DENPASAR, INDONESIA
15–19 January 2007

IMPROVING PAEDIATRIC REFERRAL CARE IN THE CONTEXT OF CHILD SURVIVAL ACTIVITIES AND IMCI

Review of processes to improve paediatric care in small hospitals in developing countries
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We also wish to express our gratitude to the Australian Agency for International Development for providing financial support to the meeting.
Abbreviations

- AAP  American Academy of Pediatrics
- AIIMS  All-India Institute of Medical Sciences
- APLS  Advanced Paediatric Life Support
- AusAID  Australian Agency for International Development
- BFHI  Baby-Friendly Hospital Initiative
- CAH  Department of Child and Adolescent Health and Development (WHO)
- CCP  Critical Care Pathways
- DFID  United Kingdom Department for International Development
- EMONC  Emergency Obstetric Neonatal Course
- ENBCC  WHO Essential Newborn Care Course
- ESS-EMCH  Essential Surgical Skills – Emergency Maternal and Child Health-care Programme
- ETAT  Emergency Triage Assessment and Treatment
- GHDF  Global Health Diagnostics Forum
- GTZ  Gesellschaft für Technische Zusammenarbeit (German Society for Technical Cooperation)
- HIV  Human Immunodeficiency Virus
- HPSR  Health Policy and Systems Research
- ICHRC  International Child Health Review Collaboration
- IFMSA  International Federation of Medical Student Associations
- IMCI  Integrated Management of Childhood Illness (WHO/UNICEF)
- IMNCI  Integrated Management of Newborn and Childhood Illness
- IPA  International Pediatric Association
- ISTP  International Society of Tropical Paediatrics
- IUATLD  International Union Against Tuberculosis and Lung Disease
- NIH  US National Institutes of Health
- NNC/TL  Neonatal Nursing Course, Timor Leste
- NRP, AAP  Newborn Resuscitation Programme, AAP
- PALS  Pediatric Advanced Life Support
- PHI  Paediatric Hospital Improvement
- QAP  Quality Assurance Project
- QI  Quality Improvement
- RCT  Randomized Controlled Trial
- SWAp  Sector-wide Approach
- TALC  Teaching Aids at Low Cost
- UNICEF  United Nations Children’s Fund
- WHO  World Health Organization
The Integrated Management of Childhood Illness (IMCI) strategy adopted by the World Health Organization (WHO) and the United Nations Children’s Fund (UNICEF) 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. If the current guidelines are followed, it is estimated that about 10–20% of sick children presenting for primary care, i.e. the most severely ill, require treatment at a first-referral or district hospital. Therefore, the quality of care provided in these hospitals is likely to have a major impact on the health and lives of millions of children each year.

Unfortunately, there is evidence that hospital care is often deficient in many countries. A key study of 21 hospitals across seven countries in Africa and Asia showed that more than half of the children were undertreated or inappropriately treated with antibiotics, fluids, feeding practices or oxygen. Lack of triage and inadequate assessment, late treatment, inadequate drug supplies, poor knowledge of treatment guidelines and insufficient monitoring of sick children were key adverse factors observed. Further hospital assessment exercises supported by WHO and other agencies over the past years have found similar deficiencies in countries including Cambodia, Eritrea, Indonesia, Kazakhstan, Malawi, Nicaragua, Niger, the Russian Federation, Solomon Islands, Timor-Leste and the United Republic of Tanzania. 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.

To review experiences with these processes to improve hospital care for newborns and children in low income countries, WHO organized a meeting in January 2007 in Denpasar, Indonesia, bringing together more than 60 participants from 24 countries. During this five-day meeting, a generic framework for improving hospital care for children in developing countries and an assessment tool were reviewed and endorsed. Approaches for quality improvement training were outlined, the role of self-assessment was identified, and a self-assessment tool was drafted. Proposals for research studies for the evaluation of the effectiveness of quality improvement approaches were drafted and a short set of indicators for global monitoring was agreed upon. A list of materials used in the process and abstracts of presentations of experiences are made available in the annexes.

Progress has been made since an initial meeting on improvement of hospital care for children held in 2000, with the focus shifting from describing the scale of the problem to examining experiences with interventions. 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 tool kit containing adaptable instruments, including a framework for quality improvement, evidence-based clinical guidelines in the form of the Pocket Book of hospital care for children: guidelines for the management of common illnesses with limited resources, teaching materials, assessment procedures and mortality audit tools. The evidence base underpinning the guidelines is systematically being collected on a web site. These tools have been field-tested by doctors, nurses and other child health workers in many developing countries.

More attention and support need to be given to action to improve hospital care for children. Improving hospital systems that deliver better care for children will have an impact more widely on other hospital services, support first-level IMCI services and strengthen links with local communities, all of which should result in better utilization of health services at all levels. The challenges remain to bring these and other strategies to scale and to support research into their use, impact and sustainability in different environments. Plans have been made by several WHO regional offices and by international partner agencies to move forward the initiative of hospital improvement.
Outline and objectives of the meeting

A five-day global meeting was held by the World Health Organization (WHO) in Denpasar, Indonesia, from 15 to 19 January 2007. This report reflects the sharing of country experiences during a marketplace session and seven working areas in the context of hospital improvement, which were reviewed in detail during the meeting:

- Materials for hospital improvement.
- Framework for improving hospital care for children in developing countries.
- Training in quality improvement methods.
- Hospital assessment.
- Principles and use of self-assessment.
- Indicators.
- Research and evaluation.

Each plenary session was followed by two group work sessions. The text of the report does not strictly follow the agenda as reproduced in Annex 1: for better comprehension of the subject matter, the group work sessions are described directly after the relevant plenary session.

Objectives

1. To review experiences with processes for the improvement of hospital care for children in developing countries.
2. To share materials used and to finalize generic materials.
3. To discuss and develop next steps at country level.
4. To present experiences of indicators used in monitoring hospital care for children in developing countries and to agree on a list of possible indicators for global monitoring of hospital care for children in developing countries.
5. To outline a formal implementation research project to demonstrate the value of the improvement approach and its components; to discuss possible places and ways of funding.
Expected outcomes

Materials
List of existing materials and details of where they can be accessed; identification of gaps in core materials. Review of materials presented by countries and determination of the possible need to edit them for general use in other countries.

Framework
Endorsement of a framework for improving hospital care for children in developing countries.

Quality improvement training
Suggested training approaches for quality improvement (QI) and materials required for the purpose.

Hospital assessment tools
Finalization of external assessment tools.

Self-assessment

Indicators
Agreement on a short set of indicators for global monitoring of hospital improvement for children in developing countries.

Research
Outline of one or several research studies for the evaluation of the effectiveness of QI approaches.
Introduction and background

Introduction

The participants were welcomed by the WHO Representative for Indonesia, Dr Georg Petersen, on behalf of the Regional Director of the South-East Asia Regional Office of WHO. Dr Petersen summarized the major global focus on continuing high child mortality. Efforts to improve case management have been underpinned by evidence-based guidelines through the Integrated Management of Childhood Illness (IMCI) and primarily focused on first-level health facilities. Dr Petersen highlighted the importance of improving hospital-based paediatric care to support existing IMCI activities. Recent efforts to assess the quality of care and initiate improvement in Asia have been led by WHO and were specifically supported by the Australian Agency for International Development (AusAID).

Dr Ratna Rosita Hendardji, Director of Specialist Medical Care of the Directorate General of Medical Care, Ministry of Health, Republic of Indonesia, reminded the participants of the Millennium Development Goals that are related to child health. She noted that to achieve these goals a major improvement in hospital paediatric care is needed. Appropriate investment will be required if efforts to improve care at this level are to be successful. She listed a number of promising local initiatives in Indonesia such as a survey using the WHO assessment tool in East Java Province and a project to adapt the WHO Pocket Book of hospital care for children: guidelines for the management of common illnesses with limited resources. Dr Ratna Rosita Hendardji expressed pleasure at the honour accorded to Indonesia in hosting this important meeting and extended a warm welcome to all participants.

Dr Jose Martines from WHO’s Department of Child and Adolescent Health and Development (WHO/CAH) reviewed the objectives and expected outcomes of the meeting, as listed above.
Background

Dr Martin Weber from WHO/CAH summarized the background of the initiative to improve paediatric referral care in the context of child survival activities and IMCI. About 10–20% of sick children require referral to hospital, and therefore good care at this level is essential for effective child survival interventions. A seminal study in 1997 was led by WHO to assess quality of care in three hospitals in each of seven developing countries. The study found certain problems to be common to each of the countries studied, such as rarely performed triage, inadequate drug supply (especially for emergency drugs), poor knowledge of treatment guidelines, infrequent monitoring of inpatients, little attention given to malnutrition and poor food supply for children. Conclusions from the study included the needs to raise the competence of staff (particularly in triage, treatment guidelines and monitoring), to improve organization (particularly in triage, drug supply and food supply) and to influence the political environment (to improve staffing, drug supply and food supply levels). In response to these findings, WHO decided to develop treatment guidelines for small hospitals: first in the form of a manual Management of the child with a serious infection or severe malnutrition and then, more recently, as a Pocket Book; both are now available in many languages. The Pocket Book is a durable, quick reference guide with, compared to the previous manual Management of the child with a serious infection or severe malnutrition, expanded sections on neonates, poisonings, human immunodeficiency virus (HIV) infection and surgical problems.

To support the implementation of the Pocket Book for the improvement of hospital care for children, WHO developed or assembled a variety of resource materials. For detailed information on available materials see Annex 5.

Dr Weber presented a timeline of studies and projects that have taken place in support of the programme to improve paediatric hospital care. Since the seven-country study was conducted in 1997, improvement processes took place in many countries, among them Indonesia, Malawi, Niger, the Russian Federation, Solomon Islands, the United Republic of Tanzania, and Viet Nam. Partners working to improve hospital care for children include the International Union against Tuberculosis and Lung Disease (IUATLD), the Quality Assurance Project (QAP) and German Society for Technical Cooperation (Gesellschaft für Technische Zusammenarbeit, GTZ); AusAID has been a major donor in South-East Asia since 2003.

Based on the experiences in countries, a framework for hospital improvement in the context of child survival activities was developed, which provides guidance on: ways to start (covering national leadership, orientation, situation analysis including hospital assessment, and stakeholders), adoption of standards, definition of roles, scope and ways to scale up activities, plus a description of the QI process (which is collaborative) and a list of supporting materials and resources. Previous review meetings were held in Geneva, in 2000 and in Pretoria, South Africa, in 2001.
The sharing of experiences in promoting improvement of quality of paediatric care was one of the most important objectives of the meeting. During a “marketplace session”, participants were invited to present posters summarizing experiences with the improvement of referral care for children in developing countries. There were 33 poster presentations; for more details, see the abstracts reproduced in Annex 3.

**Messages from the posters**

The poster session was followed by a structured plenary discussion to identify lessons learned from the various experiences. Several pilot or small-scale projects were presented. The challenge of going to scale at a national level was recognized: some examples of successful nationwide projects were presented.

The Malawi Child Lung Health project, which was jointly conducted by IUATLD and the Malawi Ministry of Health, reached national coverage. The entire project benefited from full funding from the outset and commitment from the ministry that it would be incorporated into the health system in the context of the sector-wide approach (SWAp).

Another example was in Viet Nam, where the neonatal health programme achieved widespread implementation with budgetary support from the Vietnamese Ministry of Health.

Experiences from various quality improvement initiatives have shown also that widespread ownership by WHO, the United Nations Children’s Fund (UNICEF), ministries of health, regional health systems and national integrated packages of linked programmes is the most effective approach to taking projects to scale. For example, the Niger Ministry of Health was committed to and favoured full national implementation from the outset of project planning.

It was reported that lessons learned from the quality improvement experience include the following.

- The programme adopted should be seen to be applicable across the whole health system.
- It is important that QI is accepted as an essential part of the health system rather than as an added extra. Without this recognition, it is unlikely that ministries of health will commit funds to support ongoing QI activities.
- Starting a pilot project and then sharing the experience is effective as a means of generating advocacy, obtaining resources from the ministry and creating a momentum for change.
- Teaching should take place as far as possible in the hospital where trainees are working, so as to reflect real-life problems and issues that they will encounter. This exposure also fosters ownership and embeds changes in routine practice.
- Establishing a project budget for new materials that the QI approach identifies as important and lacking may mean that progress in implementation is slower but is more likely to lead to lasting changes.
Further discussion contributions

Experience in the Solomon Islands suggests that training of staff generates a pressure for improvement and change and thus becomes in itself an advocacy process. Dr Titus Nasi and Dr James Auto reported that it was of critical importance to pass resolutions at the annual national conference which then can be built into the national health action plan.

Experience in Timor-Leste showed that changes in health systems at the national level can create complications for the delivery of interventions.

A recent large review of the maternal and child health strategy in China highlighted issues of quality and accessibility of hospital care. The review noted that intervention needs to be linked to payment systems rather than being dependent on external funding if changes are to be embedded in the health system.

A certain level of autonomy regarding budget allocation and decision-making is needed at the hospital level if QI approaches are to bring about change that will improve health outcomes.

To ensure sustainability and make certain that doctors and nurses graduate with correct knowledge and practices, it is crucial to involve universities and other training institutions. It is common to find out-of-date medical and nursing curricula that typically do not reflect the burden of disease concept or up-to-date evidence-based guidelines.

Conclusion

The challenge of going to scale in QI projects was acknowledged, and the following actions were identified in order to scale up QI successfully.

- Ensure commitment of country-based agencies by including them at the outset.
- Seek support and involvement of national paediatricians to facilitate long-term implementation of the programme.
- Give emphasis to projects that go beyond pilot implementation and attempt to take the project to scale. This requires attention to links with the health system and to motivating health staff through either incentive systems or national certification/accreditation systems linked to financial reward.

Dr Trevor Duke congratulated the group on the substantial development of QI activities over the six-year period since the last meeting. This development had moved the meeting debate from theoretical discussions to detailed reviews of expanded and consolidated experiences.
Materials for hospital improvement

“Travelling road show”
During a “travelling road show” session, available materials were reviewed critically and their usefulness in local or national settings or organizations was considered. Posters were introduced by the participants – 18 in all – representing different materials used in the context of improvement of hospital care for children. Details are given in the abstracts of presented materials in Annex 4.

Discussion
During a plenary discussion after the travelling road show, the following gaps in the available materials were identified:

- materials to support initiatives in pre-service training;
- materials to support QI initiatives with nurses, including materials to support improvement in nursing skills and nursing care.

The following issues were raised and considered:

- How to approach private providers.
- How to assign accreditation to materials and document the extent of experience in their use.
- Guidance on how far materials can be adapted to the local setting without losing validity or effectiveness and how this adaptation could be made.
- How to assure and maintain the quality of the trainers through adoption of standard methods of training and monitoring and assessment of trainers (as in emergency care and resuscitation, where re-training is required every 2–3 years).
- Maintenance of essential paediatric equipment (such as oxygen equipment). Guidance is required on selection and purchase of equipment, including the levels of budget, manpower and expertise required for essential maintenance (including details of spare parts and technical manuals in the appropriate language). It was agreed that a manual, such as Clinical use of oxygen developed by WHO, is essential and that similar attention should be given to other essential paediatric equipment.

Target groups that have not been addressed so far were identified. Nurses are not being targeted with existing materials, as noted above. For sustainability it is important to include initiatives in undergraduate education and pre-service training. Teachers and facilitators need separate, distinct training and preparation; minimum standards and appropriate materials are required for this. Clinical officers may require the materials to be fine tuned to make them suitable for their level of background knowledge.
Overlaps with other available materials were revealed. Considerable overlap between the WHO CD-ROM and the materials presented from Uzbekistan were noted. There were several neonatal courses. Many materials from paediatric associations exist (but were not presented at the meeting), so it should be possible to complete a compendium of materials available from paediatric associations globally, which may facilitate involvement of a wider group of paediatricians. Such a compendium could be coordinated through the International Society of Tropical Paediatrics, as suggested by Dr Tom Schulpen. The Kenya Medical Research Institute has been compiling available materials for use in the country. It was noted, however, that as long as the information is consistent there is no harm in having different materials. In developing new materials it might save energy to avoid duplication.

Dr Elizabeth Molyneux summarized the discussion session as follows. We need programmes that:

- use accredited materials that are flexible and evidence-based;
- incorporate appropriate incentives to encourage use;
- are at an acceptable level appropriate to the available human resources;
- consider how the trainers will be trained;
- incorporate a system to maintain standards;
- ensure that generalizability is governed by local needs;
- have a plan for sustainability (e.g. through the use of private fees or involvement of universities to fund ongoing activity with students), since programmes often wither once external support is withdrawn;
- give attention to issues of undergraduate education as well those of postgraduate training.

Dr Molyneux noted the potential to:

- work together in areas of overlap to develop improved materials that build on the best aspects of all available materials;
- standardize clinical records and make a recommended format available on the Internet;
- standardize audit software and make it available on the Internet;
- learn from projects that have been successful in achieving sustainability;
- develop a guide to support the proper use or successful introduction of new medical equipment.

Group work
The plenary session was followed by two group work sessions with the following expected outcomes.

- List of existing materials and where they can be accessed.
- List of gaps or core materials missing.
- A review of materials presented by countries and possible need for editing for general use.

List of existing materials
The group made a comprehensive list of all materials presented at this meeting, to be made available to interested programmes. There was consensus, however, that other quality resources available for improving hospital care exist, though not presented at the meeting. It was proposed to initiate a formal process to compile a complete list, and it was recommended that the list should categorize the materials into two groups: (i) those produced by WHO; and (ii) other reference and training materials, published and produced elsewhere, that are compatible with WHO standards. The summary should also list other key characteristics of each item, including its sources and how to obtain it. The list could be added to the WHO/CAH web site. The group developed a draft “materials framework” that could serve as a starting point for such a review, which is included as Annex 5. It was suggested the framework could also be sent to Teaching Aids at Low Cost (TALC).
Gaps and overlaps in core materials

The group identified the following gaps in content and implementation:

- a formal process for updating selected materials (e.g. Pocket Book, web-based);
- nursing standards, guidelines and training tools;
- more – and more varied – audiovisual materials for cases and procedures to be collated;
- translation into many languages;
- guidance for teachers;
- tools for follow-up, supervision and student/trainee examination;
- guidance for programme managers: include guidance on materials in the framework;
- list of training tools and equipment (e.g. dolls) to be included in WHO library services.

Four types of gaps were identified:

- Failure of the materials gathered at the meeting to include certain existing WHO resources and technical areas that are indirectly linked to hospital improvement:
  - breastfeeding counselling courses;
  - training on the management of severe malnutrition.
- Inadequate coverage of technical areas in currently available resources:
  - nursing standards;
  - guidelines and training tools.
- Failure of current resources to be sufficiently comprehensive:
  - tools for follow-up, supervision and examination after courses;
  - guidance and guides for teachers;
  - accompanying audiovisual teaching aids (there is a need for further development of these materials, in respect of both clinical signs and clinical procedures).
- Gaps related to the processes of development, updating and dissemination of materials:
  - regular and timely updating of resource materials;
  - formal review of resource materials and their accreditation to ensure consistency with WHO standards;
  - availability of resources in several languages;
  - availability of a complete set of accompanying training tools and equipment (e.g. dolls) in each country where hospital improvement is taking place.

The group also discussed overlap of the materials. It was noted that, in principle, overlap was not problematic as long as guidelines and recommendations were consistent with WHO standards. Some inconsistencies within WHO’s own resource materials were pointed out, for instance inconsistencies between neonatal care guidelines in Managing newborn problems, pregnancy, childbirth and postpartum care (IMPAC series) and Neonatal IMCI guidelines. There are many training materials with a similar focus in the technical areas of resuscitation and newborn health. For example, materials focusing on resuscitation include, but are not limited to, Advanced Paediatric Life Support (APLS/PALS), Emergency Triage and Treatment (ETAT) and ETAT+, Essential Surgical Skills – Emergency Maternal and Child Health-care Programme (ESS-EMCH), Newborn Resuscitation Programme (NRP, AAP) and Emergency Obstetric Neonatal Course (EMONC, JHPIEGO Corporation).
A number of overlaps were identified in monitoring tools and patient records including in APLS, ETAT and ESSEMCH materials. The group recommended guidance to be provided for maintaining quality of trainers and for giving more sustained support to implementation of the guidelines and tools.

**Review of materials presented by countries**

The group concentrated on reviewing three groups of materials: neonatal resources, the Pocket Book training CD-ROM and South African audit tools.

**Neonatal resources.** The review comprised: WHO Essential Newborn Care Course (ENBCC), WHO Pocket Book CD-ROM, All-India Institute of Medical Sciences (AIIMS) Essential neonatal nursing, ESS-EMCH, ETAT+, and the neonatal nursing course (NNC/ET) in Timor-Leste. There is considerable overlap between the available materials/courses: all six cover emergency and resuscitation; three cover essential newborn care topics (AIIMS, ENBCC and NNC/ET); and three cover ongoing inpatient neonatal care (ETAT+, the Pocket Book CD-ROM and NNC/ET). IMNCI was not included in this review. The use of any of the materials for pre-service training was also not considered. The group recommended that there should be one standard set of materials on essential newborn care and one on the care of the sick neonatal inpatient. The former could be a modified version of the ENBCC materials. There is a need to ensure consistency between the content of this course and other WHO courses such as IMNCI. The recommended course for managing the sick inpatient neonate (which could be called ENBCC+) could be developed from the AIIMS/ET. It will be important to cross-reference with WHO to check compatibility. A summary of the newborn training courses is provided in Annex 5.2.

**Pocket Book CD-ROM.** The strengths of this training tool are that it is interactive, has good clinical cases, includes self-assessment and has regular references to the paper version of the Pocket Book. The review identified some shortcomings: lack of diversity of clinical cases, limited language editions, the need for a trainer and the fact that it goes beyond the Pocket Book in some areas. It was recommended that a greater range of clinical cases should be given (children from other countries, cases of different disease severity and a wider range of conditions – ileus, neonatal tetanus, omphalitis and measles), other languages developed, and videos of practical procedures added.

**South African audit tools.** The Child Healthcare Problem Identification Programme (Child PIP or CHIP) and the Perinatal Problem Identification Programme (PPIP) were reviewed. These South African tools to improve quality of care capture characteristics of paediatric and neonatal deaths, respectively (demographics, nutrition, HIV status and social factors) and quality-of-care data. They are paper-based or run on a computer and incorporate data analysis for feedback. The process was considered to be generalizable to other countries with some minor modifications; no gaps were identified.

**Recommendations and next steps**

- Expand the CD-ROM for the Pocket Book with more and simpler cases and procedures.
- Adapt newborn courses from the Indian National Neonatology Forum course and its East Timor extensions.
- WHO/CAH should coordinate a formal process to list and review resources for improving hospital care for children. The framework prepared by the group would serve as a starting point. The purpose of the list is to assist countries in accessing quality resources for their activities in hospital improvement for children. The list should include “non-WHO materials” that have been formally reviewed and have been found to be consistent with WHO standards.
- WHO/CAH should include suggestions for use of the materials in the Framework for Improving Hospital Care for Children in Developing Countries, possibly as separate annex or as a linked web site.
- The group acknowledged the importance of constant review of technical guidelines. WHO/CAH should initiate and coordinate a continuous process for constantly updating the pocket book on Hospital care for children.
WHO/CAH should support development of:
- nursing standards, guidelines and training tools;
- audiovisual materials for clinical cases and procedures;
- translation of existing materials and tools into selected languages;
- guides for teachers on the use of all items on the “WHO materials” list;
- tools for follow-up, supervision and assessment in areas covered by currently available materials.

WHO/CAH should develop a list of recommended job aids (e.g. mannekins) and make them available through its network at country level (e.g. WHO library services).

WHO/CAH should provide guidance for selection and recertification of trainers in order to ensure quality.

WHO/CAH should sustain support for implementation of the guidelines and tools for improving hospital care for children in developing countries.
Framework for Improving Hospital Care for Children in Developing Countries

Plenary session
The framework is an outline of a systematic approach to address hospital care for children: a suggested sequence of steps and activities and a proposed way of involving stakeholders. Quality should be considered as adhering to expected standards both explicit (adopted national or local standards) and implicit (the way parents believe staff at a health facility should treat their child) in order to ensure that children receive appropriate care, to avoid harmful practices and to provide a benchmark for professional development, self-monitoring and accreditation. The framework encourages the adoption of national standards and processes to achieve this.

The framework leads through the following areas for improving quality of care:

- vision and entry points;
- leadership;
- country orientation towards improving hospital care for children;
- data collection through hospital assessments in countries;
- national or sub-national feedback of the findings of hospital assessments;
- initiation of an improvement process;
- monitoring;
- scaling up.

An important component of the improvement process is a data collection exercise through hospital assessment. The feedback of findings should include not only a report but also a meeting with ministry of health decision-makers and relevant stakeholders. This participation leads to system creation at the level of decision-makers, which ensures leadership, policy support and availability of resources. Initiation of the improvement process is normally carried out in a defined geographical area, or with the hospitals that have been assessed, and follows a QI process.

Practical experience in child survival strategies
Participants were invited to share their experiences with a QI framework in the context of referral care. Their presentations are summarized below.

1. Mrs Penny Enarson recounted her involvement with the Child Lung Health project in Malawi, a IUATLD project to introduce oxygen concentrators into all paediatric wards. The essential elements of the IUATLD approach included: ensuring full government commitment (in terms of health services structure, assured access and sufficient resources for the project); agreed standard case management guidelines; adequate logistics to maintain uninterrupted supplies;
accountability through recording and reporting; and regular supervision and evaluation.
Implementation was carried out in a step-wise fashion incorporating:

- a situation analysis;
- prioritization of cases by risk of death;
- standardization of the information system;
- training in technical and managerial aspects;
- establishment of a materials management system;
- regular and detailed evaluation;
- scaling up to cover the whole country.

2. Dr Nasi described the introduction of the Pocket Book in the Solomon Islands using in-service and preservice training courses for both doctors and nurses, supported by a CD-ROM developed by Dr Duke. The project led to the restructuring of the Child Health Division at ministerial level to bring together all stakeholders who could influence quality of hospital paediatric care. Dr Nasi noted that expertise was required to adapt the training and integrate it into nursing and midwifery curricula and that many copies of the Pocket Book were required for distribution to all clinic and hospital personnel.

3. Dr Stephen Kinoti presented the collaborative approach of the Quality Assurance Project (QAP). An “improvement collaborative” is an organized effort of shared learning by a network of sites (or teams) to:

- adapt to their local situations a known, best-practice model of care for a specific priority health problem;
- achieve significant results in a short period of time (e.g. 12 months), thus reducing the gap between current and best practice;
- scale up the adapted model throughout the organization using an intentional spread strategy.

The collaborative approach was used successfully in industrialized countries. It has been adapted for use in the developing world, and experience now exists in projects in 12 developing countries. Quality can be defined as “Doing the right thing right, the first time. Doing it better the next time, within the available resources and to the satisfaction of the community” (ODI Consulting).

QAP’s Paediatric Hospital Improvement (PHI) programme is an initiative to help health systems in resource-poor settings to improve their quality of care for seriously sick children through the application of adapted WHO standards. Improvement collaboratives can rapidly adapt and spread evidence-based standards to multiple sites. Their networks support improvement teams simultaneously to test and identify effective changes for implementation of specific interventions such as ETAT. The collaboratives promote regular communication and friendly competition between sites to actively disseminate and share effective changes for implementation of best practices; further, they support participating sites in the regular collection, analysis and sharing of core common indicators. Dr Kinoti proposed that improvement collaboratives are a powerful mechanism for scaling up, because they can be planned so as to apply an intentional scale-up strategy from the outset; create a cadre of national and local “champions” to spread achievements at scale; and influence national leadership to adopt and mandate best practices.

4. Dr Tsegereda Gebrehiwot presented positive country experience from Eritrea in implementing a QAP PHI programme. She noted that the aims of this programme are to improve the quality of care for hospitalized children with serious infections and severe malnutrition through the application of evidence-based standards, specifically: to improve recognition and management of emergency conditions in children under five years of age; to decrease hospital case-fatality rates per condition and hospital death rates of children under five years of age; and
to decrease the duration of hospitalization for children with serious infections, severe malnutrition and emergency conditions. Furthermore, the PHI programme aims to increase efficiency of care and decrease management costs of serious infections (e.g. antibiotics). Key areas of the programme are emergency assessment, triage and management, oxygen availability and administration, nutritional status and feeding of all sick children, patient monitoring appropriate to the condition, antibiotic usage, rehydration in severe dehydration and treatment of severe malnutrition.

Dr Robert Scherpber from WHO/CAH highlighted the relationship between child survival strategies and service packages such as IMCI and hospital care. He summarized the current status of IMCI implementation at the first-level health facility and also the hospital level. A multicountry evaluation of IMCI yielded some general lessons for hospital improvement. These included that more attention should be given to the continuum of care, demand generation and health system support (equipment, medicines, human resources, budget and policies) and that simultaneous attention must be paid to quality and coverage.

The following initiatives provide opportunities for improving hospital care on a larger scale:

- neonatal framework;
- programme management guidelines for child survival;
- child survival strategies and costed operational plans;
- qualitative and quantitative norms for health workers;
- GAVI proposals provide a health systems window.

Review of existing child survival strategies in WHO regions showed that hospital improvement was explicitly included in strategies in the European and Western Pacific Regions but not in those in the African or South-East Asia Regions. Dr Scherpber concluded that quality improvement needs to go together with increasing coverage and that opportunities exist to improve hospital care on a larger scale. The framework includes many — but not all — of the elements that were considered important in scaling up IMCI. It should be ensured that explicit linkages are made with national child survival strategies and operational plans and that these strategies and plans explicitly reflect the importance of improving the quality of hospital care.

**Discussion**

During the discussion that followed, there was strong general endorsement for the framework. A number of suggestions for changes and additions were made, which were elaborated during the group work over the next few days. It was noted that the framework included all the necessary elements of overall quality of care (not only paediatric care), and participants proposed that any initiatives using the framework should be integrated into wider hospital improvement efforts.

The major audience for the framework was queried. It was suggested that the framework’s comprehensive nature dictated that it might be most appropriate for policy-makers at the national level. The framework might be most useful for countries with detailed SWAp health planning, such as Malawi. It was suggested that parts of the framework could be used in isolation in countries where less detailed or comprehensive planning is taking place. The main challenge may be how to translate outputs from the framework into action plans, and perhaps more guidance should be given on this aspect. As the level of human resources is of overwhelming importance, some indication of minimum recommended levels would be helpful.

The importance of considering undergraduate education in the framework was highlighted, given its key importance as a determinant of health workers’ care practices and thus quality of care. National accreditation frameworks were considered, together with the desirability of governments defining standards and setting up an accreditation process. Such a process should not be defined too closely, though general guidance may be useful.

Country experiences have shown that paediatricians often did not fully support IMCI. The implementation of the Pocket Book involves paediatric staff early in the process and may lead to extension to first-level facility workers and better acceptance of IMCI.
Major international agencies are currently interested in health systems strengthening; it is important to take this forward at a national level with support from international agencies and other bodies.

**Conclusion of plenary discussion**

The intention of the framework is to provide guidance and to facilitate hospital improvement processes – not by any means to be prescriptive or to define a process that excludes some groups. This child health initiative can be an entry point for wider QI efforts in hospitals. The existing materials for supporting the introduction of the Pocket Book include evidence-based and case-based training that is consistent with educational methods in medical schools and is appropriate for inclusion in undergraduate education and preservice training. To make progress with new areas such as hospital QI or neonatal care in countries with high child mortality, a child health officer may be crucial to initiate and drive forward these processes, particularly in countries which may not have a strong ministry of health or other institutional base.

**Group work**

The plenary session was followed by two group work sessions with the following expected outcome.

- Finalization and endorsement of generic framework.

The group reviewed the framework in detail, and decided to divide it into two parts in order to highlight the target audience more specifically: (1) conceptual and strategic aspects; and (2) technical and operational details.

In the Introduction, target groups and purpose of document were reviewed and the term “hospital” was defined. The section on standards was expanded. Sections 4 and 5 were reviewed and applied to primary and secondary care (health facility versus hospital). In the section on the process of improvement, vision and entry points were reviewed and the text on leadership was elaborated. Country examples were added, as well as a section on implementation/follow-up and operational research (section 6.8). The elements of the improvement process were summarized. The sections on self-assessment and rewarding mechanisms were rewritten and expanded and annexes were provided on Collaborative QI and the Framework cycle summary diagram.

During these discussions, it was confirmed that the framework was relevant to all levels of hospital care. It was thought there was a need to link it to existing QI approaches and to define more closely who needs to be engaged in these processes.

**Next steps**

Several aspects of work could not be finalized during the group’s deliberations and require final touches by WHO/CAH. These include the positioning of indicators, editing, sequencing and cross-referencing and development of a dissemination strategy for the framework.

**Conclusion of group work**

The framework was reviewed and endorsed, with some proposed changes. It was noted that the framework could also have a wider application and that the work on improving child health (children being a vulnerable group) could be seen as spearheading an intention to spread out to other aspects of hospital care.
Quality improvement training

“What QI training is needed for improving hospital care of children?”

Plenary session

Dr Lauri Winter noted that training to improve hospital care of children should include QI as well as technical knowledge and skills. Furthermore, hospital systems and management issues that impact on pediatric care should be covered.

She suggested that the QI content include further elaboration of:

- definition, dimensions and perceptions of quality;
- standards and norms for pediatric care;
- quality measurement and indicators;
- quality improvement and problem-solving;
- teams and team dynamics; conflict resolution and negotiation;
- essentials of communication.

A number of training options were presented: an in-service or pre-service formal start-up training package of 5–10 days; multiple shorter training periods (1–3-days), serially sequenced and focused on QI and technical topics; self-learning, either computer-based or using paper modules; on-site, just-in-time learning with facility-based mentors; or combinations of these alternatives. Advantages and disadvantages of the different options were identified and discussed in depth by the working group over the following days.

Other challenges include the lack of a functioning health information system to use in ongoing monitoring and the fact that mastery of QI skills requires “learning by doing” which takes time and regular coaching or mentoring.

Dr Kinoti presented some of these key issues in QI training based on his project experience. In the collaborative approach used by QAP, QI training is embedded in a series of seven sessions. In terms of sustaining and spreading the QI work, he noted that the programme should equip participants to:

- identify factors that will establish a supportive environment so as to enable the organization to sustain improvements over time, maintain the quality method of working and ongoing application of QI, and/or establish a community of practice;
- discuss what needs to be done to prepare for spread or next phase;
- discuss common activities undertaken to implement a spread strategy.
Dr Susanne Carai from WHO/CAH presented the draft WHO Manual for quality improvement, which was developed in recognition of the need for a guide that summarizes relevant QI processes, tools and approaches. The manual includes tools and processes that may be used to improve the quality of care in health facilities. Examples of how the tools may be used in settings where children and adolescents are cared for are included, as well as selected facilitation techniques to support group work. The QI manual is intended to function as a reference guide, not as training material itself, but can be used in the training approaches.

**Practical experience in quality improvement training**

Participants were asked to share their experiences with QI training. Their presentations are summarized below.

1. **Dr Hong Rathmony** described his experience of hospital QI activities in **Cambodia**, a collaborative approach built on existing experiences and using WHO guidelines, tools and standards. The partners involved were the Ministry of Health of Cambodia, the National Paediatric Hospital, the Cambodia Paediatric Association and a number of external partners (Belgian Technical Cooperation, French Cooperation, GTZ/CIM/DED, University Research Corporation and WHO). Activities included a 12-hospital quality assessment, a severe malnutrition course with a follow-up workshop employing QI methods to tackle weaknesses, an ETAT course and self-assessment questionnaire, and inclusion of hospital care in the Cambodia Child Survival Strategy.

   Dr Rathmony identified the strengths of this approach as:
   
   - improvement in the quality of paediatric hospital care that fits with countries’ priorities;
   - tools and expertise exist;
   - guidelines and standards were accepted;
   - interested internal partners were present;
   - hospital QI was attractive for clinicians and opinion leaders in child health.

   He considered the weaknesses to be:
   
   - a weak institutional basis;
   - reliance on external resources;
   - inability to overcome some underlying health system constraints;
   - uncertain levels of inter-observer consistency.

   During the following plenary discussion it was noted that the experience in Cambodia showed that considerable institutional strength is required to be able to employ collaborative methods. They work well in a project funded by external donors but are difficult to build in a sustainable way into health systems in a developing country. Substantial drive and motivation are required, which may be difficult to build into a health system.

2. **Dr Gebrehiwot** shared her positive experience of incorporating QI methods into training in **IMCI** in **Eritrea**. QI activities were incorporated into both pre-service and in-service training.

3. **Experience in the United Republic of Tanzania** was reported. To support the shortening of courses to three days covering case management and QI methods, local mentors were recruited and trained. This approach seems to be successful and has been motivating. It has lead to examples of changes initiated at a local level, such as local decisions to buy oxygen concentrators.
4. In South Africa, there are separate government structures that contain technical expertise and QI expertise; both aspects need to be incorporated in order to facilitate integrated training. Current medical training includes problem-solving steps, which apply an approach similar to QI methodology. It was suggested that what we are proposing is very close to problem-solving and indeed it might be better formulated in this way, since there is a strong feeling that it is essential to use simple language if it is to be adopted by clinicians. An opposing view was that the aim is not to solve problems per se, rather, steadily to improve systems with no defined end point but building in a system of continuous scrutiny of practice leading to improvements.

Discussion
It was proposed that any QI course should include guidance on conflict resolution, as changes are likely to lead to conflict. This guidance does not exist at the moment in a format that recognizes cultural differences. Several participants felt, however, that any QI training that included the development of complex skills such as those for conflict resolution would have to be at least 10 days’ duration.

In 2007, the International Pediatric Association (IPA) will include QI training in a two-day workshop for national paediatric associations, whose members are often involved in undergraduate training.

It was noted that an enhanced political profile of QI of services had been achieved, as indicated by the questions raised in recent meetings of the 14 health ministries of Africa.

Group work
The plenary session was followed by group work sessions with the following expected outcomes.

- Suggested training approaches for QI and the materials required.
- Outline of agenda for a training workshop.

The group outlined the essential elements of QI and the materials required to achieve it. The aims of QI training in the context of care for children are to enable service providers to acquire knowledge and skills to implement improvement processes in the provision of services to children at their health-care facilities.

It was acknowledged that the following different categories of personnel require different levels of training:

- QI country experts;
- health officials;
- clinical providers (doctors, nurses and paramedics);
- ancillary staff;
- teams working on QI.

Outline of essential components of a quality improvement training course
The objectives of the training courses are to:

- understand the concept of quality and QI;
- understand the Plan–Do–Study–Act cycle;
- become familiar with QI tools;
- be able to use these skills and tools for improving care for children and adolescents in health facilities and hospitals.
The content of the training course comprises the following sections:

- Introduction.
- How to identify the problem (by describing the current process and comparing it with the standard).
- How to develop improvement actions.
- How to implement action plans.
- How to measure the improvement.
- How to use results for further improvement.

