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Global initiatives for improving hospital care for children: state of the art and future prospects

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Abstract

Deficiencies in the quality of health care are major limiting factors to the achievement of the Millennium Development Goals for child and maternal health. Quality of patient care in hospitals is firmly on the agendas of Western countries, but has been slower to gain traction in developing countries, despite evidence that there is substantial scope for improvement, that hospitals have a major role in child survival and that inequities in quality may be as important as inequities in access. There is now substantial global experience of strategies and interventions that improve the quality of care for children in hospitals with limited resources. WHO has developed a toolkit containing adaptable instruments, including a framework for quality improvement, evidence-based clinical guidelines in the form of the Pocketbook of Hospital Care for Children, teaching material, assessment and mortality audit tools. These tools have been field-tested by doctors, nurses and other child health workers in many developing countries. This collective experience was brought together in a global WHO meeting in Bali in 2007. This article describes how many countries are achieving improvements in quality of paediatric care, despite limited resources and other major obstacles, and how the evidence has progressed in recent years from documenting the nature and scope of the problems to describing the effectiveness of innovative interventions. The challenges remain to bring these and other strategies to scale, and to support research into their use, impact and sustainability in different environments.

Keywords

Children; Quality of health care

Background

Most systems of health service delivery assume that people who become sick will first go to a primary care provider. From there the severely ill will be identified and referred onwards for care that cannot be provided at an outpatient level. The WHO / UNICEF Integrated Management of Childhood Illness (IMCI) strategy seeks to strengthen prevention and care for children through appropriate community and household care, primary care, referral practices and care at the first level hospital. Based on current guidelines it has been estimated that about 10-20% of sick children presenting for primary care, i.e. the most

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severely ill, may require referral to a first referral or district hospital. The quality of care provided in these hospitals is likely therefore to have a major impact on the health and lives of millions of children each year. 1 Unfortunately, there is good evidence that hospital care is often deficient in many countries, including a study of 21 hospitals across 7 countries in Asia and Africa.² This study showed that more than half of the children were under-treated, or inappropriately treated, with antibiotics, fluids, feeding or oxygen. Lack of triage and inadequate assessment, late treatment, inadequate drugs supplies, poor knowledge of treatment guidelines and insufficient monitoring of sick children were key adverse factors observed. Similar observations were made in a study in Kenya, with clear indications that most practitioners were neither aware of nor followed international guidance on best practice^{3,4} and by assessments carried out in Brazil and Angola, where severe malnutrition and triage and emergency care were identified as priority areas to be addressed to decrease hospital mortality.^{5,6} Hospital assessment exercises supported by WHO over the past few years have found similar deficiencies in countries including Cambodia, Indonesia, Kazakhstan, Solomon Islands and Timor Leste (http://www.who.int/child-adolescent-health/publications/OVERVIEW/ISBN_92_4_159223_0.htm). In spite of this evidence, improving hospital care for children has not received much attention so far within the package of interventions to improve child survival.

This article reports current experience shared at a WHO initiated global meeting in Bali in early 2007 of attempts to improve hospital care for newborns and children in low income countries (<http://www.who.int/child-adolescent-health/>). Clear progress has been made since an initial meeting in the year 2000 (<http://www.who.int/child-adolescent-health/publications/pubCNH.htm>) with the focus shifting from describing the scale of the problem to examining experiences with interventions. We present currently available generic tools and resources that can be locally adapted, we highlight some selected country experiences in improving quality of hospital care and discuss current challenges and future prospects.

Available tools and strategies

Arising from locally identified needs in a number of countries, materials to support quality improvement have been developed and tested. The scale of these initiatives ranges from pilot projects to large programs with national coverage. The following is a brief description of several of these initiatives (with links on how to access further details and /or copies of materials given in text box 1).

