doctors were trained on and provided with copies of the WHO Pocket Book along with five sets of job charts.



Training manikin at the scientific clinical centre

The **Tajikistan**, the Scientific Clinical Centre for Paediatrics and Child surgery of the MoHSPP was established as centre of excellence. The centre was provided with updated equipment, training materials/resources and manikins for practicing life support skills. The centre also serves as a base for strengthening paediatric care providers' knowledge and skills through undergraduate and postgraduate education. It was officially opened in October 2014 during the official visit of Her Royal Highness, the Crown Princess Mary of Denmark, Patron of the WHO Regional Office for Europe and

Ms Zsuzsanna Jakab, WHO Regional Director for Europe.

5. Monitoring and end-line assessments

To measure the impact of interventions implemented, countries carried out end-line assessments of the quality of care. Kyrgyzstan and Tajikistan reassessed both intervention and control hospitals in September and October 2014, Ethiopia conducted reassessments in early December 2014, and Angola in September 2015 (see Table 7). A total of 57 hospitals (41 pilot and 16 control) participated in the end-line assessment.

Angola assessed the same 11 pilot hospitals for the end-line assessment and plans to extend the evaluation to an additional 12 referral hospitals. A team of 36 assessors from the provincial hospitals has been trained to support these additional hospitals.

In **Ethiopia**, eight of the 10 hospitals assessed were general and two were specialized. The end-line assessment was carried out using the adapted *Tool for the assessment of the quality of paediatric hospital care in Ethiopia*. When possible the same assessors who had participated

in the baseline assessment were used, but in a few instances they were paired with newly-recruited assessors.

Kyrgyzstan reassessed quality of care in the 10 pilot hospitals and 10 non-pilot hospitals. These were comprised of sixteen district hospitals, three regional hospitals and one national centre covering three regions in the north.

Tajikistan conducted assessments in 10 pilot hospitals. At end-line, six non-pilot hospitals were included to serve as a comparison between intervention and non-intervention sites.

Overall, the end-line assessment results showed significant improvement in all aspects of quality of care including facilities, availability of medicines and supplies, clinical care processes and management and reduction in paediatric deaths.

Table 7. End-line hospital assessments

Country	Year conducted	Number of hospitals assessed
Angola	2015	11
Ethiopia	2014	10
Kyrgyzstan	2014	20
Tajikistan	2014	16
Total		57

6. Documentation and dissemination

Implementation of changes in care and the results of improvement processes were continuously documented and disseminated within countries. Achievement of standards was celebrated, for example, in meetings with relevant staff at the hospitals and during national and regional workshops, and communicated to the wider public and scientific community.

Delegations from all four countries shared their achievements and experiences at the 3rd International Forum “Reducing child mortality – the Russian experience of universal paediatric care coverage for the child population as an instrument for achieving the Millennium Development Goals”, organized by the Government of the Russian Federation in Moscow, 15–17 April 2014.

Ethiopia held national paediatric QI annual review meetings in 2013 and 2015. During the first meeting, paediatric QI was integrated with the maternal health QI initiative. The second meeting was expanded to be an MNCH QI review meeting and integrated the National Hospital Alliance for Quality, a hospital reform initiative supported by Clinton Health Access Initiative.

In **Kyrgyzstan** a midterm review meeting was conducted in October 2013 with the participation of representatives from all pilot hospitals, MoH officials, Russian experts and WHO regional and country office staff. Progress in implementing the project was described, positive case studies from the hospitals were presented, and participants identified and discussed constraints. A final round table was organized in last quarter of 2014 to discuss the results and impact of the project, as well as future perspectives on scaling up best practices in the country. Based on the results of the follow-up assessments, the best pilot hospital in the eastern and western groups was selected to be a centre of excellence and awarded special prizes.

Tajikistan held a midterm project implementation review in October 2013 to review progress, identify barriers and find ways forward in selected hospitals of the Khatlon Region. Final results were disseminated nationally at a meeting of the Advisory Council, at bilateral and multilateral meetings with development partners and at the round table at project closure in 2014. At the final round table, the two best hospitals were selected and awarded special prizes. Project results were also communicated through the website of the WHO Regional Office for Europe and the webpage of WHO Country Office for Tajikistan.