A draft outline for a three-day training course was developed (see Annex 6), and the core competencies to be acquired were described.

**Next steps**

- Finalization of a generic training course.
- Identification of specific examples.
- Elaboration of a specimen timetable.
- Further study of various training approaches.
- Completion of list of training materials needed.
- WHO: facilitation of the process of training of trainers.

It was recommended that specific examples should be presented as a major component of the course.
Plenary session
Dr Giorgio Tamburlini introduced the session and pointed out that the WHO assessment tool was developed from the tool used to assess hospitals in the seven-country study. It exists in many versions, as it has been adapted in every country where it was used. It is an integral part of the QI process and should further serve as the basis for any development of a monitoring tool for clinical practice.

Presentation of the long assessment tool
Dr Andreas Hansmann presented the long version of the assessment tool. It is a generic structured questionnaire (70 pages) for the assessment of hospital paediatric care. Standards were set for each condition, together with criteria by which performance against these standards can be assessed. Pre-visit data are requested before a first meeting takes place with the medical director and staff of a hospital. Assessment is done through the review of case records, observation and discussions with staff of case scenarios. After the assessment, immediate feedback should be given to staff, to start the improvement process with “quick fixes”. Findings should be discussed with hospital management, and the feasibility of changes considered. It should be seen as a process rather than a one-off event, which should focus first on the most pressing issues. Experience shows that paediatricians generally welcome working with peers on clinical management issues rather than a more bureaucratic process with management assessing performance standards.

Presentation of the short assessment tool
Dr Weber presented the short version of the assessment tool (37 pages). This version focuses on issues that are considered to be the most important (triage, hand-washing, availability of emergency and first-line drugs, availability of updated standard treatment guidelines, emergency care and management of common conditions). It aims to evaluate key aspects of areas essential to good care and provide a general idea of how the hospital is functioning in terms of care for children. This version employs a scoring system applied to each section, based on standards and criteria to meet these standards. The criteria are scored as: 5: good or standard care; 4: little need for improvement to reach standard care; 3: some need for improvement to reach standard care; 2: marked need for improvement to reach standard care; 1: services not provided, inadequate care or harmful practices. A summary score is compiled for each standard and each section. The main differences from the long version are: the shorter drug list; less guidance on standards; shorter list of criteria; focus on cough, diarrhoea, fever, malnutrition and the newborn; no highlighting of strengths and weaknesses; and the inclusion of a summary score.

Dr Tamburlini highlighted that these versions of an assessment tool represent only two examples from a potentially wide range of alternatives.

Debate
As a baseline for the debate, the participants were asked to vote for the tool to which they gave preference. The results showed that 23 participants voted in favour of the short version versus 17 for the long version. The other participants abstained. The vote was followed by the debate led by two proponents, one making the case in favour of the long tool and the other for the short tool.
Making a case for the long tool

In favour of the long tool, Dr Severin von Xylander, WHO/Viet Nam, stated that the challenging part is the assessment rather than the setting of standards. Thus the assessment process should be seen as a discussion rather than an examination. The long tool makes better allowance for documentation and discussion, being a more descriptive process. The scoring system of the short tool is rather problematic to apply and could engender conflict.

Making a case for the short tool

In favour of the short tool, Dr Kinoti noted there are major practical problems in implementing a complex and time-consuming process and thus the long tool is not ideal. He questioned what proportion of all the data collected is actually used and whether data should be collected on aspects that will be included in future monitoring. He suggested that simple scores could form the basis of future monitoring so that change can be tracked over time.

Before voting again

Dr Tamburlini reported that the assessment process in itself can lead to improvements in practice and cited an example from the use of the assessment tool in Angola. After the assessment, the hospital authorities decided to open a separate neonatal ward and offer specialist care for feeding. In a general discussion, participants evaluated further strengths and weaknesses of the two tools. The following points were made.

The long version allows for making choices and thus a focus on certain areas, whereas it is more difficult to add areas to the short version. The greater detail in the long version is important, and it was noted that the assessment does not necessarily have to be done in one session but could be made into a modular structure. The long version makes it easier for a country adaptation process to take place. It might be ideal to start with the long version but develop a medium sized version from this after having gained experience.

Hospital assessment in the Netherlands is carried out by an organization based on ISO criteria. This is quite distinct to the peer review system, which exists in parallel. Peer review visits occur every 4–5 years and have evolved from a process comprising a large amount of data collection to a more qualitative process. The visit is preceded by a 40-page questionnaire. The peer review is complemented by questionnaires administered to a sample of referring doctors and patients. A self-assessment is made of adherence to standards by case note review of five cases. Finally, colleagues of the doctor under review are asked to comment on his or her performance. This experience favours a system that offers helpful feedback from colleagues rather than a scoring system. In contrast, however, some participants felt that a single summary score had some value.

The observation was made that the key issue is the quality of the interaction with the staff and being able to draw their attention to obstacles to good care. Whether the tool is the short or long version is less critical as long as a detailed understanding of the problems is gained.

The baseline information that is provided using the long version was found to be helpful for future monitoring. Another view was that a short list of indicators would be easier to implement and more useful.

An external assessment component was felt to be important in order to provide an external view of hospital practices, though it is possible that this may be difficult in some cultures. There is a danger that a very negative assessment without support can be very demotivating. The quality of the assessors is crucial. Experienced and skilled assessors are more likely to pick up key problems without detailed guidelines and to communicate well with staff. In some circumstances they may also be able to form a supportive bond with the staff. It is essential that the assessors are senior enough to be credible and to command the respect of those who are being assessed.

Dr Tamburlini summarized the debate and discussion: The assessment process is extremely important and enough time must be allocated to ensure that an interactive process can take place. Another important issue is to realize that change on many issues is possible even without ministerial approval. Improvements in some issues (such as adding triage and improving prescription practice) are feasible without the need for systems or facility changes. Feedback and discussion of results with all hospital staff are important to identify a preliminary action plan. Scoring may also be important for benchmarking hospitals but this is not the main aim of the current assessment tool. Final scores may not always be helpful as they do not correspond to the supportive spirit of the proposed approach. A broader focus beyond child health may...
provide this process with higher profile and priority and increase its impact, e.g. initiating a mother and child health improvement process rather than starting child health assessment alone. It was noted that the Safe Motherhood programme has a hospital assessment tool that may be worth reviewing. It was suggested that any further meeting of this group should consider involving maternal health.

The assessment and quality improvement process may need to be adapted to different countries and to the purpose of the exercise in various settings. In practice, the assessment tool was modified each time it was used to meet specific needs and, furthermore, to engender ownership of the process. The subsequent monitoring can then focus on a few (approximately five) critical issues that have been identified in the initial assessment. This approach is trying to combine hospital assessment and peer review (activities that are typically carried out separately in industrialized countries). It might be possible to discuss with the ministry of health whether a more formal accreditation element could be added to the assessment later. However, this may require a well-organized paediatric professional body to help administer such a system.

Final vote
After the debate, the final vote was 21 in favour of the long version of the assessment tool and 16 in favour of the short version.

Group work
This plenary session was taken forward in a group work session with the following expected outcome.

- Finalization and endorsement of the external assessment tools.

The group reviewed the tools available and proposed improvements for their further development. The long assessment tool was favoured. Suggestions included: adaptation according to national guidelines; specific guidelines for countries with scanty data or substantial missing data; an expanded guide for the assessment tool to give details of how to select and deploy the assessors; and expansion of the tool to cover maternal health in order to allow for a continuum of care from birth onwards.

The group

- endorsed the principles and structure of the assessment tool (long version);
- recognized the need for adaptation to the state-of-the-art in current efforts of countries to improve quality of care in hospitals (adaptation may include not only choice of relevant items, but step-wise approaches, links with accreditation, etc.);
- recognized the need to incorporate specific guidance on:
  - simplified approaches for hospitals where the basic information is not available;
  - criteria for selection and training of assessors;
- recognized that the current assessment tool is suitable for expansion to include maternity/delivery care, but not primary care.

Next steps

- Finalize changes.
- Incorporate specific guidance on:
  - simplified approaches for use where the basic information is not available;
  - criteria for selection and training of assessors.
Plenary session

Dr Winter outlined the concept of self-assessment. She defined self-assessment as the ability of an individual to undertake appraisal or assessment of his or her own performance, compare it with an agreed standard of performance or guideline and make judgement as to adherence to or conformity with the standard. Taken beyond the individual level, self-assessment can also apply to an institution, such as a hospital, (see also Annex 7).

Particularly in settings where human resources are limited, staff mobility is high and hospital information systems are poor and cannot support data review, self-assessment can be very useful. Self-assessment automatically reinforces knowledge of the standard or guideline that is the basis for comparison. It brings overt attention to variation in performance from the standard, but in a manner that is more comfortable and easier for many professionals to accept than when assessments are made by others. Behaviour change is motivated from within, and an ethic of professional accountability may be built. Self-assessment may create “champions” for change within a facility or organization and decrease reliance on external supervision; it motivates and builds on-site capacity. Self-assessment can be cost-saving and may be repeated at regular intervals with minimal cost or need to mobilize external supervisors. However, accurate assessment of compliance with or adherence to the standard is dependent upon the self-assessor’s knowledge and understanding of the standard or guideline with which his or her performance is being compared; some individuals may be more motivated to change by results from external assessment or assessment by their supervisors, especially if their performance is linked to remuneration or reward.

Validity and reliability of assessment results may be impaired by personal bias, intra-assessor variation (especially with serial measurements) and inter-assessor variation (with pooling or aggregation of multiple self-assessment results).

Dr Winter highlighted the methods most conducive to self-assessment:

- Direct observation of supplies, pharmaceuticals and organization of services, using pre-established checklists.
- Chart or record reviews – allowing direct comparison of key information with pre-established written standards.
- Client interviews – when key client responses can be recorded efficiently and accurately on a pre-established form with pre-tested common responses.
- Peer assessment of simple clinical interventions that allow codification of actions according to a pre-established checklist and that do not require assessor competence. Peer assessment can be a variation of self-assessment and may increase validity.
How to do self-assessment
Dr Winter outlined a few key points:

- Keep self-assessment instruments simple.
- Build in some instruction of the assessment instrument by an external adviser, even if it is simply answering questions.
- Develop a simple scoring method that lends itself to graphic presentation of results, ideally over time.
- Couple self-assessment with quality or performance improvement, so that results are not “dead ends” but are used to stimulate change.
- Encourage repeated assessments to measure results of improvement interventions (linking changes with measurement).
- When possible, establish a mechanism for comparison of results between individuals or across facilities and districts, so as to catalyse shared learning and healthy competition.
- Develop an external validation system of results to ensure their validity, especially when results are used for decision-making, beyond quality improvement efforts.

The validation of self-assessment
Dr Kinoti outlined a concept for the validation of self-assessment in the United Republic of Tanzania.

The objectives of the operational research will be to demonstrate that:

- training, coaching and supervision can, over time, strengthen the capacity of teams to use self-assessment in an African setting;
- the quality of data used in the self-assessment process improves over time;
- self-assessment is a valid tool for monitoring compliance with standards of care in first-referral level hospitals in a developing country setting.

A semi-structured questionnaire will be used to collect key informant and observational data on: availability of staff and time to undertake the collection of data; acceptability of the tools and procedures for self-assessment in the context of the regular service norms of the facilities; random selection of case notes, completeness of data sources; and completion of data collection forms and other provider behaviours.

Practical experience in self-assessment
Participants were asked to share their experiences with self-assessment. Their presentations are summarized below.

1. Dr Auto presented the programme in the Solomon Islands that identified a number of key clinical care issues across six major diseases and developed a self-assessment questionnaire based on this information. Assessment of quality processes was added, e.g. adherence to guidelines and existence of supportive hospital polices such as infection control, and a score was developed for each of the main sections of the questionnaire. The target audience is staff in district and central hospitals. The questionnaire needs further development, though it is crucial that it remains short and simple to use.

2. Dr Mphelekedzeni Mulaudzi presented the South African Child Healthcare Problem Identification Programme (Child PIP or CHIP). This process facilitates a reflection on personal practice based on results of an audit of child deaths, by focusing on the question “Is this the best that we can do?” It aims at allowing for change to take place. As an example, an audit was reported that resulted in a two-thirds reduction in deaths from Pneumocystis carinii pneumonia by encouraging HIV testing and uptake of cotrimoxazole prophylaxis.

South African CHIP, which comprises much more than self-assessment, is a very well-developed model of audit that operates successfully and achieves service improvements. The main
challenge encountered in its implementation was how to bring about attitude changes. The CHIP process channels reflection, as it is always preceded by a child death, and provides a structure for improvement rather than introducing something entirely new. In fact, the introduction of CHIP has resulted in substantial improvement, e.g. in case records. At hospital level, the data amassed can lead to prioritization of problems to inform planning and resource allocation and to raising the profile of child health problems. The data are also assembled across many hospitals. Another challenge is how to document the discussions for use in teaching and in order to track the process of change and reasons for decisions.

Considerable effort has gone into encouraging others to join this programme and into supporting new partners, including promotional meetings. Participation should be seen as an invitation and not a requirement, and acceptance results in peer support from the group. A first step is often to start hospital review meetings. The programme offers software support and limited external assistance for its operation; this is an example of external input to raise motivation to start a process of self-assessment. The degree to which staff perceive the system as external depends to some extent on how it is presented to them. A self-assessment process initiated within a hospital may still be seen as external to staff if they have not chosen to take part but are required to do so.

In Cambodia, self-assessment was introduced into six hospitals after baseline data collection from case notes, using integrated care pathways (ICP) forms based on those used in Malawi. On a monthly basis, five ICP records are reviewed by the paediatric teams and adherence to guidelines is monitored over time. Evaluation is now planned in order to validate the process, which is dependent on the existence of case records with a minimum of information recorded. It is important that there is ownership of this approach and for the hospital to give commitment to take action on problems that are identified, where possible. The peer assessment aspect of this method requires good communication and interpersonal skills.

It was acknowledged that a culture of self-assessment is required to make the process successful and valuable. It was questioned to what extent it can be encouraged to happen from outside.

Group work
The plenary session was followed by two group work sessions with the following expected outcomes.

- Draft of a self-assessment tool.

Identification of the role of self-assessment in improving hospital care for children
The group considered the branding of hospital self-assessment. Other general aspects that were considered to be important were the need to build partnerships, validation of the process and the need to keep it simple and adaptable. The process needs to be flexible to account for the varying level of existing hospital standards and of motivation factors.

Self-assessment was thought to have the potential to contribute to the fulfilment of several roles, including: enabling a hospital to move towards a set of standards; setting its own indicators; prioritization of need; demystifying overwhelming problems; and enabling a change process that focuses on capacity-building among staff and provides evidence to support applications for funds.

The process could be initiated through a needs assessment exercise by brainstorming, a questionnaire, stakeholder analysis or other appropriate methods. The method of introducing self-assessment to staff was considered to be very important, and there may be some need for external supervision.

The process should include:

- clarification of the purpose of self-assessment;
- providing understanding of the outcomes of assessment;
- giving immediate feedback;
• formulating a follow-up plan with details of the time frame and responsibilities;
• presentation of results, including examples of areas for improvement and presentation to donors for funds;
• monitoring and review.

Self-assessment could lead to a variety of positive outcomes, including:

• promotion of friendly competition amongst hospitals;
• provision of incentives;
• formulation of links with the collaborative approach;
• provision of teaching opportunities;
• assistance in communication in geographically isolated hospitals;
• contribution to changes which would increase patient satisfaction.

The following constraints were identified:

• quality management required;
• some knowledge of QI methodology required;
• time taken to train staff away from the ward;
• lack of donor funding;
• lack of incentives in terms of poor political stimulus and low salaries;
• need for external funds as provided through health systems strengthening initiative or equity fund;
• existing unhelpful traditions, legacies or cultures.

Self-assessment should be embedded into an overall framework of meeting children’s needs in hospital.

Draft of a self-assessment tool

The group considered both the tool and the process and developed a draft self-assessment tool. Self-assessment should be based on knowledge of QI cycles and a team approach; the hospital assessment tool should enable teams to generate self-assessment checklists (with standards of care taken from the Pocket Book), with self-assessment feeding into QI systems in terms of monitoring and evaluation.

The enabling environment required includes:

• knowledge of QI;
• knowledge of the WHO assessment tool;
• strong management and leadership;
• teamwork;
• conflict resolution;
• working in a step-wise approach to challenging targets.

The group defined hospital self-assessment and analysed how and where it fits into the framework. Revised entries for the framework were drafted, as well as an annex to the framework document on the role and process of hospital assessment in improving the quality of care for children and a guide for the development of the hospital self-assessment tool. The process of hospital self-assessment was reviewed and refined. Several assessment tools were reviewed.

The group recommended developing a definitive hospital self-assessment tool by using the WHO long assessment tool in modular form.

Next steps

Prepare a definitive hospital self-assessment tool that can be split into modules.
Standards and indicators

Plenary session
At the beginning of the session, participants were invited to share their experiences with indicators used in the context of quality improvement activities for children.

1. Mrs Enarson described the use by the Child Lung Health project in Malawi of a set of well-defined epidemiological and operational indicators, which were established for measuring targets. The indicators were selected to be measurable, valid, reliable and readily interpretable. For example, the hospital case management indicators for pneumonia are as follows.

   **Type of patient**: Number of children admitted with severe pneumonia or very severe pneumonia by age groups.

   **Type of treatment**: Number of children within each category of pneumonia who receive standard case management in hospital.

   **Outcome of treatment**: Treatment outcome of children hospitalized for pneumonia by severity and age.

Documents used to record and report data were simple and clear; they were limited to the absolute minimum that was required for adequate monitoring of the programme.

2. Dr Kinoti presented examples of indicators used in the Paediatric Hospital Improvement (PHI) initiative in the context of QAP projects. He gave examples of categories of indicators used, such as:

   - capacity of facilities to provide quality paediatric AIDS and PHI services;
   - ETAT practices;
   - HIV detection rates and follow-up, referral for antiretroviral therapy and co-trimoxazole prophylaxis;
   - compliance with standards for case management;
   - case management outcomes (case-fatality rates).

The indicators adopted by this programme can be considered in three classes (examples from ETAT):

**Inputs**: Number and percentage of facilities with functioning ETAT (improved patient flow, designated space, equipment, medicines, trained providers and laboratory services).

**Process**: Number and percentage of children <5 years of age who are triaged as emergency cases and managed according to ETAT guidelines, and common conditions treated according to guidelines.
**Outcomes**: Overall mortality rate for children <5; Overall 24-hour or 48-hour mortality rates for children <5; Case-fatality rate.

**Lessons learned from the Baby-Friendly Hospital Initiative**

Dr Martines presented lessons learned from experience with the Baby-Friendly Hospital Initiative (BFHI). The goals of BFHI are to transform hospitals and maternity wards through implementation of the “Ten steps to successful breastfeeding” and end the distribution of free and low-cost supplies of breastmilk substitutes to maternity wards and hospitals. The impact of baby-friendly practices was demonstrated by the Promotion of Breastfeeding Intervention Trial (PROBIT) which showed that BFHI increased the duration and exclusivity of breastfeeding and decreased the risk of gastrointestinal infection and eczema.

The total number of designated Baby-Friendly Hospitals reached about 20 000 globally. The materials to support BFHI included a course for hospital decision-makers, a 20-hour course for maternity staff, hospital self-appraisal and monitoring and tools for external assessment and reassessment. The assessment tool incorporated an interview with the head of maternity services, a hospital data sheet, a review of written materials, observations, staff interviews, and interviews with mothers and pregnant women.

The process of setting indicators involved a detailed 10-step process, including: having a written breastfeeding policy that is routinely communicated to all health-care staff; training of all health-care staff in skills necessary to implement this policy; informing all pregnant women about the benefits and management of breastfeeding; helping mothers to initiate breastfeeding within half an hour of birth; showing mothers how to breastfeed and how to maintain lactation; and promoting good practice (such as giving newborn infants no food or drink other than breast milk, practising rooming-in, encouraging breastfeeding on demand, giving no artificial teats or pacifiers to breastfeeding infants and fostering the establishment of breastfeeding support groups and referring mothers to them on discharge from the hospital or clinic).

Indicators adopted included data on absence of free and low-cost breast-milk substitutes, follow-up on breastfeeding after discharge and information from records on infant feeding practices.

Dr Martines summarized the strengths of the BFHI process, in that it was:

- well formulated with a number of well-defined key steps;
- sensitive to facility changes;
- flexible;
- closely associated with a number of identified remedial actions;
- strongly endorsed with technical and financial support at both international and local levels.

He noted that weaknesses were:

- high level of effort required (including the need for frequent repetitions);
- complexity of the process requiring the use of multiple data sources;
- limited standardization of application;
- high dependence on external resources.

Dr Martines explained that the BFHI programme had lost momentum and thus there was a need to integrate BFHI monitoring into broader existing or future quality assurance or accreditation programmes. For improved delivery and cost-effectiveness, this should involve integration into hospital programmes for auditing or quality assurance and national systems for hospital accreditation.
A Delphi process to identify indicators
Dr Mike English presented an approach to reach consensus on a small set of indicators for monitoring the quality of hospital care.

Measuring quality is usually seen in data on the structure–process–outcome model. Structure indicators do not feature widely in industrialized country literature but are critical in developing countries, as without a minimum set of resources it is not possible to provide standard care. The definition of what is available for patient care can be complex, because issues of free versus delayed payment are important. Case management guidelines set reference standards for structure and processes against which health-worker performance can be measured. Process indicators are easier to measure, are common and do not require follow-up. Process indicators provide clear and valued feedback; however, they must be relevant and be linked to a valued outcome. Valuable outcome indicators include survival, neurologically intact survival, cost minimization and efficiency maximization, harm reduction, and patient or carer satisfaction (a major determinant of use).

A framework for considering indicators for adoption could include questions such as the following.

- Does the information exist in the records?
- Is the indicator providing valid information that is important clinically?
- How strong is the link between performance according to the indicator and better outcome?
- Are the measurements of the indicator reliable? Is this indicator appropriate in all settings?
- What are the clinimetric characteristics of the indicator, e.g. relating to case mix?

As there is no consensus and no gold standard against which to measure indicators, expert opinion needs to be elicited in a structured way. This will be done through a Delphi process over the next year.

WHO/CAH framework of indicators at national and global level
Dr Thierry Lambrechts from WHO/CAH noted that there already existed an exhaustive list of indicators based on “standards” mainly for “problem-solving” purposes at the hospital level. He presented a core group of 15 indicators for national and global monitoring as a basis for further group work.

1. Availability of oxygen in the paediatric ward.
2. Availability of emergency care.
3. Availability of essential drug list.
5. Initiation of breastfeeding within the first hour after birth.
6. Correct antibiotics for pneumonia.
8. Correct management of diarrhoea.
9. Correct diagnosis and management of severe malaria.
10. Availability of neonatal resuscitation.
11. Case-fatality ratio for all admissions under five years of age.
12. Case-fatality ratio for severe pneumonia.
13. Case-fatality ratio for diarrhoea.
15. Case-fatality ratio for newborns 1–1.5 kg.
Dr Lambrechts proposed that indicators should systematically cover all areas that are included in monitoring and evaluation, including the following:

- policies and political commitment (existence of policies and strategies, existence of a budget line);
- health systems (human resources, training coverage, incentives);
- provision of services (availability of drugs and equipment, emergency care);
- cost (to provider and client);
- quality of services (quality of case management);
- utilization of services;
- coverage;
- impact (case-fatality rate);
- inequities (disaggregated by age, sex, urban or rural, quintiles).

He noted, however, that the suggested list did not cover all aspects, and that many indicators could not be measured with existing processes but would need new surveys. This needed to be considered in the refinements through the group work.

Discussion

There was widespread support for the adoption of global indicators. The adoption of global indicators has an advocacy function and generates a drive for change, whereas without global indicators it will be difficult to get global attention. The use of indicators will generate data that will provide evidence of problems with quality of care and of progress towards achieving standards. A mechanism at the regional level for tracking progress in countries will be provided. The final list should link to those proposed within the UN Convention on the Rights of the Child.

In response to a query whether there are similar international indicators in industrialized countries, it was reported that European indicators typically include admission rates, neonatal survival, indicators for specific diseases such as leukaemia, indicators related to the Rights of the Child in hospital (e.g. pain relief, parents’ rights in decision-making, and the right to privacy). It was suggested that these should be reviewed as part of the process of agreeing global indicators.

Reported experience from the Netherlands showed that a plethora of indicators exists, however as this presented an overwhelming problem for hospitals only a few overall indicators were adopted. Each hospital has in place a system for improving quality. The ability to collect and report indicators is seen in itself to be an indicator of quality. In the Netherlands, financial penalties exist for hospitals that do not meet national standards measured by these indicators. National media attention to poorly performing hospitals proved to be a major driver for change.

The current IMCI strategy focuses very much on the community level. There is a growing recognition, however, that more attention and resources need to be given to care at the referral hospital level. This support must be considered complementary and not as a threat or a movement that may deflect current resources away from community and first-level health facility initiatives to the hospital level.

It was agreed that hospital data should be seen as an essential part of efforts to support child survival and that hospital indicators should not be separate from existing child survival indicators. Hospital indicators should be incorporated within and be consistent with national health information systems. It was suggested that an admission record book with identification of major diagnostic groups would increase capacity to measure some of the indicators.

It was questioned whether governments should have to adopt all 15 indicators. The consensus was that, to obtain global data for monitoring, the measurement of all indicators should be promoted rather than allowing a “pick and mix” process. It was agreed, however, that these indicators should be to some extent dynamic and should always focus on the major current issues in which improvement needs to be made at any given time.
Conclusion
Wide support was expressed for the concept and promotion of global indicators for hospital care for children and their integration into child survival indicators. Furthermore, indicators should fit into a Child Rights framework and be compatible with and fit into existing health information systems in hospitals.

Group work
The plenary session was taken forward in two group work sessions with the following expected outcomes.

- Comprehensive list of standards and indicators.
- Agreement on short set of indicators to be recommended and validated in 2007.

The group considered global hospital indicators, particularly those related to policy and measurement of clinical practices. A working definition of a hospital was adopted: a facility that provides inpatient care.

The group considered the list of suggested indicators, but realized that many of them would require new surveys and therefore would not be readily available for global reporting right away. It therefore proposed a revised list of nine indicators for monitoring QI in hospital care at the global level.

1. Existence of a national policy or strategy for child health care with specific provisions concerning hospital care for children.
   (Proportion of countries having a national child health policy or strategy with specific provision for hospital care for children.)

2. Existence of a mechanism for allowing access to hospital care to children and vulnerable groups (gratuity, user fee exemption or insurance scheme) covering the entire population.
   (Proportion of countries with mechanisms to allow free hospital care to children.)

3. Existence of evidence-based, national clinical guidelines for paediatric care updated during the last five years (for major conditions in children: neonatal sepsis, neonatal resuscitation, pneumonia, malaria, dengue, diarrhoea, malnutrition and HIV).
   (Proportion of countries having national evidence-based clinical guidelines updated during the last five years.)

4. Existence of a national mechanism for comprehensive and regular assessment of hospitals including paediatric care (for the last five years).
   (Proportion of hospitals having been assessed during the last five years.)

5. National mechanism for monitoring inpatient fatality rates (by age groups: neonate, infant, child).
   (Proportion of hospitals providing inpatient fatality rates by age group.)

   (Proportion of hospitals having designated areas for paediatric care.)

7. Availability of oxygen (and age-related delivery system) for children in paediatric wards.
   (Proportion of hospitals having O2 available in paediatric wards.)

   (Proportion of hospitals having bags and masks for neonatal resuscitation.)

   (Proportion of hospitals certified (or re-certified) as Baby Friendly within the last five years.)
These indicators can be collected at country level without additional formal surveys. It was noted that none of the proposed indicators can be influenced by health worker performance (rather, they are all dependent on policy and health system organization) and that policy indicators are not robust unless they are very precisely defined. In terms of coverage, it will be important to ensure that the hospital indicators link to child survival indicators. Data from demographic and health surveys were not considered useful for hospital monitoring, as they are derived from small samples with relatively few serious events leading to hospitalization.

Consideration of who would collect the data helped to determine the final list. A hospital survey would have to include all hospitals and the accuracy of this would be uncertain. The alternative would be a probability sample, which would have substantial imprecision and error. The team therefore tended to avoid measures that required the collection of additional new data. In order to report some of the indicators the country would have to have data from all hospitals, so this would be an indicator of the quality of data reporting within the country. In addition, an indicator on health systems use—such as a crude hospitalization rate for children under five years of age—might be useful.

**Recommendations and next steps**

It was agreed that the above indicators needed to be measured from 2007 onwards and experiences documented.

- Start measuring now by piloting in the countries represented at the meeting.
- Extract relevant data from hospital assessments conducted to date.
- Ensure that appropriate information is collected in all new hospital assessments.
- Use these data to start assembling a WHO global monitoring system and commence reporting in 2008.
Evaluation of effectiveness and research study

Plenary session
Dr Harry Campbell reviewed some aspects of the role of research in supporting actions to improve hospital services. He noted that research can help at both local and global levels: in a local setting by defining what is cost-effective and contributing to a process of improving current approaches and methods; and at a global level by providing data in support of efforts to attract recognition of and backing for work to improve hospital paediatric services, by providing a clear demonstration of cost-effectiveness.

The research under discussion could be described under the term health policy and systems research (HPSR). In broad terms this comprises research to define what is effective in both controlled and real-life situations and research to improve delivery of interventions known to be effective (through more complete or equitable coverage or more effective delivery or reduced cost of delivery). The latter is also known as implementation research.

Dr Campbell reviewed the state of knowledge in these areas and highlighted the databases of evidence on research to define what is effective within the Cochrane database of randomized controlled trials (RCTs) and on research to improve delivery of interventions known to be effective within the Effective Practice and Organisation of Care (EPOC) group database. Although these are extensive databases it is not clear to what extent they contain information relevant to the quality of hospital paediatric care in developing countries.

There is no detailed knowledge of the level of research investment in HPSR in child health. In general, levels of investment in research and development on major child health burden have been relatively low compared with other investments. An analysis of HPSR awards by the National Institutes of Health (NIH) and the Gates Foundation 2000–2003, presented at the Global Forum for Health Research in 2003, showed low levels of investment in this topic in relation to its potential to contribute to a reduction in burden of disease.

A new approach to health research priority setting being developed by the Child Health and Nutrition Research Initiative for the Global Forum for Health Research was outlined. This is a fair and explicit method, which is based on a logical rationale if the aim is to target research to areas that would make the greatest contribution to achieving the Millennium Development Goal for child health. It is being piloted by WHO/CAH as a means of reviewing global child health priorities, and early results appear consistently to give higher priority to HPSR. HPSR could be helpful for supporting efforts to improve paediatric hospital services at both local and national levels, the latter including help in international advocacy to demonstrate cost-effectiveness for this approach to improving child health and to promote more general investment to support this research work. Potential benefits are the sharing of expertise, methods and tools; coordination of efforts; development of standard tools to permit comparisons; and exploration of the potential for multicentre collaboration. Participants were asked if there was interest within this group to define common research priorities and take advantage of partnerships, development of standard instruments and joint expertise to raise the quality and thus the impact of research.
Dr English described part of the research work he has been conducting. He asked the group to consider the question “What does training alone achieve?” considering the wide range of modifiers and mediators involved in determining child health outcomes related to government policy (e.g., human resources, cost recovery and drug supply), non-health sectors (e.g., economic issues), district level factors (e.g., socioeconomic status and geographical factors) and mediators at the hospital level (e.g., staffing, budget and baseline resources). This shows that each application or an intervention in a different setting can be quite distinct and these issues could have major effects on impact. The intervention may mature over time with a better or more complete level of implementation or decrease over time due to poor sustainability, so impact may vary substantially over time. Another aspect of the effect of time is that longer follow-up will give more outcome events and thus greater study power.

The level of funding required for efficacy studies is very substantial – for example, to detect a 20% reduction in a case-fatality rate of 10% would require 16 hospitals in Kenya to be randomized to both control and intervention groups and require a substantial follow-up period. This is a major challenge for studies seeking to measure health outcomes. In addition, power is reduced by the need for a cluster design, and analysis is complicated requiring sophisticated statistical methods such as multilevel modelling. Demonstrating an effect in a process indicator is more achievable but this is valuable only when the link between the process indicator and health outcome is well established. Even in cases where impact has been clearly shown it might be very context dependent and thus challenging to be replicated in other settings.

Discussion

During the plenary discussion, the question was raised of how to balance the needs of the national child health programme with the needs of the research when these may conflict. Questions that are important to the ministry of health should be considered, e.g., should the ministry invest in guidelines and training. It was questioned whether data generated in QI programmes were sufficient to influence local policymakers and to what extent attention to study design could generate better data for a similar input. It was acknowledged that it can be a political challenge to present study results to policy-makers.

A need for a simple package that can be delivered across a number of sites to generate important outcome data was discussed. Funding opportunities to support a large collaborative project may be available and the group may want to accept the challenge. It was considered whether there was an overarching research question common to all parts of the group that could serve as basis for a joint project, e.g., how best to implement the Pocket Book. It was agreed that it would very difficult to develop such a research project yet very important to try to do so. Such research holds the potential to solve health systems problems as the product of research and this is important for local advocacy. The opportunity to analyse particular aspects of guidelines in ETAT or another particular area to define better methods of implementation was identified.

Dr Martines shared experience from the launch of IMCI. During a public opening event the following question was raised: “What level of mortality reduction have you achieved with this new approach that you are promoting?” Failure to give a robust response to this fundamental question could be very damaging to the programme. It was therefore considered fortunate that a research study had been launched some years previously (at a time of general enthusiasm for IMCI and when people were questioning the need for the research). This took several years to report but these data were very important to support IMCI at a time when scepticism about its approach was much more prominent.

Presentation of potential funding sources for research activities

Dr Harry Campbell introduced this session.

- Ideas on potential funding sources to support research or research and development were shared (such as NIH, the Gates Foundation, European Union, WHO, Wellcome Trust and bilateral agreements).
- Interest was explored in preparing a short outline of a consortium bid comprising several linked projects with a common aim or theme on employing QI approaches to improve paediatric hospital care.
He asked the groups attending the meeting to indicate who might be interested or if they knew about others who could be approached. During the group work it will be considered whether one or two specific project outlines could be developed. The working group will try to outline such a project that could then form the basis of a research collaboration tackling a research question that would play a general advocacy role for promoting paediatric hospital quality improvement and could not be answered by an individual group alone.

Dr Giorgio Tamburlini presented an outline of the European Union Framework Programme 7 funding programme and noted a specific opportunity in section 3.5.3 on health-care intervention research. This calls for proposals to explore the implications of health systems reform for the secondary care sector in the light of evidence-based decision-making and practice in order to develop and validate relevant policy options.

Dr Hugh Reyburn shared his experience of interactions with and funding by the Gates Foundation. He noted that the Buffet contribution to the Foundation has doubled the available funding and he suggested that the Gates Foundation may be looking for new areas for investment. He proposed that the development of a short outline presented on an informal basis would be one way to gauge interest. He noted there was a recent strategy shift towards funding consortium bids (such the Intermittent Preventive Treatment of Malaria Initiative and artemisinin-based combination therapy). The former encompassed efficacy and effectiveness as well as research on social and economic issues. This suggests an interest in implementation and policy linkages within the Foundation. The investment in a recently awarded QAP project on a global analysis of health diagnostics use and costs supports this assumption. Counter examples from Saving Newborn Lives and IMCI evaluations suggested that the primary interest in the Foundation was in technology-based solutions and primary research.

During the following plenary discussion it was noted that the United Kingdom’s Medical Research Council is about to review its research strategy in Africa. The main approach to the World Bank would probably be through country offices. The Wellcome Trust has recently stopped its health services research programme but has decided to invest in health research capacity strengthening in Kenya and the United Republic of Tanzania and has recently formed a link with the United Kingdom Department for International Development (DFID). In the United States, NIH has advertised a new call for “dissemination and implementation research” projects with deadlines for proposals throughout 2007–2009. It was suggested that funding from some of the larger developing nations might be a realistic possibility for efforts to support the development of quality of care in hospitals. It was recommended to draft a short outline to be used in high-level contact with these agencies.

Group work

The plenary discussions were taken forward in a group work session with the following expected outcome.

- Outline of one or several research studies for the evaluation of the effectiveness of QI approaches.

Progress was made in four areas.

1. Experience with oxygen delivery

Oxygen is an important determinant of quality of care in sick neonates and in children with pneumonia, and oxygen concentrators are a promising approach to make oxygen delivery accessible and affordable. A standard assessment tool covering hospital and programme evaluation had been developed by Dr Trevor Duke and Dr Sophie La Vincente, and a plan was made to conduct surveys in Papua New Guinea and Malawi to identify determinants of successful use of the tool. The protocol was further elaborated and endorsed during the group work. The next steps include seeking support for an evaluation in Malawi in May–June 2007 in government hospitals and those run by the Christian Hospital Association of Malawi (CHAM). The evaluation will be conducted by Dr Sophie La Vincente and Dr David Peel in liaison with a Malawian paediatrician, a Malawian technician and the Ministry of Health of Malawi, with input from IUATLD, the WHO Regional Office for Africa (WHO/AFRO) and WHO headquarters. It should be followed by surveys in other relevant countries, so as to obtain a solid summary of experiences with oxygen delivery in country settings.
2. Evaluation of pulse oximeters

The Gates Foundation plans to invest in diagnostics with the characteristics identified by this review (at least 85% sensitivity and 90% specificity). Pulse oximetry is a cheap and robust technology that fulfils some of the performance requirements of a test for severe pneumonia identified by the Global Health Diagnostics Forum (GHDF). An outline for an informal proposal to the Gates Foundation was drafted, composed of two parts: a structured evaluation of field experience in use of pulse oximetry and a trial to demonstrate the impact of oximetry plus oxygen availability on pneumonia case-fatality rate (a detailed draft protocol has been prepared). The next steps are to draft a joint outline led by Dr Trevor Duke and involving WHO/CAH (Dr Martin Weber). It was thought that the members of the GHDF (Steinhoff, Mulholland and Campbell) would have a ready avenue of approach to the Gates Foundation via the Gates Foundation member who coordinates the GHDF.

3. International Child Health Review Collaboration

The International Child Health Review Collaboration (ICHRC) was discussed fully in the evidence working area (see next section). A list of requirements to enable developing countries to participate in the ICHRC was drafted and will be circulated for comments. A proposal will be prepared for submission for support (led by Dr Tom Schulpen). ICHRC will also enquire about other funding sources.