Pocketbook of Hospital Care for Children

This pocket-sized manual presents up-to-date clinical guidance for the inpatient management of the major causes of childhood mortality, such as pneumonia, diarrhoea, severe malnutrition, malaria, meningitis, measles, HIV infection, neonatal problems and surgical conditions. The recommendations are based on a review of the available published evidence by subject experts, and over 130 paediatricians throughout the world contributed. The Pocketbook is designed for use by doctors, senior nurses and other senior health workers who are responsible for the care of young children at the first referral level in developing countries, and can provide the starting point for developing national clinical standards of care. It is currently available in around 20 languages, including English, French, Portuguese, Russian, and Chinese. The recommendations are designed for small hospitals where basic laboratory facilities and essential drugs and inexpensive medicines are available. A related publication, "Serious childhood problems in countries with limited resources", summarises the technical background underlying these clinical guidelines. Recently, the International Child Health Review Collaboration (ICHRC) has been established to develop and make widely available summaries of systematic reviews of the

evidence behind recommended practices and to ensure updating of the Pocket Book.⁷ Materials can be accessed on the ICHRC website (see text box 1).

Introduction course to the Pocket Book

This training resource was developed to teach health workers how to make the best use of the Pocketbook in everyday clinical practice. A training CD-ROM contains clinical case-based teaching on each of the chapters focusing on all the stages of care: triage, emergency treatment, diagnosis and differential diagnoses, treatment, monitoring and supportive care, discharge planning and follow-up. In addition for each chapter the CD has video footage and clinical photographs illustrating important clinical syndromes and signs mentioned in the Pocketbook, plus other clinical resources such as monitoring charts. The CD is designed to be used either in a 4-day workshop to introduce the Pocketbook and train health workers in its use, or in under-graduate or post-graduate courses, for self-learning or distance learning programs. The training CD-ROM is available in English, Russian, and a draft in Chinese.

Training courses for Emergency Triage Assessment and Treatment (ETAT) and in management of severe malnutrition

It is recognised that clinical guidelines need to be supported by training courses, especially for acquisition of skills and that training should be accompanied by appropriate staff support and general improvements in service quality. Training is not an end in itself but needs to be embedded into a quality improvement approach to lead to lasting effects. As triage and emergency care were found to be deficient in several assessments a 3.5 day ETAT course was developed, based on the Advanced Pediatric Life Support (APLS) course but modified for use where human resources and laboratory back up are scarce. It follows the ABCD approach of life support courses and has been validated against APLS.⁸ The training manual includes charts and tables that can be enlarged to use as wall charts in the workplace. They are available in English and French.

The management of severe malnutrition has been found to be very deficient in practically all countries where this has been studied.⁹ A 5 day training course has been developed in which participants are introduced to the 10 steps in management, focusing on principles like correct preparation of and feeding with special formula diets, first a lower calorie content in the stabilization phase and then a higher calorie feed in the rehabilitation phase.

Assessment tool for hospital care for children

In many countries formal hospital assessments have been conducted in order to understand the fundamental problems and priorities in hospital care for children.^{2,5,6,10} To evaluate the performance of hospitals a structured assessment tool has been developed covering the most important aspects of pediatric hospital care in resource poor countries¹¹. Standards for each condition are provided and criteria to assess performance against these standards are defined. A scoring system grades the need for improvement in various areas. Data are collected through observations of areas where children are cared for, direct observation of the management of clinical cases, review of medical records, and discussions with clinical staff, administrators, and parents. An example of a page is depicted in Fig. 2. A structured action planning tool is provided to guide discussions with hospital authorities and to encourage a focus on the most urgent needs to improve hospital care. The tool has been adapted in each country where it has been used.

Framework for Quality Improvement (see Figure 1)

WHO has developed a framework, which outlines a sequence of steps and activities to address improving the quality of hospital care for children. Quality may be defined as

adhering to expected standards, both those which are officially stated (as in national or local standards) and those which may be more implicitly held (for example reflecting the expectations that parents may have about how staff at a health facility should treat their child). In paediatric care such standards exist to ensure that children receive appropriate care, to avoid harmful practices, and to provide a benchmark for professional development, self-monitoring and for accreditation. The framework may be used at a national, regional or hospital level. To start the process, a limited initial hospital assessment process is suggested. Assessment findings are then discussed by all stakeholders, to promote broad participation in and ownership of the process. The importance of local leadership is emphasized. In many countries progress will require the development or updating of national (or local) standards. Standards will be in the areas of treatment guidelines, essential medicines, technology and equipment, physical facilities and human resources. A process to achieve such standards is outlined. Once these standards are in place, actions to improve quality in line with these standards should follow the steps in the quality improvement cycle (figure 1), including evaluation of progress. National programmes should additionally, where possible, include efforts to go to scale to reach national coverage.