V. Additional country implementation activities and actions

Equipment and supplies

Addressing gaps in availability of essential equipment and supplies was another core activity of the initiative. The main items needed were: training manikins, equipment for emergency resuscitation of patients (laryngoscopes, endotracheal tubes), oxygen supply and delivery (concentrators, nasal prongs), and patient monitoring equipment for the wards (pulse oximeters, glucometers).

Countries purchased and distributed new essential medical equipment and supplies to improve the quality of care for children in hospitals

Angola procured and distributed 48 newborn resuscitation kits to the 11 pilot hospitals. They also installed EpiData 3.2 software in the statistics departments of each the hospital's statistical department.

Ethiopia Funds from the initiative were used to upgrade the children's wards in each of the hospitals and to create emergency rooms for receiving severely ill children. In addition to what had been budgeted for the initiative, the MoH procured emergency equipment worth US\$ 2.1 million and distributed to all 108 hospitals in the country.

Equipment distributed to 108 hospitals in Ethiopia		
	<i>Equipment</i>	<i>Quantity</i>
1	O2 concentrator	1000
2	Flow splitter	750
3	Prongs and catheter	6850
4	Pulse oximeter	500
5	Nebulizer	500
6	Oro-pharyngeal tubes	6850
7	Ambu bags	750
8	Glucometer	1000
9	Manikins	15 sets

In **Kyrgyzstan**, all pilot hospitals received basic items of equipment and necessary supplies worth more than US\$ 75000. This included oxygen concentrators, nebulizers, vacuum suction pumps, laryngoscopes, cardio-respiratory monitors, Ambu bags for children, scales, glucometers and otoscopes. The handing-over-ceremony was attended by MoH and representatives of the Embassy of the Russian Federation in Kyrgyzstan.



Equipment handing-over ceremony, Tajikistan

(From left to right) Dr Pavel Ursu, Head of the WHO country office in Tajikistan, Mr Igor Lyakin-Frolov, Extraordinary and Plenipotentiary Ambassador of Russia in Tajikistan, Dr Lola Bobohodjeva, First Deputy Minister of Health and Social Protection of Tajikistan

Tajikistan equipped all ten pilot hospitals with 340 items of essential lifesaving equipment and 7000 supply items, including pulse oximeters, nebulizers, vacuum suction, laryngoscopes, Ambu bags and scales. The equipment and supplies were given to pilot hospitals during a ceremony with the participation of the Deputy Health Minister, the Head of the WHO Country Office, the Ambassador of the Russian Federation, and representatives of the Centre for Children's Health of the Russian Academy of Medical Science. As highlighted at the ceremony, the equipment provided significant support for implementing the Pocket Book recommendations and improving child health.

Partnerships at the national level

In all four countries the initiative strengthened existing or catalysed the establishment of new relationships between the MoH and its partners to support the scale-up of quality improvement in child health. The activities carried out over the project period provided the ministries of health with an opportunity to identify key challenges and the actions that can be instituted to address them.

All countries strengthened and established new national partnerships in improvement of quality of care.



Paediatric quality of care meeting in Angola

In **Angola**, a strong partnership was established with the Angolan Paediatric Association, which provided technical support throughout the implementation process. The initiative has also been able to build a partnership with the local nongovernmental organization, CUUAM, which supports hospital assessment and is implementing best practices in its project areas.

In **Ethiopia**, the initiative was completely integrated into the quality assurance unit of the MoH, which led in the implementation the initiative, supported by the Ethiopian

Paediatric Association. As a result, additional funds were mobilized to procure and supply emergency paediatric equipment to all hospitals in the country. This decision was informed by gaps that were identified in the pilot hospital, and the discussions during the national dissemination workshop on quality of care. The initiative was also integrated into other activities on newborn care and hospital standards being supported by UNICEF and the Clinton Health Access Initiative.

The initiative has also strengthened the partnership between the MoH and the Ethiopian Paediatric Society. As a result of this collaboration, quality of care was included as a panel discussion at the 14th Annual Conference of the Ethiopian Paediatric Society in 2012. The panellists were external and internal experts from WHO, the MoH and Malawi. The presentations and discussions covered the following topics: i) global perspectives and the framework for improving quality of paediatric care, ii) Ethiopian hospital reform standards, iii) ETAT implementation – with discussion of experiences of implementation in Malawi, iv) results of the assessment of quality of paediatric care in Ethiopian hospitals and v) quality improvement activities in community maternal and newborn care.