4. Evaluation of quality improvement for hospital care

The group developed a five-page draft outline of a QI trial for an informal approach to the Gates Foundation, containing the following elements:

- Importance of the topic and need for this research.
- Summary of evidence in support of QI.
- Overall vision for a five-year programme to evaluate a QI approach.
- Outline steps as in MRC framework for evaluation of a complex public health intervention:
  - conceptual framework for intervention;
  - pilot work on intervention;
  - full evaluation.
- List of developing country sites and partners and of technical experts in trial design and analysis, QI and health economics.

In terms of overall design, the group discussed a cluster randomized trial of QI intervention in a number of hospitals (incorporating maternal and child health scope). The intervention would promote WHO Pocket Book guidelines and standards of care within a QI framework (and with a policy component). It was considered that, ideally, the trial would incorporate community surveillance in the catchment population to assess impact on community deaths and hospital utilization.

The intervention would be at the hospital level but may involve efforts to improve referral to the hospitals. It was suggested that an approach to the Gates Foundation should contain a prominent information technology component, to generate routine reports of statistics and details of change in performance over time. It was noted that this linked well with the approaches of CHIP and Critical Care Pathways (CCP) and was also consistent with Dr Peter Campbell’s proposal to use PDA telephones to collate data regionally and nationally. Human and other resources were discussed when considering the nature of the intervention, and ethical issues were raised about sustainability after the trial. It was thought that outcome assessment should include a mixture of structure, process and outcome measures (structure – attention to human resources very important; process – hospital utilization outcome seen as desirable, if feasible; outcome – population-based mortality outcome seen as vital for advocacy purposes but the group was unsure as yet whether this would be feasible). There was some discussion of sites where community surveillance is in existence after a trial or its establishment may be feasible. The group gave initial consideration to the technical experts who could be involved in relevant areas.
Discussion
Eritrea, Malawi and Niger have made progress in QI activities. WHO/AFRO expressed interest in supporting the proposed Malawi project with some cofunding. It acknowledged that a challenge is to identify a sustainable intervention: it should not contain expensive external components. The CHIP and CCP programmes with provision of feedback were seen to be particularly promising.

Recommendations and next steps
- Move forward with an oxygen concentrator evaluation in Malawi (in government and CHAM hospitals) and in other countries.
- Make an informal enquiry to the Gates Foundation in the context of GHDF recommendations, with the following proposals:
  - pulse oximeter for assessment of severe pneumonia;
  - evaluation of oximeter and oxygen concentrator impact.
- Develop a proposal for expansion of ICHRC partners (Dr Duke) and follow-up on funding possibilities.
- Finalize a five-page outline of a QI trial for an informal approach to the Gates Foundation after further detailed consideration of power, design, QI approach and partners. This task is to be coordinated by WHO/CAH. A formal research development workshop should be held if the group is asked to prepare an outline proposal.
Evidence base

Plenary session
Dr Duke presented a summary of ICHRC (http://www.ichrc.org), which is a systematic approach to document the evidence underlying the treatment recommendations of the Pocket Book. Dr Duke gave an overview of the main aspects of the site including a list of the partners involved, the tool kit for carrying out a review, and a list of completed reviews indexed by topic following the scheme used in the Pocket Book.

Reasons why it is crucial to document the evidence include:

- to assist with justification and implementation;
- to reveal areas of uncertainty or controversy;
- to highlight gaps in guidelines;
- to provide a standardized systematic resource for updating the guidelines: a “living document”;
- to broaden the network of people who feel ownership of WHO guidelines;
- to make evidence-based practice accessible (acting as an entry point for evidence-based medical learning);
- to provide a mechanism for incorporation of WHO recommendations into undergraduate education.

To date, over 120 reviews have been commissioned and 34 have been published on the web site in html and pdf formats. The site contains a detailed description of search methodology, a reviewer’s tool kit and contact information. Furthermore, it contains summaries of all RCTs published in child health in developing countries performed on a yearly basis over several years (>250 RCTs). The site receives on average 8000 hits per month.

The methodology adopted in the reviews is as follows:

- develop research question;
- develop search string (use MeSH terms);
- consult Cochrane Systematic Reviews to avoid duplication and identify studies of relevance to developing countries;
- consult PubMed’s Clinical Queries Narrow Search (RCTs only);
- conduct a Clinical Queries Broad Search (includes reviews and non-randomized trials);
- primary author(s) write the draft review;
- editorial review;
send to secondary reviewer;
comments returned to primary author(s) for revision;
standardize the format, final editing for posting on http://www.ichrc.org.

The use of the Clinical Queries tool in PubMed has good performance in finding relevant articles. ICHRC now holds an e-mail list of 1000 addresses that could be used for dissemination, and the translation of its web site into Chinese is planned.

Dr English shared experience in disseminating evidence in Kenya through a child health evidence week. IMCI was generally not very popular among paediatricians in Kenya. The Pocket Book was introduced at district level in circumstances in which doctors had already been trained in other guidelines. A major investment was the development of a workshop assembling 26 lectures annotated and linked to available references. The lectures were sent to two international experts and eight national lecturers who delivered the course, which summarized the evidence behind the WHO guidelines. Participants were provided with a CD-ROM with background materials. The workshop was funded by the Royal College of Paediatrics and Child Health, London, and attracted 26 Kenyan and 10 Tanzanian participants. The course was repeated in the United Republic of Tanzania in 2006. A major achievement was that the WHO guidelines were considered to be suitable for the National Teaching Hospital after the workshop. Limitations include that reviews were structured rather than systematic; there is no system for updating and a lack of funding for this initiative. The course aims to get acceptance and understanding but does not aim to teach skills.

Dr Duke described his work on summarizing RCTs relevant to paediatric care in developing countries, in the form of a compendium. In developing countries, up-to-date evidence on child health is rarely available because journal subscriptions are unaffordable and Internet access is often patchy and costly. In addition, relevance and applicability of studies from developed countries are often doubtful. The focus is on treatment evaluations conducted by RCT. The search uses the Clinical Queries Narrow Search strategy designed for this purpose. The number of trials per year has varied from 75 to 95. Dissemination occurs via an e-mail list of 1000 names, via TALC and ICHRC. The initiative could contribute to continuous professional development, teaching evidence-based medicine, policy development and updating guidelines.

The CD-ROM contains a PowerPoint presentation that describes a PICOT format for interpreting RCT findings (with attention to the population, intervention, comparator, outcome and time). Limitations include lack of funding for dissemination and lack of study reviews in languages other than English.

Dr Harry Campbell outlined the plans for future development of the ICHRC. Future review will be selected with WHO input. The quality of the reviews will be assured by adopting uniform methodology with local supervision, ICHRC review of protocols, librarian review of search terms and strings, and undertaking a second expert review if there is controversy. Date reviews and custodianship for updating will be considered and an editorial board will be constituted – composed of current ICHRC partners, WHO, IPA and the International Federation of Medical Student Associations (IFMSA). To guarantee sustainability, the process should be further formalized, ownership widened and funding sought.

It important to define links to the Cochrane Collaboration and identify relevant Cochrane review groups including those on neonatal/pregnancy and childbirth, with a view to identifying all relevant Cochrane reviews (and protocols), and also to register with the National Center for Biotechnology Information in order to receive alerts when Cochrane reviews are published.

Action has been taken to expand the network of partners and to invite wide participation in the consultation to prepare a list of research questions and in the secondary review process.

IPA has given official endorsement to the initiative and will have a representative on the editorial board. IPA will encourage national societies to present the initiative to medical schools and will support regional workshops; it will identify reviewers and present the ICHRC at the plenary session of the next IPA congress.

IFMSA has agreed to join the ICHRC and to identify some medical colleges in developing countries that could get involved: they may help with the translations of reviews and present them during the IFMSA workshops on evidence-based child health. This will help to develop evidence-based medicine in paediatrics in the curriculum.
Discussion
IPA and the International Society of Paediatric Surgeons have formally supported ICHRC. IPA will discuss the provision of funding for the organization of evidence workshops during the coming year. The International Society of Tropical Paediatricians (ISTP) may also be interested in supporting this activity. ISTP and IPA could front an application for funding. It was acknowledged that the project needs strong senior leadership to ensure continuity of medical student involvement.
Dr Weber reminded the group of the objectives of the meeting and noted that considerable progress had been made. The framework and assessment tool had almost been finalized, needing only editorial touches; they were considered useful for practice in countries and endorsed by the group. Substantial progress had been made in other areas such as the agreement on a short list of global indicators and the development of training materials, the definition of self-assessment and the outline of research studies.

Dr Weber raised some cross-cutting issues for discussion.

**The dissemination and utilization of the framework and operationalization in countries**

WHO regional advisers and IPA affirmed their interest in QI activities (and will promote workshops). The issue will be raised for discussion within ISTP. The QAP and BASICS projects are also supportive of this approach. It was noted that QAP will become the Health Care Improvement project and thus interest and involvement in these issues are very likely to continue offering opportunities for joint activities. Interest was expressed from the Tanzanian Ministry of Health in the context of its quality assurance framework, with a suggestion that the framework should be brought to the attention of African ministries of health.

A need for advocacy with other international agencies in the Child Survival partnership was acknowledged, as their support would facilitate activities at country level.

**Workshop approaches: quality improvement and technical evidence base**

These approaches were strongly supported and WHO/AFRO expressed interest in supporting a regional workshop. A joint WHO–IPA–ISTP approach might increase success at fund-raising to support these workshops. Support was also expressed from the European [EURO] and Western Pacific Regional Offices (WPRO) of WHO. EURO noted that many countries in the European Region shared these problems and there was a need to improve the quality of hospital care.

**Re-evaluation of hospitals**

A re-evaluation of a number of hospitals particularly in the African, South-East Asia and Western Pacific Regions was recommended. WHO hopes to be able to call upon some of the meeting participants to assist in this undertaking. Dr Weber suggested that the e-mail discussion group Child Survival 2015 could be used to foster communication.

Dr Sudhansh Malhotra from the WHO Regional Office for South-East Asia (SEARO) closed the meeting, thanking the WHO Representative in Indonesia, the meeting participants, and staff from WHO/SEARO, WHO headquarters and other regions. He also thanked those who handled the meeting and travel arrangements so expertly.
Summary of recommendations

As summarized above, the working groups made good progress on taking forward materials and approaches for action to improve hospital care for children. The following specific recommendations were made for further work arising from the meeting.

Materials

Beyond the materials reviewed, many others exist from paediatric associations. It would be useful to coordinate a compendium of all available products in liaison with the International Paediatric Association and the International Society of Tropical Paediatrics. Areas of overlap could then be addressed to develop improved materials that build on the best aspects of all those identified.

There is a need for a formal process to compile a list of more materials in two categories: (i) WHO products; and (ii) compatible materials from other agencies and institutions. WHO would need to undertake this compilation and make the list available (e.g. through links on the web site). An additional process could be the assignment of accreditation to materials and the documentation of experience in using them.

The group recommends that WHO/CAH should initiate and coordinate a formal process for constantly updating the Pocket Book of hospital care for children.

The group recommends the support for materials to assist introduction of the Pocket Book. The evidence-based and case-based training format is consistent with educational methods in medical schools and is therefore appropriate for inclusion in undergraduate education and pre-service training.

The group identified the following gaps in content and implementation:

- formal process for updating selected materials (e.g. Pocket Book, web-based);
- nursing standards, guidelines and training tools;
- more – and more varied – audiovisual materials for cases and procedures to be collated;
- translated materials;
- guidance for teachers;
- tools for follow-up, supervision, student/trainee examination;
- guidance for programme managers: include guidance on materials in the framework;
- list of training tools and equipment (e.g. dolls): include in WHO library services;
- materials to support QI initiatives with nurses, including support to improvement in their skills and care;
• materials to support initiatives in pre-service training;
• standardized clinical records to be made available on the Internet;
• standardized audit software to be made available on the Internet.

Specifically, the need was identified to consider and address overlaps in monitoring tools and patient records, including overlap in products from APLS, ETAT and ESSE-MCH.

Equipment
There is a need to develop a guide to support the successful introduction and proper use of new medical equipment. It was agreed that a manual such as that developed by WHO on The clinical use of oxygen is essential and that similar attention should be given to other vital paediatric equipment. Evaluation of the use of oxygen equipment in developing countries should be carried out, characteristics of successful programmes should be identified and disseminated.

Framework
There was strong general endorsement for the WHO framework and the need to finalize it urgently was recognized. The framework has to fit into existing child survival strategies and service packages in countries, and it must be determined exactly how it could be used. The standards and practices included in the framework should be covered in undergraduate education. It is necessary to develop guidance for governments on how to set up national standards and local adaptations and how to establish a national accreditation framework. Beyond the framework, guidance is needed on how to translate its outputs into action plans. It will also be necessary to support data analysis, interpretation and use after the assessment. WHO Representatives could be involved in this activity, as they are the link persons to country-level institutions and stakeholders, including international stakeholders.

Other suggestions included:
• integrate training content and QI methods;
• gather successful examples of QI approaches to incorporate into existing training courses;
• develop an approach that requires a minimum time away from work;
• build a system of continued scrutiny of practices, which can lead to improvements and a system of sustainable support to QI;
• include QI in pre-service training;
• identify new opportunities to promote QI such as IPA’s two-day workshops and the African Ministers of Health call for QI.

Further work should be undertaken on alternative entry points (such as international forums), strategies to introduce the framework into countries, and consideration of how to approach pre-service institutions.

Quality improvement training
The Manual for quality improvement was considered a useful reference guide for QI processes, tools and approaches. In 2007, IPA will propose a QI model to national paediatric associations in a new two-day workshop. It was suggested that the group should pull together examples of good practice in QI approaches that are embedded in existing successful training courses in clinical management and ETAT in an attempt to distil some key messages.

Assessment tool
There was strong support for the assessment tool, with a preference for the long version. It was noted that the assessment process in itself can lead to improvements in practice. The baseline information in the long version was found to be helpful for future monitoring. It was highly recommended to finalize the assessment tool in its generic version for country use, as a matter of urgency, and make it available.
Further comments included:

- Countries should be allowed to adapt the assessment tool and should be assisted in this task.
- Data collected should be linked to future monitoring. The simple scores included in the tool or a short list of indicators could form the basis of future monitoring and evaluation.
- The long version allows collection of adequate baseline data and facilitates country adaptation.
- The quality of assessors is very important: they should be experienced, skilled and possibly senior enough to provide appropriate support and bonding and to give “importance” to the activity.
- A pretest of the adapted/adopted assessment tool in countries is recommended.

**Self-assessment**

The South African ChIP model was praised for being widely disseminated throughout the country and for its impact on providing important information for epidemiological monitoring, teaching purposes and increasing the profile of child health. It was agreed that tools such as critical care pathways and structured medical records may be very useful for health facility-based self-assessment. Adapted versions of the external assessment tool provided another opportunity for self-assessment. A need was identified to anchor self-assessment in an overall framework of meeting child needs in hospital. A generic self-assessment tool needs to be developed.

**Standards and indicators**

There was widespread support for the adoption of global indicators. It was noted that adoption of global indicators has an advocacy function and generates a drive for change. There was strong support for the adoption of a core set of indicators for national monitoring, with a need to review similar international indicators in industrialized countries. Hospital indicators were thought to be neglected, and it was felt they should be incorporated into national health information systems. A standard set of indicators for global monitoring should be adopted and variation from it should be discouraged.

Consensus was reached about the need for a core set of indicators to be measured in all countries to track quality improvement of first-level hospital care for children.

- Indicators in the core set should be limited in number and linked to the framework.
- Some indicators could be inserted into existing health information systems.
- Suggestions were made to review the list of indicators for hospital-level care used in Europe and those for specific indicators: free access to hospital for children, interactions between hospital staff and patients, etc.
- Need to link the monitoring of QI at referral level with global efforts for monitoring progress in child survival (e.g. global monitoring for countdown 2015 and by WHO, efforts to measure coverage of interventions at first-level facilities and in communities).
- Integrate Baby-Friendly Hospital Initiative indicators with hospital assessment, QI, accreditation mechanisms, etc.

**Research**

It was recommended to conduct a multicountry evaluation in countries with experience in the introduction of oxygen concentrator systems, i.e. Egypt, Malawi, Mongolia and Papua New Guinea, to collate useful information and to replicate successful experiences in other countries. The second stage should include the introduction of pulse oximeters for assessment of severe pneumonia in these countries and an evaluation of the impact of oximeter and oxygen concentrator systems.

Furthermore, it was highly recommended to prepare a 4–5 page outline of a QI trial to submit to funding bodies after further detailed consideration of power, design, QI approach and partners. This is to be coordinated by Dr Weber. A formal research development workshop should be held to prepare an outline proposal.
International Child Health Review Collaboration

There was strong support for this new initiative to disseminate evidence and widening involvement in and understanding of evidence-based guidelines, with support for CD-ROM and evidence-based workshops. It is necessary to ensure high methodological standards and to identify funding to secure the future of this project and enable involvement of developing country partners. Resources required to enable the participation of developing country partners should be listed, and a proposal for funding should be written. It is important to get QI accepted as an essential part of the health system rather than as an added extra. Without this recognition is unlikely that ministries of health will commit funds to support ongoing QI activities. Obtaining the support and involvement of national paediatricians will help to build in long-term implementation of the programme. Emphasis must be given to projects that go beyond pilots and attempt to take the project to scale. In QAP experience, hospitals often lack the ability to take action to solve simple problems. There needs to be a mechanism to get proposed solutions into district action plans and to share experiences and lessons learned so that the solutions can be implemented widely.

To ensure quality of the reviews, it is recommended to adopt a uniform methodology with local supervision; ICHRC review of protocols and a librarian review of search terms and strings, with the possibility of undertaking a second expert review if there is controversy; date reviews and allocation of custodianship for updating. It was highly recommended to constitute an Editorial Board, consisting of current ICHRC partners, WHO, IPA and IFMSA. To guarantee sustainability, the process needs to be formalized, ownership widened; and funding sought.

Links to the Cochrane Collaboration will have to be identified: relevant Cochrane review groups including those on neonatal/pregnancy and childbirth should be contacted in order to identify all relevant Cochrane reviews (and protocols) and to register with the NCBI to receive alerts when new ones are published.

IPA is committed to encouraging national societies to present initiatives to medical schools and to supporting regional workshops.

Further plans for country and regional actions

The WHO regional offices and international partner agencies represented at the meeting were strongly supportive of the process. They emphasized the following areas of action to be promoted over the next year.

- Initiation of improvement processes with the use of the framework in countries that have not already made a start.
- In countries where hospital improvement has already started, re-assessment and monitoring of progress needs to be done. Where the improvement was confined to pilot projects, going to scale should then be explored.
- There will be a number of orientation workshops on the Pocket Book, the evidence base for its recommendations, and the improvement processes. Indicators will be promoted and collected globally.
Annex 1: Agenda

**DAY 1**

9:00–9:20 Opening of the meeting and introduction of participants and represented agencies
   Regional Director WHO Representative

9:20–9:30 Objectives and expected outcomes of the meeting
   Jose Martines

9:30–9:45 Background to improving paediatric hospital care in the context of child survival activities and IMCI
   Overview of experiences
   Agenda of Day 1 and background materials
   Martin Weber

9:45–10:00 Introduction to Marketplace session
   Chair: Trevor Duke
   Group photograph and coffee break

10:00–12:15 Marketplace with structured posters on country experiences
   Brief introduction of posters by participants (1 min each), to be followed by individual discussions
   (For detailed information please see abstracts)
   Introduction of participants
   Rapporteurs: Elena Kesheshian and Thierry Lambrechts

12:15–14:00 Lunch

14:00–14:45 Plenary discussion
   Pulling together messages from the posters:
   - What have we learnt in the past few years?
   - What were our strengths and weaknesses?
   - Where are the gaps in our approaches?
   - Are the country experiences generalizable?
   - What coverage have we achieved?
   Chair: Trevor Duke, Rapporteurs: Elena Kesheshian and Thierry Lambrechts

14:45–16:30 Introduction to Travelling road show
   Travelling road show
   Brief introduction of materials used for hospital improvement by participants (1 min each) to be followed by individual discussions
   (For detailed information please see abstracts)
   Chair: Elizabeth Molyneux, Rapporteurs: Mark Patrick, Ingrid Bucens and Severin von Xylander
16:30–17:15 Plenary discussion
Pulling together information of materials used for hospital improvement:
- Existing materials
- Overlap of materials
- Core materials missing
Chair: Elizabeth Molyneux
Rapporteurs: Mark Patrick, Ingrid Bucens and Severin von Xylander

17:15–17:30 Overview of agenda for the following days
Martin Weber

17:30–18:00 Meeting of chairs and rapporteurs of Day 2
Rapporteurs of Day 1 to summarize for feedback next morning

19:00 Reception

**DAY 2**

8:45–9:00 Summary of Day 1
Rapporteurs of Day 1

9:00–10:30 Rolling out hospital improvement in countries – Framework
Chair: Elmarie Malek
Presentations:
1. Framework for quality improvement of hospital care (10 min)
   Martin Weber
2. Statements of participants (2 min each)
   Martin Weber
3. Collaborative approach (5 min)
   Stephen Kinoti
4. Child survival strategy and service packages (5 min)
   Robert Scherpbie
Plenary discussion:
- Where does the framework fit into the child survival strategy and service packages for children in countries?
- Could this framework be used to address quality of care at all levels of health facilities?
Rapporteurs: Robert Scherpbie and Aigul Kuttumuratova

10:30–10:45 Coffee break

10:45–12:15 Quality improvement training
Chair: Lauri Winter
Presentations:
- What sort of quality improvement training do we need? (5–10-day course vs. just-in-time modular training) (10 min)
  Lauri Winter
- 4 days training in quality improvement (5 min)
- Quality training approach in Cambodia (5 min)
  Stephen Kinoti, Severin von Xylander and Hong Rathmony
Presentation of approaches and timetables of quality training by projects (2 min each)
Presentation of materials: Manual on quality improvement (5 min)
Susanne Carai
Discussion
Rapporteurs: Marianna Trias and José Martines

12:15–14:00 Lunch

14:00–15:30 Assessment tools
Chair: Giorgio Tamburlini
Presentation of short and long assessment tools
Severin von Xylander and Martin Weber
Debate:
**Debaters:** Long tool – Andreas Hansmann and Short tool – Stephen Kinoti
- Position A: A short tool is a waste of money as it does not provide the guidance needed for an improvement process
- Position B: A long tool will never be used outside pilot projects

Voting before and after debate

Discussion
**Rapporteurs:** Andrew Mbewe and Harry Campbell

15:30–15:45 Coffee break

15:45–17:00 Self-assessment
**Chair:** Sudansh Malhotra
- Presentation of the concept of self-assessment (10 min)
- Diana Silimperi
- Validation of self-assessment and the wider perspective (10 min)
- Statements of participants: Experience in countries (2 min each)
- Maina Boucar and Stephen Kinoti
- Plenary discussion
  - How can we do self-assessment in hospitals?
  **Rapporteur:** Giorgio Tamburlini

17:00–17:30 Meeting of chairs and rapporteurs of Day 3
**Rapporteurs** of Day 2 to summarize for feedback next morning

**DAY 3**

8:45–9:00 Summary of Day 2
**Rapporteurs** of Day 2

9:00–10:30 Standards and indicators
**Chair:** Mike English
- Indicators used
  - Experiences from participants (5 min each) in relation to suggested short list
  - Lessons learnt from indicators of the Baby-Friendly Hospital Initiative
  - Short presentation on indicators used in the context of QAP projects
  **Jose Martines and Stephen Kinoti**
  **CAH framework of indicators at national and global level**
  **Thierry Lambrechts**
- Discussion
  **Rapporteurs:** Hanny Roespandi and Thierry Lambrechts

10:30–10:45 Introduction to group work
**Robert Scherbier**

10:45–11:00 Coffee break

11:00–12:15 Group work Session 1 (See guidelines for group work)
**Chair – Rapporteurs:**
1. **Materials**
   - List of existing materials and details of where these can be accessed
   - Gaps: list of core materials missing
   - Elizabeth Molyneux – Trevor Duke, Severin von Xylander and Ingrid Bucens
2. **Framework**
   - Finalization and endorsement of generic framework
   - Elmarie Malek – Aigul Kuttumuratova and Robert Scherbier
3. QI training
   Suggested training approaches and materials required
   Outline of agenda of a training workshop
   Stephen Kinoti – Mariana Trias and Jose Martines

4. Assessment tools
   Finalization and endorsement of external assessment tools
   Giorgio Tamburlini – Andrew Mbewe and Andreas Hansmann

5. Self-assessment
   Identification of the role of self assessment
   Draft of a self-assessment tool
   Lauri Winter – Kerry Davies

6. Indicators
   Completion of a comprehensive list of standards and indicators by
   integration of suggested country indicators into CAH list
   Mike English – Thierry Lambrechts and Hanny Roespandi

Rapporteurs of Day 3 to summarize for feedback next morning

DAY 4
8:45–9:00  Summary of Day 3
            Rapporteurs of Day 3

9:00–10:15 Evidence base
            Chair: Giorgio Tamburlini
            Overview (aims, methodology, scope, current status)
            Trevor Duke
            Evidence base workshops, Kenya
            Mike English
            Summarizing and distributing evidence on controlled trials
            Trevor Duke
            Future plans
            Harry Campbell
            Discussion
            Rapporteurs: Rami Ekran Subhi and Stephen Kinoti

10:15–10:30 Outline of a project on a Delphi review of indicators
            Mike English

10:30–10:45 Coffee break

10:45–12:00 Group work Session 2
            Chair – Rapporteurs:
            1. Materials (to continue listing materials from Session 1 if the outcome
               was not achieved)
               Elizabeth Molyneux – Trevor Duke and Ingrid Bucens
            2. Framework (to continue from Session 1 if the outcome was not achieved)
               Elmarie Malek – Aigul Kutumuratova and Robert Scherpber
            3. QI training: Outline of a training approach (modular or course)
            4. Research study group: Outline of a research study design
               Lauri Winter – Kerry Davies – Lauri Winter – Kerry Davies – Mike
               English – Hanny Roespandi and Thierry Lambrecht
            5. Self-assessment: Identification of the role of self-assessment and
               development of generic self-assessment tools
               Harry Campbell and Jose Martines
            6. Indicators: Agreement on a short set of selected indicators to be
               recommended for global and national monitoring
               Sophie La Vicente and Harish Kumar
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<th>Time</th>
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<tr>
<td>12:15–14.00</td>
<td>Lunch</td>
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<td>14:00–15:30</td>
<td>Group work Session 2 (continued)</td>
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<td>15:30–15:45</td>
<td>Tea break</td>
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<td>15:45–17:00</td>
<td>Plenary discussion</td>
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<td>Feedback from group work</td>
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<td>Marianna Trias</td>
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<td>17:00–17:30</td>
<td>Meeting of chairs and rapporteurs of Day 5</td>
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<td>Rapporteurs of Day 4 to summarize for feedback next morning</td>
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**DAY 5**

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<td>8:45–9:00</td>
<td>Summary of Day 4</td>
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<td>Rapporteurs of Day 4</td>
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<td>9:00–10:30</td>
<td>Finalization of group work; recommendations</td>
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<td>10:30–10:45</td>
<td>Coffee break</td>
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<td>10:45–12:15</td>
<td>Presentation of outcomes</td>
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<td>Chair: Jose Martines, Rapporteurs of the groups</td>
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<td>12:15–14:00</td>
<td>Lunch</td>
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<td>14:00–15:30</td>
<td>What have we achieved in this meeting?</td>
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<td>Next steps – the way forward</td>
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<td>Chair: Martin Weber, Rapporteur: Susanne Carai</td>
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<td>15:30–16:00</td>
<td>Closure of the meeting</td>
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<td>Sudhansh Malhotra</td>
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<td>16:00–16:30</td>
<td>Meeting of facilitators and rapporteurs</td>
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Annex 2: List of participants

Dr Trevor Duke
Associate Professor
University of Melbourne Department of Paediatrics
Centre for International Child Health
Royal Children’s Hospital
Flemington Road, Parkville
Melbourne, Victoria 3052
AUSTRALIA

Dr Rami E Subhi
University of Melbourne Department of Paediatrics
Centre for International Child Health
Royal Children’s Hospital
Flemington Road, Parkville
Melbourne, Victoria 3052
AUSTRALIA

Dr Sophie La Vincente
Applied Epidemiology Scholar
University of Melbourne Department of Paediatrics
L4 Centre for International Child Health
Flemington Road, Parkville
Melbourne, Victoria 3052
AUSTRALIA

Dr Mohammed Nurul Alam
Junior Consultant
Sadar Hospital Cox’s Bazar
Government of Bangladesh
Dhaka
BANGLADESH

Dr Dewan Md. Emdadul Hoque
Project Research Manager
Child Health Unit
Public Health Sciences Division
ICDDR,B
Dhaka-1212
BANGLADESH
Dr Shafiqul Islam  
Assistant Professor (Paediatrician)  
Department of Paediatrics  
Mymensing Medical College  
BANGLADESH

Dr Lorn Try Patrick  
Deputy Director  
Kampong-Cham Provincial Hospital  
Phnom Penh  
CAMBODIA

Dr Hong Rathmony  
Vice Director, Communicable Diseases Control  
Ministry of Health  
151–153 Kampuchea Krom Avenue  
Phnom Penh  
CAMBODIA

Dr Ung Sophal  
Chief of Emergency Department  
National Paediatric Hospital 100 Russian Federation Blvd  
Phnom Penh  
CAMBODIA

Dr Tsegereda Gebrehiwot  
Paediatrician  
Paediatric Referral Hospital, OROHA  
Tiravolo, Kusht Rd 780  
P.O. Box 1251  
Asmara  
ERITREA

Mrs Penny Enarson  
Head, Child Lung Health  
International Union Against Tuberculosis and Lung Disease (IUATLD)  
Department of Tuberculosis and Lung Health  
68 Bd Saint-Michel  
75006 Paris  
FRANCE

Dr Andreas Hansmann  
St. Marien Hospital  
Bergstrasse 211  
53129 Bonn  
GERMANY

Dr Sandeep Kumar Kanwal  
Assistant Commissioner Child Health II  
Ministry of Health and Family Welfare  
Room No. 512 A  
Nirman Bhavan, New Delhi  
INDIA

Dr Gunawan Chely  
Tripat General Hospital, Gerung  
Jl. Selaparang 24  
Cakranegara, Mataram  
West Nusa Tenggara  
INDONESIA
Dr Made Diah
Directorate of Child Health
Depkes RI, Lt. 7/C/R.722
Jl. HR Rasuna Said X5 No. 4–9
Jakarta Selatan
INDONESIA

Dr Simplicia Maria Anggrahini Fernandez
Paediatrician
Dr WZ Johannes General Hospital
Jl. Moh. Hatta 19
Kupang East Nusa Tenggara
INDONESIA

Dr Idawati Trisno Koamesah
Project Adviser
Health System Strengthening Project
Jl. Polisi Militer No. 3, Kupang 85111
East Nusa Tenggara Province
INDONESIA

Dr Luwiharsih
Head of Teaching Hospital
Ministry of Health
MOH Building, 5th floor, Room 510
Jl. HR Rasuna Said X-5 No. 4–9
Jakarta
INDONESIA

Dr Erna Mulati
Directorate of Child Health
Jl. Angsana No 42 RT 001/02
Desa Jatimurni Pondok Melati, Bekasi
INDONESIA

Dr Waldi Nurhamzah
Department of Child Health
Faculty of Medicine, University of Indonesia
Jl. Diponegoro 71
Jakarta 10430
INDONESIA

Dr Nurul Ainy Sidik
Jl. Radar Auri No. 58 Cibubur
Jakarta Timur
INDONESIA

Dr Karina Widowati
GTZ–NTB Indonesia
Jl. Swara Mahardika No. 16, Mataram 83121
West Nusa Tenggara
INDONESIA

Dr Marzia Lazzerini
Institute for Child Health IRCCS
Istituto Burlo Garafolo
Via dell’Istria 65/1
34137 Trieste
ITALY
Dr Giorgio Tamburlini
Research Director
Children’s Hospital and Research
Istituto Burlo Garafolo
Via dell’Istria 65/1
34137 Trieste
ITALY

Dr Mike English
KEMRI/Wellcome Trust
Child and Newborn Health Group
P.O. Box 43640, 00100 GPO
Nairobi
KENYA

Dr Stephen Ntoburi
KEMRI
Wellcome Trust Research Programme
P.O. Box 43640, 00100 GPO
Nairobi
KENYA

Dr Elizabeth Molyneux
Professor and Head of Paediatric Department
College of Medicine
P.O. Box 360
Blantyre
MALAWI

Dr Tom WJ Schulpen
Professor of Paediatrics
Director of Quality Management
Office of the Dutch Paediatric Association
Mozartlaan 2
3723 J M Balthoven
NETHERLANDS

Dr Oscar Nunez
Proyecto Garantia de Calidad – QAP/USAID
Kilometro 5, Carretera a Masaya
Edificio King Palace
Managua
NICARAGUA

Dr Elena Keshishian
Head of Paediatric Department
Taldomskay str 2
Moscow
RUSSIAN FEDERATION

Dr James Auto
Paediatrician
National Referral Hospital
Chinatown Road
P.O. Box 349, Honiara
SOLOMON ISLANDS

Dr Titus Nasi
Paediatrician
National Referral Hospital
Chinatown Road
P.O. Box 349, Honiara
SOLOMON ISLANDS
Dr Elmarie Malek
Paediatrician and Senior Lecturer
Department of Paediatrics and Child Health
Witbank Hospital, University of Pretoria
Private Bag X 7206
Witbank 1035
SOUTH AFRICA

Dr Mulaudzi Mphelekedzeni
Paediatrician
Kalafong Hospital Kunikala Building
PO Box 30814, Woonderboompoort
Pretoria
SOUTH AFRICA

Dr Mark Patrick
Paediatrician
Grey’s Hospital
P/Bag X 9001
Pietermaritzburg 3200
SOUTH AFRICA

Dr Cindy Stephen
Grey’s Hospital
P/Bag X 9001
Pietermaritzburg 3200
SOUTH AFRICA

Ms Estelvina Alves
Nurse
CSI Vipuepue, Dili
TIMOR LESTE

Dr Liborio da Costa Alves
Paediatric Ward
Baucau Referral Hospital
Baucau
TIMOR LESTE

Dr Bourdaloue Fernandez Moniz
Hospital Referral Maliana
Dili
TIMOR LESTE

Dr Domingas Angela da Silva Sarmento
Paediatric Ward
National Hospital Guido Valadares
Bidau Toko Baru
TIMOR LESTE

Dr Lauri Winter
Technical Director
TAIS Delegacia de Saude
Ruangoma, Dili
TIMOR LESTE

Dr John Bridson
Child Health Advocacy International (CAI)
7 Albany Close, Wombwell
Barnsley, South Yorkshire S73 8ER
UNITED KINGDOM
Dr Harry Campbell  
Department of Public Health Sciences  
University of Edinburgh  
Teviot Place  
Edinburgh EH8 9AG  
UNITED KINGDOM

Ms Kerry Davies  
Hospital Management Adviser  
King’s College School of Medicine  
85 Victory Road  
Wanstead, London E11 1UL  
UNITED KINGDOM

Dr Festus Kalokola  
Country Director  
University Research Co, LLC  
Quality Assurance Project (QAP)  
PO Box 71561  
Dar Es Salaam  
UNITED REPUBLIC OF TANZANIA

Dr Hugh Reyburn  
Senior Lecturer,  
London School of Hygiene and Tropical Medicine  
Joint Malaria Programme  
PO Box 2228 KCMC, Moshi, Kilimanjaro  
UNITED REPUBLIC OF TANZANIA

Dr Stephen Kinoti  
Senior Advisor, Quality Assurance  
Quality Assurance Project (QAP)  
University Research Co., LLC  
7200 Wisconsin Avenue  
Bethesda, MD 20814  
USA

Dr Peter Campbell  
Regional Director  
Quality Improvement in Health  
ZdravPlus, 16 Bozbozor, 5th Street  
Tashkent 100077  
UZBEKISTAN

Dr Thi Phuong Hoa DINH  
Department of Reproductive Health  
Ministry of Health  
138A Giang Vo street  
Ba Dinh District  
Hanoi  
VIET NAM
WORLD HEALTH ORGANIZATION REGIONAL AND REGIONAL OFFICES

Dr Ingrid Bucens
Technical Adviser
Maternal and Neonatal Health Programme
c/o WHO Office Timor-Leste
UN Agency House, PO Box 451, Dili
TIMOR-LESTE

Dr Harish Kumar
NPO WHO India
Nirman Bhawan, Maulana Azad Road
New Delhi 110011
INDIA

Dr Aigul Kuttumuratova
Technical Officer IMCI
WHO Regional Office for Europe
8 Scherfigsvej
2100 Copenhagen Ø
DENMARK

Dr Sudhansh Malhotra
WHO Regional Office for South-East Asia
World Health House
Indraprastha Estate
Mahatma Gandhi Road
New Delhi 110002
INDIA

Dr Andrew Lingililani Mbewe
Regional Adviser
WHO Regional Office for Africa
Cité du Djoué
PO Box 06
Brazzaville
CONGO

Dr Hanny Roespandi
WHO Indonesia
9th floor Bina Mulia Building 1
Jl. HR Rasuna Said Kav 10 Kuningan
Jakarta 12950
INDONESIA

Dr Marianna Trias
Regional Adviser in Child and Adolescent Health
WHO Regional Office for the Western Pacific
UN Avenue corner Taft Avenue
PO Box 2932
Manila 1099
PHILIPPINES

Dr Severin von Xylander
WHO Viet Nam
63 Tran Hung Dao Street
Hanoi
VIET NAM
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Background
Niger has very high infant (81/1,000) and child mortality (198/1,000), and less than half of its population lives within 5 km of a health facility. Niger was one of the first countries in Africa to adopt the IMCI strategy in 1997 and mainly focused on the peripheral level in initial implementation. With the advent of WHO’s guidelines for care at the first referral level, Niger began its improvement of pediatric hospital care in 2003.

Approach/methodology
While clearly needing both training and equipment to improve care, Niger undertook an innovative approach to improving pediatric hospital care. This approach including integration of both clinical norms and inputs with quality improvement methodologies in a collaborative, mutual learning process across a number of hospitals. A small number of initial sites participated in a “national” collaborative process, followed by the addition of new sites that were then organized into “regional collaboratives.”