Manual of quality improvement (QI)

During quality improvement exercises in countries, where participants were introduced to QI methods, a need for having a reference guide briefly describing the relevant processes, tools and approaches became apparent. The manual is currently in draft for field testing. It outlines how the tools may be used in settings where children and adolescents are cared for. As a large part of the work consists of group work, selected facilitation techniques are included. The manual can be used as a reference for teaching and learning in quality improvement methodology, or in a health facility that is undertaking quality improvement activities.

Examples of experiences with quality improvement initiatives in countries with limited resources

Examples of some quality improvement activities that illustrate key issues are now briefly introduced.

Malawi: hospital QI projects and integrated care pathways

The Child Lung Health Project, coordinated by the International Union Against TB and Lung Diseases in collaboration with the Ministry of Health (http://www.iatld.org/full_picture/en/about/divisions/division_child_lung_health.phtml), aimed to improve case management of childhood pneumonia in hospital and address specific resource barriers. The project included improving drug and consumable supplies and providing oxygen concentrators with regular maintenance for exclusive use in the paediatric wards of district hospitals and appropriate staff training. The intervention successfully encouraged staff to set up a separate “high dependency” room or area within the paediatric ward where oxygen could be provided for severely ill children. Long term evaluation suggested significant improvements in quality of pneumonia care and a reduced case fatality ratio.¹²

The paediatric department of the College of Medicine in Blantyre, Malawi has implemented Critical Care Pathways (CCP - also known as integrated care pathways ¹³) to address the problem of often disorganized and illegible clinical notes. ¹⁴ A CCP is a clinical record that documents the medications given, nursing and medical findings, patient monitoring details and laboratory results on one chart. It incorporates times and actions so that the CCP is not only a record of care but a guide to management and is used by all members of staff in the outpatient and the inpatient unit. Generic CCPs for paediatric medical admissions, neonates

and one for severely malnourished children were developed and these have strengthened teamwork in the pediatric unit strengthened teamwork and helped to increase the efficiency with which resources are deployed. They also provided an opportunity to note actions and progress in improving quality of care. 14 Copies of these are available electronically and can be modified to ensure local relevance and ownership.

In the same department, a program of staff training in ETAT was incorporated within a program of general improvements to emergency services. This program started with a detailed analysis of deficiencies, and led to improved patient flow through the emergency department, improved cooperation between inpatient and outpatient services, and improved staffing for better supervision. These changes were accompanied by a 40% reduction in inpatient mortality over 2 years.¹⁵

Solomon Islands: national QI program

In the Solomon Islands, a country recovering from a civil conflict which seriously affected the child health service, innovative measures have been introduced to improve hospital care. In 2002 the results of an assessment of quality of care in provincial hospitals were presented to the Ministry of Health. The assessment highlighted several problems in clinical care, human resources, health financing, referral systems, and training. A training package was developed, to introduce standard treatment guidelines based on the WHO materials. A 4-day course was held first for 25 nurses, representing child health workers from each of the 9 provinces, to provide a system of standardized management for serious and common childhood illnesses that can be used in isolated environments. In 2005-2007 this training strategy has been extended to provinces, and the Pocketbook of Hospital Care for Children is now used throughout the country. Other parallel initiatives including the development of a comprehensive National Child Health Plan, and a system of child mortality reporting, have ensured that hospital quality improvement is an integrated part of the child health program, and that data is available for evaluation and policy development.¹⁶