In **Kyrgyzstan**, the MoH has used the initiative to strengthen partnerships with UNICEF and USAID, including for printing of the newly adapted Pocket Book and distributing it to four provinces that have paediatric quality of care projects. Trainers trained during the initiative now serve as national trainers and supervisors. In partnership with the MoH, UNICEF, USAID and WHO, the project provided training to teachers and paediatric chairs of several medical universities in the country and supported the revision of curricula.

In **Tajikistan** a core group of experts was trained on evidence-based medicine and skills for managing common paediatric conditions. The availability of a national version of the Pocket Book and supportive supervisory tools, as well as experience in their use, has strengthened the position of the MoH in terms of expanding the initiative to all hospitals in the country.

Applying the WHO model, the USAID-supported Quality Health Care Project scaled up implementation to five pilot districts with documented improvements in the quality of paediatric care. The Aga Khan Foundation also initiated training activities, and JICA has expressed interest in learning from the experience of the initiative to support national expansion to other hospitals to which it provides support.

The MoH collaborated with the German Development Bank (KFW) to initiate a new partnership allowing a more comprehensive approach to improving quality of maternal, newborn and child health. The project was implemented in the same hospitals where the KFW is supporting a project on “Improving maternal and newborn and emergency care services” in the Khatlon region. Since the main focus of the KFW project is rationalization and optimization of services in the hospitals by improving infrastructure and equipment, the two initiatives are complementary and contribute to the overall improvement of maternal and child health services.

VI. Global activities

The initiative contributed to a number of activities at the global and international levels, including the revision and development of global tools and guidelines and the strengthening of international technical support and partnerships.

Revision and development of global tools and guidelines

This initiative provided the resources and opportunity for WHO to develop or update a number of global guidelines and tools, including

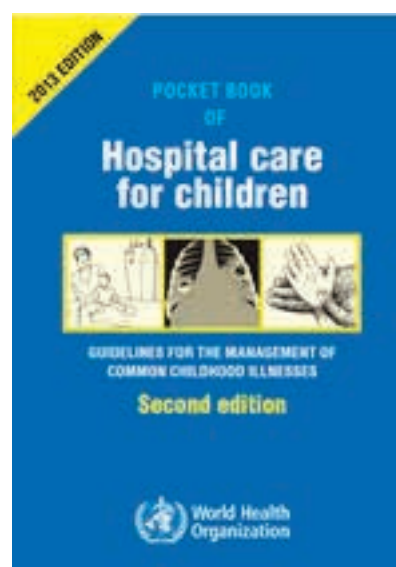
- the WHO Pocket Book (updated);
- the ETAT guidelines and training materials (updated);
- the child rights assessment tool (developed),
- the integrated maternal, newborn and child quality of care assessment and improvement tool (developed); and
- the rapid quality of care monitoring indicators (developed).

Second edition of the WHO Pocket book of hospital care for children: guidelines for management of common childhood illnesses

Findings of the hospital assessments and results of the quality of paediatric care processes in the countries, as well as systematic literature reviews by experts were essential for updating the *Pocket book for Hospital Care for Children*, originally published in 2005. The second edition contains the most recent evidence for clinical guidelines. Published in April 2013, it was officially launched in August 2013 during the International Congress Paediatrics in Melbourne, Australia.

Under this initiative, 15 000 copies were made available for free distribution to developing countries, and an additional 5 000 were made available for sale through the WHO bookshop. To date, over 10 000 copies have been either sold or distributed.

At the British Medical Association medical book awards in 2014, the Pocket Book received the BMA Medical Book of the Year prize award and the first prize in the paediatric category. The electronic versions in English, French and Russian are available at: http://www.who.int/maternal_child_adolescent/documents/child_hospital_care/en/



Emergency triage assessment and treatment training (ETAT) guidelines and training materials

Emergency triage assessment and treatment is one of the main areas found to be deficient during hospital assessments in this initiative and in others. As part of the process of updating the existing ETAT guidelines, WHO held a consultative expert meeting in March 2013 to review

the scope and content of ETAT, identify clinical and technical questions for evidence collation and agree on training strategies and methodologies. The meeting brought together 10 experts including Professor Leyla Namazova-Baranova from the Scientific Centre for Children's Health of the Russian Academy of Medical Sciences. The initiative also supported the ETAT guidelines development group meeting held in Geneva on 30 September – 2 October 2014 to make recommendations for updating the Pocket Book.