Implementation process
Initially, 14 hospitals and 3 referral maternity units participated in the PHI Collaborative. A baseline assessment in August 2003 showed in-hospital pediatric mortality of 25%, “absolute need for improvement” both in 84% of observed urgent care case management and in 64% of common case management. Based on clear norms, quality improvement teams together mapped out the care process, analyzed cloudy areas, worked together to develop and implement solutions to problems, measured process and outcome indicators. Collaborative sites were given training in ETAT and supported through visits from coaches with expertise in both pediatric hospital care and quality improvement. These 17 sites came together in a series of 4 learning sessions to acquire additional skills and to share results and best practices. These best practices were then shared in a national PHI conference. At this stage, an additional 15 sites were added to the collaborative, now covering all national hospitals, 5/6 regional hospitals and over 50% (21/42) of district hospitals in the country. To facilitate follow-up and support and integration of the collaborative process into the MOH structures, at scale-up, the collaborative process was decentralized: learning sessions (1-2 so far) are organized and held at regional level and regional coaches have been trained to support the quality improvement teams at the 32 sites. In addition, internal coaches have been trained to ensure adequate clinical and QA skills available to the site teams. Local advocacy ended in funding in ETAT training, coaching visits and support in equipment.

Improvements/Achievements/Results
All 32 facilities have a functional process in place for handling pediatric emergencies following ETAT norms. Achievements include reductions from 25% to 2% in intra hospital mortality in the first 24 hours, and increases in hospital case management in compliance with norms: malaria (10% to 81%), pneumonia (14% to 86%) and dehydration (0% to 83%). All PHI hospitals now have medical charts. In addition, structures and capacities have been treated to support additional expansion to remaining district hospitals: a committed group of PHI experts, 9 national trainers for ETAT, 18 regional coaches and 57 internal coaches trained and carrying out their functions, and strong political support and commitment for quality improvement.

Challenges
Major challenges include: difficulties in communication, staff mobility, weaknesses in MOH information system that make monitoring more difficult (including poor medical charts) and weak capacity in collection and use of data on quality. Monitoring of children in-hospital remains weak and may require testing of affordable but effective modification in norms.

Recommendations
Engagement of key actors (providers, IMCI coordinators) in a baseline assessment, plan for sustainability mechanisms from the beginning (indicators, supervision/coaching structures, opportunities for sharing and mutual learning), pare down norms and indicators to real essentials.

Future Direction
Continue to reinforce local coaching capacities, data management and testing and reporting changes; continue training in ETAT and common conditions, integrate the collaborative approach into institutional structures and regular meetings, build and support a core group of pediatric and QA experts to extend PHI to all remaining hospitals in Niger, and link PHI to ambulatory and community IMCI.
Background
With the advent of WHO’s guidelines for care at the first referral level, Niger began its improvement of pediatric hospital care in 2003. As in most developing countries, the first referral and tertiary public hospitals have been very neglected as a result of political and economic choices, with a subsequent strong impact on both the quality of care for those most seriously ill and the quality of the health information systems necessary to monitor progress at this level.

Approach/methodology
Given the very poor quality of public hospital information systems, the PHI collaborative had to invest tremendous time and effort in improving general hospital information systems in addition to its original goals to improve care of seriously ill and malnourished children. Improving pediatric hospital information systems was relatively new terrain for QAP in Niger and much was learned on the ground during the pre-scale up phase 1 of the collaborative. For valid data to be collected by self evaluation in a weak HIS, QAP had to provide adequate TA to support monitoring skills and developed a detailed and practical “how to” PHI Monitoring Manual and has conducted several training sessions targeting regional external “expert” coaches and on-site “internal” (to team) coaches. These coaches, often MOH employees, support teams at the regional level.

Implementation process
Moderation in monitoring and specific training was crucial to achieve valid self reported data. The most sensitive indicators in self evaluation are process ones. All sites were encouraged to calculate all indicators during team meetings based on the criteria list. During coaching visits, the same medical charts were double checked in addition to new ones to be sure on the validity.

Improvements/Achievements/Results
Many improvements were rapidly implemented and documented via this intensive monitoring at the local level, not least improved medical record keeping, archiving, and general maintenance of hospital pediatric registers. However, it is imperative to simplify and focus data collection on key elements for tracking progress towards collaborative goals (improved quality, outcomes, and more efficient processes of care for children with serious illness): simplify the disease-specific process indicator monitoring tools (ETAT, malnutrition, pneumonia, diarrheal disease/dehydration, malaria) to include a minimum set of elements for each disease process based on the following categories: Evaluation, Initial treatment, In-patient monitoring, and Discharge. For each disease process, there is a simple table of standards and a corresponding table for quick review of medical record against these standards. The measurement of “percent compliance” instead of “all or nothing” compliance has been more conducive to tracking improvement and less demoralizing to providers.

Challenges
Major challenges include: staff mobility, regularity of coaching visits which a constant focus on data validity, Hospital management weaknesses with impact on meeting certain criteria, and availability and completion of medical charts in District Hospitals.

Recommendations
Engagement of key actors (pediatricians at all levels, District officers), categorize indicators by level of usefulness, plan for sustainability mechanisms from the beginning (involvement at all levels of HIS officers), regular coaching and validation of data.

Future Direction
Continue to reinforce local coaching capacities, data management and testing, more and more involvement local HIS managers and by so doing electronic data management;
Problem and problem analysis
The health workers in many under resourced countries receive little or no training in the management of emergencies during pregnancy, at birth, after childbirth, in newborn infants and into later infancy and childhood. However, training is of little value unless there are staff and appropriate resources to provide emergency care.

Objectives of improvement approach
A sustainable, internationally recognized and quality controlled, resource-appropriate training programme designed for all levels of health workers together with advocacy to ensure essential drugs, medical supplies and basic equipment are immediately available in the first referral health facility and provided by the local Ministries of Health. This means that National Government must first be engaged.

Advocacy must ensure low cost and appropriate renovation resulting in a hospital that is clean and effective 24 hours a day. Support for and motivation of health workers at all levels is essential.

Strategies/ Activities undertaken
The programme was developed by a multidisciplinary expert working group put together by Childhealth Advocacy International (CAI).

The education systems used were developed by the Advanced Life Support Group and similar to the Advanced Paediatric Life Support-APLS and the Management of Obstetric Emergencies and Trauma (MOET) courses which includes interactive lectures, workshops, scenarios and skill stations.

Results and Outcomes
The programme has been piloted in Pakistan since 2003. It is recognised by WHO Pakistan as an effective tool for helping them move towards the achievement of the two relevant MDGs. Through feedback the training element has evolved and is now being cascaded across Pakistan. It has become an integral part of the Pakistan Maternal and Child health development programme, is being funded in country, and is sustained through a faculty of skilled and trained Pakistani instructors. A formal evaluation is under way.

We are now introducing the programme into the Brikama District of The Gambia. We have developed a working relationship with three WHO departments in Geneva.

What worked?
The partnership with WHO and the Governments of Pakistan and The Gambia have ensured that there is a focus for the advocacy parts of the ESS-EMCH movement.

International accreditation is provided for the training.

Lessons learnt and recommendations
A competent evaluation is essential and is being developed in Pakistan.

External funding is required for start up and then internal funding for continuation.

Next Steps/ Future
We have been asked by the governments of four other countries to provide the programme.
Problem and problem analysis
A level II neonatal nursery opened at the national hospital of the newly independent Timor-Leste in 2003 however staff were minimally trained in neonatology. Ward practices were poor; no clinical standards were in use; turnover of expatriate paediatricians often created confusion and, importantly, mortality was high, around 15% of all inpatients.

Objectives of improvement approach
Process objectives
1. to develop a locally relevant national training for neonatal nurses at referral hospitals
2. to promote national ownership and sustainability of the course
3. to develop a set of core trainers from various sectors of the health system

Specific objectives of the training were to
1. Improve the knowledge, attitudes and the practical skills of the nurses
2. Introduce standard protocols of neonatal care
3. Improve the standard and quality of care provided to newborns
4. Reduce neonatal mortality at referral hospitals

Strategies/ Activities undertaken
A 10 day course (18 modules), preceded by a 5 day TOT, was developed to match the needs and skills of the nursing staff and the case-mix and resources available on the ward.

Results and Outcomes
Implementation of the training was unfortunately interrupted on day 5 by civil disturbance that resulted in profound disruption to the health system and to society at large. Course completion and follow-up were postponed indefinitely.

What worked?
In spite of the termination of training the TOT had already achieved some process successes:- 1) it enabled open discussion of variations in practice between the recently arrived Cuban medical brigade and WHO standards 2) it notably increased the confidence of the relatively inexperienced facilitators by virtue of the teaching and support provided by the paediatricians during the week.

What did not work / Lessons learnt?
• The course was too long — participants fell behind schedule before the end of week one.
• The very low baseline performance (pretest scores mean 33%) means expectations for post-training improvements will require readjusting.
• Low numbers of inpatients compromised clinical sessions

Recommendations / Next Steps/ Future
• The course will need to be reimplemented when the country situation allows; the stress that the participants have experienced in the interim make it likely that knowledge retention will be seriously compromised.
• Consideration should be given to implementing the course over a longer time frame, splitting the training or deleting some modules
• Supervision and follow-up will be an extremely important component of the training.
Problem and problem analysis

Management of severely ill children at the hospital level in developing countries often falls far short of accepted modern standards, leading to unnecessarily high morbidity and mortality rates, and high costs of care. In addition, there is often poor linkage between primary health care programs and the staff working at the hospital level. Training programs to address such issues often do not address shortcomings in the local circumstances, and fail therefore to ensure that good practices that have been taught are able to be implemented.

Objectives of improvement approach

The course aimed to highlight significant issues at the various hospitals, perhaps different for each one. Modern Quality Improvement techniques would be used to provide a means to identify and address the issues, and to show improvements in a tangible way.

Strategies/ Activities undertaken

Using the WHO manual on hospital level pediatric care we developed a 10-day training program with participative, interactive and realistic case scenarios and multimedia presentations. The course included an overview of the primary care level IMCI program for the benefit of the hospital staff. This was taught in the context of the participants’ own hospital settings, and the training involved testing the ability of the hospital to implement the guidelines. Once implemented, one particular pilot site developed a number of simple indicators and monitored these over time, applying QI techniques to improve their performance.

Results and Outcomes

What worked?
Spending 1-day giving the hospital staff an overview of community IMCI; the use of interactive teaching methods; the introduction of clinical cases in actual hospital settings; providing tests to assess and assure the doctors’ knowledge and skills during the course; integrating QI training into the course, and doing follow up at one pilot site where they have now become the hospital pediatric experts in QI and are causing others to become interested and involved in participating in using such methods.

What did not work?
The course is very comprehensive, with many aspects that are difficult to follow up on to ensure that staff are implementing the recommendations correctly; the course advocated some major changes in practices, but it has not been easy to change doctors’ established behavior patterns and beliefs; the population did not understand why little medication was prescribed by staff according to the WHO guidelines, and additional work with population was needed to be carried out to teach nurses to counsel the patients properly to address their concerns; it was difficult to address the more deep rooted system issues such as lack of oxygen, nasal cannulae, payment systems for drugs.

Lessons learnt and recommendations

A 10-day interactive and participative training program based on WHO guidelines for hospital pediatricians is relatively inexpensive and feasible, and implemented within the framework of a Quality Improvement methodology, can lead to the sustained implementation of better hospital care practices, with considerable parallel cost savings (67% on average).

Next Steps/ Future
This is a course that has huge potential for developing countries, in particular those of the former Soviet Union. The materials are complete, and are in the Russian language. Further minor enhancements to the course are now planned to bring it more into line with the newly published and updated WHO Handbook “Pocketbook of Hospital Care for Children”. The course should be established in Medical Schools, to ensure the sustainability of the changes.
Setting
Svay Rieng Provincial Hospital, Cambodia

Participants
Hospital Management Team and Paediatric Ward Staff

Study Design
Following the introduction of the WHO Paediatric Quality Improvement Assessment tool, staff in Svay Rieng Provincial Hospital undertook an 18 month period of paediatric quality improvement interventions. Staff were then left to perform unassisted for a nine month period. There followed a qualitative review of hospital management interventions on the paediatric ward over a three month period.

Main outcome measures
Evidence of hospital management teamwork, functioning discipline committee, availability of internal supervision, rational drug use, ongoing quality improvement projects in the management of malnutrition, diarrhoea and acute respiratory infection. General hospital quality improvement interventions in hygiene and improvement of the facilities for children and for patient’s relatives. Completion of IMCI (integrated management of childhood illness) training by doctors, evidence that staff have used finance scheme money for appropriate projects with suitable planning and long term follow up.

Results
Patient satisfaction surveys showed increased satisfaction, reduced corruption and improved time keeping but some periods of staff absence. There had been increased bed occupancy throughout the hospital. The number of children presenting with malnutrition was sustained and the supply of formulas adequate. All equipment was still functioning, medical record keeping was good and demonstrated sustained internal supervision. There was evidence of project planning and use of funds to improve hospital infrastructure. There was some inappropriate spending; statues in the hospital grounds; however this reflected the pride that the staff now had in their hospital.

Conclusion
Use of paediatric QI assessment tools can lead to long term hospital management interventions. These interventions can be sustained after withdrawal of support.
Problem and problem analysis
The supply and administration of oxygen is poor in many hospitals in developing countries. Establishing an effective system to administer oxygen can greatly improve the overall quality of care that is provided in a hospital ward. Not only is oxygen essential in the management of many seriously ill children, but the process of planning, setting up and maintaining an oxygen system within a high-dependency area encourages staff to make improvements to other key aspects of clinical care. This involves identification of the sickest children, adoption of guidelines and protocols, a greater focus on monitoring, and attention to management issues such as ordering of consumables, maintenance of equipment, equipment safety, and infection control.

Objectives of improvement approach
To highlight the importance of hypoxaemia and the limited existing resources to deal with this complication. To implement cost-effective systems using oxygen concentrators and pulse oximeters in hospitals in resource-poor countries. To document the experience of establishing such programs. To develop clinical and management tools to assist countries in improving the delivery of oxygen. To provide a framework for evaluating such oxygen programs.

Strategies/ Activities undertaken
Epidemiological studies were conducted that confirmed the high incidence of hypoxaemia and the limited resources that were available to manage this problem in rural and remote hospitals in developing countries. Oxygen systems were implemented in 5 hospitals in PNG in 2005. Clinical guidelines for the use of oxygen and evaluation tools for oxygen programs were developed. WHO is producing a book on the Clinical Use of Oxygen which will describe in detail how to set up oxygen systems, and contains clinical and management tools to assist paediatricians, administrators and engineers in planning and implementing such programs.

Results and Outcomes
What is working?
Prior to the implementation of the program, oxygen was unavailable for 22% of children admitted to hospitals on the day of admission.

Lessons learnt and recommendations
Better oxygen systems require both concentrators and pulse oximeters. Pulse oximetry enables the accurate detection of which children will benefit from oxygen, and the duration for which oxygen is needed. Many factors are necessary for such programs to be successful. These include expertise in procurement, commissioning and installation of equipment, management capacity in planning and implementation, human resources (clinical and engineering) and training, simple guidelines and clinical protocols, equipment maintenance, reinforcement, supervision and follow-up. Ideally such programs should be based on a local understanding of the burden and epidemiology of acute respiratory disease and hypoxaemia, and be cooperative programs between various disciplines within the health sector.

Next Steps/ Future
Complete the WHO oxygen book, and to develop a web-site with these resources freely available. Expand the oxygen programs to provide universal access to oxygen in hospitals in PNG. Conduct a longitudinal multi-country (PNG, Malawi, Mongolia, Egypt, other) evaluation of oxygen programs, using the evaluation tools that have been developed. Promote systems for oxygen provision in hospitals caring for children worldwide. Investigate the efficacy and effectiveness of very low-cost pulse oximetry.
Problem and problem analysis
During the situation analysis carried out in 2000 it was noted that oxygen was not readily available in most paediatric wards in district hospital and staff did not appear to know indications for its use nor details of how it should be administered to young children. The system for delivery of oxygen to the child when it was available was inadequate due to lack of supplies. In most hospitals generator and back up cylinder oxygen was available to theatre only. In most hospitals there were only one or two functioning machines that were primarily assigned to the operating theatre and the maternity ward. The Biomedical Engineering Departments at Central Hospitals were in charge of the service and repair of the oxygen concentrators throughout the country. District Hospitals reported that there was no regular maintenance of the concentrators although biomedical engineering repaired faults when spares were available.

Objectives of improvement approach
To implement a system of supplying oxygen via oxygen concentrators in all paediatric wards in district hospitals throughout the country of Malawi. To develop a package of information/tools for all levels of activity i.e. management, clinical and technical, that covers all steps from procurement through training to installation and maintenance of oxygen concentrators.

Strategies/ Activities undertaken
The CLHP provided oxygen concentrators for exclusive use in the paediatric wards of district hospitals with appropriate spares, related supplies for oxygen delivery to the patient and appropriate training to staff. Twelve steps were identified in developing the system — the five major steps of implementation are as follows:
1. Develop training materials and curriculum
2. Identify designated staff at each site for training on concentrator use and ongoing maintenance
3. Visit regional biomedical departments and discuss regular maintenance protocol/procedures
4. Conduct training once concentrators arrive in country
5. Distribute concentrators to sites once designated staff have received training

Results and Outcomes
What worked?
Training all health service personnel involved in the administrative, clinical and technical levels of oxygen therapy.
Purchasing all necessary supplies/equipment for administering oxygen and maintaining concentrators prior to installation.

What did not work?
At the beginning parents/guardians were reluctant in allowing their children to receive oxygen therapy, as they believe their child will die once oxygen is administered. Health Workers started to counsel parents about the importance of oxygen in their child’s treatment and gradually there has been more acceptance of oxygen therapy by mothers.

Lessons learnt and recommendations
The provision of oxygen through concentrators can be implemented county-wide at district hospital level in low-income countries.
That it would be an advantage if oximeters could have been provided as these will assist in showing parents the positive effects of oxygen therapy when they are shown the resulting increase in oxygen saturation.
That it is important to have the appropriate people trained and in place, along with all necessary equipment and supplies, prior to installation of concentrators.
That regular maintenance and supervision of system/personnel is essential.

Next Steps/ Future
Analysis of the cost effectiveness of oxygen for the treatment of children with very severe pneumonia in Malawi.
Expand this system to other countries in the region.
Problem and problem analysis
Acute respiratory infections (ARI) cause more than 2 million deaths per year. More than 95 per cent occur in developing countries (low and middle-income). Sub-Saharan Africa constitutes the focal point of these deaths. In Malawi, in 1999/2000, the infant mortality rate was 134/1000 and the child mortality rate 234/1000. Pneumonia case fatality rate (CFR) was as high as 25% among hospitalized children. The Ministry of Health (MoH) requested assistance from the International Union Against Tuberculosis and Lung Disease (The Union) for support to implement a Child Lung Health Programme (CLHP) to address the following problem areas:
1. Inadequate health worker skills.
2. Inadequate amounts of antibiotics and supplies and the equipment to administer oxygen therapy.
3. Poor data collection, collation, analysis and utilization.

Objectives of improvement approach
The objective of The Union’s intervention was to promote better lung health in children through the development of a cost-effective, sustainable programme for the surveillance, diagnosis, and management of severe respiratory disease in children at the first referral level, the building of sustainable management and technical capacity for these activities in the target country, and the ultimate establishment of national self-sufficiency for this model of health services delivery for severe childhood respiratory disease. The Union has long and vast experience in sub-Saharan Africa doing this in relation to tuberculosis control.

Strategies/ Activities undertaken
The model program was incorporated into Malawi’s existing infrastructure of health services and was implemented in a stepwise approach by the personnel already working within the services. Such personnel already carry out existing activities for control of ARI and IMCI.

Results and Outcomes
What is working?
Through the application of The Union model for lung disease in children it was possible to implement accurate accounting for services, materials and training and allow calculation of outcome per unit of cost. It also permitted regulation of supply and demand to ensure no disruption of supply of essential materials. Through a stepwise approach the programme was implemented country-wide within 33 months. There was a marked decrease in the CFR for pneumonia and maintenance of the quality of the service was assured through several mechanisms.

What did not work?
In a few instances the CLH Programme faced failure in some districts when training was not followed-up closely with supervision.

Lessons learnt and recommendations
The model programme was able to reduce case fatality from pneumonia in children through the existing infrastructure of first referral hospitals. The key elements of the model were government commitment, establishment of a central management unit, sufficient financial support, development of case management guidelines and standardized training material and regular monitoring through systematic visits and routine reporting of activities and outcomes.

Next Steps/ Future
The MoH of Malawi has included the CLHP in the Essential Health Package which will be funded through the Sector Wide Approach (SWAp).

The model should be applied to other low-income countries, under different social, economic and geographic conditions, to establish its feasibility and generalizability.
Problem and problem analysis
- IMCI uptake has been slow in Kenya with little interest from the Physician Training Schools — inpatient practices are at odds with IMCI OP recommendations (e.g., management of dehydration)
- Detailed survey work in Kenyan District Hospitals indicated that quality of care for hospitalized children in Kenya is poor with few health workers aware of modern management guidelines and with limited resources
- Human resources are scarce with most care for children in hospital being given by nursing staff or diploma qualified clinical personnel
- The degree to which care can be improved using in-service approaches is not clear

Objectives of improvement approach
- Improve knowledge and skills
- Introduce appropriate job aides
- Make care provision more rational and more effective
- Examine and address barriers to provision of care that can be solved locally through self-reflection / appraisal and external support supervision
- Monitor changes in quality of care post-introduction

Strategies/ Activities undertaken
- Detailed baseline survey of ‘hospital performance’ in 8 hospitals (2 weeks per hospital) with data collected at each site on:
  - 400 inpatient episodes (retrospective)
  - 25-50 inpatient episodes (prospective)
  - Facility resources
- ETAT+ training in 4 hospitals, traditional 1.5 day seminar in 4 hospitals
- Introduction of MoH guidelines and job aides in all 8 hospitals
- Support for locally selected ‘facilitator’ in 4 ETAT+ trained sites

Results and Outcomes
- Repeat hospital surveys will be undertaken until the end of 2008
- Baseline data continue to indicate major problems in the provision of effective care — awareness of what comprises ‘best practice’ extremely poor. No MoH or WHO guidelines in use

Lessons learnt and recommendations
- Too early for properly informed insight but it appears:
  - IMCI has failed to engage with medical training institutions — in particular IMCI is regarded as ‘too simple’ for physicians
  - The lack of development of ‘evidence based practice’ in Kenya has undermined understanding and acceptance of IMCI
- For long-term improvements in quality of care issues around pre-service training must be addressed
**Background**

Most HIV infected children present to the health care facilities with pneumonia, recurrent diarrhea, delayed developmental milestones and other common childhood illnesses. Successful treatment requires early identification, prophylaxis with cotrimoxazole and palliative care and antiretroviral therapy for those that need it. Today it is estimated that 59,000 children below 15 years are living with HIV/AIDS in Tanzania. Tanzania has altogether 5,379 health facilities (219 hospitals, 481 health centers and 4679 dispensaries) but by March 2006, only 544 (10%) facilities are providing PMTCT services. In the last two years, with PEPFAR funding the Tanzanian Ministry of Health in collaboration with QAP has been implementing an improvement collaborative in 7 demonstration first level referral hospitals. While improving the quality of care for common conditions causing severe illness and death in children, the collaborative aims included strengthening linkages between various HIV service points to improve the identification, testing, treatment and follow up of children with HIV/AIDS.

**Design and methods**

Since August 2004, the MOH, the WHO Office and QAP in Tanzania initiated a program to address pediatric HIV/AIDS care and treatment as part of overall improvement of pediatric services within these facilities. Teams comprising clinical and nursing staff from the facilities were identified and trained in clinical care using standard WHO guidelines adapted to the country situation, and in the use of standardized tools to monitor case management and outcomes of care. Mentoring was provided by collaborating partners on a regular basis using standardized tools to monitor systems improvements and outcomes of care and compliance with standards.

**Results and outcomes**

Pediatric care improvement teams in the five main referral facility sites received refresher courses and improved their skills to triage, assess, and treat emergency cases brought to the facility; screen, counsel, and test for HIV. The teams have now put in place regular meetings with health providers from the other service areas in the hospital, sharing best practices and solutions to quality obstacles, patient flow has been improved, triage has been set up, special areas for very sick children have been created such as emergency rooms and spaces equipped with emergency trays and drugs, oxygen concentrators and means of resuscitation provided. Over 90% of patients attending the outpatient departments are being triaged. So far, screening of children suspected to have HIV infection has contributed up to 10% of HIV-positive patients enrolled in the nationally instituted care and treatment programs within these facilities, a number less than the national target that at least 20% of all PLWH on treatment have to be children. As providers improved their skills in the use CCPs and Plan, Do, Study, Act (PDSA) quality improvement cycles, some reduction of the hospital disease specific mortality rates has been observed and compliance to standard guidelines in case management improved to ranges from 70% to 80%.

**Conclusion and lessons learned**

Even in situations of limited resources, it is possible to improve quality of pediatric services and improve outcomes. Champions and mentors are important in PHI collaboratives in developing countries. It is essential that staff have clinical standards, program management capacity and tools to monitor compliance with standards to achieve improvements. Mentoring should be provided by local experts for sustainability. Strong and committed leadership is key to the internalization of the whole process of quality improvement. When the Medical Officer in charge of the hospital was involved as the leader of the PHI improvement team, in identifying problems and designing the solution, the problems are solved much faster. Care for pediatric HIV patients involving identification of patients in need of ARVs and prophylaxis, improved contact with the PMTCT program in order to improve follow up for exposed children and taking steps to put these children on prophylaxis, and testing as required and referral to the CTC, requires effective coordination, a functional communication strategy and accurate documentation.

**Recommendations**

We recommend that PHI using the collaborative approach be adopted and adapted for application in developing countries as an important component of IMCI.
Problem and problem analysis

The audit of the hospitals of 1 level, namely in the North of Russia (Chukotka) and in the Caucasus (Ossetiya, Ingushetiya, Chechnya) shows that the problem is not only in methodology of diagnostics and referring of patients, but also in practical use of simple manipulations, because most of physicians do not have special paediatric education.

This made us consider a possibility of developing a course which should execute both tasks (what to do and how to do).

Objectives of improvement approach

- Test the materials and format of the course applying to the Russian context
- Identify weaknesses and gaps
- Train health workers (capacity building)

Strategies/ Activities undertaken

Field test in Chukotka based on WHO generic course. Followed by a course with partial adaptation, changed schedule with greater number of clinical examples.

- Materials (Pocket Book, WHO referral manual, CD-ROM, clinical cases)
- Process of preparation
- Facilitated course (2 facilitators)
- Trainees (15): Paediatricians and physicians working in rural hospitals

Results and Outcomes

- Indicated what should be improved in the course
- More important in terms of teaching methodology than training of trainees

What worked?

- CD and video demonstration of clinical examples.

What did not work?

- Discussions of clinical cases in big groups exceeding 5 persons.
- Difficulties in demonstration of practical situations in hospital (lack of demonstration cases).

Lessons learnt and recommendations

- Our experience proved: the first day — discussion on the problem of hospital care in participants’ region, introduction of the Pocket Book; discussion on the steps to improve hospital care for children in regional hospitals.
- The second and third days should cover solving of various clinical situations in small groups from the beginning to the end accompanied by demonstration of practical skills

Next Steps/ Future

- To work out an adapted, strictly regulated and ready for distribution three-day course “Hospital improvement for children”
- To get the course approved by the Ministry of Health
Poster 13 – Implementing Best Practices in Paediatric Care Using the Improvement Collaborative Approach
Stephen Kinoti, Kathleen Hill and Lani Marquez – Email: skinoti@URC-CHS.COM

Start-up: Organizing a Paediatric Improvement Collaborative

Key Tasks

- Develop specific objectives and aims for the collaborative
- Conduct situational analysis/pre-assessment of current Pediatric services and vital statistics to guide collaborative planning and implementation
- Foster development of national and local leadership and engage key stakeholders
- Select international best Paediatric practices for implementation based on results of situational analysis and discussions with key leadership and stakeholders
- Adapt international Paediatric best practices to the country with “expert team” and develop operational plan ("change package") for implementation of selected best practices in the collaborative
- Plan management structure for the collaborative
- Develop collaborative management tools (e.g. organize collaborative monitoring plan, data base, web-based reporting if appropriate, etc.)
- Select sites and organize collaborative teams
- Identify best available mechanisms for communication and sharing among teams
- Identify mechanisms for spread and institutionalization

Some Issues for Discussion

- Trade-offs between breadth and depth in defining the technical scope of the collaborative
- Challenges and opportunities for fostering national and local leadership
- Challenges and opportunities for adapting international best practices to a particular country
- Feasible mechanisms for communication and sharing among teams in different sites

Establishing a Measurement and Reporting Framework

Key Tasks

- Define the standards to be implemented through the collaborative
- Define indicators to measure compliance with selected standards
- Develop data collection plan
- Identify processes for site teams to analyze their site data and develop “action plans” based on review of data collected
- Define how teams will report data and share results with other teams

Some Issues for Discussion

- Advantages and limitations of self-assessment as a data collection method in a collaborative
- Advantages and disadvantages of external assessment as a data collection method in a collaborative
- Strategies for overcoming poor quality of medical records
- Other methods for measuring the effects of improvement activities

Implementing and Managing a Collaborative

Key Tasks

- Develop detailed work plan and timeline
- Develop implementation package for key improvement objectives (training strategy and materials, monitoring tools, supervision/coaching guidelines, reporting forms, job aids, procurement of essential inputs, etc.)
- Organize learning sessions (key feature of collaborative model for shared learning)
- Orient and train collaborative teams in clinical content, quality measurement, and quality improvement methods
- Support implementation of improvements during action periods (site coaching visits, telephone calls, email, etc.)
- Support teams to function effectively
- Facilitate ongoing sharing of experiences and results, both among teams and with local and national leadership
- Disseminate collaborative results

Some Issues for Discussion

- Different training strategies for increasing provider competence with technical content of the collaborative
- Sustainable mechanisms for providing ongoing technical training
- Supporting teams to develop skills in continuous quality improvement and motivating teams to sustain gains
- Strategies for managing a collaborative at scale (i.e., national coverage)

Beyond the Collaborative: Spreading Best Practices and Institutionalizing an Improved System of Paediatric Care

Key Tasks

- Convene final meeting of teams to review collaborative achievements and lessons learned and to consolidate teams’ learning on how to implement best PHI practices at local level
Share collaborative lessons with larger national audience

If part of collaborative objectives, implement focused spread strategy to put in place approaches developed during the collaborative in new regions and sites

Support national level adoption of updated PHI policies, standards, and operational guidelines for institutionalization of improvements and innovations developed during the PHI collaborative

Some Issues for Discussion

- Sustaining the sharing/learning aspects of a collaborative after the collaborative has ended
- Supporting collaborative gains be supported at the national policy level
- Strategies for spreading an improved system of Paediatric care to larger portions of the health system
Problem and problem analysis

The findings of the assessment of first-level hospitals in the Region revealed a good access for severe sick children, low reported hospital case fatality rates, good health networks and skilled and committed doctors caring for children. However, unnecessary and prolonged hospitalization of children, excessive treatment using many ineffective drugs and therapies, as well as inadequate supportive treatment and monitoring were very common. One of the wide-spread problems indicated by this assessment as well as through the process of group discussions with the national counterparts and paediatricians was inadequate management of sick children with diarrhoeal diseases in hospital settings.

Objectives of improvement approach

Update countries on recent advances on diarrhoea management and revise clinical guidelines. Increase awareness among policy-makers and leading clinicians and academicians about the problems of inadequate management of diarrhoeal diseases. Provide recommendations for change of policy guidance on management of diarrhoeal diseases for use by individual countries. Reach a consensus on ways for monitoring change or for introduction and implementation of evidence based management of diarrhea.

Strategies/ Activities undertaken

- Translation of clinical guidelines and training resources on hospital care for children in Russian.
- Technical support for countries on adaptation and printing the Pocket Book
- Inter-country technical consultation on Improving Management of Children with Diarrhoea in Hospital Settings
- Country planning meeting on improvement of paediatric hospital care

Results and Outcomes

- Pocket Book on hospital care for children and CD-ROM with training resources available in Russian
- Adaptation of the Pocket Book finalised in the seven countries
- Inter-country technical consultation on Improving Management of sick children in hospital settings was held in May 2006 with participation of the ten countries
- Recommended approaches and actions to be taken towards improving quality of paediatric hospital care in a few countries

What worked?

- Creation of a working group and active involvement of respective health managers and specialists
- Commitments by the government and partners on improving referral care including management of diarrhoea
- Reaching a consensus on ways for monitoring change or for introduction and implementation of evidence based management of diarrhoea
- Country proposals on improving management of diarrhoea in children

What did not work?

- Shortages in human resources
- Lack of incentives for improving quality

Lessons learnt and recommendations

- Technical guidance and support for adaptation, revision of policies, legislation and country planning on improving quality
- Translation of the guidelines and technical documents into national languages
- Capacity building in improving quality referral care
- Development and implementation of sustainable monitoring and assessment of changes in practice

Next Steps/ Future

- National technical meetings on planning, revision of policies, legislation and standards
- Development and implementation of sustainable monitoring and assessment of changes in practice
- Capacity building training workshops
Problem and problem analysis

Neonatal and child mortality remain high in many areas of Mpumalanga province, with great disparity between hospitals. Audit and feedback is a widely used approach to understanding and improving the delivery of health services. Objectives of improvement approach to implement and evaluate the impact of audit and feedback on neonatal and child care and outcomes in provincial hospitals. To establish baseline rates and causes of neonatal and child mortality in Mpumalanga hospitals. To explore the use of routinely collected mortality data (as part of the Perinatal Problem Identification Program, PPIP) as an outcome indicator in evaluating the intervention.

To facilitate better utilization by hospitals of routinely collected mortality data.

Strategies/ Activities undertaken

This QI initiative is based on a program in an adjacent province (Limpopo Initiative for Newborn Care: LINC). Mpumalanga is a geographically large province with a population of approximately 3.3 million and many rural hospitals. MINCC is a new initiative of the Mpumalanga Provincial Health Department that aims to reduce mortality and improve quality of health care for newborns and children at all 25 provincial hospitals.

The initiative is separated into two phases: neonatal and child. We are in the planning phase and report here on the proposed intervention for the neonatal phase.

The intervention

The intervention will be implemented across the province in a randomized stepped wedge design. For the neonatal phase the audit and feedback intervention includes:

- a series of workshops with hospital staff and managers to raise awareness at various levels using PPIP feedback reports,
- fact sheets, norms and standards, with activities such as hospital teams completing a situational analysis and action plan,
- conducting hospital visits,
- providing training on the use of a newborn admission record, neonatal care guidelines and observation tools,
- a full-time project coordinator to work with and support the hospitals, and
- accreditation of hospitals.

A preliminary perinatal audit tool has been designed based on recommendations in the Saving Babies 2003 Report.

Evaluation of the intervention The primary outcome indicator will be birth weight standardized neonatal mortality rate. The Perinatal Problem Identification Program has been operating across the province since 2000. These data serve as a reliable indicator of baseline hospital neonatal mortality. Rates will be birth weight standardized to adjust for the confounding effect of case mix on neonatal mortality.

Results and Outcomes

Baseline mortality rates and causes Low birth weight babies were significantly more likely to die than normal birth weight babies in all hospitals. Mortality rates were directly standardized to South African PPIP birth weight distribution.

Annual standardized mortality rates between 2000 and 2005 ranged from 4.3 - 34.3 per 1000 live births, with a median of 16.8 (SD 7.8). Fifty-two percent of deaths were immaturity related, while 27% and 7.5% were related to hypoxia/birth trauma and infections, respectively.

Next Steps/ Future

Develop secondary process indicators and finalize strategy for implementation of the intervention.

Funding is being sought to facilitate progress with this project.
**Poster 16 – Quality of care for sick children attending referral health facilities in the African Region**

Dr Andrew Mbewe, Regional Adviser (Planning and Implementation), CAH/DRH, WHO/AFRO, Brazzaville, Republic of Congo – Email: mbewe@afro.who.int

**Problem and problem analysis**

It is estimated that 4.6 million children under five years die annually in the African Region\(^1\)\(^2\). Evidence also indicates that 40% of children die at the referral health facilities, such as district hospitals and mostly in the first 24 hours of admission.\(^3\) With the support from WHO and UNICEF countries in the African Region, countries have had improved quality of care for sick children at home and at the first level health facilities through the implementation of the Integrated Management of Childhood Illness.\(^4\)\(^5\) However, little had been done to improve the quality of care for very sick children attending the first referral health facilities. Therefore from 1998, CAH/WHO/AFRO embarked upon activities aimed at assisting countries to improve the quality of care provided to very sick children attending the referral health facilities.

**Objectives of improvement approach**

The main objective is to improve the quality of care for sick children attending the referral health facilities.

**Strategies undertaken**

The strategies include: Assessment of referral health facilities using the WHO assessment tool for quality of care, establishment and implementation of quality improvement activities in the referral health facilities and repeat of the two processes after periods of implementation.

**Results and Outcomes**

The assessments of referral hospitals for quality of care provided to sick children was conducted in collaboration with QAP project\(^6\) in Eritrea\(^7\), Kenya, Malawi\(^8\), Tanzania\(^9\), Senegal, Niger\(^10\), Nigeria, Uganda, Zambia, Zimbabwe. One of the key findings of the assessments identified was lack of clear emergency triage assessment and treatment guidelines as well as equipment to support emergency treatment.

The treatment of very severe conditions in the inpatient wards was suboptimal. Malawi and Niger carried out evaluation of their interventions. Malawi had a 13% reduction in deaths among children attending a referral hospital.\(^7\)

**What worked?**

The training on ETAT and also the establishment of emergency triage assessment and treatment has worked in Malawi and Niger. The training has also been conducted in Eritrea, Kenya, and Nigeria whose impact is yet to be identified. In the other countries where the assessments have been conducted are yet to be evaluated but provide us with a valuable situation analysis.

**What did not work?**

Countries have limited resources to deal with all the problems identified during the assessments for quality of care provided to very sick children at referral health facilities.

**Lessons learnt and recommendations**

Establishment of ETAT has shown improvements but resources are required to sustain the impact and the initiative.

**Next Steps/Future**

To scale up the initiative of improving the quality of care for sick children attending referral hospitals and to mobilize resources to sustain the initiative.

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1. Lancet Child Survival Series
2. Petersen et al.
3. Weber et al.
4. Health Facility Survey Results, CAH/WHO/AFRO
7. E Molyneux et al
Problem and problem analysis

Neonatal units are understaffed and nurses are stretched to provide care for the sick and very low birth weight babies as well as feeds and warmth to the low birth weight infants. Prematurity and IUGR are common when mother’s are very young, or sick (e.g. HIV, anaemia, infections). Kangaroo Care has been shown to deliver warmth, food and love to small infants safely and more effectively than incubator warmth and intermittent feeding by ‘visiting’ mothers.

Strategies undertaken

Kangaroo Care is skin to skin care of a mother for her newborn child. The baby (or if twins, babies) is placed on her chest between her breasts, held by a wrapper and maintained in this position almost continuously. Her body temperature provides the baby with even warmth. She can feed her baby by cup with expressed breast milk until he/she can suckle, or by NGT, and she is alert to subtle changes in her baby’s condition. Bonding is enhanced.