Niger: collaborative networking of QI programs

The Quality Assurance Project supports several countries in sub-Saharan Africa and Central America through the Paediatric Hospital Improvement Initiative (PHI). One example is Niger, where a collaborative network approach to quality improvement has been initiated (<http://www.qaproject.org/world/worldafrica.html#Niger>). Initially, 14 hospitals and 3 referral maternities participated in the PHI Collaborative. A baseline assessment in 2003 showed in-hospital pediatric case fatality ratio of 25% and a clear need identified for improvement in case management. Based on clearly defined norms, quality improvement teams mapped out the care process, worked together to develop and implement solutions to problems, measured process and defined outcome indicators. Collaborative sites were given training and support through visits from staff with expertise in both pediatric hospital care and quality improvement. Best practices were shared in a national PHI conference. At this stage, an additional 15 sites were added, with coverage of all national hospitals and half of the district hospitals. To facilitate follow-up, support and integration of the collaborative process into the MOH structures, the collaborative process was decentralized. Learning sessions are organized and held at regional level and regional coaches have been trained to support the quality improvement teams at the 32 sites. Achievements include substantial reductions in hospital case fatality ratios in the first 24 hours (unpublished findings reported at Bali meeting 2007).

South Africa & PNG: mortality audit

There are many possible 'entry points' when considering how to initiate, focus and sustain improvement of hospital care. In South Africa and PNG systematic mortality review has

been used. The Child Healthcare Problem Identification Program (ChIP - <http://www.chip.org.za>) in South Africa provides structured computer based tools for careful review of in-hospital deaths with the capacity to summarise, in automated analyses and reports, accumulating experience over time.¹⁷ Using the information derived from these mortality reviews, interventions at local, provincial and national level, have led to measurable improvements in quality of care, including increasing the availability and uptake of maternal-to-child transmission prevention interventions and providing treatment for HIV-affected mothers and infants. The ChIP may be easily generalisable to other countries with minor modifications. In PNG mortality audit has enabled a better understanding of the complex social, epidemiological and health system factors surrounding child deaths. 18-20 Mortality audit has contributed to identification of the need for better oxygen systems, identification of a major measles epidemic, advocacy for the introduction of the *Haemophilus influenzae* type b vaccine, and improved staffing in emergency and children's outpatient departments.

CIS countries: assessment of hospital care

In 2002, the WHO Regional Office for Europe promoted an assessment of the quality of hospital care for children. A sample of 17 hospitals was assessed in Kazakhstan, the Republic of Moldova, and the Russian Federation, using an adapted version of the WHO hospital assessment tool. Although the overall situation, characterized by a well developed health system and relatively low case fatality rates, is not comparable to developing countries, several critical areas were identified: unnecessary and lengthy hospital stays, overdiagnosis particularly of neurological conditions, and excessive, expensive and ineffective treatment given to most children.¹⁰ These findings prompted WHO to convene a meeting among leading paediatricians and child neurologists from CIS countries. Participants from 12 countries recognised the need to revise definitions and clinical guidelines of the most common neurological conditions, removing the obstacles to evidence-based practice and improving the training of pediatric staff. Other reforms and activities have also followed the assessment, including adaptation and implementation of the Pocketbook of Hospital Care for Children in Kazakhstan, Uzbekistan and Turkmenistan.

Challenges and prospects

Until recently, relatively little international attention was paid to the issue of hospital care for children, perhaps because many children in developing countries die before reaching hospital, or due to concern that promoting improved quality of hospital care might divert resources from primary care. But if hospitals are perceived as expensive places to die, where there is little prospect of effective treatment and little hope that a child will be cured, why should parents follow referral advice? In Uganda, referral of children to district hospitals was often not completed due both to immediate financial constraints and beliefs by parents that hospital staff would treat their children poorly or that the hospitals lacked the necessary facilities and drugs.²¹ Improving quality of hospital care is therefore required to ensure the majority of severely ill newborn babies and children get appropriate, effective and timely treatment, to provide essential support to primary care facilities and to provide an incentive for appropriate care seeking. In short it is an essential component of an approach to strengthen the entire health care system and to achieve equity, since inequities in quality may be as important to global child mortality as inequities in access. It should therefore be part of the package of interventions used to achieve Millennium Development Goal 4 which aims to reduce child and newborn mortality and, recognising clear parallels with efforts to make pregnancy safer, Millennium Development Goal 5 which aims to reduce maternal mortality.