The child rights self-assessment tool

Child rights are an important aspect of the care of children, and as part of the initiative the WHO self-assessment tool on child rights in hospitals was translated into Russian. The WHO Regional Office for Europe provided an orientation on the use of the tool for selected staff of the pilot hospitals in Kyrgyzstan and Tajikistan, and supporting documents were developed. The 21 pilot hospitals in the two countries conducted self-assessments using the tool, to examine a number of critical issues for improving quality of care and promoting respect, protection and fulfilment of children's rights. The assessment, which included a survey of children 6–18 years old, parents or caretakers, medical staff and administration covered seven standards:

- i) the highest possible quality of care;
- ii) respect of the principles of equality and non-discrimination of all children;
- iii) planned and provided opportunities for play and learning for all children;
- iv) the right of all children to be informed and involved in decisions that affect their health and directly affect them, and to be provided with services;
- v) provision of health services that meet the needs of all children in a safe and clean environment;
- vi) children's protection from all forms of physical or mental violence, unintentional injury, abuse, neglect, exploitation and sexual abuse;
- vii) provision of pain relief and palliative care for children.

Integrated maternal, newborn and child quality of care assessment and improvement tool

Findings of the hospital assessments further informed the updating of other assessment tools. For example, based on the experience gained from previous assessments and the current initiative in embracing the continuum of care, WHO developed an integrated maternal, newborn and child quality of care assessment and improvement tool for hospitals. This tool was subsequently pre-tested in Nigeria, and will be available on the WHO website in French and Russian.

Rapid quality of care assessment and monitoring indicators

In order to standardize and support the routine monitoring of the quality of care provided in hospitals, a selected set of indicators was developed through a two-year consultative process was field-tested in Ethiopia and Kyrgyzstan. Data on these indicators can be rapidly collected at the hospital level and can serve as a proxy for assessing quality of care. Use of these indicators should also allow for more frequent quality improvement exercises in hospitals. In addition, WHO led a global consultation in December 2013 to develop a set of indicators to be used internationally to report on trends and progress in improving maternal, newborn and child care in health facilities.

Strengthening international technical support and partnerships

At the global and regional level, WHO facilitated implementation of project activities in a number of ways. These included: providing direct technical support to countries or identifying experienced international consultants; supporting countries to engage with other organizations, to develop work plans and to manage and disburse project funds; and ensuring high-level political commitment. The following are some of the key activities coordinated.

Project coordination

A number of global and national activities were held to plan and facilitate the implementation of the initiative. Both WHO headquarters and regional office staff provided technical support to the four countries and helped to identify and contract international consultants. Consultants supported activities in a variety of areas including: hospital assessments, national dissemination workshops, development of quality improvement plans, capacity building for master trainers, supportive supervision and the development of national guidelines.

The first joint meeting for the four countries was held in February 2012 to develop detailed project implementation plans. Countries were also supported on an annual basis through teleconferences and country visits to develop yearly implementation plans. WHO continued to provide external technical support to all countries during the adaptation and development of national guidelines and tools and in purchasing appropriate equipment.

A final project meeting was held in July 2015 where countries had the opportunity to share key achievements, experiences gained and lessons learnt from the implementation of the project. Participants included representatives from the ministries of health of the countries and of the Russian Federation, the Russian mission in Geneva, Russian collaborating institutions and WHO staff from regional and country offices.

High-level ministerial briefing at the World Health Assembly 2013



High level ministerial meeting, Geneva

During the World Health Assembly in May 2013, WHO organized a meeting to facilitate high-level policy dialogue, share experiences, review progress on the current initiative, and explore opportunities for further collaboration. The ministers reiterated the importance of the initiative in having catalysed improvement in quality of care, on which countries can build and expand. It was also unanimously agreed to explore the possibility of expanding initiative along the continuum of care to include maternal and newborn health, levels of care.