KC Training manuals are available through Save Neonatal Lives.

Languages available

English, and French

Experience

We opened our KC unit in 2003 and now have 3 trained Patient Attendants. 1800 infants have been cared for in this time. The mothers like it, their inpatient time is shortened, the babies gain weight more quickly than they did prior to KC. Nurses were first reluctant to allow PAs to be in charge but now value their experience and expertise and the PAs are now asked by the nurses to choose when babies are suitable for KC. The nurses give overall support and PAs return any sick infant back to the neonatal nursery.

Importantly nurses now have more time to give nursing care to the sick and very low birth weight infants.

Links with other methodologies

The Blantyre Hot Cot (abstract materials 14) can be used for babies who are too weak or too premature for KC and they can graduate to KC as they grow.

Where is material available?

KC manuals are available from Save Neonatal Lives. But visiting a KC unit is invaluable.

Lessons learnt and recommendations

Weaknesses

We have learned several points in starting KC and have published this in the Malawi Medical Journal1. PAs need longer to teach than nurses but once taught are excellent.

Recommendations for further development

Teach KC in DGHs and encourage KC transport of sick babies from one health unit to another.

Poster 17 – KANGAROO CARE taught and managed by Patient Attendants

Elizabeth Molyneux, Hannah Blencowe, College of Medicine, Box 360, Blantyre, Malawi

– Email: emolyneux@malawi.net

1 H Blencowe and E Molyneux Setting up Kangaroo Mother Care at the Queen Elizabeth Central Hospital, Blantyre — a practical approach. Malawi Med Journal. 2005;17 (2): 39-42.
Problem and problem analysis

Many children in developing countries are suffering from chronic diseases from which they will not make a recovery. HIV/AIDS has added enormously to the number of affected children. Families, children and health staff are demoralised by inadequate supportive care and in particular lack of attention to symptoms of pain, nausea, paralysis, diarrhoea and vomiting. We found malnourished children in our nutrition unit being forced to eat and both staff and mothers feeling that they have failed as the children failed to improve.

Children with cancer, chronic renal failure, terminal cardiac failure and their families needed advice, symptomatic treatment, emotional and spiritual support.

Description of Training for Palliative care

A nurse, a clinical officer and a doctor all did the 18 month distance learning diploma in palliative care from Uganda. They then formed a team to which all clinicians may refer patients who need pain or other symptom control, time to talk about the problems they face and try to understand and manage their family grief.

Our team then ran 5 day training courses for their fellow health workers and went to other hospitals where a focal person for palliative care was identified.

The government was lobbied for oral morphine which is now available.

Experience

The ability to treat pain, to help with symptom control, to have time to discuss a parent's or child's anxieties and problems, has improved greatly the quality of care and the quality of life for these children. Other health workers are grateful for the support the team gives and their presence has raised morale and given them confidence to help the dying. Pain control for all children has improved.

A national association for palliative care (PACAM) is now established and coordinating training and practice..

Costs

The initial cost for a palliative care course per person is about $2000. Local courses costs are for per diems and travel.

Palliative care courses and guidelines are available from, amongst others, Hospice Africa, Uganda hospiceu@africaonline.co.ug. Or P.O. Box 7757, Kampala, Uganda

Lessons learnt and recommendations

Weaknesses

Palliative care is in great demand and we cannot meet all the needs of children especially those who live far away.

Gaps

We need better coordination with home based carers and need to support some of them with medical advice and medications.

Recommendations for further development

Child/family orientated services need to increase and more health staff need to be made trained and made aware of what can be done for terminally ill children. Every health worker should have some pre-service and in-service palliative care training.
Problem and problem analysis
Newborns get cold in the labour ward. This is because the midwives are few and concentrate on caring for the mothers. Cold, hypoxic, acidotic infants are greatly disadvantaged and have a poor start to life. If this can be prevented it greatly benefits newborn infants.

Description of PA training duties
A lady who showed interest and was able to read and write English was interviewed and chosen for the position. She has a child of her own. She was attached to the special care baby unit for a month where she was taught to dry and warm newborns, to label them with their mothers’ name and to recognize a premature or small baby. She had the opportunity to see many sick newborns in SCIBU and was trained to tell the midwife if she identified a baby in any difficulties or if he/she was very small. On confirmation of findings she takes the baby to the newborn nursery.

Experience
Before she started work the midwives were unconvinced that an untrained (non nurse) person would be useful to them. She was taught one or 2 points at a time and given medical support whenever necessary. The nurses and the mothers soon found her role invaluable and the nurses have asked for a similar person to be based in theatre.

Links with other roles
The PA in the labour ward is also being taught Kangaroo Care and the KC patient attendants will learn newborn care. Thus they will support each other and the team will multi-task.

Costs
A good interested hospital cleaner or clerk can be taught these tasks and take on these duties at minimal cost to the hospital.

Lessons learnt and recommendations
Weaknesses
Our service is only in the daytime. A 24 hour service is needed.

Recommendations for further development
A 24 hour service and another PA working in the nursery and in theatre.
Problem and problem analysis
The Solomon Islands health service, infrastructure and economy were severely affected by the civil conflict that occurred between 1998 and 2003. In 2002 plans to rebuild health services for children, especially those provided in provincial hospitals, were developed by paediatricians, in collaboration with WHO. A systematic observational assessment of the quality of hospital care for children in Solomon Islands was conducted in November 2003. The study used a WHO assessment tool, modified for use in the Asia-Pacific region. The assessment highlighted several problems in clinical care, human resources, health financing, referral systems, training and infrastructure.

Objectives of improvement approach
To address the deficiencies highlighted in the assessment of the quality of hospital care in 2002. To provide standardized paediatric guidelines for health workers in hospitals and area health centres (the WHO Pocketbook of Hospital Care for Children).
To provide a training package (training-CD for Pocketbook implementation) that could be used to implement these guidelines, emphasizing the priority deficiencies found during health service assessments.
To develop a National Child Health Plan for Solomon Islands, in line with the Child Survival Strategy, and to integrate all child health activities and technical guidelines.

Strategies/ Activities undertaken
The results of the 2002 assessment were presented to the Ministry of Health in 2003. In 2004 a training package, initially built around the WHO Referral Care Manual, and later the WHO Pocketbook was developed. In November 2004 a 4-day course on the WHO Hospital Care approach was held in Honiara for 25 nurses, representing each of the 9 provinces and staff from the nurse training college. The aim was to share the findings from the assessment, to provide a system of standardized management for serious and common childhood illnesses that can be used by nurses and non-specialist doctors in isolated environments, and to discuss strategies to improve the areas where problems were found. Organizational and management issues that impact on quality of clinical care were discussed during the meeting. In 2005 and 2006 this training strategy was extended to provinces. 150 nurses, including nurse managers, provincial nurse training instructors, paediatric nurses, instructors of the school of nursing and the nurse-aide schools, midwives, labour ward nurses and outpatient nurses have attended 6 workshops (in Kula’ufi, Kiraikin, Gizo, two sessions at the midwifery school and one with the National Reproductive Health Workshop in October 2006). In November 2005 a National Child Health Plan was drafted, in line with the recommendations of the WHO/UNICEF Child Survival Strategy. In 2005 a system of Child Mortality Reporting was piloted in Honiara, and in 2006 has been integrated with the national Maternal Mortality Reporting system.

Results and Outcomes
What is working?
The initial study and the initiatives that have followed it demonstrate the link between assessments, child health policy and quality improvement activities, even where resources are very limited. Supporting human capacity and child health leadership is more essential than technical strategies.

What did not work?
A tentatively planned evaluation based on improvements in case fatality rate was flawed from the beginning. The fragmented health information system was not robust enough to support this.

Lessons learnt and recommendations
1. Consistent background support is needed for these initiatives.
2. “Pilot projects”, which only target certain provinces, are less likely to become national programs, and unlikely to improve equity.
3. Supervision is vital.
4. In-service training is OK to raise the profile of such strategies but integration into pre-service curricula are necessary for sustainability, and effort should be put into this early.

Next Steps / Future
Sustaining these initiatives will be important for the Solomon Islands if it is to achieve the Millennium Development Goals for child survival by 2015.
Problem and problem analysis

- Indicators for assessing the quality of care of children admitted to hospital should be as objective as possible, and be valid, repeatable and reliable.
- Validity would be supported by a ‘common view’ over an indicator’s importance and more particularly by clear evidence linking a resource or process to a clinically meaningful outcome.
- In addition, indicators should ideally be simple to collect at low cost from ‘routine’ data.
- There has been limited work trying to optimize indicators for quality assessment of hospital care for children in low income countries (LICs) although there are considerable challenges to this process e.g. lack of routine data.

Objectives of improvement approach

- To develop sets of quality indicators that are valid and feasible to collect for use from different perspectives:
  - Rapid health systems appraisal
  - Detailed health systems appraisal (possibly just for research purposes)
  - On-site progress monitoring

Strategies/Activities undertaken

- Literature review on the development of quality indicators
- Exploration of the Delphi approach / modified Delphi approach to indicator development
- Exploration of the scope and range of potential indicators and the feasibility of their collection using baseline experience from 8 recent detailed hospital surveys.

Next Steps/Future

- Develop a proposal for conducting a Delphi study of quality indicators for hospital care for children in LICs
- Undertake Delphi study and define indicators
- Test indicators using Kenyan data to be collected over the next 2 years for feasibility and usefulness in identifying change.
Background
Prior to May 2003, there is not protocol or guideline for the management of the ill critically children and for that reason it was not possible to know the level of quality of care. A baseline was carried out and the main results were: irrational use of antibiotics, lack of detections of danger signs, inadequate plan and follow up of children with severe dehydration due to diarrhea, poor approach of the psychosocial status of children with severe malnutrition. 18 months later an intermediate assessment was done and it found progress on the management of children with pneumonia, diarrhea and meningitis and more comprehensive approach of children with severe malnutrition. At the date, 16 hospitals up to 22 are participating in the Initiative. In early 2006, one private provider, which operates five clinics providing health services in the Social Security, has adopted this Initiative. Other relevant aspect is the spread of the Protocols and methodology of PHI to primary health care facilities (27 of 154 health centers).

Approach
Many strategies and actions have been implemented for the expansion and institutionalization of the PHI such as: design and training on national guideline for case management of severe ill children under 5 years old, apply the “Prize of knowledge” as continuing education process, participative selection of standards and indicator of quality of care, monthly monitoring of through quality teams leaded by Chief of pediatric Service, initial and intermediated assessment, QAP staff adapted a pediatric emergency care job aid used in emergency wards in the U.S. to Nicaraguan treatment protocols, assistance has also focused on improving client focus in pediatric care, including improving interpersonal relationships and creating play areas for hospitalized children. In cooperation with UNICEF, QAP has also worked with MINSA to integrate the pediatric hospital improvement collaborative standards into the certification process for the national Mother and Baby Friendly Health Units Initiative. Clinical areas emphasized in the collaborative include care of the newborn (both with and without complications), management of the severely malnourished child, nutritional recuperation, perinatal mortality surveillance, and pediatric emergency care. In the area of nutritional rehabilitation, QAP assistance in the past year focused on training and helping hospital staff to apply the PROCOSAN nutritional counseling approach and provide more individualized counseling to mothers and caretakers of sick children, including appropriate use of nutritional rehabilitation formulas. Two in-service training centers were created to build staff competency in management of acute pediatric illnesses through short rotations. UNICEF and PAHO have designated funds to support MOH in establishing such training centers in all hospitals in the country, with QAP technical support. QAP in a joined effort with CARE, UNICAF and MOH, designed, validate and began training on the software for surveillance of the infant and perinatal fatalities.

Achievements
Nicaragua was affected by a national strike of physician which lasted from November 2005 through May 2006 and the quality monitoring and improvements activities were reinitiated beginning in June 2006. Nevertheless, progress was made in the past year in the standardization of antibiotic use and classification of severity in the management of meningitis. In general, there is some evidence of impact of the PHI collaborative in standardizing case management of the most common childhood illnesses treated in hospitals. Case fatality rates for pneumonia have declined in PHI hospitals between the July 2005-June 2006 period and the July 2004-June 2005 from 9.35 in year 2004 to 7.93 in year 2005-2006. Some hospitals (Madriz and Estelí/San Juan de Dios) have actually seen no pediatric deaths from pneumonia in the latter period. Declines in case fatality have also been seen in diarrhea, from a lethality rate of 10.51 in the year 2004 to 5.46 in the period 2005 — 2006. Four hospitals (Estelí, Madriz, Chinandega, and Granada) saw no deaths from diarrhea in the July 2005- June 2006 period.

Recommendations and future directions
Link PHI with primary and community IMCI involving other Agencies of external cooperation for financial and technical support. Addition to the framework of PHI some kind of stimulus for Champions and more equitable balance of importance between contend and friendly - humanism care of children. In the Mother — Baby Friendly Healths Units certification process include the standards of PHI.
Background URC/QAP

Background URC/QAP is using the collaborative approach to quality improvement to care for seriously ill children at the first referral level, in developing countries. Over the last four years Ministries of Health in four developing countries have been implementing PHI activities using the collaborative approach. Collaborative work in these countries is proving to be effective both in significantly increasing the quality of care in diverse programs and in accelerating the scale-up of the improvements from initial facilities to much larger portions of the health system.

Achievements

Achievements in Tanzania, initial sites reduced to 6% the proportion of admitted children not triaged according to guidelines. A total of 1508 children were suspected to have HIV infection based on the HIV screening algorithm. Of these, 1190 were tested, 553 were found to be HIV-positive, and 527 (95% of those HIV-positive) were referred to treatment centers for ART and cotrimoxazole prophylaxis, subject to eligibility. In Niger, Average % compliance with pneumonia, malaria, and ETAT standards has ranged above 65% for the first half of 2006, finishing at over 80% for all conditions by the end of the year. Other important results is the recuperation of malnourished children as an integral part of PHI, in the spring of 2006, malnutrition case-fatality rates averaged 14% in the 15 PHI sites newly targeted for intensive recuperation services, as compared with case fatality rates over 40% in PHI sites without such services. In Nicaragua case fatality rates for pneumonia have declined in PHI hospitals between the July 2005 and June 2006. Some hospitals (Madriz and Esteli/San Juan de Dios) have actually seen no pediatric deaths from pneumonia in the latter period. Declines in case fatality have also been seen in diarrhea. Four hospitals (Esteli, Madriz, Chinandega, and Granada) saw no deaths from diarrhea in the July 2005-June 2006 period.

Conclusion

Conclusion The collaborative approach has facilitated leadership by national institutions instilling ownership and paving the way for institutionalization of improved processes and evidence-based interventions. Scale-up resulting from sharing of improvement experiences and innovations among collaborative teams is a powerful way to collectively develop “prototype interventions” to overcome operational obstacles and increase quality. Champions and mentors are important and staff must have clinical standards, program management capacity and tools to monitor compliance with standards to achieve improvements. Mentoring should be provided by local experts for sustainability.

Challenges and recommendations

Challenges and recommendations included more equitable balance of importance between content and friendly humanism care of children as well as incorporation of the PHI into the Mother — Baby Friendly Health Units Certification process. PHI using the collaborative approach be adopted and adapted for application in developing countries as a link to community IMCI.
Goal
Improvement of the quality of paediatric care in developing countries and worldwide implementation of the WHO Pocket Book “Hospital Care for Children; guidelines for the management of common illnesses with limited resources”.

Methods
A series of workshops on promotion of quality of care. The workshops can be organized regionally for about 30-40 persons from 1-3 countries for 4-5 days. The primary goal is to support local paediatricians and other medical doctors in their clinical work and help them improving their quality of care. By supplying educational and instrumental tools to the participants, they will be equipped to teach their colleagues at home afterwards in the same way, creating a snowball effect by organizing local workshops. The main principle is: “teach the teachers”.

Workshop (conference) organization
The leitmotiv of the workshop is awareness of the possibilities to improve the care.
It intends to support the paediatricians and other doctors in their daily practice.
1. Each senior participant (paediatrician) should be accompanied by a junior participant (paediatrician or medical doctor) from the same region who will be involved in training and teaching other doctors
2. The faculty of the workshop (conference) exists of 4-5 internationally recognized experts in paediatrics and teaching who will be assisted by local, promising paediatricians. These local facilitators will change per region.
3. Incentives have to be created for the local facilitators because participation should have some surplus value for them. Possibilities are a robust daily allowance or a social status allowance like Quality Ambassador of the local university or medical school, WHO fellow etc.
4. The participants will receive financial incentives to organize local workshops and for follow up by local site visits with teaching on the spot.
5. A contract will be signed in which the participants promise to organize such workshops and to perform local follow up site visits. The number of workshops and site visits can be negotiated. A control system should be invented to evaluate their performance.

Content of the workshop (conference)

a) practical clinical tools like APLS (advanced paediatric life support), paediatric procedures, judgment of X-rays, clinical dermatological quiz etc.
b) implementation of the WHO guidelines Pocket Book
c) modern educational tools (how to teach adults)
d) child health and possibilities for preventive measures in local circumstances
e) principles of evidence based medicine
f) principles of critical appraisal of scientific literature and how to write scientific papers
g) improvement of quality of paediatric hospital care

Short theoretical lectures will be followed by ‘break out sessions’ in small groups where participants can exercise their newly acquired skills and knowledge under the supervision of the expert.
In order to create a positive learning environment and to promote friendship an attractive social programme will be organized.

Experience with this approach
Several examples from over the world can be included in the programme, like the site visit approach of the Netherlands, at present being implemented in the CPEP (Continuous Paediatric Educational Programme) Kilimanjaro Christian Medical Centre in Mashi Tanzania or the successful “Training the Trainers” workshops from the World Association of Gastroenterology.

Evaluation
After the first three workshops the results of this approach will be evaluated by assessing the number of locally organized workshops and site visits.

Further steps
During the Bali conference (improvement of quality of paediatric hospital care in developing countries) in January 2007 the input of the participants and the examples of quality improvement projects, can serve as the fundamentals for a workshop (conference) manual.

After the Bali conference some people should investigate the feasibility of this approach in different continents of the world. In case this approach is feasible I will approach the Dutch government for financial support.
Problem and problem analysis
For those working with sick children in hospitals in South Africa it became apparent that many avoidable deaths were occurring and that these were often due to poor quality of care. The Child Health Problem Identification Programme (Child PIP) was developed by health workers committed to improving practice, as a tool for assessing the care received by children in hospital. It is a mortality audit tool, and as part of the mortality review process, provides structure for caring health workers to reflect on their work and bring about change.

Objectives of improvement approach
The objectives of Child PIP are to monitor and evaluate quality of child health care, to find out how and why our health system fails (modifiable factors), to have a tool to give feedback to health workers and managers and to make recommendations, plan interventions and monitor their impact.

Strategies
Child PIP provides the structure and tools for careful review of in-hospital paediatric deaths by:
1. Ensuring all deaths are identified
2. Assigning a cause to each death
3. Describing the context (social, nutritional and HIV) of each child who dies
4. Determining modifiable factors in the caring process for each child who died

Activities undertaken
Child PIP was piloted in South Africa in 2004 and has grown from being implemented in 12 hospitals initially to 30 in 2006, covering all 9 provinces. National workshops have been held 6 monthly where users have presented data and shared experiences.

Results
The programme enables data to be collected about children who die (demographic, social, nutritional, HIV and Cause of Death) and the quality of care received (record keeping, modifiable factors in home/clinic/hospital).

Outcomes
What worked?
• Immediate local improvement occurs as soon as processes are observed ("Hawthorne effect")
• Specific designed interventions / responses e.g. Witbank Hospital, Child Health Resource Package
• Saving Children 2004 Report — awareness nationally and buyin from Department of Health

What did not work?
• Software difficulties due to complexity of requirements and level of hardware available
• ‘Demand exceeds capacity’ for everyone (staff shortages)
• Recommendations not implemented due to lack of clarity in terms of action required

Lessons learnt
Participative programme building works!
• Audit cycle approach can make a difference
• Using mortality review process to look at quality of care is powerful

Recommendations and Next Steps
To monitor outcomes of Child PIP as it continues to be implemented in South Africa and to further refine and develop the programme in response to the needs of users.
In the future, we plan to encourage expansion to all interested sites as well as collaborate with colleagues doing similar work around the world.
**Poster 26 – Improving quality of pediatric hospital care in Kosovo**

Giorgio Tamburlini, Institute of Child Health Burlo Garofolo, Trieste, Italy  
Email: tamburliniburlo.trieste.it

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**Problem and problem analysis**

After the conflict in the year 1999, in Kosovo a health reform process is improving the quality of primary care by renovating infrastructure, training family doctors, and introducing IMCI-based practice guidelines, but hospital care has not been yet addressed with the exception of a project led by UNICEF and WHO that addressed perinatal care in 2001-2. A preliminary assessment carried out within a WB poverty assessment in 2004 identified several critical areas in the quality of hospital care for children. WHO promoted a quality of care assessment according with guidelines produced by previous experience in CEE/CIS countries.

**Objectives of improvement approach**

- a) identify critical areas in pediatric hospital care
- b) identify priority actions for improvement
- c) establish a plan of action

**Strategies/ Activities undertaken**

Questionnaires were distributed to all 7 hospitals, 6 regional hospitals (Gjilan, Gjakova, Ferizaj, Peja, Prizerren, Vushtrri) and Prishtina University Hospital prior to the assessment visit. The questionnaires were modified from the original version developed at WHO Headquarters, and covered: structural aspects (beds and staffing); basic hospital statistics including admissions, per age and per main diagnostic group, and deliveries; availability of basic equipment, drugs, supplies and laboratory procedures. Complete data were obtained from all hospitals. From November 28 to December 3 a direct assessment of quality of paediatric hospital care was carried out in all hospitals by an external consultant from the Institute of Child Health in Trieste in collaboration with local professionals. An adapted version of the WHO assessment tool was used. Results were then discussed during two subsequent meetings organized by the local WHO office, MoH and the pediatric association of Kosovo.

**Results and Outcomes**

The main problems identified by the authors were unnecessary and lengthy hospital stay, over-diagnosis and excessive treatments. Most problems derive from the lack of updated guidelines and knowledge, such as opportunities for continuous medical education, rather than from the lack of facilities and supplies. Access to international literature has been limited over the last decades, but pediatricians are highly committed to fill their gap and establish a model system for improving medical practice. Priority issues were addressed by the development of national guidelines with support from external consultant and by offering two training stages at the Institute of Child Health in Trieste to leading pediatric staff.

**What worked?**

Collaboration among WHO local office, the pediatric association of Kosovo and availability of technical support in assessment, development of guidelines and training opportunities from an external institution

**What did not work?**

Not all professionals showed enthusiasm, although most did. Incentives should include formal accreditation and economic incentives if all professionals have to be involved.

**Lessons learnt and recommendations**

The direct assessment of quality of care using an adapted version of the WHO assessment tool is an essential step of a country wide strategy. The collaboration of external auditors in the process is essential to build awareness. The full engagement of local professionals through professional societies is crucial to implementation and follow-up. Incentives should include formal accreditation and economic incentives if all professionals have to be involved. Twinning between institutions and professional societies may be instrumental to ensure technical support and continuity.

**Next Steps/ Future**

A follow-up assessment visit is planned to evaluate improvements and reformulate plan.
Problem and problem analysis

In 2003 paediatric hospital care was assessed in 3 hospitals in Timor Leste using the generic WHO tool. This new country is still building its health care system and developing its own health professionals. At the time of the assessment the majority of doctors working in the hospitals and districts are expatriates recruited on 6-12 month contracts by the MOH. Expatriate doctors come from all over the world and may manage childhood illness in different ways. This provides conflicting information to nursing staff and provides sub-optimal paediatric care.

The assessment showed a general need to improve all paediatric emergency and hospital care. Specifically it recommended the development of, or improvement in the following areas:

- Standard clinical guidelines for the management of sick children in hospitals,
- Skills of nurses in emergency care (including triage) for sick children,
- Supply and maintenance system for drugs and equipment
- Coordination/communication between doctors and para-medical staff
- Communication between the health provider and the client
- Standard hospital procedures

For various reasons the specific improvements proposals were not implemented. Since this assessment there have been some attempts at introducing standardized treatment protocols. However in 2005 Timor Leste began a program with Cuba that supplies physicians to work throughout the country and will train large numbers of Timorese to be physicians. The above cited issues with paediatric hospital care largely remain the same.

Objectives of improvement approach

Overall the current objective and expected outcome will be to improve care for children referred through IMCI to medical doctors in community health centres or at hospital level. Working through the Ministry of Health and the East Timor Medical Association TAIS, WHO and other partners will support the development of hospital level standards of care in an interactive process which should also improve some of the communication issues previously identified. The interactive process to be used will be tailored by the participants from the original 3 hospitals that were assessed.

Strategies/ Activities to be undertaken

WHO will support Spanish speaking assistance for the orientation of the majority of the foreign doctors to IMCI and standards from the “Pocket Book” as well as the Timorese doctors. This orientation process will prompt the choosing of outcome monitoring indicators, improvements project planning and self and peer monitoring processes in order to measure changes over the next year. Depending on the discussions with physicians in this orientation baseline data may or may not be collected in a major assessment type effort or may be collected as before and after data for discrete improvement efforts.

Results and Outcomes

To be determined

Lessons learnt and recommendations

To be determined

Next Steps/ Future

Continuing efforts to find the strategies that will assist in improving paediatric hospital care and development of a continuum of care within the evolving health care system of Timor – especially the adjustment of doctor and nurses roles in the system.
PROCESSES TO IMPROVE PAEDIATRIC CARE

Problem and problem analysis

IMCI implementation improved case management at PHC level. A MOH study identified 11% of sick children required referral to first-level hospital to save their lives and there was limited knowledge of current hospital clinical practices. Thus Eritrea MOH decided to adopt the collaborative improvement approach in order to promote improvement change in pediatric hospital care.

Objectives of improvement approach

The first step was to undertake an interactive quality assessment of hospital care for sick children to identify current hospital pediatric practices and introduce evidence-based guidelines for case management of a child with serious infection or severe malnutrition. The Collaborative Approach for Quality improvement approach was used to promote the changes needed to put in place standards for pediatric hospital care. This approach sets up shared learning opportunities through periodic learning sessions and peer exchanges. The collaborative approach sets up common objectives and indicators for several facilities to work on together. The idea is to increase the learning as solutions are shared and thus accelerate improvements in outcomes. The collaborative approach classically uses 4 -6 learning sessions with action periods in between spread out over 9 to 18 months. The learning sessions are work sessions during which facility team representatives come together to share results, learn something technical/clinical related to issues that need solving and learn some quality improvement tool or technique. The teams then make plans for improvements during the next action period.

Strategies/ Activities undertaken

The assessment findings were used to prioritize areas that needed improvement. The first learning session was for the hospital teams to hear all the results from all of the hospitals. The priorities to be worked on by the collaborative members over the next 12 months were: Emergency care, Nutrition for Sick Children and Patient monitoring. Ten of the19 assessed hospitals became the first collaborative. They met 3 more times in formal learning sessions taking on more formalized indicators for the overall hospital care improvement and receiving some inputs to start improving priority areas of emergency care and, later, neonatal sepsis and severe malnutrition. Then the approach was integrated into similar improvements going on with IMCI in order to be more efficient in looking at the continuum of care for children in the Zobas (regions). Mentoring and peer supervisions were also organized between learning sessions. Since the same senior pediatricians that were monitoring the hospital care were the same ones supporting the IMCI trainers and facilitators it became useful to treat the issues of child health care in this more integrated manner.

Results and Outcomes

Emergency Care

- Reorganization of emergency areas: first aid, emergency meds and equipment
- ETAT training of mentors completed [7 hospitals]
- Onsite in-services in triage — emergency and priority signs
- Triage systems initiated
- Job aids (wall charts) introduced

Nutrition for Sick Children

- Pediatric diet and menu introduced
- Discussions held with hospital administrators to buy pediatric appropriate food supplies; supplementary feeding supplies through MOH/WFP
- Doctors oriented to write Pediatric feeding instructions as part of admission orders
- Daily supervision of feeding
- Weekly feeding program scheduled
- Feeding monitored by ped ward or head nurse matron

Patient Monitoring

- Monitoring forms introduced
- In-services held for nurses
- Doctors include monitoring instructions in orders
- RR monitoring in pneumonias implemented

Other improvements

- Oxygen concentrators, cylinders/flow meters ordered by MOH
- Lab night coverage improved by shifting staff
- PHI Task Group plan to adapt RCN, refining antibiotic protocols for severe pneumonias, neonatal sepsis

Poster 28 – Eritrea: Paediatric hospital care improvement process

QAP TASC1 and TASC2 projects - Lauri Winter – Email: lwinter@basics.org
— In-service RCM materials for onsite capacity development in process

What worked?
The sharing worked as the doctors and nurses saw and heard from their peers real life feasible solutions for their context. The peer team visits were successful.

What worked less easily?
Regularity in data monitoring was difficult for most sites — but they did do it in preparation for meetings. The problem with this was that some problems were not caught as soon as they could have been.

Senior Paediatrician visits were difficult to schedule and execute. Central / Ministry recognition of the improvements made through this process, despite the efforts to have a technical working group to oversee progress.

Lessons learnt and recommendations
“Champion” hospitals and doctors amongst peers are real motivators for many in the collaborative. Just a few who are willing to try something different and who are then given the forum to share their experience in motivates others to try.

The power of recognition — the presence or absence of the Ministry of Health in hearing the improvements facilities teams were making lead to more sustained effort or discouragement.

Discussion of real data amongst peers brought clearer understanding the impact of their work. Use of common indicators and visual recording was important.

Recognition of the regular realities of work — such as the fact that some people were responsible for IMCI in their region as were receiving the referrals in the hospitals, and then bringing them together produced higher quality tools for future monitoring and improvement.
When IMCI first introduced in Indonesia in 1996 some hard comments appeared, especially from university where medicine is taught. IMCI involved physicians from the faculty especially pediatricians because when a pediatric health policy would be socialized to the community it would involve the experts (pediatricians) to legalize, who usually come from the university. When pre-service training also needed, it means teaching IMCI for medical students. Some faculties rejected the concept of IMCI for students because it looked simplified the clinical way of thought.

Later the so-called PMPT (Integrated Pediatric Medical Education) method was going to introduce the rationalization of IMCI for medical students, but still obstacles happened such shortage of well-informed teachers. More difficulties were coming when realized that almost nobody liked to add more subjects for students’ competency.

Until 2005 teaching the IMCI concept in some medical faculties decreased if not said blurred. Fortunately the IMCI concept was likely developed better in midwife school program where the majority of the graduated would work in primary health service.

The situation seemed changed when the WHO Hospital Care Pocket Book published in 2005. Medical students and physicians (medical teachers in faculties) appreciated more and started using this book as one of their reference books. With the help of Indonesia Pediatric Society, the WHO Indonesia cooperating with Ministry of Health conducted series of workshops attended by the experts from various disciplines in pediatric field. In these workshops some recommendation and changes were given. Unfortunately not all the related experts gave their view yet. The attended experts had agreed that some adaptation should be done and the adapted book would be useful for managing and treatment in pediatric care system, especially in the first referral hospital in Indonesia. Ministry of Health would like to label it as the national guidelines for pediatric illnesses in district hospital. Time and financial problem to unite all the experts involved were still as main obstacles. Need more patience and proper situation for collecting the opinion or input from the experts and not force the experts to finish all the tasks in a tight time as they may not put the task as a top-priority in their workdays. Some workshops must be conducted before the finalizing starts. The translation hoped to be adapted completely in mid of 2007 and the draft will be distributed in several sampled hospital for a trial while assessment tool also introduced in the same hospital. Later the input taken from the assessment tool will complete the so-called national guidelines for paediatric management in first level referral hospital (that is district hospital in Indonesia).
Problem and problem analysis
Cause of deaths in inpatient facilities are similar to causes of death overall. The standard of treatment at the facilities for sick children and newborn are not uniform.

Objectives of improvement approach
Improving structures, capacity building, improving logistics leading to reduction in Mortality

Strategies/ Activities to be undertaken
Place identified in the National strategy
Policy decision taken
Technical expert group finalized
Draft training material finalized and to be piloted soon

Results and Outcomes
Not yet assessed

Lessons learnt
N.A

Next Steps/ Future
Areas of Implementation identified
Monitoring and evaluation activities to be initiated
Lessons learnt to be used into future plans
Problems and Problems Analysis

The IMR and NMR in Indonesia is still very high (35/1000 and 20/1000 life birth respectively). In 2006, the IMR in West Nusa Tenggara Province was the second highest. Hospital Quality of care also contributed to this high mortality rate.

Mataram Hospital is a provincial hospital with hospital coverage 20 – 30 km around the area and it also a referral centre for the whole province of West Nusatenggara.

There are many problems that we have encountered and it can be divided into 4 groups:

Families and Community: Poverty, ignorance, low educational level, socio cultural (e.g. community belief that traditional health attendance can do more than hospital staff, the need of entire family agreement prior to hospital admission), poor transportation (some of the areas can not reach by cars only by motorcycle or on foot). All of these make the patients came late in very critical condition.

Emergency Unit: Though we have more than enough medical doctors, they can not work efficiently. Lack of resuscitation skill (Only 3 doctors have been trained for NRP), no adequate equipment (resuscitation set, pulse oxy-meter), no proper IVF and drugs supply in emergency room, poor knowledge of treatment guidelines. Laboratory examination for emergency cases are not available (we have no ABG, Serum electrolytes examination).

Paediatric Ward/ICU: Poor monitoring of patients, Nurse patients ratio was 1: 4 / shift, poor sanitation and hygiene (e.g. no adequate supply of water for hand washing), no ventilator / CPAP.

Outpatient Clinic: Poor follow up, there are less than 30% of patient who need to be followed up came to outpatient clinic.

Objectives and Improvement Approach

Improve knowledge and the skills of health professionals, midwives and nurses through trainings is necessary to increase their competency in caring severely ill children and neonates. Collaboration with local government is needed for the availability of adequate equipment particularly for resuscitation set and incubator. Implement an effective monitoring in the ward and activate the surveillance in the local area for children who lost to follow up.

Strategies/ Activities undertaken

The assessment for paediatric ward will be conducted to overview the quality of service. Essential Neonatal Care training based on USAID project is undertaken for hospital staff and the outcome will be evaluated next year.

Results and Outcomes

To be determined

Lessons Learnt and Recommendations

To be determined
Background

The multi-country evaluation (MCE) of IMCI is designed as a multi-year (2000-2007) cluster randomized study being implemented in areas of Matlab upazilla (sub-district). The primary aim of IMCI-MCE is to assess the health and economic impact of IMCI implemented at first-level health facilities, in association with community-based interventions to improve community and family practices. Impact will be evaluated in terms of changes in health status, including mortality and nutritional status outcomes. Twenty GoB first-level outpatient facilities and their catchment areas were randomized to either IMCI or standard care. Health workers managing children in first-level in the intervention areas were trained in the Bangladesh adaptation of the IMCI case management guidelines recommended by WHO and began managing sick children as per these guidelines in early 2002. Referral facility providers were also trained in these guidelines. The community component of IMCI began in mid 2003 that includes problem solving counseling and education by community based workers, social mobilization by village theatre and religious leaders, involving village doctors to reduce harmful practices and increase referral and meeting with community leaders.

Problem and problem analysis

A baseline survey conducted in 2000 identified poor care-seeking behaviour and poor utilization of the first level facility as major problems. Only 8% of children sick in previous 2 weeks received care from first level facility providers, private doctors and other community health workers while 53% received care from untrained providers (village doctors and traditional healers). The baseline data on utilization of first level facilities was less than 1 per child per year and the utilization of referral facility was also very low.

Observations

Observations from a baseline Health Facility Survey led to physical improvement of the facilities, provision of essential supplies, improvements in record keeping and reporting, strengthening of facility functioning and promotion of the facility in the IMCI intervention areas. The continuation of facility based intervention since 2002, provides evidence that IMCI brings improvements in quality of care at first level facilities and is associated with more than 3-fold increase in the use of these facilities. As utilization increased, the number of severe cases seen, and therefore those needing referral, increased at the first level facilities. As a next step, referral compliance rate at referral facility was monitored and it was found that for 2002 and 2003 the rate was low and even decreasing. Following this finding, a qualitative assessment involving in-depth interviews with the successful and unsuccessful cases of referral was conducted in 2003 to identify the factors associated with referral failure. Problems were identified at the referral facility, first level facility and at the family level. Measures to improve referral compliance were taken at the referral facility that included the establishment of a child health corner, separate ward for the children, improved signage for the emergency department, and use of a nebulizer machine and better provision of first line referral drugs. At the first level facilities service providers were oriented to provide standardized message to caregivers at the time of referral to encourage compliance. Finally the clinical care guidelines for children aged two months to five years was modified to recommend treatment of severe pneumonia without any other danger signs at first level facilities.

Poster 32 – Facility improvement-experience from the Multi-Country Evaluation of IMCI Study Bangladesh
DM Emdadul Hoque1, Shams El Arifeen1, Robert Scherpbier2
Name of the presenter and email: Dr. Dewan Md. Emdadul Hoque – Email: emdad@icdadr.org
Module 1 - What is an Improvement Collaborative?

Definition
An Improvement Collaborative is an organized effort of shared learning by a network of sites (or teams) to:
• Adapt to their local situations a known, best practice model of care for a specific priority health problem
• Achieve significant results in a short period of time, i.e. 12 months - thus reducing the gap between best and current practice
• Scale up the adapted model throughout the organization using an intentional spread strategy

Objectives of the course
Recognize / acknowledge the value of Improvement Collaboratives:
• Identify the scale and scope of an IC, and how that was chosen;
• Explain how the topic for improvement was chosen;
• Identify the change package and chosen indicators
• Describe the roles of (national / organizational leaders; technical experts; trainers; coaches; clinicians; partners etc)
• Identify activities undertaken as part of learning sessions and activity periods
• Discuss how the IC might have been implemented differently or in another country or setting;
• Identify the factors that supported or hindered the IC in their work
• Identify the factors that would support and hinder implementing an IC in their organization

Module 2 Getting started (planning)
Session 1- Topic, Scope, Scale
At the end of this module, participants will:
• Discuss how to choose the topic for the Improvement Collaborative
• Identify how to establish the scale and scope of an Improvement Collaborative
• Identify how to establish the scale and scope of an Improvement Collaborative
• Discuss how to choose the topic for the Improvement Collaborative

Session 2 - Partners, budgets, experts
At the end of this module, participants will:
• Discuss issues in developing a budget for implementing an Improvement Collaborative
• Identify partners who would participate in the IC, e.g., MOH, funding agency, other organizations
• Identify the roles played by partners and other local and/or NGO groups
• Identify how to access content specialists (experts in topic) who could assist with both the technical improvement topic and the facilitation / training of collaborative teams
• Discuss issues in developing a budget for implementing an Improvement Collaborative
• Partners, experts budget

Session 3a Planning for spread
At the end of this module, participants will:
• Describe several spread strategies and how to develop strategy for spread.

