IMPROVING QUALITY OF PAEDIATRIC CARE IN SMALL HOSPITALS IN DEVELOPING COUNTRIES

Report of a meeting
Geneva 19–21 June 2000
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## Aims

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Aims

1. to consider the implications of the results of the 7 country study of child care in hospitals in developing countries in terms of the need to improve quality of referral level paediatric care

2. to review experience in promoting improved quality of referral level paediatric care in developing countries

3. to prepare a brief report identifying options for approaches to promote improved quality of referral care paediatric services—for WHO CAH to consider

4. to identify important research issues related to the identification of effective strategies to improve the quality of paediatric care

DAY 1

Introduction and aims of the meeting

Dr Weber welcomed the participants and reviewed the objectives of the meeting. He explained that the meeting would review experience in quality initiatives within paediatric care in developing countries (aims 1 and 2) and use this as a platform from which to prepare recommendations for WHO CAH to consider as part of their efforts to improve quality of paediatric referral level care (aims 3 and 4). He mentioned that participants had been chosen for their particular experience in implementing projects which sought to improve quality of paediatric care.

Dr Weber briefly outlined the elements of the referral care project within WHO CAH which seeks to strengthen paediatric care in referral hospitals. He explained that this had started with a literature review of referral level care in developing countries. This had revealed a very poor literature base from which to identify the key issues in referral level care and to indicate in which areas interventions would have the best chance of improving health outcomes. A qualitative study (7 country study—see below) was carried out and revealed substantial potential for reducing morbidity and mortality in referral level hospitals. Specific recommendations leading from this study informed the referral care project Working Group and guided the subsequent development work carried out by the Group. This work included the preparation of a manual of referral level paediatric care, the development and field testing of Emergency Triage Assessment and Treatment (ETAT) guidelines and guidelines for the management of severely malnourished children. The Working Group advised that an informal consultation of experienced paediatricians and quality assurance experts should be held to guide future work commissioned by WHO CAH.

Review of published experience on quality of in-patient care

Dr Tamburlini described the literature review that he had carried out and presented key principles and themes that he had identified on this topic with a particular focus on applicability of findings to developing country settings. A Medline search supplemented by a hand search of “tropical paediatric” journals formed the basis of the review presented. He noted that there was almost no published literature on general paediatric quality of care from developing countries. Most of the literature from industrialised countries related to specific diseases or to admission and discharge experience with very little published on general quality of paediatric care. He summarised published experience around a number of core concepts noting that:

- **practice guidelines**—require adaptation, feedback, incentives and respected peer support if they are to change practice; the need for conti-
nuity of peer supervision was considered to be especially important

- measurement of current practice—is time consuming to collect; these data are generally not available and health staff do not readily accept the need for efforts to be made to improve data collection

- audit—requires a team to be in place, motivation and time set aside for this activity; examples exist of successful operation in teaching hospitals but not in smaller hospitals

- integrated care pathways—make guidelines applicable in specific selected areas of practice; have the potential to empower nursing staff; other general comments as for audit

- system re-engineering—based on the premise that quality of care is a system issue and not only knowledge / skills based (particularly for maintenance of health worker performance)

- rapid cycle improvement—quality initiatives typically show a long lag time between collection of data on current practice and eventual quality improvement; rapid cycling focuses on linking together data collection to response interventions in order to bring about rapid change (which re-inforces the process and motivates staff to take part)

- driving forces—this is based on the “no drive no change” experience; potential driving forces include consumers associations (rare in developing countries), hospital management (often weak or not interested in quality in developing countries), or professional organisations (often weak or have professional objectives other than quality of care); strategies include promoting the formation of national or regional networks, provision of incentives or accreditation linked to quality of care and creation of improvement teams within each hospital

Dr Tamburlini concluded by recommending that initiatives to improve quality should include standards, measurements of current practice and strategies for change. Standards could be expressed as guidelines (like the manual developed by the Referral Care Project) re-inforced by a system of respected peer support and continuous peer supervision. Measurements of current practice would require the development of an assessment tool which was simple and whose implementation was based on the rapid cycling principle.

The key strategy for change was the identification or creation of appropriate driving forces or change agents. Internal driving forces could be a national network, hospital improvement teams or teaching hospital staff if professional ownership of wider paediatric care within that region can be developed. External driving forces could be a certification process (for examples established by WHO, UNICEF or the international paediatric association) which recognises different levels of achievements and confers recognition for a defined time period.

Discussion highlighted the need to raise awareness of the need to improve quality of care and suggested that publication of the 7 country study and this literature review would be important first steps. The need to have a simple (but well-founded and not simplistic) format for data collection and quality improvement was stressed and the need for a practical tool to achieve this was recommended. Concern was expressed that much of the quality improvement literature was based on a business model that was cost driven. It was considered vital that the primary focus of this tool be on quality of paediatric care. Dr Lanata shared his experience from a Peru project in which a public sector approach had focused successfully on patient satisfaction and had lead to improved hospital services (see below).

WHO/OSD approaches to quality of in-patient care

Dr Siem Tjam presented a historical perspective on the development of health services and quality of care theory in the context of differing types of health systems. He drew attention to the important distinction between individual (e.g. improving case management) and collective (e.g. reducing poverty) interventions and to the importance of tailoring approaches to specific health systems. He stressed the need for a national commitment to quality and shared a successful example of a national hospital accreditation scheme, which is improving quality
of care in Thailand. He noted that the priority selection processes found in any quality initiative involves making choices which have an ethical dimension.

Subsequent discussion noted that health care ethics could be harnessed as motivation for bringing about changes and improvements in services.