Participants included the honourable Minister of Health of the Russian Federation Dr Veronika Skvortsova, the honourable Minister of Health of Angola Dr José V. Dias Van-Dúnem, the honourable Minister of Health of Ethiopia Dr Kesetebirhan Admassu Birhane and the honourable Deputy Minister of Health of Tajikistan Dr Sohbnazar Rahmonov. Mr. Aidit Erkin, Counsellor

(international organizations), of the Kyrgyzstan Mission represented the Ministry of Health of Kyrgyzstan. WHO was represented by Dr Flavia Bustreo, Assistant Director-General for Family, Women's and Children's Health and Dr Elizabeth Mason, Director of the Department of Maternal, Newborn, Child and Adolescent Health.

Collaboration with the Scientific Centre for Children's Health

This initiative strengthened collaboration between WHO and the Scientific Centre for Children's Health, Moscow, Russian Federation. A team of 13 experts, led by Centre Deputy Director Professor Leyla Namazova-Baranova, provided both direct and indirect technical support during national orientation workshops, hospital assessments, training and supportive supervision exercises in all four countries. Overall, they made over 30 direct technical support missions and provided indirect support to Kyrgyzstan and Tajikistan during the update and adaptation of national guidelines and tools. The team also participated in the project evaluation study in collaboration with Trieste Institute in Italy. At the 2013 International Congress of Paediatrics in Melbourne, Australia the centre made two poster presentations on the initiative, which elicited positive responses and interest from congress participants.

In addition, the Scientific Centre for Children's Health experts participated in the WHO expert guidelines development group meeting to review and make new recommendations for the ETAT guidelines. Over the period of the initiative, they also conducted five two-week training courses through lectures, simulation and skills reinforcement for doctors from participating countries. Thirty doctors each from Kyrgyzstan and Tajikistan, five from Ethiopia, two from Angola, and eight from other developing countries. See details in Annex 4.

VII. Conclusion

The WHO framework and comprehensive implementation model allowed countries to build national capacity to improve quality of paediatric care, leading to improved child health outcomes in the pilot hospitals. Much was accomplished through this initiative. Countries were able to institutionalize the improvement of quality of paediatric care, produce national paediatric guidelines, train nearly 1 500 health professionals, purchase and distribute essential medical equipment and supplies, and most of all reduce child death rates in hospitals. The initiative established consistent and effective collaboration among stakeholders, in particular ministries of health, the Russian Federation and WHO.

The initiative produced many lessons that will greatly contribute to global understanding of improving quality of care. The initiative showed that success depended on the commitment of national and subnational government and the ministry of health, the integration of actions into existing systems, full involvement of the hospital administrative and medical staff and the inclusion of professional associations. Implementation required the establishment of quality improvement teams at hospitals, targeted training of health workers, mentoring and supportive supervision.

The initiative has provided a model that countries can follow to expand to additional hospitals and to expand to additional areas, specifically maternal, perinatal and care. The expansion of activities to a national/regional scale is needed to achieve adequate coverage of quality child health interventions and improve child health outcomes. This calls for the development and implementation of long-term plans and budgets, with the support of partners to mobilize needed resources.

Annex 1: Highlights from countries

Angola

Highlights of implementation in Angola

- National orientation on Paediatric Hospital Care Quality improvement
- Adaptation of the generic WHO QI assessment tool
- Baseline assessment in all participating hospitals
- Tools developed to improve emergency triage and treatment as well as Hospital Information Systems
- An electronic database (built by Epi-Data 3.2 software) installed in the statistics department of each of the hospitals, 11 staff were oriented
- Eleven rounds of ETAT courses, covering 177 health workers (42 medical doctors, 128 nurses and seven administrators)
- Successful introduction of the concept of quality standards for health services
- The concept extended to cover maternal and child health
- Collaboration expanded with the Angolan Paediatric Association, the Russian Scientific Centre for Children's Health and CUAMM

In Angola, this initiative highlighted the need and the importance of improving paediatric care in referral hospitals especially in such areas as reorganization of the management of emergencies, monitoring and information system.