Session 3b Change Package
At the end of this module, participants will:
• Define and discuss how to develop the change package and measurement strategy (i.e., objectives of measurement, indicators, data collection and analysis approach, and monitoring tools); identify challenges to data collection that most ICs experience

Session 4a - Site Selection
At the end of this module, participants will be able to:
• Discuss how to select the sites participating in the collaborative based upon the scope of improvement selected (i.e. national, regional, local; mix of public/private).

Session 4b — Roles in managing a collaborative
At the end of this module, participants will be able to:
• Identify/Define common tasks and roles in the Improvement Collaborative and how to assign them (core team, senior leaders, managers, site leaders, coaches, participants, etc.).

Session 5 — Managing and coaching the teams
At the end of this module, participants will be able to:
• Identify a strategy for managing and coaching the teams.
• Discuss the need to plan, develop, and conduct training for coaches.

Session 6 — Communication and reporting plan
At the end of this module, participants will be able to:
• Discuss issues related to developing a plan for communications and reporting among Improvement Collaborative management and teams; identify factors that promote and hinder communication and reporting among IC mgmt and teams.
Session 7 – Training and capacity development
- Discuss issues related to developing training plans or capacity development plans that includes each level and role of those involved in the Improvement Collaborative; identify topics that commonly need to be addressed by training and capacity development plans

Module 3 - Running a collaborative
The participant will be able to:
- Identify topics (needs) commonly addressed in Learning Sessions
- Identify resources available to develop or adapt training materials and tools for interactive Learning Sessions that include sessions on shared learning among teams and QI training to include data collection and reporting; action plans; working in teams; holding meetings; communicating, etc.; discuss issues in deciding how to provide training for learning sessions
- Review common schedules/timelines for conducting the Improvement Collaborative including learning sessions and activity periods

Module 4 – Sustaining or spreading improvement
The participant will be able to:
- Identify factors that will establish a supportive environment that will enable the organization to sustain/maintain improvements/results over time; maintain the quality method of working and ongoing application of QI; and/or establish a Community of Practice
- Discuss what needs to be done to prepare for spread or next phase, if any
- Discuss common activities undertaken to implement a spread strategy, if any
Problem and problem analysis
The quality of care in public health facilities, in Cambodia, is considered as poor. The reasons are multiple and described elsewhere. Apart anecdotal reports, in 2003, little concrete information on the quality of paediatric hospital care was available.

Objectives of improvement approach
The objectives of the approach were (1) to assess the quality of paediatric hospital care in, and (2) to improve its quality, defined as adherence to existing treatment guidelines, by applying quality improvement techniques and training on specific clinical topics.

Strategies/Activities undertaken
A collaborative approach was chosen. The Referral Hospitals Guidelines (1997 ed.), largely in line with WHO guidelines, were used to define the standards. The draft WHO/QAP assessment tool was adapted and assessors trained. Ten out of 74 referral hospitals and 2 tertiary paediatric hospitals were assessed, in 2003. Quality cycles were established in three, and the 2 tertiary hospitals set up working groups. Yearly follow-up workshops were conducted with training on quality improvement techniques and topical areas. Existing training materials and courses were used. Two full and two partial reassessments for ARI and emergency care were conducted.

Results and Outcomes
Initially, the main areas needing improvement were: case management (ARI and malnutrition), feeding and nutrition, monitoring, triage and emergency care, and communication. In one hospital, out 14 areas the number needing strong improvements was reduced from seven to one between 2003 and 2006.

What worked?
- Building on existing resources: tools and expertise (e.g. CQI methodology)
- External assessments identifying areas needing improvements
- Bringing different staff cadres together (director, doctors, nurses and midwives)
- Training on Emergency Triage and Treatment (ETAT) and malnutrition
- Punctual support for motivated individuals as change agents at local level
- Engage other partners on this endeavour (gtz, URC, BTC)

These activities changed actual practices with better compliance with the standards.

What did not work?
- To build a self-relying institutional basis
- To generate national resources for this activity
- To address underlying major health system constraints to substantial improvements
- Achieve intra- and inter-observer reliability of assessors

Lessons learnt and recommendations
Improving hospital care for children needs to be included in comprehensive operational plans for child survival, at all levels. The tools used needs to be more standardised. Improving hospital care for children should be linked to ongoing accreditation and health financing processes.
Problem and problem analysis
In November 2003, the quality of inpatient pediatric care in 12 hospitals, including National Pediatric Hospital (NPH) was conducted. According to the assessment finding, some main areas needed to be improved such as case management, especially ARI and malnutrition, feeding and nutrition of children, monitoring, triage and emergency care and communication with mothers.
During the first follow-up workshop in 2004 in Siam Reap province, obstacles to the progress had been identified, analyzed and prioritized. NPH team decided to restart CQI (Continuous Quality Improvement) in the attempt to ameliorate the situation.

Objectives of improvement approach
1. To reduce the mortality rate 24 hours of admission
2. Reduce the case fatality rate
3. To self-assess on ARI and diarrhea

Strategies/Activities undertaken
1. Capacity buildings:
   — ETAT training course
   — Emergency Training course
   — IMCI course
   — Severe Malnutrition Course
   — HIV/AIDS training Course
2. Education to the parents or child care-takers: 2 times a week (on Tuesday and Thursday).
3. To ameliorate the emergency room and the facilities

Results and outcomes:
In the result, the case fatality rate was decreased every year from around 10% in 1980 to around 1% in 2006 and the mortality rate 24 hours of admission was decreased from 53% in 2002 before ETAT and Emergency training course set up to 46% in 2005.

What worked?
1. Training:
   — ETAT trainings courses
   — IMCI training for core trainers
   — Severe malnutrition training
   — HIV/AIDS Pediatric Care Training
   — Breastfeeding Counseling training
2. Health education to the parents and child care-takers
3. Regular yearly follow-up workshop

What did not work?
1. Diarrhea monitoring
2. ETAT training not to all the NPH staffs
3. Emergency training course

Lessons learnt and recommendations
CQI is an approach selected to solve problems. It is important to stress that the participation of all the staff in the process is vital, and the leadership and management as well as the perceive ownership is empirical for the success.

Next steps/Future
1. Continue training and monitoring ETAT/Emergency, diarrhea monitoring, IMCI
2. Follow up the progress
Problem
By the end of 2005, 77% of all the patients died in pediatric ward at Kampong cham provincial hospital had been within 24 hours of admission.

Problem analysis
- Human resource
- Material and equipment
- Incentive for staff
- Skills enhancement for staff and follow-up
- Job description

Objective of the improvement approach
- To reduce mortality rate within 24 hours of admission
- To improve the quality of pediatric care
- To develop action plan for improving quality of inpatient pediatric care

Strategies/Activities undertaken
- Behavior change communication
- Capacity building: Training of Emergency care (ETAT training 3 courses for staff and other referral hospital) and follow-up
- Partnership building (to aid equipment, technical etc)
- Job description for staff
- Self-assessment and monitoring
- Drug and material supplies

Results and outcomes
What worked?
- Increased number of inpatient in 2006 (Increased bed occupancy)

- Reduced mortality rate within 24 hours of admission (from 77% to 66%)

What did not work
- Mortality rate of neonate still have been stable within 24 hours of admission and also dengue hemorrhagic fever. A lot of patients were transferred lately from HC or other RH.
- Equipment was not complete
- Human resource was limited

Lesson learnt and recommendation
To reduce mortality rate within 24 hours of admission and improve quality of inpatient pediatric care we should be:
- Health education for community
- Capacity building for health workers, i.e IMCI for HC, ETAT for hospital staff
- Health system support: facilities, drugs and material equipment supply
- Motivation for staffs
- Follow-up capacity of staffs
- Management and leadership

Next steps/Future
- Continuous follow-up (especially ETAT)
- To train IMCI for HC staffs
- To decrease mortality rate of neonate
- To continue self assessment (ARI, Diarrhea, Neonate)
- To continue building partnership
The abstracts published in Annexes 3 and 4 are reproduced as they were received from the named authors. The authors alone are responsible for the views expressed in the abstracts.

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**Material 2**  
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Ingrid Bucens, Health Alliance International Timor-Leste – email: ingbucens@hotmail.com

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Ingrid Bucens, Health Alliance International Timor-Leste / Max Stahl, Centro-audiovisual Max Stahl Timor-Leste (CAMS). – email: ingbucens@hotmail.com

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Peter Campbell MBBS Lon USAID-funded ZdravPlus Project, Regional Director - Tel 00998711 169 2211; email: peter@zdravplus.uz

**Material 5**  
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Susanne Carai, WHO/CAH, 1211 Geneva 27, Switzerland – email: carais@who.int

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Trevor Duke and Julian Kelly, Centre for International Child Health, University of Melbourne  
email: trevor.duke@rch.org.au

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Trevor Duke, Centre for International Child Health, Melbourne and University of Edinburgh  
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Mike English KEMRI / Wellcome Trust Research Programme, Nairobi, Kenya.
email: menglish@nairobi.kemri-wellcome.org

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Julian Kelly, Harry Campbell and Trevor Duke Centre for International Child Health, Melbourne and University of Edinburgh – email: julian.kelly@rch.org.au

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Carolyn Maclellan, Royal Darwin Hospital, Darwin Australia – email: carolynmaclennan@yahoo.com
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Elmarie Malek, Department of Paediatrics, University of Pretoria at Witbank Hospital, South Africa emalek@postino.up.ac.za; Sophie La Vincente, Centre for International Child Health, University of Melbourne. Sophie.lavincente@mcri.edu.au

Material 13
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Elizabeth Molyneux, Martin Weber2 and Carolyn Maclellan2 - email: emolyneux@malawi.net
1 College of Medicine, Box 360, Blantyre, Malawi; 2 WHO/CAH, 1211 Geneva 27, Switzerland

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Elizabeth Molyneux, Hannah Blencowe, College of Medicine, Box 360, Blantyre, Malawi,
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Mark Patrick (Mark.Patrick@kznhealth.gov.za), Cindy Stephen, Mphele Mulaudzi (South Africa)

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Martin Weber andSusanne Carai, WHO/CAH, 1211 Geneva 27, Switzerland – email: weberm@who.int

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Elizabeth Molyneux and Grace Malenga. Paediatric Departmt College of Medicine, Box 360, Blantyre Malawi.

Material 18
Generic Quality Assessment Tool for Paediatric Hospital Care
Martin Weber, WHO – CAH email: weberm@who.int; Andreas Hansmann, St-Marien-Hospital Bonn, Department of Paediatrics, email: andreas.hansmann@yahoo.de
Starting point
Work by CAI staff in hospitals in poorly resourced countries over the last 10 years has identified the need for training that in collaboration with an advocacy programme that strengthened hospitals and ensured emergency equipment, drugs and medical supplies would sustainably improve the quality of the emergency care of pregnant mothers, infants and children in resource poor countries. The course materials took a considerable time to develop, and are continually being updated.

Description of product
The materials are available on three compact discs. The ESS – EMCH instructor course materials, the APLS CD/DVD ROMs covering up to date emergency care for infants and children and the EMCH CD/DVD covering emergencies in pregnancy and in the neonate. Each CD/DVD contains many hundreds of videos and pictures as well as pathways of care. The ESS EMCH instructor CD ROM contains the course manuals, log books and the WHO manual of Hospital Care for Children. The manuals are PDF files and can be printed.

Target audience
The target audience are all health workers who are involved in the emergency care of pregnant women, newborn, infants and children. They range from health workers (including traditional birth attendants for whom a pictorial manual has been developed) at the bedside through to tertiary unit staff.

Languages available
It is available in English and local language.

Experience
The teaching materials have been used extensively in our pilot study in Pakistan, and are now being introduced to The Gambia.

Links with other tools
The materials are linked to The Advanced Paediatric Life Support Course (APLS) the Managing Obstetric Emergencies and Trauma (MOET) course, the WHO Integrated management of Essential Emergency Surgical Skills course (IMPEESC) The WHO Integrated management of Pregnancy and Child Birth (IMPAC), the WHO Emergency Triage and Treatment course (ETAT), The Integrated Management of Childhood Illness course (IMCI) and the WHO book Hospital care for Children.

Where is material available?
We are intending to put most of our course material onto the websites of CAI and ALSG in the near future. The APLS CD Rom is published by Blackwells, the EMCH DVD ROM will be published by the Royal College of Obstetrics and Gynaecology in the UK and marketed by an NGO called Baby lifeline.

Lessons learnt and recommendations
The course materials are in a process of continual redevelopment, and require modifications to meet the specific needs of the target country.
Material 2 – Training Modules for Neonatal Nurses at Referral Hospitals in Timor-Leste
Ingrid Bucens, Health Alliance International Timor-Leste – email: ingbucens@hotmail.com

Starting point
Training materials for hospital-based neonatal nurses in developing countries were reviewed. A recently developed resource, “Essential Newborn Nursing for Small Hospitals in Resource Restricted Countries” from the All India Institute of Medical Sciences (WHO Collaborating Centre) New Delhi was of most relevance to the Timor context. This 7 modular course was adapted for use as the core for a new training for neonatal nurses in Timor-Leste.

Description of product / Target audience
An additional 11 modules were developed as the course was to be used in referral hospitals in Timor-Leste (as opposed to “small” district based hospitals). Key resources used to develop these modules included “Managing Newborn Problems: A guide for doctors, nurses and midwives” (WHO Geneva 2003); “Pregnancy, Childbirth, Postpartum and Newborn Care: A Guide for Essential Practice” (WHO Geneva 2003); Breastfeeding Counseling Course (WHO / UNICEF 1993) and Infection Prevention (JHPIEGO 2003); all standards available and / or implemented in Timor-Leste. The result was a comprehensive 10 day course on neonatal care suitable for a level II nursery. A facilitator guide including pre and post-tests was also developed.

All modules include theoretical and practical components and a self-evaluation. Teaching methods include individual and group learning and presentations, role plays, case studies, clinical simulations, clinical skills demonstrations and clinical skills practices. Teaching aides include audiovisual material, mannequins and regular nursery supplies and equipment.

Experience / Lessons learnt and recommendations / Weaknesses and gaps
In the result, the case fatality rate was decreased every year from around 10% in 1980 to around 1% in 2006 and the mortality rate 24 hours of admission was decreased from 53% in 2002 before ETAT and Emergency training course set up to 46% in 2005.

- Subjectively, participants found the materials and the learning methods interesting.
- The total number of modules is too many to be taught consecutively as was attempted. It would be better to teach the modules in 2 or more split weeks or as weekly sessions over a longer period, allowing time for implementation and supervision of new knowledge, skills and standards in a step-wise fashion.
- Due to the unexpected interruption of the program by the crisis the plan for supervision is untested. Follow-up supervision competency checklists are yet to be finalized and plans are afoot for peer supervision / mentoring using course facilitators. Course evaluation was incomplete for the same reason.

The course will be rescheduled when the political situation in Timor-Leste has stabilized. The longer-term plan is for expansion of the training to all referral hospitals. There is potential to use the training modules (either as a set or using select modules) for other purposes (e.g. pre-service training) both within Timor-Leste and abroad in countries with similar contexts.

Where is material available?
Electronic copies of the modules are freely available through the WHO office Dili, Timor-Leste on request.
Starting point

Community based qualitative studies of maternal and newborn health (MNH) in Timor-Leste confirmed a poor level of knowledge and understanding and a heavy influence of cultural traditions on beliefs, practices and decision making regarding health during the pregnancy through to the postpartum period. An urgent need for health education was clear. A strategy of approaching health education by acknowledging the importance of culture and the challenges of logistic difficulties was selected. Film was chosen as the medium because of the high level of illiteracy and also because it is still a relatively unexplored method of health promotion in Timor-Leste.

Two baseline documents guided the film script: a list of traditional practices analysed according to the effect of each practice on health, and a list of recommended practices for MNH based on WHO standards. Filming was undertaken throughout Timor-Leste, in remote communities, private homes as well as in health facilities, over a period of 9 months. Filming was done by young Timorese staff of CAMS as well as by Max Stahl himself. Over 100 hours of raw material have been collected.

Description of product

The audiovisual film (voiced in Tetun and made up of 2 parts each of about 40 minutes duration) is now close to completion. The first half focuses on pregnancy and birth; key messages being the unpredictability of problems and the importance of planning. The second half addresses birth and the postpartum period including breastfeeding. Short modules will also be extracted from the film in order to enable focused promotion of key messages for use in settings where screening a longer film may not be practical. The target audience is the community at large. Midwives and nurses will be trained in how to use the films for effective health promotion. The film is jointly funded by AUSAID, UNICEF, RANZCOG, St John of God Pathology and the MILK foundation, Singapore.

Experience

The completed film will be launched in Dili, Timor-Leste in March prior to using it as an education tool nationwide. As the film is yet to be shown in the field an evaluation has not yet been performed. It is presented here as there is clear potential for other uses of the film as well as of the other raw material collected during the filming process. Recently footage of neonatal danger signs as well as actual clinical resuscitation scenarios were used during a neonatal training course. There is potential to use this very unique material for purposes such as clinical audit, self-learning, supervision and training both in Timor-Leste and in other countries in the region. It is anticipated that it can also serve as a powerful advocacy tool, very relevant to the MDGs, both in Timor and abroad.

Where is material available?

Copies of the film will be available through the Dili office of Health Alliance International (rheekman@hotmail.com) or Headquarters (hai@u.washington.edu)
Starting point

Work began in summer 2004, when it was not known by the ZdravPlus Project that WHO was developing a Pocketbook with a training CD ROM. In order to teach on the older version of the Pocketbook, “Management of the Child with a Serious Illness or Severe Malnutrition”, a number of illustrative and interactive materials were developed.

First, to link the hospital level to the Community level, a DVD was created with a menu system to allow rapid access to any of the video clips without having to fast forward or rewind each time.

Second, a detailed training program was developed with participative, interactive and realistic case scenarios using multimedia. The course included an overview of the Community IMCI program for the benefit of the hospital staff. This was taught in the context of the participants’ own hospital settings, and the training involved testing the ability of the hospital to implement the guidelines.

Third, once implemented, one particular pilot site developed a number of simple indicators and monitored these over time, applying QI techniques to improve their performance, and the results of their work were used to develop a film documentary on DVD to be used in upcoming training programs to encourage others participate in such initiatives.

Description of product

1. 10-day lesson plans: A complete (but being revised) curriculum for a 10-day program of training on the “Pocketbook of Hospital Care for Children”.
2. Community IMCI DVD: A DVD with easy access Menu system for 1 day overview course on Community IMCI
3. Documentary DVD on QI: A DVD on Hospital QI methodology applied to implementation of the Pocketbook guidelines

Target audience

Doctors (and possibly nurses) attending the 10-day training course

Languages available

1. 10-day lesson plans: Old version in English & Russian; new version in Russian (but being translated into English)
2. Community IMCI DVD: Russian
3. Documentary DVD on QI: Russian (some Uzbek in it)

Experience

1. 10-day lesson plans: These have been taught to about 150 pediatricians working in district and provincial hospitals in about 20 hospitals. The course has been very much appreciated, by both staff and teachers, who receive step by step explanations and materials for their lessons.
2. Community IMCI DVD: This was also used in the trainings as above, and was found to be very practical.
3. Documentary DVD on QI: This is just developed, and there is as yet no experience in its use.

Links with other tools

The lesson plans linked originally to the older version of the Pocketbook (Management of the Child with a Serious Illness or Severe Malnutrition).

The Community IMCI DVD links directly with the original WHO Community IMCI video materials, and borrows most of its materials from this.

Where is material available?

From the ZdravPlus website http://zplus.kz/library/pub_lib.asp (lesson plan manual: search under hospital or IMCI), and by direct application to the author. Materials will be freely available, unless bulk orders are made in which case costs of materials and production will be required.

Lessons learnt and recommendations

weakness

The material is now in the final stages of being revised according to the new Pocketbook, and with some additional materials included.

Gaps

The lesson plans focused on core life saving strategies, and a number of subjects were left out because of time constraints e.g. malaria, HIV, and others.

Recommendations for further development

The 10-day course is being revised and improved in line with the new Pocketbook, with more emphasis on the ongoing continuous QI potential.
Starting point

During quality improvement exercises in countries, where participants were introduced to QI methods, a need for a reference guide briefly describing the relevant processes, tools and approaches became apparent. As a large part of the work consists of group work, selected facilitation techniques were included.

Description of product

The manual is currently in draft, and will be produced in size A5. It will be around 250 pages.

It is targeted at health workers working with children and adolescents in health facilities and hospitals and contains examples of tools and processes that may be used by health workers to improve quality of care in their health facilities. The manual outlines the tools and processes in a simple manner, providing examples of how the tools may be used in settings where children and adolescents are cared for. Section 1 provides an introduction and overview of quality in health care, followed by section 2 on “Steps in Problem Solving”. Section 3 describes the organization of meetings Section 4 working with groups and Section 5 describes facilitation and quality improvement tools in a semi-structured format.

The manual can be used

1. As a reference manual for health workers that have conducted a course in quality improvement methodology
2. As a reference manual in a health facility that is undertaking an improvement process together with supervisor/facilitator trained in quality improvement methodology
3. As the reference manual for quality improvement learning sessions

Languages available

Currently only English

Experience

None with the manual as such, only with the components

Links with other tools

For use in the QI processes used in the CP for the Pocket Book, assessment exercises

Costs

Approximate cost of (re)-production
Translation and adaptation might be done and entail cost

Freely available or for sale?

When finalized on WHO website for free; on sale through WHO publications, ~US$15

Lessons learnt and recommendations

n.a.

Weaknesses

n.a.

Recommendations for further development

n.a.
Starting point

The WHO Pocketbook of Hospital Care for Children is a major advance in providing comprehensive standardized guidelines for paediatric care in hospitals where resources are limited. However the availability of guidelines is unlikely to change practice per se. During promotion of the WHO Pocketbook and its predecessor the Management of the Child with a Serious Infection or Severe Malnutrition, many health workers emphasized the need for training resources. In systematic hospital assessments it was apparent that the stages of care from triage and emergency treatment to discharge planning and follow-up were not followed; especially deficient were monitoring and various aspects of supportive care, such as giving oxygen, nutrition, fluid management, appropriate use of investigations. A training resource was necessary to teach health workers how to make the best use of the WHO Pocketbook in everyday clinical practice.

Description of product

This is a CD-ROM that contains clinical case-based teaching on each of the chapters in the WHO Pocketbook. For most chapters there is one clinical case that covers all the stages of care (triage, emergency treatment, diagnosis and differential diagnoses, treatment, monitoring and supportive care, discharge planning and follow-up). These cases are presented on PowerPoint slides, with clinical photographs, videos and diagrams, and are cross-referenced throughout to the Pocketbook sections. The PowerPoint presentations are interactive, posing questions that can then be answered by reference to the Pocketbook. In addition to cases for each chapter the CD has video clips and clinical photographs illustrating other important clinical syndromes mentioned in the Pocketbook, plus some other clinical resources such as monitoring charts. The CD is designed to be used in a 4-day workshop that would introduce the Pocketbook and train health workers in its use. An introductory presentation on the Pocketbook and the value of standardized clinical guidelines is included in the CD. A draft workshop timetable is included, which includes practical clinical teaching on a hospital ward, built around using the Pocketbook in everyday clinical practice. The CD can also be used in under-graduate or post-graduate courses (such as nursing courses or undergraduate medical training) where the Pocketbook would be used as the curricula.

In such courses a chapter could be covered each week, for example. The CD can also be used for self-learning, or distance learning programs.

Target audience

All child health workers who use the Pocketbook of Hospital Care for Children - Nurses, Medical students, Doctors

Languages available

English, Russian, draft in Chinese

Experience

During the development of the CD it was piloted in the Solomon Islands, where it has been used for a national workshop and then provincial training courses. The CD was also used in Uzbekistan, (2005) China (2006) and PNG (2006) as the basis for training workshops in the implementation of the WHO Pocketbook and the Referral Care manual.

Links with other tools

- Pocketbook of Hospital Care for Children
- www.ichrc.org
- ETAT training course

Where is material available?

During the piloting phase the CD has been freely available to anyone wanting to use it. In future it will be available from WHO at low cost.

Lessons learnt and recommendations

- weakness
  - No acronym in the title!

Recommendations for further development

The CD has undergone many changes after each phase of piloting, but we welcome further suggestions for improvement.
Material 7 – Annual Review of Randomized Trials in Child Health in Developing Countries
Trevor Duke - Centre for International Child Health, Melbourne and University of Edinburgh
Email: trevor.duke@rch.org.au

Starting point
In most developing countries access to evidence on which to base child health policy and treatment guidelines remains unsatisfactory. The booklet is compiled annually to summarize the evidence on child health derived from randomized trials in developing countries over the previous year. The aim is to make this information widely available to paediatricians, nurses, other health workers and administrators in resource poor settings. It is hoped that such information will be helpful in reviewing treatment policies, clinical practice and public health strategies. We aim to provide this up-to-date evidence in cheap hard-copy and in a form that can be sent by email or distributed on a CD.

Description of product
The booklet contains all the randomized trials published on child health in developing countries that are referenced in Pubmed. Pubmed is used as the search engine because it is freely available and widely used in most countries throughout the world. The search strategy has been chosen to try to capture as many relevant studies as possible, although it is possible that some are missed. The search strategy is reproducible by anyone with access to the Internet, through http://www.ncbi.nlm.nih.gov/entrez/query.fcgi.

In 2004, 2005 and 2006 there were 77, 85 and 95 studies published respectively, covering about 30 broad topics. The studies are combined under subject headings, and some comments, usually linking studies are provided.

Target audience
Paediatricians, teachers of child health, child health nurses, child health policy makers

Languages available
English

Experience
This booklet has been compiled and distributed annually since 2002.

Links with other tools
www.ichrc.org

Where is material available?
All material is freely available on the web at www.ichrc.org, and is distributed as a PDF, via an email network of over 1000 interested people, and Paediatric Societies. It is also available on CDs produced by Teaching Aids at Low Cost (TALC). Ideally it would be available as a cheap hard copy, but this requires funds.

Lessons learnt and recommendations
Weaknesses
Available in English only at this stage; and Pubmed does not reference all non-English language journals.
Randomized controlled trials (RCTs) are far from the only valuable scientific evidence, and some RCTs, because of problems with design or implementation have limited value. The results of RCTs should not be accepted uncritically and they should be evaluated for quality and validity. Before the result of an RCT can be generalized to another setting there must be consideration of the wider applicability, feasibility and potential for sustainability.

Need for wider distribution in cheap hard copy.

Gaps
Many RCTs are efficacy trials (a test of whether the specific intervention has a specific effect in a trial circumstance). Unfortunately there are fewer effectiveness trials (whether under more real-life circumstances the intervention has an effect). More research is needed on how to turn the results of such trials into policy and into implemented, integrated and sustainable programs.

Please let me know how you think this booklet could
Material 8 – (a) Paediatric Audit and (b) A Child Mortality Reporting System

Trevor Duke, Adrian Hutchinson, James Auto, Titus Nasi – email: trevor.duke@rch.org.au
Centre for International Child Health, Melbourne, and Honiara Hospital, Solomon Islands

Starting point

The information that can be derived from audit and health information systems often has very different implications and application depending on the population the data are gathered from. Here we describe two examples of audit/reporting systems: (a) hospital based and (b) population based.

(a) Clinical audit can help identify patterns of morbidity, mortality, and health service weaknesses and strengths; suggest appropriate interventions, as well as assess their effect. Audit also serves team building and educational roles.

(b) National systems of population-based child mortality reporting can be highly effective in guiding child health policy, and deciding on local priorities.

Description of examples of tools

(a) A framework for paediatric audit, with computerized and paper-based options. The computerized version was made using "File maker". The program file are small (1.5 Kb). It can print out reports and summaries. The data can be saved to Excel, Access or other database. An accompanying document describes a problem-solving approach to audit and how to run clinical audit meetings.

(b) An example of National Child Mortality Reporting from the Solomon Islands. A data-sheet was developed using Word, and a database developed in EpiData (a freely available on-line program).

Target audience

(a) Hospital clinicians wanting to conduct paediatric audit meetings.

(b) Paediatricians or Ministries of Health wishing to implement a national system of child mortality reporting.

Experience

(a) The Paediatric Audit is based on an audit system used (in paper-based form) in Papua New Guinea for several years. There has been very limited use of this computerised system elsewhere at this stage (some in the Children's Hospital No 1 in HCM City in Vietnam). May need modification for local conditions.

(b) The National System for Child Mortality Reporting was designed by clinicians and administrators in Solomon Islands at the time of planning implementation of the WHO Pocketbook of Hospital Care for Children, and the development of a National Child Health Plan. The principle is to document child deaths and their circumstances, to have a Child Health Committee review these deaths; look for patterns, identify avoidable factors and make policy recommendations to the Ministry of Health or health facilities. Deaths reported are not confined to those occurring in hospitals (as this may bias results in locations where many deaths occur in villages or primary health clinics); the system aims to record basic information on deaths occurring within all levels of health facility and within communities. This system was piloted in Honiara Hospital in 2005, and has recently been incorporated into the National Reproductive Health Reporting System.

Where is material available?

These tools are locally available only at this stage, but either could be freely adapted.

Lessons learnt and recommendations

Systems, human resource capacity and funding for analysis, summarizing data, interpretation and policy recommendations need to be built and sustained for such national mortality reporting systems to have an optimal impact. Integration with National Health Information Systems should occur where possible to avoid parallel data systems. Ideally a Child Mortality Committee should be a statutory committee of Government, so that there is a direct link between information and policy.
Starting point
- Detailed survey work in Kenyan District Hospitals indicated that few health workers were aware of modern management guidelines and resources for care of the very sick child were limited.
- In collaboration with the Division of Child Health in the Ministry of Health, Kenya’s two medical schools and other partners best-practice guidelines for care based on the WHO’s Pocket Book were developed and efforts were made to collect and synthesise the evidence supporting them (a process complemented by work as part of www.ichrc.org).
- Building on the course structure of ETAT components were added that included newborn life support and care of the very sick child with altered consciousness (including convulsions), respiratory distress, severe malnutrition, and diseases in the newborn period. Further additions were sections on DCT in HIV, audit and hospital self-reflection.

Target audience
All health professionals — Aim for ‘Hospital Training’

Languages available
English

Experience
- ETAT+ was further developed and revised during 3 pilot training episodes
- ETAT+ has been delivered in 4 Kenyan district hospitals in 2006 as part of a long term evaluation project being undertaken by KEMRI / WT in collaboration with the Ministry of Health.
- In the 7 courses to date over 200 people have been trained — each course can accommodate between 32-36 participants if there are 5 trained instructors (including one course director).
- All courses in the districts have been run in or near hospitals and no per diems have been paid to participants. The main costs have been the facilitators, food / refreshments and basic seminar facilities.
- End of course evaluation has been very positive with 80% of participants passing a practical exam at the end of the course.

Links with other tools
- Pre-reading materials for participants include the ETAT manual and pre-specified sections of the WHO Pocket Book (supplied to all participants)
- Job aides in use during the course and afterwards in the hospitals include MoH basic paediatric protocols and structured paediatric admission records.
- Wall charts of the MoH protocols are made available at the end of the course in the hospital.
- A CD-ROM of all materials and teaching is left behind at the hospital.

Where is material available?
All the material that is not already part of WHO materials is available from the PI of the project (ME)

Cost
There is no cost, however, for use of video clips we would need to obtain the permission of KEMRI.

Lessons learnt and recommendations
Weaknesses
High quality instructors / facilitators are required who themselves have received additional training. Materials will require regular updating as evidence becomes available — this requires an infrastructure and co-ordination.

Gaps
We do not talk about Dengue, TB or other chronic diseases as the aim is the first 24 hours of hospital care.

Recommendations for further development
We aim to find out whether the training achieves anything — if it does not then further development may be a waste of time!

Material 9 – Emergency Triage Assessment and Treatment plus admission care for the severely ill child and newborn - ETAT+
Dr. Mike English KEMRI / Wellcome Trust Research Programme, Nairobi, Kenya.
Email: menglish@nairobi.kemri-wellcome.org
Material 10 – International Child Health Review Collaboration
Julian Kelly, Harry Campbell and Trevor Duke Centre for International Child Health, Melbourne and University of Edinburgh – email: julian.kelly@rch.org.au

Starting point
The WHO Pocketbook of Hospital Care for Children is a major advance in providing comprehensive standardized guidelines for paediatric care in hospitals where resources are limited. However the availability of guidelines is unlikely to change practice per se. In the era of evidence based clinical practice, recommendations need to be justified by sound evidence. Documentation of this evidence will facilitate uptake and adherence, highlight areas of uncertainty, and lead to further research in areas where there are deficiencies. The project aims to engage doctors, medical students and nurses throughout the world in a global process, to broaden the network of people who feel ownership of the WHO Pocketbook and other child health recommendations, and build capacity in evidence based health care.

Description of product
This is a website library of reviews of the evidence behind the Pocketbook. Clinical questions are organized according to the relevant chapter in the Pocketbook for ease of reference. The website also contains a detailed description of the search methodology, has a reviewer’s toolkit and contact information for people wishing to undertake a review.

The process uses a systematic methodology and enables evidence-based practice to be easily accessible. The methodology of reviewing the evidence behind each clinical question employs a free-to-air search engine (Clinical Queries - PubMed™) that is validated, reproducible and can be saved for updates automatically (via My NCBI). Reviews are created by a primary author and this is then reviewed by an acknowledged content expert. After final editing the final dataset is then posted on the web for universal availability- www.ichrc.org.

Target audience
All child health workers who use the Pocketbook of Hospital Care for Children or the Management of the Child with a Serious Infection or Malnutrition

Languages available
English; Chinese website in planning stages

Experience
To date 33 reviews have been completed. 6 reviews have been published in peer reviewed clinical journals. A further 100 reviews are in the primary or secondary review stages. Collaboration has occurred between the 5 coordinating centres and WHO Geneva office. Expansion to medical student bodies such as the IFMSA (International Federation of Medical Students’ Association) and to the IPA (International Pediatric Association) is currently under way. The website has had over 60,000 hits in the first 8 months.

Links with other tools
Pocketbook of Hospital Care for Children
CD-ROM teaching tool
Management of the Child with a Serious Infection or Severe Malnutrition
Background book on management of child with serious infection
ETAT training course

Where is material available?
All material is freely available on the web at www.ichrc.org

Lessons learnt and recommendations
Weaknesses
Please tell us…

Gaps
Those reviews not yet completed….

Recommendations for further development
We need to enlist the skills of a librarian to review all string-searches, so that the searches are more standardized. All searches to be registered and stored with My-NCBI to allow for automatic notification and updating as new evidence becomes available.
Starting point

CAH WHO has developed a generic tool to assess the quality of care for children in health facilities. This tool though comprehensive is rather long and may place equal emphasis on all issues associated with improving hospital care for children rather than the priority issues. It is also time-consuming to administer and such a detailed assessment though informative may not be necessary. For quality hospital care for children certain things are more important than others, these include triage, hand-washing, availability of emergency and 1st line drugs, availability of updated standard treatment guidelines, emergency care and management of common conditions. A rapid assessment will evaluate key aspects of areas essential to good care and provide a general idea of how the hospital is functioning in terms of care for children. Problems can then be identified and solutions initiated immediately following assessment.

Objectives of improvement approach

- To develop a rapid assessment tool for assessing the quality of care for children in health facilities
- To field-test the rapid tool in 6 district hospitals in Kenya
- To make changes to the rapid assessment tool based on the results of the field-test

Strategies/Activities undertaken

Based on experience with using the standard generic assessment tool, the rapid tool was developed with focus on key areas essential to hospital care of children. Each section was scored based on standards and criteria to meet these standards. The standard was stated and the criteria to meet the standard were scored out of 2. The criteria is scored in one of three ways

- 2: good or always done
- 1: present but not good or not always done
- 0: absent or never done

Some standards have several criteria and a total score is provided for that standard as a sum of the criteria score. This is compared to the potential score for that standard.

Material 11 – Generic tool for the rapid assessment of the quality of care for children in health facilities

Dr Carolyn Maclellan, Royal Darwin Hospital, Darwin Australia – email: carolynmaclennan@yahoo.com, Dr Kihara, Kenyatta National Hospital, Nairobi, Kenya

The rapid tool was field-tested in 6 district hospitals in Kenya, by 2 Paediatricians experienced in managing sick children and familiar with WHO guidelines.

Results and Outcomes

What worked?
The rapid tool was successful in identifying the key problems in hospital care for children in the 6 hospitals in Kenya.

What did not work?
The scoring out of 2 was too imprecise. Hospitals could still score 1 and still provide poor care. The tool appeared to score the HIV section highly even when services were actually poor. The section of the tool on care of the newborn suggested that newborns were managed in a newborn unit where in reality most of newborns were in the side room of the maternity ward. The tool did not differentiate between investigation and management of sepsis in newborns.

Lessons learnt and recommendations

The rapid tool was revised based on the field test. The scoring was changed so that criteria are scored in one of 5 ways as in the standard generic assessment tool. The care of the newborn section was changed to reflect that newborns may be kept in different areas of the hospital. In the sick newborn care section investigation and treatment of newborn sepsis were separated to provide 2 standards: correct diagnosis of neonatal sepsis and correct treatment of neonatal sepsis and questions for the standard, “specific feeding needs of sick young infants and those with low birth weight (LBW) available” were refined. More questions on the HIV section are being developed in an attempt to improve this section.

Next Steps/Future

The rapid assessment tool as an alternative to the standard assessment tool can be used in countries undergoing an improvement process for hospital care for children to identify key areas that should be addressed as a priority.
Starting point

MINCC is a new initiative recently embarked on by the Mpumalanga Provincial Health Department aimed at reducing mortality and improving quality of health care for newborns and children at all 25 provincial hospitals. The data base used in MINCC Neonatal Phase is PPIP (Perinatal Priority Identification Programme), a software programme developed locally by the MRC Unit for Maternal & Infant Health Care Strategies (PPIPWINv2 (Simply Software©)).

Description of product

PPIP was developed in the 1990's and has been extensively field tested since 1996. PPIP is a simple, user friendly computer-based programme that calculates various perinatal care indices, describes the medical conditions that led to the perinatal death and describes the avoidable factors, missed opportunities and substandard care that led to deaths. Data from various sites can be collated, thus perinatal care indices, patterns of disease and avoidable factors can be analysed for various groupings of sites. Priority problems are clearly identified and solutions can be sought. PPIP follows the “ICA solution” audit system, first described in 1995. It relies on the presence of regular perinatal mortality meetings to discuss the various deaths and the possible shortcomings in care and thus it takes enthusiasts to run it. The classification system used in PPIP was first used in Aberdeen in the 1940’s; its chief purpose being to identify “the factor which probably initiated the train of events leading to death”; clearly pointing to where prevention can be targeted. The system was modified by Whitfield et al in 1996, adapted by Pattinson et al in 1989 for use in developing countries and again in 1995 to include the concept of avoidable factors, missed opportunities and substandard care.