We recognize that weak infrastructure, shortage of essential supplies, and, most of all, the human resource crisis amongst health staff, especially in sub-Saharan Africa²² are major limiting factors to quality care for children in developing countries. Reasons for slower progress in quality assurance in developing countries also include the lack of access to information (especially online information), the limited adaptation of quality improvement strategies to developing country needs, and the misperception that a focus on patient quality and safety is expensive. Nevertheless, many of the approaches described in this review show that important advances can be made although a number of key challenges have to be faced.

Building a QI culture is the priority challenge. QI should not be seen as a high level activity that can only be conducted by QI staff. It is important that in practice this is seen as health workers identifying problems, developing solutions and testing them to see if they work before building them into health systems. To achieve this QI principles should be incorporated into teaching hospital care, so that medical students, interns and nurses are exposed to models of good medical practice that will set patterns for a lifetime of work. This can be complemented by continuous, in-service education and training programs to introduce in everyday practice tools and methods of quality improvement. Furthermore, improving quality should be seen as a cross-cutting, system level intervention. This diverges from the still prominent vertical program approach with the danger that even at hospital level well resourced programs (typically HIV, Malaria, TB and Family Planning) all develop independent parallel systems to address problems with 'their' programs. Although these cross-cutting, system level approaches will incur start-up costs they may prove to be very cost effective in the long run. Additional roles for teaching institutions include effective local development and adaptation of clinical guidelines based on evidence, perhaps through greater capacity development and involvement in initiatives such as the ICHRC⁷ and through partnerships with established centres who could offer funding, training and mentorship.

Going to scale is essential to achieve significant results. To do this, it will be important to tailor approaches to local circumstances. Standard tools and materials described in this paper can act as a starting point but a process of adaptation, implementation, monitoring and revision will need to take place within health systems that are geared towards a sector-wide approach to improve hospital care. QI programmes in maternal and child care at the hospital level could represent the vanguard of this wider effort. Since improved quality in hospital care can have a direct and measurable impact on key health indicators outlined in MDGs 4 and 5, such as maternal and child mortality, the international pediatric community should play a leading role in advocating for and directly contributing to efforts to strengthen investments and develop innovative strategies in this area. The Baby Friendly Hospital Initiative (BFHI) is a good example of a relatively simple accreditation system that has been widely implemented in developed as well as in developing countries and has greatly contributed to improve quality of care in maternity units.²³⁻²⁴ This kind of approach could be expanded to cover hospital care for children more broadly. However, the BFHI experience also serves as a reminder of the difficulties in sustaining an approach. Accreditation needs to be time limited and to provide an incentive to maintain improved levels of quality.

Country level programs

Ministries of Health first need to review current policies, standards and programs that rely on or contribute to hospital care and develop a list of stakeholders (and possibly donors) who need to be involved. They need to identify who will co-ordinate activities for the MOH across sectors such as government, FBO and relevant private agencies. Information gathering to help define local and national problems and priorities should be conducted

through surveys assessing the quality of paediatric care in a sample of hospitals throughout the country. A meeting of stakeholders, including senior government paediatricians, educational institution representatives, child health nurses, rural representatives and administrators would then develop consensus on these priorities and the ways forward. Key aspects of this would be setting of goals that are achievable (and affordable) and will promote equity; securing commitment to funding, and a commitment to evaluation of program performance against agreed goals. Training institutions should be included as an essential element of these programs so that students are aware of the standards, have problem solving skills and understand their role in ensuring that standards are adhered to.