Ethiopia

Highlights of implementation in Ethiopia

- National orientation on quality improvement of paediatric hospital care
- Adaptation of the generic WHO QI assessment tool
- Baseline assessments in the ten participating hospitals
- National dissemination and planning workshop
- Capacity of health workers built, including in-service training on ETAT
- Monitoring: national supportive supervision (four rounds to the ten project hospitals plus one round of gap-filling support for five hospitals).
- Annual review meeting of national paediatric quality improvement
- Endline assessment in participating hospitals
- Paediatric QI scaled up to 42 hospitals and integrated with the maternal health quality of care improvement initiative.



Hospital playroom and area in Ethiopia

Kyrgyzstan

- Highlights of implementation in Kyrgyzstan
- Unjustified hospitalizations decreased from 47.6% to 13.2%
- Polypharmacy decreased from 83.8% to 12.6%
- The rate of "not assessed nutritional status" decreased from 75.9% to 5%
- Significant reduction in the unnecessary use of IV fluids and painful procedures, including injections.
- Dramatic rationalization in the use of medicines for treatment of major childhood illness
- Basic items of life-saving equipment and necessary supplies distributed to 11 pilot hospitals
- Adaptation of WHO Pocket Book displayed on the MoH website, increasing awareness among medical staff
- Triage integrated into tasks of medical staff in reception wards
- Creation of reception wards and acquisition of in emergency care equipment some hospitals
- Playrooms made available for children admitted to paediatric departments
- Support and facilitation of quality of care by hospital administration via internal audits
- Quality of care improvement team and focal person in each hospital
- Medical staff members in pilot hospitals are now more informed about children's rights when providing medical care, with regards to unnecessary infusions or intramuscular injections leading to unnecessary pain for children

In one Oblast hospital, after training of health workers, the number of infusions declined by 40%, which also contributed to savings in hospital resources.

Non paediatrician doctors on night duty stated that they were no longer afraid of paediatric admissions as they are much more confident and able to provide the necessary care before calling the paediatrician.



New playroom and resuscitation equipment, Kyrgyzstan

Tajikistan

Highlights of quality of care improvement in Tajikistan

- Ten pilot hospitals equipped with 340 items of essential life-saving equipment and 7 000 necessary supplies
- Adapted WHO Pocket Book disseminated and endorsed as a national guideline for management of common childhood illnesses. Hospitals provided with wall charts for triage and emergency care and CDs of training materials
- More than 300 health professionals, including doctors, nurses, and academic faculty trained and provided with the WHO Pocket Book
- Supportive supervision tools for paediatric care developed and used, and experience gained
- Establishment of a resource training centre to institutionalize evidence-based approaches to academic and clinical paediatric care
- Respect, protection and fulfilment of the children's rights strengthened in ten hospitals
- Evidence-based WHO recommendations integrated into the curricula of undergraduate and postgraduate training of paediatric health workers
- Strong partnership developed with the Russian Scientific Centre for Children's Health
- IMCI scaled up at all levels: community, primary care and hospital

Changes were made in the physical structure of the hospitals, making life-saving equipment easily accessible and allowing direct admission to emergency wards for treatment.

Voices from the field

“ Among the main outcomes of the Project are positive changes in attitudes of health personnel concerning treatment and overall care of sick children and their parents. Now ETAT has been introduced in all admission departments, which increase child survival and contributes to the reduction of unnecessary hospitalizations.

Program manager, Tajikistan

“ Due to the introduction of the pocket book, savings increased for both families and hospitals due to reduced unnecessary use of antibiotics.

Hospital manager, Tajikistan

“ I have been trained in this hospital for 40 years, now we are child friendly. For 40 years we were not child-friendly. This project helped us a lot. We have new equipment, we have new nice interiors, and when I go to work it is like a fairy tale. Now children are not anymore afraid of us...

Nurse, Kyrgyzstan

“ The Pocket book is like a revelation – it has opened our eyes.

Doctor, Kyrgyzstan

“ After this project it has become easier for us to work.

Nurse, Kyrgyzstan

“ This project has reduced workloads.

Doctor, Kyrgyzstan

“ This project has reduced costs. This is one of the major achievements of the project.

Manager, Kyrgyzstan

“ The main achievement is that population now trust us more. More patients are coming to our hospital, as they think that quality is now better. Also with this project we have reduced to zero patients complains (on children cases).

Manager, Kyrgyzstan

“ We were able to talk with patients and convince them about the new treatments/ indications according to the Pocket Book. They have seen results, so it was not difficult. After this, it is just word of mouth.