Languages available

English

Experience

PPIP has been used in Mpumalanga since 1996. Almost all Mpumalanga hospitals now collect PPIP data, with 168 PPIP sites nationally. PPIP has been widely reported on and published.

Links with other tools

PPIP was used in LINC project to track trends in neonatal mortality, and is the basis of the MINCC project evaluation (abstract MINCC poster 14). PPIP has led to the recent development of a Child Priority Identification Programme (Abstract poster 24, materials 15). Evaluation of baseline PPIP data has led to the development of a standardized neonatal mortality rate index (abstract poster 14).

Where is material available?

PPIP is available free of charge and is downloadable from the PPIP website: www.ppip.co.za

Lessons learnt and recommendations

Weaknesses

Under-reporting of neonatal deaths, especially in the birth weight group 500-999 grams, as well as due to referrals and BBAs (born before arrival)

Gaps

Lack of standardized neonatal mortality index to validate comparisons between similar hospitals. Lack of a full-time provincial PPIP coordinator

Recommendations for further development

Assessment of validity and utility of a standardized neonatal mortality ratio (abstract poster 14). Evaluation of audit and feedback using PPIP as an integral component of a quality improvement initiative inclusive of a full-time project coordinator in improving neonatal outcome and quality of care.
Material 13 — Emergency Triage Assessment and Treatment training course (ETAT)
Elizabeth Molyneux1, Martin Weber2 and Carolyn MacIennan2  - email: emolyneux@malawi.net
1 College of Medicine, Box 360, Blantyre, Malawi; 2 WHO/CAH, 1211 Geneva 27, Switzerland

Starting point

During hospital assessments in resource limited settings, the need for improved triage and emergency care management of common childhood illnesses became apparent. Therefore a section on triage and emergency care was included in the book entitled “Management of a child with a serious infection or severe malnutrition” This section was developed into a training course called ETAT.

Description of product

This is a practical training course in triage and emergency care of children for use by clinicians, nurses and other health workers who look after children at the first referral level (typically a district hospital) in developing countries. It is based on the 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. The course is 3.5 days long but is divided into modules which can be taught in shorter periods of time. Participant and Facilitator Manuals are available. The participant’s manual includes charts and tables that can be enlarged to use as wall charts in the workplace. The facilitator’s manual includes advice on teaching techniques and provides a checklist or all the materials needed to run the course.

Languages available

English and French

Experience

The course has been taught in several countries — Malawi, Niger, Nigeria, Tanzania, Kenya, Eritrea, Cambodia, and Indonesia. It has been taught at a senior level to produce Trainers and at district hospital level. In Malawi 8 health districts now have ETAT trainers and Health Centre staff has also been included. The Triage module has been taught to many gatekeepers, guards, receptionists and ward assistants. In the Queen Elizabeth Central Hospital, Blantyre, Malawi where ETAT has been used for 4 years in the emergency department the mortality for inpatients has been halved.

Links with other tools

The ETAT course is part of a series of documents and tools that support the Integrated Management of Childhood Illness (IMCI). This course focuses on emergency assessment and treatment but a summary of the technical background and the evidence base underlying these clinical guidelines is presented in the background book “Serious childhood problems in countries with limited resources” (ISBN 29 4156269 2), and in the evidence base website presented separately (abstract materials 10) and available under www.ICHRC.org. Additional tools include The Pocket Book of Hospital Care for Children, a training CD (abstract materials 6), and an assessment tool (abstract materials 11 and app.).

Where is material available?

ETAT manuals are available from the WHO/CAH website for free

Lessons learnt and recommendations

Weaknesses

As with all training courses follow up is essential to maintain standards and sustain efforts.

Gaps

It is important not to overload a course, but a section on monitoring and evaluation and on the use of Critical Care Pathways may be helpful.

Recommendations for further development

Mannequins (dolls) and teaching equipment need to be made available at country level of trainers to borrow. Evaluation of change following the introduction of ETAT in countries other than Malawi needs to be carried out. The manuals need some minor editing.

3 Robertson A, Molyneux EM.Description of cause of serious illness and outcome in patients identified using ETAT guidelines in urban Malawi. Arch Dis Child 2001;85;214-217
Starting point
Very low birth weight babies and sick infants cannot maintain body temperature. Modern incubators are expensive, difficult to maintain and can become dangerous (either too hot or too cold).

Description of product
This is a locally made ‘incubator’ constructed from wood with a Perspex top. Heat is provided by up to 4x 60 watt electric bulbs and hot air flows into the cot by convection. Each bulb raises the temperature a further 1.5°C above ambient temperature. The design is based on technical drawings by Moshi Technical School and provided by Kilimanjaro Christian Medical Centre, Tanzania.

Experience
We have 7 cots in use in SCIBU (Special Care Baby Unit) and one on the nursery. The nurses are very happy with them and the mothers prefer them to the “old” incubators. We introduced one at first and asked the nurses to evaluate it. They asked for a modification to the cover which we did and then introduced more cots at their request.

Links with other methodologies
As soon as babies can safely be put into the Kangaroo Care position they are transferred to KC (see poster 16).

Where is material available?
Technical drawings are available from Dept of Paediatrics College of Medicine, Box 360, Blantyre, Malawi.

Cost?
A completed cot costs us in Malawi US$ 97

Lessons learnt and recommendations
Weaknesses
The hinges need to be well placed so that the Perspex top does not snap if the cover falls suddenly. The nurse did not like a wooden cover which they said looked like a coffin.

Recommendations for further development
Introduce a ‘hot cot’ to every district hospital so that they have one cot at least for the very small or sick infant.
Starting point
Many South African health workers have been aware through the normal process of reflection that there are problems with the quality of care that children receive in the South African health system. A challenge was to develop a tool that could provide a structure for reflecting on what we do, for answering the question “Is this the best I can do?”, and for bringing about change. The mortality review process was chosen as the method by which we could ascertain the quality of care that children receive in the South African health system and seek to improve it.

Description of product
Child PIP provides the structure and tools for careful review of in-hospital childhood deaths by ensuring all deaths are identified, fully described and the quality of care reviewed. Using this information, interventions at local, provincial and national level, can lead to improvements in quality of care.

The Child PIP software package is part of the overarching mortality review process and provides:
1. Printouts of data capture sheets, code lists, simple instructions and a detailed manual
2. A user friendly interface
3. Data capture and analysis
4. Data export and import

Target audience
Any health worker (doctor or nurse) concerned with the quality of care received by children in their health district, who wants to change the way children are cared for.

Languages available
English only

Experience
In 2002 the process was conceptualised and tested in the Mafikeng region of the Northwest Province of South Africa, and was developed into the Under 5 Child Healthcare Problem Identification Programme. Under 5 PIP was piloted in 2004 in 12 hospitals from 5 provinces and resulted in the publication of the “Saving Children 2004” report. The programme developed into the Child Healthcare Problem Identification Programme which allowed for the auditing of all age groups admitted to children’s wards. Child PIP was launched in 2005 and is currently used in 30 hospitals functioning at levels 1, 2 and 3, in all 9 provinces and in a wide variety of settings.

Links with other tools
Child PIP has become the third part of a continuum of quality of care assessment tools for Maternal and Child Health alongside the confidential enquiry into maternal deaths and the Perinatal Problem Identification Programme (PPIP).

In KwaZuluNatal recommendations in “Saving Children 2004” gave rise to the “Child Health Resource Package” which is a comprehensive package containing a variety of tools for looking after children properly in the province. The tools include clinical guidelines, a record keeping system, ART guidelines, the IMCI chart booklet and the information about ChIP and PPIP.

Where is material available?
The Software programme on CD and paper copy of the manual are distributed for free to interested health workers. The programme can be downloaded from the ChIP website, but this is impractical for most as it is a large file.

Lessons learnt and recommendations
Weaknesses
Difficulties have been experienced by some users during installation of the software. The software does require reasonably up to date hardware and operating systems.

Gaps
The code lists for causes of death and modifiable factors have a “medical” emphasis (rather than “surgical”), and the programme has been developed at district and regional hospital levels. Paediatric surgeons and paediatricians at higher levels of care are now using the programme, and gaps in their needs are currently being assessed.

Recommendations for further development
There is a need to adapt the programme to accommodate the audit needs of children with surgical problems and those at higher levels of care. This needs to be done without over-elaboration. Training materials which have evolved along with the Programme itself need to be consolidated and “packaged”.

Material 15 – Child Healthcare Problem Identification Programme (Child PIP or ChIP)
Saving lives through death auditing
Mark Patrick (Mark.Patrick@kznhealth.gov.za), Cindy Stephen, Mphele Mulaudzi (South Africa)
Starting point

During hospital assessments in resource limited settings, the need for guidelines for the management of common childhood illnesses became apparent. During the introduction of the predecessor manual “Management of a child with a serious infection or severe malnutrition”, the development of a pocket-size text was suggested as being more adequate for reference in daily practice.

Description of product

This is a pocket-sized manual 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 (typically a district hospital) in developing countries. It presents up-to-date clinical guidelines which are based on a review of the available published evidence by subject experts, for both inpatient and outpatient care in small hospitals where basic laboratory facilities and essential drugs and inexpensive medicines are available. It focuses on the inpatient management of the major causes of childhood mortality, such as pneumonia, diarrhoea, severe malnutrition, malaria, meningitis, measles, HIV infection and related conditions. It covers neonatal problems and surgical conditions of children which can be managed in small hospitals.

Languages available

~20 languages, including English, Portuguese, Russian, Chinese, French and Spanish in progress

Experience

The Pocket Book has been available for a year, and 20000 copies of the English version have been disseminated, expiring stock within 6 months. There has been a large demand for translation, but experience about its actual use and impact is limited.

Material 16 – Pocket Book of Hospital care for children

Martin Weber and Susanne Carai, WHO/CAH, 1211 Geneva 27, Switzerland – email: weberm@who.int

Links with other tools

This Pocket Book is part of a series of documents and tools that support the Integrated Management of Childhood Illness (IMCI). Whereas this manual focuses on treatment recommendations, a summary of the technical background and the evidence base underlying these clinical guidelines is presented in the background book “Serious childhood problems in countries with limited resources” (ISBN 29 4 156269 2), and in the evidence base website presented separately (abstract materials 10) and available under www.ICHRC.org. Additional tools comprise a training CD (Abstract materials 6), a training course on ETAT (abstract materials 13), and an assessment tool (abstract materials 11 and app.).

Where is material available?

The Pocket Book is available in the WHO/CAH website for free and for sale though WHO publications (WHO book shop).

Lessons learnt and recommendations

Weaknesses

? tell us

Gaps

Some sections will need to be expanded, like neonate, without exceeding 500 pages

Recommendations for further development

A new edition will be needed in 2-3 years, updating and expanding, based on feedback.
Material 17 – Critical Care Pathways
Elizabeth Molyneux and Grace Malenga. Paediatric Department College of Medicine, Box 360, Blantyre Malawi.

Starting point
Clinical notes are often illegible, disorganised and not very informative. Nurses and doctors write in separate parts of the file and seldom read each other’s comments. The laboratory results are kept elsewhere. Monitoring is seldom more than a record of temperature and drug delivery.

Description of product
We decided to use a critical care pathway (CCP) to overcome some of these barriers to good care.
A CCP is a clinical record that integrates the medications given, nursing and medical findings, laboratory results and temperature recordings on one chart. It incorporates times and actions so that the CCP is not only a record of care but a guide to management. It can easily be used to audit care or outcomes.

Target audience
The CCP replaces the usual drug chart on the children’s wards. It has the chart on one side of an A4 page and an admission proforma on the reverse. It is used by all members of staff in the outpatient and the inpatient unit.
There is a generic CCP, a separate neonatal one for infants coming from the delivery room to the nursery, and one for malnutrition.

Languages available
The CCP is available electronically and can be modified for local use. It is important that it is discussed and modified by members of the entire caring team so that there is a sense of ownership of it.

Experience
We have used CCPs in our department for 10 years. It took persistence in getting them introduced, but now staff would not be without them. They are quick to fill in, easily to follow, consolidate necessary information and are informative. They make audit easier and monitoring more frequent and reliable.

Links with other tools
See “Serious childhood problems in countries with limited resources” (ISBN 29 4156269 2).

Where is material available?
WHO Child and Adolescent Health Unit and on their website of IMCI publications.
Or emolyneux@malawi.net
It is free.

Lessons learnt and recommendations
Include all levels and cadre of staff in modifying the CCP. Train staff in its use before you introduce it and then re-train at regular intervals. Be patient, it takes time to change something as central to clinical care as the medical chart.
Introduce one type of chart (e.g. generic CCP) at a time.

Weaknesses
A tool is only as good as the use to which it is put. It records and reminds carers of actions, monitoring and management. It needs to be filled in well to be useful.

Gaps
Rare diagnoses will need a fuller admission and recording sheet.

Recommendations for further development
Modify and use your own locally derived CCP based on evidence based best practice.
Material 18 – Generic Quality Assessment Tool for Paediatric Hospital Care

Starting point
Has been developed from an older Quality Assessment Questionnaire of Paediatric Care, which was used in Eritrea in 2002 by CAH-WHO.

Description of product
Sixty-plus page, comprehensive assessment questionnaire covering the most important aspects of paediatric hospital care in resource poor countries. It first states the standards, which are to be met and then spells out different criteria, which are to be evaluated. The scoring has been changed to five grades from ‘good standard’ to four different levels of ‘need for improvements’ necessary to meet the standards (small- to urgent need for improvement). Detailed references are given referring to the “Pocket Book of Hospital Care for Children”, WHO. There is ample space for comments for each criteria before main strengths and weaknesses should be noted, leading to a summary score (good standard to ‘urgent need for improvement’). At the end of the questionnaire, there are questions for caretakers and health workers to gather some additional useful information and a summary assessment sheet and action plan, summarising the most urgent aspects to improve hospital care.

- It is meant to be a generic assessment tool: this means, its purpose is for assessors to design its own assessment questionnaire choosing the most relevant aspects for the health facilities they are evaluating.

Target audience
- Assessors, asked to assess paediatric hospital care in resource poor countries.
- In future also to be developed for use in self-assessment.

Languages available
English

Experience
Old generic assessment tool has been widely used as baseline material for assessments in countries in the former USSR, Asia and Africa. It has also been used as a baseline for a shorter assessment tool developed by Carolyn Maclennan. The revised version of the long generic assessment tool has not been used for assessment.

Links with other tools
Content has been fully referenced to the “Pocket Book of Hospital Care for Children”, WHO.

Where is material available?
To be made freely available on the website of “Department of Child and Adolescence Health and Development, WHO”.

Lessons learnt and recommendations

Weaknesses
if used indiscriminatively, it is comparatively long and time consuming; some parts do have a weak evidence base (interviews…) and priorities for change in management/care might not be as obvious as they could be.

Gaps
needs application and evaluation to claim effectiveness.

Recommendations for further development
Trial of paediatric hospital assessment with accompanied evaluation of generic hospital assessment tool and on-going adaptation to suit assessor.
Annex 5: Materials for paediatric hospital improvement in resource-poor countries

Description of available materials
<table>
<thead>
<tr>
<th>Subject and product</th>
<th>Source and contact</th>
<th>Type of material</th>
<th>Key features</th>
<th>Target audience</th>
<th>Teaching guides</th>
<th>Duration</th>
<th>Audio-visual element</th>
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<tbody>
<tr>
<td><strong>Life-saving skills</strong></td>
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<tr>
<td>Essential Surgical Skills – Emergency Treatment</td>
<td>Child Health Advocacy International, Advanced Life Support Group UK</td>
<td>Teaching guides</td>
<td>Guidelines for development of a country programme in maternal, newborn and child health, including a training course</td>
<td>Adaptable to any level of health-care provider</td>
<td>Training of trainers (TOT), instructor's CD, development of national set trainers</td>
<td>Flexible, 1–5 days</td>
<td>Yes</td>
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<tr>
<td>Essential Surgical Skills – Emergency Treatment (ETAT)</td>
<td>WHO/CAH web site: <a href="http://www.who.int/childhealth/publications/ETAT.htm">http://www.who.int/childhealth/publications/ETAT.htm</a></td>
<td>Training material and course</td>
<td>Training manuals, guides for participants and facilitators; CD/DVD clinical signs and symptoms (draft)</td>
<td>Any level of health facility for triage; any health worker</td>
<td>Facilitator's manual, training of trainers</td>
<td>3.5 days, may be modular</td>
<td>Yes</td>
</tr>
<tr>
<td>Emergency Triage and Treatment + (ETAT+)</td>
<td>KEMRI–Wellcome Trust Collaborative Programme</td>
<td>Training course</td>
<td>ETAT manuals, job aids, wall charts</td>
<td>Any level of health facility for triage; any health worker</td>
<td>Facilitator's guide</td>
<td>5 days, modular</td>
<td>Yes</td>
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<tr>
<td><strong>Neonatal courses (see also Annex 5.2)</strong></td>
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<tr>
<td>National Resuscitation Programme (NRP)</td>
<td>American Association of Pediatrics (AAP)</td>
<td>Training course</td>
<td>Systematic training course in neonate resuscitation</td>
<td>Neonatal nurses level III</td>
<td>Facilitator's guide</td>
<td>Flexible</td>
<td>Yes</td>
</tr>
<tr>
<td>Newborn nursing at referral level in Timor-Leste</td>
<td>Health Alliance International East Timor/WHO</td>
<td>Training course and modules</td>
<td>18 modules</td>
<td>Neatonal nurses level III</td>
<td>Facilitator's guide</td>
<td>Flexible</td>
<td>Yes</td>
</tr>
<tr>
<td>Essential newborn nursing in resource-restricted countries</td>
<td>All India Institute of Medical Sciences (AIIMS)</td>
<td>Training course and manual</td>
<td>7 modules</td>
<td>Small hospitals</td>
<td>Facilitator's guide</td>
<td>3 days, 1 day TOT</td>
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<tr>
<td>Perinatal Education Programme South Africa</td>
<td>Dave Woods, e-mail: <a href="mailto:papouse@web.co.za">papouse@web.co.za</a></td>
<td>Self-learning course</td>
<td>5 modules for nurses, doctors and medical students</td>
<td>Doctors, nurses and medical students</td>
<td>Facilitator's guide</td>
<td>Distance learning</td>
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<tr>
<td>Integrated Management of Neonatal and Childhood Illness (IMNCI)</td>
<td>National Professional Officer, WHO/CAH Office</td>
<td>Training course</td>
<td>Two 8-day training packages: one containing materials for doctors and one for community level health workers</td>
<td>Physicians in primary health centres and small hospitals; health workers at community level</td>
<td>Facilitator's guide</td>
<td>Chart book and training modules</td>
<td>8 days</td>
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<td>Subject and product</td>
<td>Source and contact</td>
<td>Type of material</td>
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<tr>
<td><strong>General child health</strong></td>
<td>WHO/CAH web site: <a href="http://www.who.int/child-adolescent-health/index.htm">http://www.who.int/child-adolescent-health/index.htm</a> email: <a href="mailto:cah@who.int">cah@who.int</a></td>
<td>Training course</td>
<td>Clinical practice sessions</td>
<td>All level of health workers</td>
<td>Facilitators course</td>
<td>11 days</td>
<td>Yes</td>
</tr>
<tr>
<td>Integrated Management of Childhood Illness (IMCI)</td>
<td>WHO/CAH web site: <a href="http://www.who.int/child-adolescent-health/publications/GHBD_HEALTH/PB.htm">http://www.who.int/child-adolescent-health/publications/GHBD_HEALTH/PB.htm</a> email: <a href="mailto:cah@who.int">cah@who.int</a></td>
<td>Guidelines for clinical practice</td>
<td>Pocket Book: presenting up-to-date clinical guidelines for inpatient and outpatient care in small hospitals Available at WHO/CAH web site or for sale</td>
<td>Doctors, senior nurses and other senior health workers at first referral level</td>
<td>See below</td>
<td>See below</td>
<td></td>
</tr>
<tr>
<td>Pocket Book of Hospital Care for Children</td>
<td>WHO/CAH web site: <a href="http://www.who.int/child-adolescent-health/index.htm">http://www.who.int/child-adolescent-health/index.htm</a> email: <a href="mailto:cah@who.int">cah@who.int</a></td>
<td>Training course or self-learning</td>
<td>How best to use the Pocket Book in everyday clinical practice; CD-ROM: clinical case-based teaching on each of the chapters, for 4-5 day workshops or self-learning</td>
<td>All health workers using the pocket book, doctors, nurses and medical students</td>
<td>Yes</td>
<td>4.5 days, modular self-learning</td>
<td>Yes</td>
</tr>
<tr>
<td>Training CD-ROM to introduce the Pocket Book</td>
<td>WHO/CAH web site: <a href="http://www.who.int/child-adolescent-health/index.htm">http://www.who.int/child-adolescent-health/index.htm</a> email: <a href="mailto:cah@who.int">cah@who.int</a></td>
<td>Training course</td>
<td>How best to use the Pocket Book in everyday clinical practice; CD-ROM: clinical case-based teaching on each of the chapters, for 4-5 day workshops or self-learning</td>
<td>All health workers using the pocket book, doctors, nurses and medical students</td>
<td>Yes</td>
<td>4.5 days, modular self-learning</td>
<td>Yes</td>
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<tr>
<td><strong>Breastfeeding counselling: a training course</strong></td>
<td>WHO/CAH web site: <a href="http://www.who.int/child-adolescent-health/publications/NUTRITION/BFC.htm">http://www.who.int/child-adolescent-health/publications/NUTRITION/BFC.htm</a> email: <a href="mailto:cah@who.int">cah@who.int</a></td>
<td>Training package</td>
<td>Director’s guide, trainer’s guide, participant’s manual, sets of slides and overheads. Basic course for health workers responsible for the care of mothers and young children.</td>
<td>Midwives, nurses, nutritionists and doctors at primary and referral levels</td>
<td>During training of trainers, trainees practice different teaching skills</td>
<td>40 hours (5 days), may be modular</td>
<td>Yes: slides, overhead figures, and recommended videos</td>
</tr>
<tr>
<td><strong>Feeding and nutrition training</strong></td>
<td>WHO/CAH and WHO web site: <a href="http://www.who.int/nutrition/yicf_integrated_course/en/index.html">http://www.who.int/nutrition/yicf_integrated_course/en/index.html</a> email: <a href="mailto:cah@who.int">cah@who.int</a></td>
<td>Training package</td>
<td>Director’s guide, trainer’s guide, participant’s manual, CD with slides, CD with reference materials, and guide for follow-up after training. Organized around competencies needed to support IMCI up to 2 years of age: breastfeeding and complementary feeding counselling, and helping mothers make HIV and infant feeding decisions. Some sessions on HIV are optional, depending on the setting.</td>
<td>Health workers providing services to mothers, other caregivers and children up to 24 months; lay counsellors</td>
<td>During training of trainers, trainees practice different teaching skills</td>
<td>5 days (plus 1 day for follow-up)</td>
<td>Yes: CD with slides</td>
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<tr>
<td>Training course on the management of severe malnutrition</td>
<td>WHO/NHD email: <a href="mailto:nutrition@who.int">nutrition@who.int</a></td>
<td>Training course</td>
<td>7 modules, picture book and supporting material.</td>
<td>Doctors, senior nurses and other senior health workers</td>
<td>Facilitator’s guide</td>
<td></td>
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<tr>
<td><strong>Specific quality improvement training</strong></td>
<td>ZdravPlus: <a href="http://www.zplus.kz/">http://www.zplus.kz/</a> Peter Campbell, Uzbekistan</td>
<td>Training course</td>
<td>Participative, interactive case scenarios; multimedia presenters based on WHO Pocket Book CD 1 day overview at community UNCI DVD on hospital QI methodology Web site</td>
<td>Doctors, senior nurses and other senior health workers at first referral level</td>
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<td>10 days</td>
<td>Yes</td>
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<tr>
<td>Quality improvement in health — Uzbekistan</td>
<td>WHO/CAH web site: <a href="http://www.who.int/child-adolescent-health/index.htm">http://www.who.int/child-adolescent-health/index.htm</a> email: <a href="mailto:cah@who.int">cah@who.int</a></td>
<td>Reference manual</td>
<td>Describes processes, tools and approaches to improve quality, including facilitation techniques</td>
<td>All levels of health workers and health care facilities working in QI</td>
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<td>Manual for Quality Improvement</td>
<td>WHO/CAH web site: <a href="http://www.who.int/child-adolescent-health/index.htm">http://www.who.int/child-adolescent-health/index.htm</a> email: <a href="mailto:cah@who.int">cah@who.int</a></td>
<td>Reference manual</td>
<td>Describes processes, tools and approaches to improve quality, including facilitation techniques</td>
<td>All levels of health workers and health care facilities working in QI</td>
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<td><strong>Reference</strong></td>
<td><strong>Audit tools</strong></td>
<td><strong>Assessment tool</strong></td>
<td><strong>Patient care aids</strong></td>
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<tr>
<td>Annual review of randomized trials in child health in developing countries</td>
<td>Mpumalanga Initiative for Neonatal and Child Care (MINNCC) : Perinatal Priority Identification Programme (PPP)</td>
<td>Generic quality assessment tool for paediatric hospital care</td>
<td>Critical care pathways</td>
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<tr>
<td>International Child Health Review Collaboration</td>
<td>Elmarie Malek South Africa</td>
<td>WHO/CAH</td>
<td>Elizabeth Molynieux Department of Paediatrics College of Medicine Box 260, Blantyre, Malawi</td>
<td></td>
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</tr>
<tr>
<td>Reference and information</td>
<td>Audit (mortality based)</td>
<td>Structured questionnaire for external assessment of paediatric hospital care</td>
<td>Clinical records and monitoring</td>
<td></td>
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<tr>
<td>Annual collection of published randomized trials</td>
<td>Simple, user-friendly computer-based project collecting data on perinatal deaths, avoidable factors, missed opportunities and substandard care</td>
<td>Includes assessment of hospital support functions (drugs, supplies and equipment), emergency care, case management on the ward, monitoring, nursery and care of the newborn, hospital layout and structure and staffing, supportive care and nutrition, discharge and follow-up</td>
<td>Structured clinical records for admission and monitoring of progress</td>
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<tr>
<td>Web site access, cheap hard copy booklet, e-mail network, CD</td>
<td>CD and web site</td>
<td>Assessors of paediatric hospital care in resource-poor countries</td>
<td>Paper and electronic versions available for local adaptation</td>
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<tr>
<td>Web site library of reviews of evidence behind the Pocket Book: <a href="http://www.ichrc.org">http://www.ichrc.org</a></td>
<td>Paper-based data collection Software to capture, code and analyse inpatient child deaths</td>
<td>Accessors of paediatric hospital care in resource-poor countries</td>
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<td><a href="http://www.ichrc.org/">http://www.ichrc.org/</a></td>
<td>Audit (mortality based)</td>
<td>Manual to be developed</td>
<td>Economic drawings available</td>
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<td>Julian Kelly</td>
<td><a href="http://www.ichrc.org/">http://www.ichrc.org/</a></td>
<td>Ongoing; 1–3 day training</td>
<td>Equipment</td>
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<td>Plan for building a newborn “incubator”</td>
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### Course content and related elements

<table>
<thead>
<tr>
<th>Description</th>
<th>All India Institute of Medical Sciences (AIIMS) Essential newborn nursing</th>
<th>Newborn nursing at referral level in Timor-Leste</th>
<th>WHO Essential Newborn Care Course (EBNCC) and guide Pregnancy, childbirth, postpartum and newborn care (PCPNBC)</th>
<th>WHO Pocket Book of hospital care for children Training CD-ROM</th>
<th>Essential Surgical Skills – Emergency Maternal and Child Health-care Programme (ESSE-MCH)</th>
<th>Emergency Triage and Treatment + (ETAT+)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Essential newborn care topics: normal newborns, immediate care and referral of sick newborns, care of the well small baby</td>
<td>Training course for neonatal nurses at small hospitals</td>
<td>Training course for neonatal nurses at referral hospitals</td>
<td>Comprehensive theory and range of topics, excludes ventilation, technical monitoring and intravenous feeding</td>
<td>Training courses for neonatal care (nurses and midwives) at district level health facilities</td>
<td>Compilation of essential practical guidelines for common neonatal problems, with case studies for training in content and how to use the Pocket Book</td>
<td>APLS-type approach Immediate care and first 24 hours of illness APLS instructor’s course Linked to small job aid Pocket Book and recording form</td>
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### Topics covered

<table>
<thead>
<tr>
<th>Essential newborn care</th>
<th>Yes</th>
<th>Yes</th>
<th>Yes</th>
<th>Yes</th>
<th>Yes</th>
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<td>Common procedures</td>
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<td>Yellow baby</td>
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<td>Bleeding</td>
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<td>Maternal problems</td>
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<td>Emergency 1st 2 hrs</td>
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<td>Emergency sick newborn</td>
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### Format

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<tr>
<th>Course</th>
<th>Modules</th>
<th>Facilitator’s guide</th>
<th>Training of trainers (TOT)</th>
<th>Sessions</th>
<th>Chapter</th>
<th>Content</th>
<th>Training</th>
<th>Equipment</th>
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<tbody>
<tr>
<td>Essential newborn care</td>
<td>7</td>
<td></td>
<td>3 days + 1 day</td>
<td>15</td>
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<td>2 casestudies</td>
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<td>Newborn nursing at referral level in Timor-Leste</td>
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<td>10.5 days + 5 days TOT</td>
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<td>4—5 days + 4 days TOT</td>
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<td>WHO Essential Newborn Care Course (EBNCC) and guide Pregnancy, childbirth, postpartum and newborn care (PCPNBC)</td>
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<td>1 day neonates equivalent within 1—3 days maternal and child and trauma</td>
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<td>WHO Pocket Book of hospital care for children Training CD-ROM</td>
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<td>Essential Surgical Skills – Emergency Maternal and Child Health-care Programme (ESSE-MCH)</td>
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<td>2 days neonates within 5.5-day course: malnutrition, pneumonia, diarrhoea, malnutrition</td>
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<td>Emergency Triage and Treatment + (ETAT+)</td>
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### Job Aids and Audio Visual Materials

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<th>Links to WHO Manuals</th>
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<tr>
<td>Managing newborn problems: Pregnancy, childbirth, postpartum and newborn care: Safer manuals</td>
</tr>
<tr>
<td>Pocket Book, Pregnancy, childbirth, postpartum and newborn care, individual references: Kangaroo Mother Care, hypothermia etc</td>
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<td>Making Pregnancy, Pocket Book, ETAT</td>
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### Target Audience and Level of Care

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<th>Assessment and Follow-up</th>
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<td>End-of-course tests</td>
</tr>
<tr>
<td>6-month follow-up and later assessment still need development</td>
</tr>
<tr>
<td>Participants design follow-up supervision</td>
</tr>
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<td>Multiple Choice Questions post-test</td>
</tr>
<tr>
<td>Skills assessment log book ongoing Supervision by local instructors.</td>
</tr>
<tr>
<td>MCQ post-test Skills assessment ongoing on the job</td>
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<table>
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<td>With adaptation</td>
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Annex 6: Quality improvement training requirements and course outline

Many developing countries have weak health systems that are currently not providing services according to established standard guidelines of care. Reasons for this include limited knowledge and skills in the standards of care and lack of continuous quality improvement (QI) approaches and skills. The proposed course aims to respond to this need.

The goal of QI training is to enable service providers to acquire the knowledge and skills to implement QI processes in the provision of care to children at referral facilities with linkages to the primary level facilities and the community.

QUALITY IMPROVEMENT TRAINING REQUIREMENTS

What QI training do health workers with limited QI background need? The following notes are designed to help in the assessment of needs and the construction of relevant training.

General issues
Consider: time frame, applicability and feasibility.
It is important to include practical examples related to hospital care, with at least one case-study consistent throughout all steps (e.g. children dying while in the waiting room).

Contents of the training course

1. Introduction
2. How to identify the problem
3. How to develop improvement actions
4. How to implement improvement actions
5. How to measure quality improvement
6. How to use results for further improvement

1. Introduction

- The concept of quality and quality improvement in health care.
- The key role of the Plan–Do–Study–Act cycle in problem-solving.

Practical exercises, tools and skills needed
- Pocket Book of Hospital Care for Children
- Manual for Quality Improvement
2. How to identify the problem

- Describe the current process.
- Compare with the standard [or define the standard if one does not exist].
- Identify the root cause or causes of the problem.

Use data already collected: review the medical records against standards (take medical records randomly and compare); emergency drug list, i.e. use self-assessment tool.

Note that the wider the agreement on standards – and the higher the authority supporting them – the easier it is to implement change.

Choose a representative sample (size and randomization).

Practical exercises, tools and skills needed
- Brainstorming
- Focus group discussion
- Prioritization tools: voting, criteria matrix
- Observation of people at work
- Review of medical records (representative sample)
- Assessment tool
- Analysis of organization of services (hospital profile)
- Key informant interview
- Exit interview of clients
- Consumer satisfaction: e.g. Nicaragua has involved community members in the QI process
- Flowcharting
- Cause and effect analysis (Fishbone analysis)

Examples: high case-fatality rate, children dying while in the waiting room.

3. How to develop improvement actions

- Prioritization (which factors need to be taken into account; most impact, cost, feasibility).
- Learn from previous experience and from others elsewhere.
- Build consensus (needs to be written down): Voting system; Consensus meeting.

Practical exercises, tools and skills needed
- Prioritization
- Consensus-building skills
- Benchmarking

4. How to implement improvement actions

Plans need to be clear and actions need to be broken down into simple steps. Tasks should be assigned to responsible persons, including the supervisor. Start small, be specific, involve management and leadership, and set achievable goals according to the availability of resources.

Practical exercises, tools and skills needed
- Responsibility matrix: Who, where, what, why (Why, who, where, how, when)
- Supervision
- Coaching
- Checklist
5. How to measure quality improvement

- How to document and analyse the results:
  Introduce the concept of SMART indicators and agree on one indicator for each activity.
  Example: monitoring compliance with standard of care:
  Standard: O2 given to patients with severe pneumonia.
  Indicator: e.g. Out of the total number of patients diagnosed with severe pneumonia, how many received oxygen? (Look at the patients’ records).

Practical exercises, tools and skills needed
- Data collection
- Concept of SMART indicators

- How to communicate, share and present the results:
  Share the results across the system
  - with the team, peers, supervisors, all staff;
  - with the hospital management team regularly, on a monthly basis or more frequently;
  - with the patients (display wall charts);
  - with hospital leaders, e.g. every 3 months;
  - with other hospitals;
  - with the public (brief a local newspaper to write an article to stimulate public awareness; publish results on the Internet)

Practical exercises, tools and skills needed
- Data analyses
- Presentation of results (bar charts, run charts)
- Pareto chart
- Data collection (concept of SMART indicators)

6. How to use results for further improvement

- Inform community leaders.
- Create a demand for quality.
- Advocate for material needed (report and request).

Inform community leaders, organize a learning session, create a demand for quality, advocate for material needed (report and request), analyse if correct root causes were identified, start the PDSA cycle again.

Practical exercises, tools and skills needed
- PDSA cycle

Further issues to consider

- Follow-up:
  - Sustainability is important.
  - Institutionalization of best practices in a facility in the long run.
  - Spread improvement throughout the whole country or beyond.

- How to work as a team:
  - Team building exercises.

- How to stimulate health workers to buy into QI improving processes:
  - Get them involved in planning, approval and implementation and sharing of results.

- Training the trainers:
  - Key people need to be chosen, because it may not be possible to train everyone.
  - Need ownership from ministry and leadership.
OUTLINE OF A TRAINING COURSE

Objectives of a 4-day training workshop on quality improvement methodology

1. To understand the concept of quality and quality improvement
2. To understand the PDSA cycle
3. To become familiar with quality improvement tools
4. To be able to use these skills and tools for improving care for children and adolescents in health facilities and hospitals

SAMPLE AGENDA FOR A 4 DAYS TRAINING COURSE IN QUALITY IMPROVEMENT METHODS

DAY 1

<table>
<thead>
<tr>
<th>Duration (minutes)</th>
<th>Topic</th>
</tr>
</thead>
<tbody>
<tr>
<td>20 min</td>
<td>Welcome and introduction Objectives of the workshop</td>
</tr>
<tr>
<td>90 min</td>
<td>Quality in health care Quality improvement in health care Principles of quality improvement Measuring and assessing quality in health care</td>
</tr>
<tr>
<td>15 min</td>
<td>Break</td>
</tr>
<tr>
<td>90 min</td>
<td>Plan–Do–Study–Act (PDSA Cycle) Steps in problem-solving 1. Describe the problem 2. Describe the current process 3. Identify the root cause(s) 4. Develop a solution and action plan 5. Implement the solution 6. Review and evaluate results</td>
</tr>
<tr>
<td>90 min</td>
<td>Lunch</td>
</tr>
<tr>
<td>90 min</td>
<td>Group work: Has your facility introduced any quality improvement processes? If so, describe what has been done. If not, how would you initiate improvement process in your facility using the PDSA Cycle?</td>
</tr>
<tr>
<td>15 min</td>
<td>Break</td>
</tr>
<tr>
<td>60 min</td>
<td>Feedback from group work End of Day 1</td>
</tr>
</tbody>
</table>

DAY 2

<table>
<thead>
<tr>
<th>Duration (minutes)</th>
<th>Topic</th>
</tr>
</thead>
<tbody>
<tr>
<td>20 min</td>
<td>Summary of Day 1</td>
</tr>
<tr>
<td>90 min</td>
<td>Quality improvement tools 1. Data collection 2. Brainstorming 3. Exercises</td>
</tr>
</tbody>
</table>
15 min Break

90 min Quality improvement tools
  Cause and effect analysis
  - Fishbone analysis (causes by categories)
  - Five whys technique
  Prioritization tools:
  - Straight voting
  - Multi-voting
  - Criteria (prioritization) matrix
Exercises

90 min Lunch

90 min Group work session
  Practical session using tools to address problem examples

15 min Break

90 min Quality improvement tools
  Force field analysis
  Flowchart
  - High-level flowchart
  - Detailed flowchart
Exercises
End of Day 2

DAY 3

20 min Summary of Day 2

90 min Quality improvement tools
  System modelling
  Benchmarking
Exercises

15 min Break

90 min Group work session
  Practical session using tools to address problem examples

90 min Lunch

90 min Quality improvement tools
  Statistical and data presentation tools
  - Bar and pie charts
  - Run and control charts
  - Histograms
  - Scatter diagrams
  - Pareto chart

15 min Break

90 min Quality improvement tools
  Action plans (Gantt chart or responsibility matrix)
  Check sheets
End of Day 3
### DAY 4

<table>
<thead>
<tr>
<th>Time</th>
<th>Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>20 min</td>
<td>Summary of Day 3</td>
</tr>
<tr>
<td>90 min</td>
<td>Group work session&lt;br&gt;Practical session using tools to address problem examples</td>
</tr>
<tr>
<td>15 min</td>
<td>Break</td>
</tr>
<tr>
<td>90 min</td>
<td>Group work&lt;br&gt;Identify 3 areas that you consider a problem in your hospital. Use the 3 different quality improvement tools to address these problems</td>
</tr>
<tr>
<td>90 min</td>
<td>Lunch</td>
</tr>
<tr>
<td>30 min</td>
<td>Continuation of group work</td>
</tr>
<tr>
<td>90 min</td>
<td>Feedback from group work</td>
</tr>
<tr>
<td>15 min</td>
<td>Break</td>
</tr>
<tr>
<td>40 min</td>
<td>Group discussion: initiating quality improvement in your health facility or hospital&lt;br&gt;Wrap up&lt;br&gt;Evaluation&lt;br&gt;Closing</td>
</tr>
</tbody>
</table>
An important component of monitoring progress towards improvement of paediatric care in small hospitals in developing countries is regular self-assessment by teams of staff in their own hospital, in the context of the hospital improvement initiative. Hospital self-assessment is not usually done by an individual but by a team of hospital staff, who may use the WHO hospital assessment tool with documented standards and the criteria necessary to achieve these standards when monitoring their own hospital. Countries may adapt these standards to provide country-specific standards for hospital care for children.