Country level programs would address each of the nine factors outlined in Figure 3, in ways that are relevant to the particular country. These would include:

- Introduction of the WHO Pocketbook of Hospital Care for Children (or where it exists, improving existing clinical guidelines) as the national standard treatment, with adaptation, translation, training workshops, and incorporation into undergraduate and post-graduate courses;
- Addressing other areas crucial to quality, including drug supplies, equipment issues and other supportive technology (such as oxygen systems), human resources, health financing, physical facilities and infrastructure. The program would be integrated with the other activities occurring in these areas. The program would also integrate with broader child health programs within the country, and be able to address quality across various levels of the health service, the interaction with the community, and various demand issues.
- Partnership between the national paediatric association and the ministry of health (program leaders will differ across countries, but in most cases such partnerships will be appropriate)

Ministries of health may form a quality and safety committee within the curative services divisions. A clinician (probably a nurse) from each hospital would be funded as a paediatric quality and safety representative. This person would coordinate activities in that hospital, including training on clinical guidelines, and addressing each of the deficiencies found in the assessment. Annual activity plans would be submitted by each hospital to the MoH for funding through this program. There would be an evaluation framework that would assist hospitals and countries monitor progress and impact of various strategies. Such information would be shared between countries in regional meetings held every 2 years.

In research efforts are needed to identify the most effective and cost-efficient strategies and approaches to improve quality. This should be participatory “operational research” to maintain the relevance of results to real life circumstances. The relative contribution to improved quality of paediatric hospital care of interventions that have been described in this article, such as the introduction of structured medical records, internal audits, performance-based accreditation systems, computer-assisted mortality monitoring systems and other approaches must be assessed with rigorous methodological approaches in different settings, also exploring the feasibility and effectiveness of various combinations. Contrary to some perceptions, a focus on quality and safety can *save* money with research on IMCI implementation and on introduction of improved oxygen delivery devices demonstrating clear cost savings.²⁵⁻²⁶ However, there often has to be an initial modest investment to save money in the longer term and costing studies must take this into account. This type of implementation research has been undervalued and under-resourced in the past but there is now increasing international recognition of its importance.²⁷⁻²⁹ It is important that future

research and implementation include an assessment of monetary costs and savings linked to QI processes.

Recent developments and the new commitments of several key actors are encouraging. Besides the recent WHO initiative in Indonesia, several NGOs and bilateral government agencies are supporting QI programs in perinatal and child health. The International Paediatric Association has identified quality of care as a priority area and is proposing regional workshops to introduce the available tools and methods to paediatricians through their national or subspecialty societies. Professional organizations can play a crucial role in improving quality of care, particularly at hospital level. Cooperation between them and national health authorities, international agencies and NGOs is essential to achieve results. The efforts parallel recent initiatives in industrialised countries to introduce quality improvement programmes into national programs. 30-32

In conclusion, there is now a wealth of experience in many countries with approaches to improve quality of hospital care for children. Materials have been developed to support these programs and there are an increasing number of health professionals who have experience in putting this theory into practice. It is now our challenge to implement and scale up these approaches to achieve national coverage and make them sustainable.

Text Box 1

List of references for tools mentioned in this article

Framework for hospital improvement (see Fig. 1)

- <http://www.who.int/child-adolescent-health/resour.htm>

Pocket book of hospital care for children: guidelines for the management of common illnesses with limited resources

- http://www.who.int/child-adolescent-health/publications/CHILD_HEALTH/PB.htm

Introduction course to the Pocket Book of Hospital Care for Children materials and CD

- <http://www.who.int/child-adolescent-health/resour.htm>

Assessment tool for hospital care for children (see text box 2)

- <http://www.who.int/child-adolescent-health/resour.htm>

WHO training course on management of severe malnutrition

- <http://www.who.int/nutrition/publications/malnutrition/en/index.html>

Training courses for Emergency Triage Assessment and Treatment and in management of severe malnutrition

- http://www.who.int/child-adolescent-health/publications/CHILD_HEALTH/ETAT.htm

Evidence base for treatment recommendations

- <http://www.ichrc.org/>

Serious childhood problems in countries with limited resources

- http://www.who.int/child-adolescent-health/publications/CHILD_HEALTH/ISBN_92_4_156269_2.htm

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- <http://www.who.int/child-adolescent-health/resour.htm>