Doctor, Kyrgyzstan

“ We must not be left completely alone or there is the risk that staff will somehow go back to previous practices.

Doctor, Kyrgyzstan

“ Teaching to other hospitals may also be a future incentive for us.

Hospital manager, Kyrgyzstan

“ I believe that this model can be scaled up also to Primary health care. This will be good, as we shall be working together.

Hospital manager, Kyrgyzstan

Annex 2 Areas assessed

Areas assessed in hospitals

1. Hospital infrastructure and staffing
2. Health information system, statistics and medical records
3. Essential medicines, equipment and supplies
4. Laboratory support
5. Paediatric emergency area, care and support
6. Paediatric wards and facilities
7. Cough/ difficult breathing
8. Diarrhoea
9. Fever conditions
10. Malnutrition
11. Anaemia
12. HIV/AIDS (only in Africa)
13. Case management of the sick newborn
14. Supportive care
15. Patient monitoring and follow up
16. Management of chronic conditions
17. Infection control
18. Paediatric surgery and rehabilitation
19. Access to hospital
20. Audit and guidelines
21. Child friendly services
22. Satisfaction of mothers

Annex 3 Tools developed and updated by countries

The following boxes present lists of key tools and materials developed by the respective countries during the implementation of the project.

Box 1. Tools and products developed or updated by Angola

- Angolan adapted paediatric quality of care assessment and improvement tool
- Angolan ETAT guidelines and training materials
- Patient management flowcharts for addressing common clinical conditions
- Electronic data base (built with EpiData 3.2 software)

Box 2. Tools and products developed or updated by Ethiopia

- Ethiopian adapted paediatric and maternal quality of care assessment and improvement tool
- Supportive supervision checklist for paediatric referral care
- Ethiopian ETAT-Plus guidelines
- Ethiopian adaptation of the 2nd edition Pocket book for hospital care for children
- Flow charts for triage of sick children in two languages
- Job aid for emergency management of triaged children in English
- Quality of paediatric referral self-assessment-tool
- Integrated MNCH audit tool for hospitals

Box 3. Tools and products developed or updated by Kyrgyzstan

- Patients chart review: data extraction form
- Kyrgyzstan adapted Pocket book for hospital care for children
- Adapted Pocket book training course for nurses
- Paediatric triage and emergency care wall charts.
- CDs with training materials
- Child rights self-assessment tool
- Monitoring and supervision guidelines including monitoring and supervision indicators

Box 4. Tools and products developed or updated by Tajikistan

- Tajikistan adapted Pocket book for hospital care for children
- Paediatric triage and emergency care wall charts
- CDs with training materials
- Paediatric care supportive supervision tools and monitoring indicators
- Child rights self-assessment tool
- Patient chart review: data extraction form

Annex 4 Key activities supported by the Scientific Centre for Children's Health

The following key activities were supported by the centre during the implementation of the project:

2012

- Participation and technical support provided to the national orientation meetings on quality of care and training courses in all four countries: Angola (November, 2 experts), Ethiopia (July, 2 experts), Kyrgyzstan (June, 3 experts), and Tajikistan (July, 4 experts).
- Participation in hospital assessments as the team members in all four countries: Angola (December, 2 experts), Ethiopia (August, 2 experts), Kyrgyzstan (July-August, 4 experts), and Tajikistan (July, 3 experts).
- Translation of the generic assessment tool and main issues of the updated recommendations into Russian.
- Assessment of a number of first and second level hospitals in the Russian Federation (Moscow oblast, Ekaterinburg, Krasnoyarsk and Vologda) using the WHO assessment tool.
- Partnership implementation with leading medical institutions in three countries of the project (Ethiopian Pediatric Association, National Centre of Maternity and child care in Bishkek, National Centre of Pediatrics in Dushanbe)
- Provision of expertise and revision of clinical recommendations for research institutions from central Asia.
- Research project in Kyrgyzstan in collaboration with Italian colleagues: comparison of two groups of hospitals, where training workshops and supervisory visits would or would not be provided.