The hospital quality improvement (QI) team should be the focus of initiating self-monitoring in the hospital. The team that carries out the self-assessment should include the medical and nursing staff working daily with children, as well as the hospital management cadres. Hospital self-assessment must always take into account the environment within which the care is given to children. Therefore both the tool and process must reflect the elements in the illustration below.

WHAT DO CHILDREN NEED FROM A HOSPITAL?
As part of hospital self-assessment, participating medical and nursing staff should regularly review patient charts to monitor adherence to guidelines and should participate in mortality meetings and audits. In addition to the more comprehensive hospital assessment, these activities will help to identify problem areas. Findings from these exercises can be discussed at hospital QI team meetings in order to prioritize the problems to be solved. A specific issue for self-assessment may be targeted each month or quarter: for example, management of children with diarrhoea for the first quarter and management of children with pneumonia for the next quarter. The purpose here is to highlight areas that can be improved without attaching blame. Simple solutions can often go a long way towards solving problems; for example, introduction of triage may reduce hospital mortality.

The role and process of hospital self-assessment in improving the quality of hospital care for children

Self-assessment is the ability to perform an appraisal of one’s own performance and compare it with an agreed standard for performance, or a guideline, and to make a judgement as to the adherence of one’s performance to the standard or its conformity with the guideline. This self-assessment may be made by an individual or a team providing or managing care, by monitoring the results of their own care processes. This activity is in contrast to assessment and judgement by a supervisor or external expert.

Hospital self-assessment is a team self-assessment, also called a peer assessment. Peer assessment usually implies the same or similar professional qualifications between colleagues. In hospital self-assessment the team is made up of all the staff members, or “peers” from the same organization, involved in the care process.

The role of self-assessment in QI is to reinforce knowledge of the standard or guideline that forms the basis against which variation in performance is compared, but in a manner that is more comfortable and easier for many professionals to accept than external or supervisory evaluation. Self-assessment motivates behaviour change from within: it is often considered to be best practised in a supportive atmosphere of quality and performance improvement where supervisors are facilitative coaches or mentors. Self-assessment is also most effective if carried out on a regular basis in conjunction with indicator monitoring to show the measurement of progress. Hospital self-assessment is a process that enables a hospital to move towards adherence to a set of standards for providing evidence-based quality care to children, such as WHO’s Pocket Book of hospital care for children: guidelines for the management of common illnesses with limited resources. Self-assessment requires leadership and management support in the process, a team of staff and a tool. Guidance on development and use of a self-assessment tool for hospital care of children is provided in the next section.

Hospital self-assessment recognizes that hospital standards, facilities and motivational factors vary considerably, so the process encourages hospital teams to set their own indicators and develop their own tools based on the performance standards adopted. Hospital self-assessment can enable the change process for improvements by building capacity of staff to understand the expectations expressed by standards of care. Hospital self-assessment reinforces learning and continuous quality or performance improvement and contributes to developing motivation among team members and across facilities if multiple hospitals are involved in improvement process. When the process of self-assessment is initiated in the context of improvement it enables staff (and other stakeholders if included in the team) to demystify the sometimes apparently overwhelming problems that have been identified.

Depending on the overall development of systematic quality assurance in the health system, self-assessment may be part of an accreditation or certification process of health-care facilities.

In order to optimize self-assessment, hospital teams should be familiar with QI methodology and the WHO Pocket Book.

It may be useful to have had a previous assessment of the hospital facilities using an adapted version of the generic WHO hospital assessment tool in order to get a broad picture of possible priority improvement areas. The hospital team can initiate or complement the prioritization process with brainstorming, questionnaires and stakeholder analysis. This step is driven by hospital staff identifying their own needs in order to enhance ownership in the process.
AREAS OF WORK MOST CONDUCIVE TO SELF-ASSESSMENT

- **Direct observation** of supplies, pharmaceuticals and the organization of services, using pre-established checklists.
- **Chart or record reviews**, which allow direct comparison of key information with pre-established written standards.
- **Client interviews**, when key client responses can be recorded efficiently and accurately on a pre-established form with pre-tested common responses.
- **Peer assessment** of simple clinical interventions that allow codification, using a pre-established checklist, of actions that do not require assessor competence.

The hospital self-assessment team works with management to formulate a follow-up plan with time-lines and responsibilities outlined. The team may integrate with existing or standing hospital committees such as quality assurance teams or infection control bodies. Presenting the results of hospital self-assessment in the form of a time-line graph enables staff to see clearly the areas where they could do better. Staff can plot their achievements and use data beyond their immediate care process improvements to advocate for changes with management or the ministry of health or to write funding proposals.

The role of external supervision during this process would be to introduce the concepts of self-assessment, conduct some QI training and provide validation of self-assessment results through checks and supportive feedback discussions. Systematic supervision is often infrequent; self-assessment is a way to overcome this problem as it allows for continuous internal quality control. External supervision can be part of an overall quality assurance system, or it may be carried out at the request of the hospital in order to empower staff and encourage participation at all levels within the hospital. The external supervisors may be part a process to advocate for funding for any well-planned and realistic projects. It is useful to hold annual or biannual workshops to establish time-lines, share lessons learned and provide momentum, motivation and training.

There are some constraints in undertaking and using self-assessment that can be mitigated by the above suggestions when implementing hospital self-assessment. Nevertheless, it is worth pointing to a few key limitations that must be considered in setting up a hospital self-assessment:

- **Accurate assessment of compliance with or adherence to a standard** is dependent upon the self-assessor’s knowledge and understanding of the standard or guideline with which his or her performance is being compared.
- **Some individuals may be more motivated to change** by results from external assessment or supervisors, especially if performance is linked with remuneration or reward.
- **Validity and reliability of assessment results** may be impaired by personal bias, intra-assessor variation (especially with serial measurements) and inter-assessor variation (with pooled data or aggregation of multiple self-assessment results). The latter is especially a problem when comparing different hospitals.

Validity and reliability can be improved by the process setup and the atmosphere in which the hospital self-assessment results are used. In addition, the way the self-assessment tool is developed, introduced to the hospital staff and then applied by the hospital team and supervisors will also contribute to the objectivity and honesty with which the team members attribute scores to their own performance.
Development and use of a self-assessment tool for the hospital care of children

There are many tools that have been created for self-assessment. The process of creating the self-assessment tool can be a critical part of ensuring the effectiveness of its use by health workers in a quality or performance improvement team.

This guide tries to capture some of the lessons learned from the experience of several countries in using hospital self-assessment. It recommends that the WHO Hospital Assessment Tool be the starting place for the development of the tools required for a hospital’s improvement priorities, because it expresses the minimum set of standards that need to be in place for quality care of children.

The self-assessment tool should be kept as simple as possible, based on the standards as expressed in the external assessment tool for hospital care of children, and discussed by the hospital self-assessment team before collecting data. This discussion should be part of the overall choices for improvement and the development of a monitoring plan, as illustrated by the diagram below.

This development guide describes the hospital self-assessment checklist tool, circled in the above illustration, but it must be remembered that it fits into an overall process of improvement. Also, the checklist data come from observations, record reviews or interviews depending on the issues that have been chosen to be targeted for improvement. It is also recommended that some of the overall indicators to be monitored are those included in WHO’s suggested list of hospital care indicators.
Within the external assessment tool of WHO, the sections for the different concerns – whether clinical care or systems support standards – are detailed. The sections in the assessment are listed in the box below.

**SECTIONS IN THE EXTERNAL ASSESSMENT TOOL**

1. Hospital support functions, including drugs, supplies and equipment
2. Emergency care
3. Paediatric ward and case management on the ward
   - Cough or difficult breathing
   - Diarrhoea
   - Fever conditions
   - Malnutrition
   - Children with HIV/AIDS
4. Monitoring of patients
5. Nursery and care of the newborn
   - Delivery care of the newborn
   - Sick newborn care
6. Hospital layout and structure
7. Staffing
8. Supportive care and nutrition
9. Discharge and follow-up
10. Mother-and-child-friendly services
11. Access to hospital
12. Paediatric surgery

It is suggested that five case observations, record reviews or client interviews, if done on a regular basis, provide enough information for the team to test if the implemented solutions and improvements work. The regularity will depend on the number of patients being seen for a particular condition, staff time and/or the schedule of an intervention such as stocking of drugs: the data collection might be daily, weekly or monthly. It is suggested that the team check if a difference is being made by a proposed solution at the very least once a month, so as to be able to plot a graph of progress or the lack of it.

A simple scoring system should be agreed and understood by the team members, particularly those who collect the data. It is essential to ensure that the standard being implemented is understood, whether it is from the Pocket Book and its assessment tool or whether it is one particular part of the solution being put in place by the team to achieve the clinical standard. Often these are process indicators. Understanding how to record and score the compliance with the standard should minimize intrassessor variation (especially with serial measurements) and interassessor variation (with pooled data or aggregation of multiple self-assessment results). Below is a sample tool converted from the long assessment to a self-assessment tool with a simple scoring system.
Example of a scoring system for a self-assessment tool

<table>
<thead>
<tr>
<th>STANDARD for pneumonia assessment</th>
<th>case/record/day</th>
<th>case/record/day</th>
<th>case/record/day</th>
<th>case/record/day</th>
<th>case/record/day</th>
<th>total/criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td>Criteria</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Health workers correctly</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>3 out of 5</td>
</tr>
<tr>
<td>diagnose pneumonia classify/</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>recognize severity, pp 69–74, 78</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sign such as – pages 70–73</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chest in-drawing</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>3 out of 5</td>
</tr>
<tr>
<td>Respiratory rate</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>2 out of 5</td>
</tr>
<tr>
<td>Presence of cyanosis</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>2 out of 5</td>
</tr>
<tr>
<td>General condition</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>4 out of 5</td>
</tr>
<tr>
<td>Total for each</td>
<td>3</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Total for standard</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>14 out of 25</td>
</tr>
</tbody>
</table>
Annex 8: Indicators and standards for paediatric hospital care

Comprehensive list of indicators based on standards for paediatric hospital care
<table>
<thead>
<tr>
<th>Standard</th>
<th>Indicator</th>
<th>Numerator</th>
<th>Denominator</th>
<th>Notes and sources of information</th>
</tr>
</thead>
</table>
| **Hospital layout and structure** | Emergency care is arranged to facilitate triage of children | Triage is available for children | | Structural indicator  
Yes/no answer  
Observation during hospital assessment |
| | Separation of children from adults | Children are separated from adults | | Structural indicator  
Yes/no answer  
Observation during hospital assessment |
| | Separation of sick newborn babies from healthy newborns | Sick newborns are kept separate from healthy newborns | | Structural indicator  
Yes/no answer  
Observation during hospital assessment |
| | Closest attention for the most seriously ill children | Closest attention for the most seriously ill children | | Structural indicator  
Yes/no answer  
Observation during hospital assessment |
| | Ward has adequate facilitates for children and mothers | Ward has adequate facilitates for children and mothers | | Structural indicator  
Yes/no answer  
Observation during hospital assessment |
| **Hospital support functions** | Hygiene and accident prevention are in place | Proportion of days per calendar year when water and soap or hand disinfectant are available for handwashing | Number of days per calendar year when water and soap or hand disinfectant are available for handwashing | Ask during hospital assessment (hospital would have to collect this information over 1 year) |
| | Essential drugs are available for children | Proportion of days per calendar year with stockouts in one or more of the essential drugs | Number of days per calendar year with stockouts in one or more of the essential drugs | See drug list  
Ask during hospital assessment (hospital would have to collect this information over 1 year) |
<p>| | Essential supplies and equipment are available and in good working order | Proportion of days per calendar year when oxygen is not available in the hospital | Number of days per calendar year when oxygen is not available in the hospital | Ask during hospital assessment (hospital would have to collect this information over 1 year) |
| | Essential laboratory tests for investigation are available | Proportion of days per calendar year during which one or more of the essential laboratory tests are not available | Number of days per calendar year during which one or more of the essential laboratory tests are not available | Ask during hospital assessment (hospital would have to collect this information over 1 year) |
| | Administrative procedures are in place for quality care of children | Proportion of health workers (doctors, nurses) looking after children who have updated job-aids in the form of pocket books with them | Number of health workers (doctors, nurses) looking after children who have updated job-aids in the form of pocket books with them | Ask during hospital assessment (hospital would have to collect this information over 1 year) |
| | Regular staff participation in audits | Proportion of health workers (doctors, nurses) who participate in audits of paediatric care at least 4 times per year | Number of health workers (doctors, nurses) who participate in audits of paediatric care at least 4 times per year | Ask during hospital assessment (hospital would have to collect this information over 1 year) |
| <strong>Staffing</strong> | Care for children by qualified staff | Proportion of shifts without at least one nurse experienced or trained in paediatric care | Number of shifts without at least one nurse experienced or trained in paediatric care | In 1 week during observation period |
| | Appropriate staff to provide emergency care | Proportion of shifts where a staff member is not available without delay to manage children with an emergency condition | Number of shifts where a staff member is not available without delay to manage children with an emergency condition | In 1 week during observation period |
| <strong>Case management</strong> | Correct provision of emergency care | Proportion of children triaged immediately on arrival (promptly assessed for severity/priority treatment) | Number of children triaged immediately on arrival | Observation for period of time during hospital assessment |</p>
<table>
<thead>
<tr>
<th>Standard</th>
<th>Indicator</th>
<th>Numerator</th>
<th>Denominator</th>
<th>Notes and sources of information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cough or difficult breathing</td>
<td>Correct assessment of pneumonia</td>
<td>Proportion of children with cough or difficult breathing who are correctly assessed and classified</td>
<td>Number of children with cough or difficult breathing who are correctly assessed and classified</td>
<td>Number of children with cough or difficult breathing</td>
</tr>
<tr>
<td></td>
<td>Correct administration of appropriate antibiotics</td>
<td>Proportion of children with cough or difficult breathing who receive correct antibiotic treatment for pneumonia</td>
<td>Number of children with cough or difficult breathing who receive correct antibiotic treatment for pneumonia</td>
<td>Number of children with cough or difficult breathing</td>
</tr>
<tr>
<td></td>
<td>Correct use of oxygen</td>
<td>Proportion of children needing oxygen who have oxygen administered correctly, including monitoring</td>
<td>Number of children needing oxygen who have oxygen administered correctly, including monitoring</td>
<td>Number of children needing oxygen</td>
</tr>
<tr>
<td></td>
<td>Correct assessment and management of wheezing children</td>
<td>Proportion of children with wheezing who receive appropriate nebulizer or spacer and bronchodilator treatment</td>
<td>Number of children with wheezing who receive appropriate nebulizer or spacer and bronchodilator treatment</td>
<td>Number of children with wheezing</td>
</tr>
<tr>
<td></td>
<td>Correct provision of tuberculosis (TB) treatment</td>
<td>Proportion of children with TB receiving correct anti-TB drug therapy</td>
<td>Number of children with TB receiving correct anti-TB drug therapy</td>
<td>Number of children with TB</td>
</tr>
<tr>
<td></td>
<td>Correct use of chest X-ray</td>
<td>Proportion of chest X-rays ordered appropriately</td>
<td>Number of chest X-rays ordered appropriately</td>
<td>Number of chest X-rays ordered</td>
</tr>
<tr>
<td>Diarrhoea</td>
<td>Correct assessment of dehydration</td>
<td>Proportion of children with diarrhoea who are appropriately assessed for dehydration</td>
<td>Number of children with diarrhoea who are appropriately assessed for dehydration</td>
<td>Number of children with diarrhoea</td>
</tr>
<tr>
<td></td>
<td>Correct management according to rehydration plan</td>
<td>Proportion of children with diarrhoea who are correctly rehydrated (correct rehydration plan selected and followed, including appropriate monitoring)</td>
<td>Number of children with diarrhoea who are correctly rehydrated</td>
<td>Number of children with diarrhoea</td>
</tr>
<tr>
<td></td>
<td>Correct use of antibiotics for diarrhoea</td>
<td>Proportion of children with diarrhoea who do not need antibiotics and do not receive them</td>
<td>Number of children with diarrhoea who do not need antibiotics and do not receive them</td>
<td>Number of children with diarrhoea who do not need antibiotics</td>
</tr>
<tr>
<td></td>
<td>Continued feeding during diarrhoea</td>
<td>Proportion of children with diarrhoea whose feeding is continued (breast milk and / or other foods)</td>
<td>Number of children with diarrhoea whose feeding is continued (breast milk and / or other foods)</td>
<td>Number of children with diarrhoea</td>
</tr>
<tr>
<td>Fever conditions</td>
<td>Consideration of differential diagnosis of fever</td>
<td>Proportion of children who have a lumbar puncture when meningitis is suspected or severe febrile illness where it is reasonable to suspect meningitis</td>
<td>Number of children who have a lumbar puncture when meningitis is suspected or severe febrile illness where it is reasonable to suspect meningitis</td>
<td>Number of children who have meningitis suspected or severe febrile illness where it is reasonable to suspect meningitis</td>
</tr>
<tr>
<td></td>
<td>Correct diagnosis and management of meningitis</td>
<td>Proportion of children with meningitis diagnosed who receive correct antibiotic treatment</td>
<td>Number of children with meningitis diagnosed who receive correct antibiotic treatment</td>
<td>Number of children with meningitis diagnosed or suspected</td>
</tr>
<tr>
<td></td>
<td>Correct diagnosis and management of severe or complicated malaria</td>
<td>Proportion of children with severe malaria who receive correct antimalarial treatment</td>
<td>Number of children with severe malaria who receive correct antimalarial treatment</td>
<td>Number of children with severe malaria</td>
</tr>
<tr>
<td></td>
<td>Correct diagnosis and management of dengue haemorrhagic fever</td>
<td>Proportion of children with severe dengue who receive correct fluid management</td>
<td>Number of children with severe dengue who receive correct fluid management</td>
<td>Number of children with severe dengue</td>
</tr>
<tr>
<td></td>
<td>Correct diagnosis and management of measles</td>
<td>Proportion of children who are given Vitamin A for measles</td>
<td>Number of children who are given Vitamin A for measles</td>
<td>Number of children with measles</td>
</tr>
<tr>
<td>Standard</td>
<td>Indicator</td>
<td>Numerator</td>
<td>Denominator</td>
<td>Notes and sources of information</td>
</tr>
<tr>
<td>----------</td>
<td>-----------</td>
<td>-----------</td>
<td>-------------</td>
<td>-------------------------------</td>
</tr>
<tr>
<td><strong>Malnutrition</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Assessment of the nutritional status in all children</td>
<td>Proportion of children whose nutritional status is assessed in terms of weight for height and oedema identified</td>
<td>Number of children whose nutritional status is assessed in terms of weight for height and oedema identified</td>
<td>Number of children admitted</td>
<td>Chart review</td>
</tr>
<tr>
<td>Checking for and managing of hypoglycaemia and hypothermia</td>
<td>Proportion of children with severe malnutrition who are checked and managed for hypoglycaemia</td>
<td>Number of children with severe malnutrition who are checked and managed for hypoglycaemia</td>
<td>Number of children with severe malnutrition</td>
<td>Chart review</td>
</tr>
<tr>
<td>Appropriate use of antibiotics and micronutrients</td>
<td>Proportion of children with severe malnutrition who are given broad spectrum antibiotics</td>
<td>Number of children with severe malnutrition who are given broad spectrum antibiotics</td>
<td>Number of children with severe malnutrition</td>
<td>Chart review</td>
</tr>
<tr>
<td>Correct management of dehydration in malnourished children</td>
<td>Proportion of children with severe malnutrition without shock who are rehydrated orally or via nasogastric tube with the correct fluids</td>
<td>Number of children with severe malnutrition without shock who are rehydrated orally or via nasogastric tube with the correct fluids</td>
<td>Number of children with severe malnutrition</td>
<td>Chart review</td>
</tr>
<tr>
<td>Appropriate feeding of severely malnourished children</td>
<td>Proportion of children with severe malnutrition who receive 3-hourly feeding both day and night</td>
<td>Number of children with severe malnutrition who receive 3-hourly feeding both day and night</td>
<td>Number of children with severe malnutrition during first days of admission</td>
<td>Chart review</td>
</tr>
<tr>
<td><strong>Children with HIV/AIDS</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Appropriate counselling and diagnosis of paediatric HIV</td>
<td>Proportion of children suspected of HIV infection who are offered HIV counselling and testing</td>
<td>Number of children suspected of HIV infection who are offered HIV counselling and testing</td>
<td>Number of children suspected of HIV infection</td>
<td>Chart review</td>
</tr>
<tr>
<td>Antiretroviral treatment (ARV) and monitoring are available</td>
<td>Proportion of children with HIV infection who receive appropriate ARV</td>
<td>Number of children with HIV infection who receive appropriate ARV</td>
<td>Number of children with HIV infection</td>
<td>Chart review</td>
</tr>
<tr>
<td>Opportunistic infections are identified and appropriately managed</td>
<td>Proportion of children with HIV infection whose opportunistic infections are appropriately managed</td>
<td>Number of children with HIV infection whose opportunistic infections are appropriately managed</td>
<td>Number of children with HIV infection who have opportunistic infections</td>
<td>Chart review</td>
</tr>
<tr>
<td>Supportive care and follow-up of HIV-infected children are provided</td>
<td>Proportion of children with HIV infection who are offered prophylactic cotrimoxazole</td>
<td>Number of children with HIV infection who are offered prophylactic cotrimoxazole</td>
<td>Number of children with HIV infection</td>
<td>Chart review</td>
</tr>
<tr>
<td><strong>Delivery care of the newborn</strong></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Neonatal resuscitation is available</td>
<td>Proportion of health workers who can resuscitate a newborn correctly</td>
<td>Number of staff who can resuscitate a newborn correctly</td>
<td>Number of health workers looking after newborns</td>
<td>Observation or scenario</td>
</tr>
<tr>
<td>Promotion of early and exclusive breastfeeding</td>
<td>Proportion of newborns who have had breastfeeding initiated within the first hour</td>
<td>Number of newborns who have had breastfeeding initiated within the first hour</td>
<td>Number of newborns</td>
<td>Observation</td>
</tr>
<tr>
<td>Thermal control of newborns is available</td>
<td>Proportion of newborns who have their temperature monitored and the result acted on appropriately</td>
<td>Number of newborns who have their temperature monitored and the result acted on appropriately</td>
<td>Number of newborns</td>
<td>Observation</td>
</tr>
<tr>
<td>Clean delivery is in place</td>
<td>Proportion of deliveries where clean instruments are used</td>
<td>Number of deliveries where clean instruments are used</td>
<td>Number of deliveries</td>
<td>Observation</td>
</tr>
<tr>
<td>Prophylaxis for newborns is available</td>
<td>Proportion of newborns who receive immunizations according to local schedule</td>
<td>Number of newborns who receive immunizations according to local schedule</td>
<td>Number of newborns</td>
<td>Chart review</td>
</tr>
<tr>
<td>Standard</td>
<td>Indicator</td>
<td>Numerator</td>
<td>Denominator</td>
<td>Notes and sources of information</td>
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</tr>
<tr>
<td><strong>Sick newborn care</strong></td>
<td>Correct diagnosis of neonatal sepsis</td>
<td>Proportion of newborns where neonatal sepsis is suspected who are appropriately investigated</td>
<td>Number of newborns where neonatal sepsis is suspected who are appropriately investigated</td>
<td>Number of newborns where neonatal sepsis is suspected or is reasonable to suspect</td>
</tr>
<tr>
<td></td>
<td>Correct treatment of neonatal sepsis</td>
<td>Proportion of newborns who received appropriate antibiotics for sepsis</td>
<td>Number of newborns who received appropriate antibiotics for sepsis</td>
<td>Number of newborns where neonatal sepsis is suspected or is reasonable to suspect</td>
</tr>
<tr>
<td></td>
<td>Specific feeding of sick young infants and low birth weight (LBW) babies is available</td>
<td>Proportion of sick young infants or LBW babies unable to feed who are fed by nasogastric tube in adequate amounts according to age, and intake is monitored</td>
<td>Number of sick young infants or LBW babies unable to feed who are fed by nasogastric tube in adequate amounts according to age, and intake is monitored</td>
<td>Number of sick young infants or LBW babies</td>
</tr>
<tr>
<td></td>
<td>Recognition and management of jaundice</td>
<td>Proportion of jaundiced newborns who have a bilirubin level checked and the result acted on appropriately</td>
<td>Number of jaundiced newborns who have a bilirubin level checked and the result acted on appropriately</td>
<td>Number of jaundiced newborns</td>
</tr>
<tr>
<td><strong>Paediatric surgery</strong></td>
<td>Appropriate pre-operative care</td>
<td>Proportion of children in whom fasting is kept to a minimum (8 hrs no solids, 6 hrs no formula, 4 hrs no milk or clear liquids)</td>
<td>Number of children in whom fasting is kept to a minimum</td>
<td>Number of children being operated</td>
</tr>
<tr>
<td></td>
<td>Appropriate intra-operative care</td>
<td>Proportion of children where blood loss is monitored during surgery</td>
<td>Number of children where blood loss is monitored during surgery</td>
<td>Number of children having surgery</td>
</tr>
<tr>
<td></td>
<td>Appropriate post-operative care and monitoring</td>
<td>Proportion of children who are monitored post-operatively with frequent recording of vital signs (blood pressure, pulse, respiration rate)</td>
<td>Number of children who are monitored post-operatively with frequent recording of vital signs</td>
<td>Number of children who have had surgery</td>
</tr>
<tr>
<td></td>
<td>Rehabilitation is available</td>
<td>Proportion of children needing basic rehabilitation equipment who receive it</td>
<td>Number of children needing basic rehabilitation equipment who receive it</td>
<td>Number of children needing basic rehabilitation equipment</td>
</tr>
<tr>
<td><strong>Supportive care</strong></td>
<td>Nutritional needs of admitted children are observed</td>
<td>Proportion of breastfed infants of 6–12 months of age who are offered appropriate complementary foods at least 3 times a day</td>
<td>Number of breastfed infants of 6–12 months of age who are offered appropriate complementary foods at least 3 times a day</td>
<td>Number of breastfed infants of 6–12 months of age</td>
</tr>
<tr>
<td></td>
<td>Promotion of breastfeeding</td>
<td>Proportion of breastfed infants who continue to receive breast milk while in hospital</td>
<td>Number of breastfed infants who continue to receive breast milk while in hospital</td>
<td>Number of breastfed infants</td>
</tr>
<tr>
<td></td>
<td>Appropriate drug treatment and avoidance of polypharmacy</td>
<td>Proportion of children who are treated with corticosteroids only when there is a clear indication</td>
<td>Number of children who are treated with corticosteroids only when there is a clear indication</td>
<td>Number of children receiving drug treatment</td>
</tr>
<tr>
<td></td>
<td>Appropriate use of intravenous fluids</td>
<td>Proportion of children who receive intravenous fluids only when indicated</td>
<td>Number of children who receive intravenous fluids only when indicated</td>
<td>Number of children who receive intravenous fluids</td>
</tr>
<tr>
<td></td>
<td>Appropriate blood transfusion</td>
<td>Proportion of children who receive blood only when indicated</td>
<td>Number of children who receive blood only when indicated</td>
<td>Number of children who receive blood</td>
</tr>
</tbody>
</table>
### Processes to Improve Paediatric Care

<table>
<thead>
<tr>
<th>Standard</th>
<th>Indicator</th>
<th>Numerator</th>
<th>Denominator</th>
<th>Notes and sources of information</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Adequate monitoring</strong></td>
<td>Adequate monitoring of patients is in place</td>
<td>Proportion of children for whom a monitoring plan is prescribed according to the severity of their condition</td>
<td>Number of children for whom a monitoring plan is prescribed</td>
<td>Number of children in the ward</td>
</tr>
<tr>
<td></td>
<td>Admitted children are reassessed by doctor</td>
<td>Proportion of children who are reassessed daily during working days by a doctor or clinical officer</td>
<td>Number of children who are reassessed daily during working days by a doctor or clinical officer</td>
<td>Number of children in the ward</td>
</tr>
<tr>
<td></td>
<td>Reassessment and monitoring by nurse</td>
<td>Proportion of children who are monitored and have the observations recorded by a nurse at least twice a day</td>
<td>Number of children who are monitored and have the observations recorded by a nurse at least twice a day</td>
<td>Number of children in the ward</td>
</tr>
<tr>
<td><strong>Discharge and follow-up</strong></td>
<td>Immunization status of children is reviewed</td>
<td>Proportion of children with missing immunizations who receive them at the hospital before discharge</td>
<td>Number of children with missing immunizations who receive them at the hospital before discharge</td>
<td>Number of children being discharged</td>
</tr>
<tr>
<td></td>
<td>Arrangements for follow-up are in place prior to discharge</td>
<td>Proportion of children who require follow-up after discharge for whom it is arranged before discharge</td>
<td>Number of children who require follow-up after discharge for whom it is arranged before discharge</td>
<td>Number of children being discharged</td>
</tr>
<tr>
<td><strong>Mother-and-child-friendly services</strong></td>
<td>Contact with and participation of mothers in care are encouraged</td>
<td>Proportion of children whose mother or other carer is allowed to stay with the sick child at all times during the hospital stay</td>
<td>Number of children whose mother or other carer is allowed to stay with the sick child at all times during the hospital stay</td>
<td>Number of children in the hospital</td>
</tr>
<tr>
<td></td>
<td>Information and counselling are provided</td>
<td>Proportion of mothers or carers who receive health education on the care of their child during the hospital stay</td>
<td>Number of mothers or carers who receive health education on the care of their child during the hospital stay</td>
<td>Number of mothers or carers in hospital</td>
</tr>
<tr>
<td></td>
<td>Access to food for mother is available</td>
<td>Proportion of mothers who have food provided by the hospital or access to cooking tools and facilities (fuel, pots, space) in the hospital</td>
<td>Number of mothers who have food provided by the hospital or access to cooking tools and facilities (fuel, pots, space) in the hospital</td>
<td>Number of mothers or carers in hospital</td>
</tr>
<tr>
<td></td>
<td>Avoidance of unnecessary and unnecessarily long admissions to hospital</td>
<td>Proportion of children who remain in hospital for longer than is necessary for the medical or surgical condition</td>
<td>Number of children who remain in hospital for longer than is necessary for the medical or surgical condition</td>
<td>Number of children in hospital</td>
</tr>
<tr>
<td></td>
<td>Emotional support and play are available</td>
<td>Proportion of mothers or carers who are encouraged to play with the children</td>
<td>Number of mothers or carers who are encouraged to play with the children</td>
<td>Number of mothers or carers in hospital</td>
</tr>
<tr>
<td></td>
<td>Avoidance of unnecessary and painful procedures</td>
<td>Proportion of children who have painful procedures, for both diagnostic and therapeutic purposes, when they are not required</td>
<td>Number of children who have painful procedures, for both diagnostic and therapeutic purposes, when they are not required</td>
<td>Number of children in hospital</td>
</tr>
<tr>
<td><strong>Access to hospital</strong></td>
<td>Referral by first level or primary health-care worker is adequate</td>
<td>Proportion of referred patients who received appropriate pre-referral treatment when indicated</td>
<td>Number of referred patients who received appropriate pre-referral treatment when indicated</td>
<td>Number of referred patients</td>
</tr>
<tr>
<td></td>
<td>Care-seeking by parents is appropriate</td>
<td>Proportion of sick children who are brought to hospital without significant delay</td>
<td>Number of sick children who are brought to hospital without significant delay</td>
<td>Number of sick children requiring hospital care</td>
</tr>
<tr>
<td></td>
<td>Transport to hospital is available</td>
<td>Proportion of children for whom cost of transport does not represent a barrier to referral</td>
<td>Number of children for whom cost of transport does not represent a barrier to referral</td>
<td>Number of sick children requiring hospital care</td>
</tr>
<tr>
<td></td>
<td>Economic barriers to hospital care are minimized</td>
<td>Proportion of children for whom hospital fees are a major barrier to hospital care</td>
<td>Number of children for whom hospital fees are a major barrier to hospital care</td>
<td>Number of sick children requiring hospital care</td>
</tr>
</tbody>
</table>
Suggested short set of indicators for monitoring at global level

1. Existence of a national policy or strategy for child health care with specific provisions concerning hospital care for children.
   (Proportion of countries having a national child health policy or strategy with specific provision for hospital care for children.)

2. Existence of a mechanism for allowing access to hospital care to children and vulnerable groups (gratuity, user fee exemption, insurance scheme) covering the entire population.
   (Proportion of countries with mechanisms to allow free hospital care to children.)

3. Existence of evidence-based, national clinical guidelines for paediatric care updated during last five years (for major conditions in children: neonatal sepsis, neonatal resuscitation, pneumonia, malaria\(^1\), dengue\(^1\), diarrhoea, malnutrition, HIV\(^1\)).
   (Proportion of countries having national, evidence-based, clinical guidelines updated during the last five years.)

4. Existence of a national mechanism for comprehensive and regular assessment of hospitals including paediatric care (for the last five years).
   (Proportion of hospitals having been assessed during the last five years.)

5. National mechanism for monitoring inpatient fatality rates (by age groups: neonate, infant, child).
   (Proportion of hospitals providing in-patient fatality rates by age group.)

   (Proportion of hospitals having designated areas for paediatric care.)

7. Availability of oxygen (and age-related delivery system) for children in paediatric wards.
   (Proportion of hospitals having O2 available in paediatric wards.)

   (Proportion of hospitals having bags and masks for neonatal resuscitation.)

9. Regular certification of “baby friendliness” of hospitals.
   (Proportion hospitals certified (or re-certified) as Baby Friendly within the last five years.)

\(^1\) If relevant for national context
## Suggested short set of indicators for monitoring at national and hospital levels

<table>
<thead>
<tr>
<th>Standard</th>
<th>Indicator</th>
<th>Numerator</th>
<th>Denominator</th>
<th>Notes and sources of information</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Oxygen is available in the ward</td>
<td>Yes/no</td>
<td>Number of children with severe malnutrition who receive 3-hourly feeding both day and night</td>
<td>Number of children with severe malnutrition</td>
<td></td>
</tr>
<tr>
<td>2 Emergency care is available</td>
<td>Yes/no</td>
<td>Number of children with severe malnutrition who receive 3-hourly feeding both day and night</td>
<td>Number of children with severe malnutrition</td>
<td></td>
</tr>
<tr>
<td>3 An essential drug list is available</td>
<td>Yes/no</td>
<td>Number of children with severe malnutrition who receive 3-hourly feeding both day and night</td>
<td>Number of children with severe malnutrition</td>
<td></td>
</tr>
<tr>
<td>4 Correct feeding of children with severe malnutrition</td>
<td>Proportion of children with severe malnutrition who receive 3-hourly feeding both day and night</td>
<td>Number of children with severe malnutrition who receive 3-hourly feeding both day and night</td>
<td>Number of children with severe malnutrition</td>
<td></td>
</tr>
<tr>
<td>5 Initiation of breastfeeding within the first hour</td>
<td>Proportion of newborns who have had breastfeeding initiated within the first hour</td>
<td>Number of newborns who have had breastfeeding initiated within the first hour</td>
<td>Number of newborns</td>
<td></td>
</tr>
<tr>
<td>6 Correct administration of appropriate antibiotics to children with pneumonia</td>
<td>Proportion of children with cough or difficult breathing who receive correct antibiotic treatment for pneumonia</td>
<td>Number of children with cough or difficult breathing who receive correct antibiotic treatment for pneumonia</td>
<td>Number of children with cough or difficult breathing</td>
<td>Chart review</td>
</tr>
<tr>
<td>7 Correct use of oxygen</td>
<td>Proportion of children needing oxygen who have oxygen administered correctly, including monitoring</td>
<td>Number of children needing oxygen who have oxygen administered correctly, including monitoring</td>
<td>Number of children needing oxygen</td>
<td>Chart review</td>
</tr>
<tr>
<td>8 Correct management of diarrhoea according to rehydration plan</td>
<td>Proportion of children with diarrhoea who are correctly rehydrated</td>
<td>Number of children with diarrhoea who are correctly rehydrated</td>
<td>Number of children with diarrhoea</td>
<td>Chart review</td>
</tr>
<tr>
<td>9 Correct diagnosis and management of severe or complicated malaria</td>
<td>Proportion of children with severe malaria who receive correct antimalarial treatment</td>
<td>Number of children with severe malaria who receive correct antimalarial treatment</td>
<td>Number of children with severe malaria</td>
<td>Chart review</td>
</tr>
<tr>
<td>10 Neonatal resuscitation is available</td>
<td>Proportion of health workers who can resuscitate a newborn correctly</td>
<td>Number of health workers who can resuscitate a newborn correctly</td>
<td>Number of health workers looking after newborns</td>
<td>Observation or scenario</td>
</tr>
<tr>
<td>11 Under-5 years case-fatality rate (1–60 months)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12 Case-fatality rate for severe pneumonia</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>13 Case-fatality rate for diarrhoea</td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>14 Neonatal case-fatality rate</td>
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<td></td>
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<tr>
<td>15 Case-fatality rate for newborns</td>
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</tbody>
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IMPROVING PAEDIATRIC CARE

IMPROVING PAEDIATRIC REFERRAL CARE IN THE CONTEXT OF CHILD SURVIVAL ACTIVITIES AND IMCI

Review of processes to improve paediatric care in small hospitals in developing countries

Denpasar, Indonesia
15–19 January 2007