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Annex:

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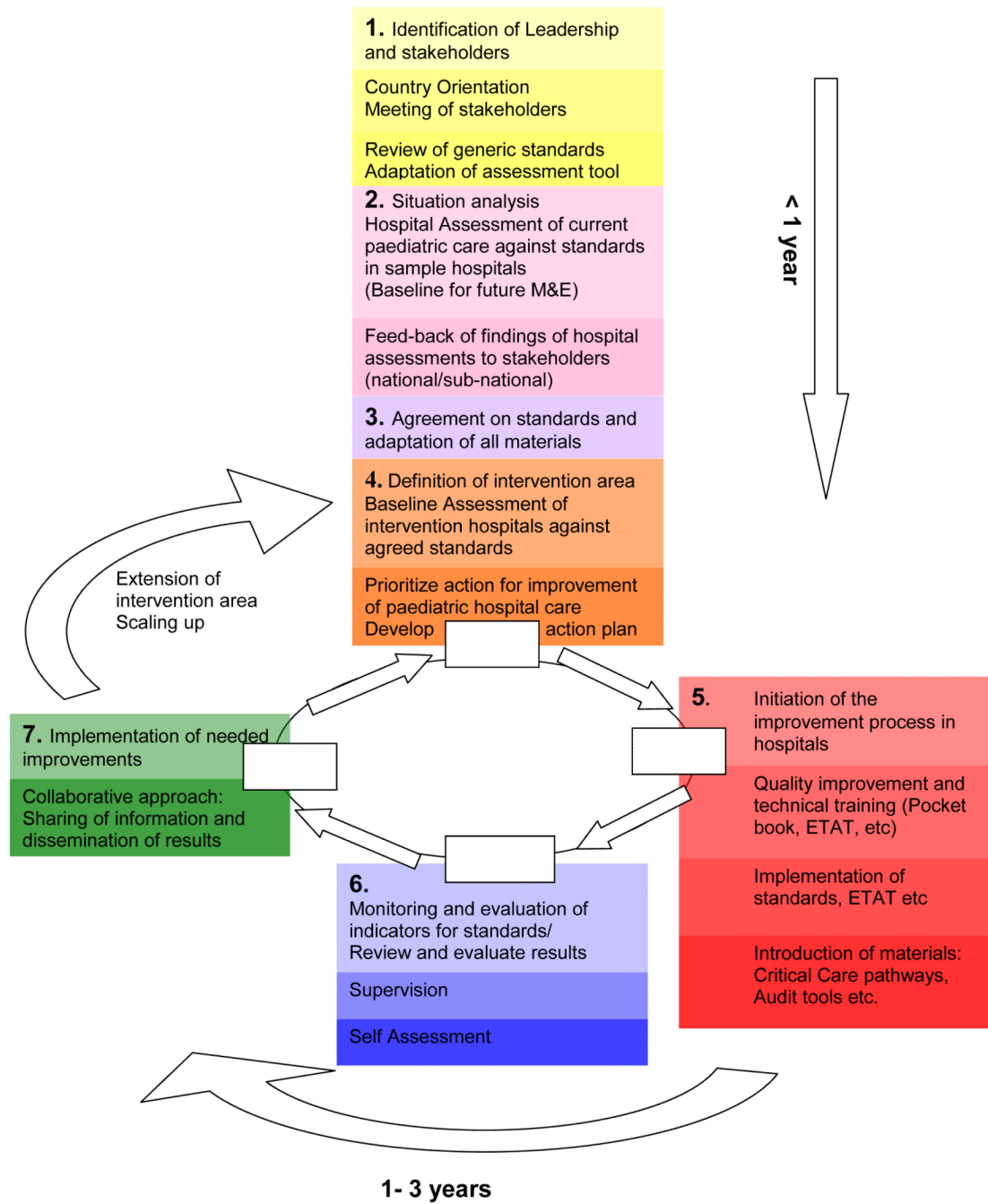


Fig 1. PROCESS FOR IMPROVING HOSPITAL CARE FOR CHILDREN IN

5.1 Cough or difficult breathing

Standards

- Pneumonia is diagnosed and classified based on diagnostic signs.
- Appropriate antibiotics are administered to children who need them.
- Oxygen therapy is administered to all children who need it.
- Correct indications for chest X-ray are applied.
- Children with wheezing receive correctly administered inhaled bronchodilators.
- TB treatment is given according to national guidelines.
- Adequate monitoring and supportive care is ensured.