2013

- Assessment of a number of first- and second-level hospitals in the Russian Federation (Moscow city, Moscow Oblast, Yakutsk, Grosnii, Mahachkala) using the WHO assessment tool.
- Catalyzing the establishment of a collaborative partnership between the paediatric associations of Angola, Ethiopia and the Russian Federation.
- Adaptation of the WHO Pocket Book: five experts supported the national adaptation of the Pocket Book in Tajikistan (April–May).
- Professor Leyla Namazova-Baranova participated in the WHO expert consultation meeting on ETAT, Divonne, France (March).
- Conducted a 5-day course on the Pocket Book for 24 learners from pilot hospitals, Bishkek, Kyrgyzstan (two experts, April).

- Provided technical support for four rounds of training on the Pocket Book and ETAT training guideline, Kurgan-Tube, Tajikistan (2 experts, 15 June–3 July) and 2 experts provided support for the Pocket Book training in Bishkek, Kyrgyzstan (8–12 April).
- Poster presentation on the improvement of quality of paediatric care in central Asia and Africa at the 27th Congress of the International Paediatric Association in Melbourne, Australia.
- Supportive supervision: supervisory visits to the pilot hospitals in Kyrgyzstan and Tajikistan every three months (six or seven visits in total) from March, 2013 to June, 2014 (two experts in each visit).

2014

- Participation in hospital reassessments: Ethiopia (November–December, one expert); Kyrgyzstan (August, four experts); Tajikistan (September, two experts).
- Continuation of supervisory hospital visits in Kyrgyzstan and Tajikistan every three months (two experts in each visit).
- Technical assistance in supplying new hospital equipment provided by the Russian Federation government (June, Kyrgyzstan and Tajikistan).
- Trainings in the simulation centre in Moscow, starting in June. Each course lasted two weeks, five courses in 2014 (six to seven experts). Thirty students from each country of central Asia (Kyrgyzstan and Tajikistan), five students from Ethiopia, two from Angola and students from eight other developing countries.
- Adaptation and translation into Russian of the new edition of the Pocket Book (2014–2015).
- Adaptation of guidelines for nurses in Kyrgyzstan (May).
- Poster presentation on the Ethiopian experience in the south-east sub region QI orientation workshop in July 2014.

The experts from the Russian Federation provided extremely valuable technical support to all the countries involved in the initiative and have actively participated in the WHO technical meetings.

Annex 5 Web publications and highlights

1. <http://www.euro.who.int/en/health-topics/Life-stages/child-and-adolescent-health/child-health/children-in-hospitals-in-kyrgyzstan-and-tajikistan-will-receive-better-services>
2. <http://www.euro.who.int/en/health-topics/Life-stages/child-and-adolescent-health/publications/2014/assessing-the-respect-of-childrens-rights-in-hospitals-in-kyrgyzstan-and-tajikistan>
3. <http://www.euro.who.int/en/health-topics/Life-stages/child-and-adolescent-health/child-health/children-in-hospitals/project-to-support-improved-quality-of-pediatric-care-in-kyrgyzstan-and-tajikistan>
4. <http://www.euro.who.int/en/health-topics/Life-stages/child-and-adolescent-health/news/news/2014/05/child-patients-and-medical-staff-benefit-from-the-use-of-who-guidelines>
5. <http://www.euro.who.int/en/health-topics/Life-stages/child-and-adolescent-health/news/news/2014/07/who-and-the-russian-federation-contribute-to-improving-pediatric-hospital-care-in-tajikistan>
6. http://www.who.int/maternal_child_adolescent/documents/paediatric-hospital-care-quality/en
7. http://www.who.int/maternal_child_adolescent/documents/paediatric-emergency-triage-update/en/

Annex 6 Project activity milestones (2012–14)

Project Components	Timelines											
	Year 1				Year 2				Year 3			
1. Identification, orientation, analysis and assessment	✓	✓	✓	✓								
2. National standards development and introduction			✓	✓	✓	✓	✓	✓	✓			
3. Capacity building				✓	✓	✓	✓	✓	✓	✓	✓	✓
4. Partnerships and international coordination	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
5. International tools and guidelines update			✓	✓	✓	✓	✓	✓	✓	✓		
6. Monitoring, documentation, dissemination and global report					✓	✓	✓	✓	✓	✓	✓	✓
7. Hospital and training equipment and supplies				✓	✓	✓	✓	✓				
8. International technical support	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓



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