Standards and criteria	Good	To be improved	Comments
Assessment of pneumonia			
<ul style="list-style-type: none"> • Health workers correctly diagnose pneumonia and classify/recognize severity. pp 69-74, 78 • Signs such as chest chest-indrawing, respiratory rate, presence of cyanosis and general condition are used pp 70-73 			

Summary table cough/difficult breathing

	Good	To be improved	Notes on cases and comments
Severity of pneumonia is correctly assessed and diagnosed.			
Appropriate antibiotics are administered for pneumonia and other respiratory diagnoses.			
Oxygen is correctly administered when necessary.			
Correct use of chest X-ray.			
Appropriate diagnosis and management of TB.			
Inhaled bronchodilators are given appropriately when indicated.			
Patient monitoring appropriately performed and charted. (from section 11)			
Supportive care provided appropriate for condition. (from section 10)			

Main strengths:

Main weaknesses:

Summary score cough and difficult breathing (to be circled)	Good		To be improved		
	5	4	3	2	1

Please indicate the quality of support by marking one of the 5 numbers; 5 indicates good support, 4 to 1 indicating levels of necessary improvement (4=small need for improvement, 1=urgent need for improvement)

Figure 2. A sample page, related to respiratory diseases, from the assessment tool for hospital care for children, showing the standards and criteria, the scoring, and the highlighting of strength and weaknesses found during the assessment.

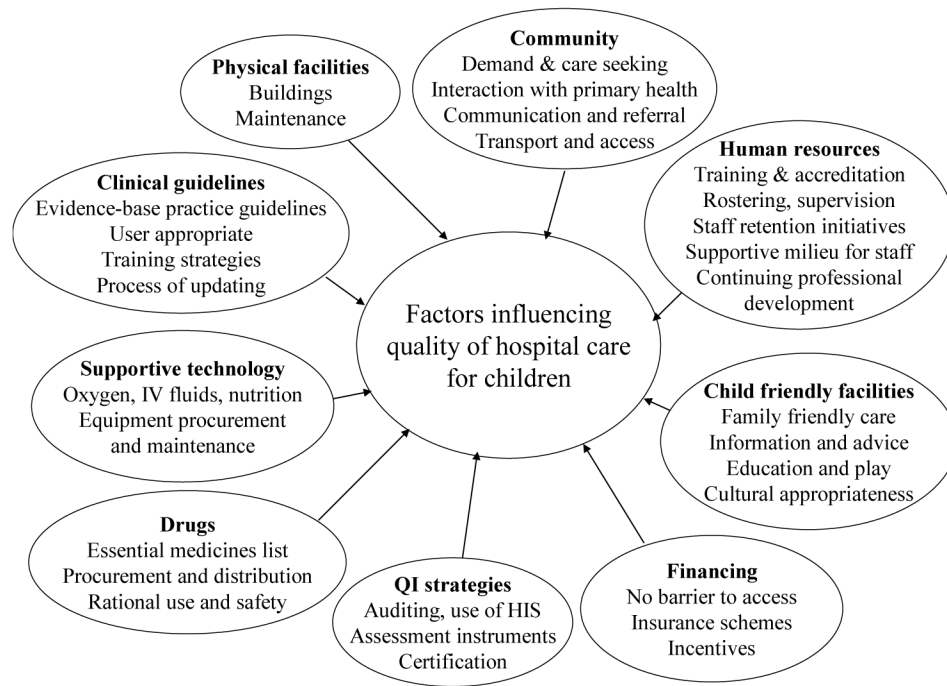


Figure 3. Factors influencing quality of hospital care for children in small hospitals in countries with limited resources.