**Determinants of Health Worker Performance**

Dr Rowe noted that health worker evaluation studies can be used to identify predictors of health worker performance. He noted that knowledge of these predictors could then be used to help in the design of interventions. He described the stages involved in designing such studies. These included deciding the perspective to be adopted and thus selecting an appropriate sampling strategy, defining performance in measurable terms in relation to accepted standards, selecting appropriate data collection methods e.g. observations, interviews, repeat assessments of children, case vignettes, use of “standard patients” checking validity of data and performing data analysis with attention to controlling for confounding, collinearity (whereby 2 or more predictors may be correlated) and external factors. He noted that he was in the process of carrying out a systematic literature review of the determinants of health worker performance (including a review of literature describing conceptual models of health worker behaviour).

Subsequent discussion noted that the predictors identified depended on which aspect of performance was studied and thus which performance indicators were selected for study. It was noted that if specific components of performance were to be studied and many possible predictors of performance were to be considered then large sample sizes would be required. Few large studies have been published. If only a few possible predictors or components of performance were to be studied then their choice would clearly be very important. It was suggested that he contact the Cochrane Centre of Effective Professional Practice to link his review to on-going international efforts in this area.

**The Quality Assurance Project**

Dr Massoud shared his experience in designing and implementing a neonatal care improvement project in Tver Oblast in Russia. He outlined a process of Define—Analyse—Develop—Plan—Do—Study—Act—leading on to a quality improvement (QI) cyclical process again with planning based on the results of these actions. He showed how the project addressed both content (standards, protocols and guidelines) and process of care (QI approaches, cycles for learning and improvement) issues. Thus developing evidence-based guidelines and standards must be complemented by an assessment then enhancement of the capacity of the system of care to enable the delivery of the improved care. He suggested that traditional approaches to quality have tended to focus too much on content of care and that both aspects were essential in any continuous quality improvement (CQI) project. He stressed that good guidelines need systems that can allow implementation.

The Tver Oblast example represented one of a high external input / labour intensive / high cost project resulting in improvements in team work and a change in culture regarding quality of care. An assessment of the system of care led to changes at all levels including policy, organisation and content of care. It was a demonstration project showing how theory can be implemented in practice. It has led to the production of a quality of care guide which gives guidance in how to define organisation, develop indicators, develop a plan for change and implement CQI cycles. The outcome of the project has been major improvements in (and substantially reduced cost) of regional neonatal services which should be sustainable with local involvement alone. A key change had been the demonstration that through team building and the correct approach it is possible to change systems of care that had hitherto appeared to control those who worked within them.

In the subsequent discussion the extent to which a project with substantial external driving force and specific focus on neonatal care could be transferable to a programme seeking to bring about a general improvement in in-patient paediatric care was questioned. It was considered that the local
involvement in prioritisation and assessment of current level of care was crucial to the sustainability of the programme.

**Approaches to improving quality—**

**the use of clinical audit**

Dr Mulholland presented a personal reflection on his experience working in paediatric care services in developing countries and with WHO. He considered the issue of improving quality at a number of levels (global, national, hospital) and suggested that although the specific issues varied at each level they all had a requirement for data to inform action. He stressed that it was important for the meeting to consider how WHO could help developing countries at a national level to decide how to assess their own services and at a hospital level so that problems can be solved and child outcomes be improved.

He suggested that to complement current WHO CAH activities on developing a manual and pocketbook and on developing guidelines for ETAT and management of the severely malnourished child there was a need for a “diagnostic approach” to identify problems in any particular setting and to direct locally appropriate action. He proposed that this diagnostic approach could identify the hospitals which were performing worst so that priority attention could be given to them. This was important for two reasons—substantial improvement in quality should be possible in these hospitals and, for reasons of equity and ethics, it is appropriate to direct attention first to these hospitals. He noted that the consequence of focusing on these hospitals was that the diagnostic approach must not be sophisticated but simple to implement. It could lead to 3 categories of action—satisfactory / accredit; minor changes; major changes required leading to a programme of future visits and a programme to action (covering such diverse issues such as ETAT, diagnosis and treatment, nursing care / monitoring, staff management, drug and supplies management, record keeping and audit).

A mechanism for data collection was recognised to be very challenging to establish and so a simple routine system focusing on essential basic information was considered essential to develop. It would be necessary to tailor this to whatever is feasible to collect in any given situation. In some hospitals, including most teaching hospitals, a more sophisticated system such as an integrated care pathway (ICP) may be appropriate to introduce. However he stressed that the focus should be on the hospitals with the poorest performance and on the establishment of basic data collection supported by regular (if possible monthly) supervisory visits to review the experience of the last month. The aim should be to start discussions about what to do to improve care and to build teamwork and support in order to identify and implement solutions to problems.

Discussion of these points led to the proposal that the development of a basic diagnostic tool (perhaps based on the 7 country assessment tool) should focus on a few indicators. Some felt that it may be possible to achieve more absolute quality improvement in hospitals which are just above those that perform the worst since it may be more feasible to succeed in implementing change in these hospitals.

It was pointed out that supervisory visits are typically made to small hospitals but that these visits did not include a focus on quality. A tool would need to be developed to promote, guide and foster this dimension of the supervisory visits. Some felt that already too much professional time is spent collecting routine data and that local clinical teams should identify problems and select priorities for action. The importance of this approach is to ensure that all members of the team are involved in discussions about the current care provided and how it can be improved. Action to improve services and solve problems generates the motivation within the team that can be harnessed to establish a data collection system as a subsequent step. Another key challenge is to encourage paediatricians to consider their responsibility as encompassing child health in their region rather than just in their hospital ward.

It was suggested that the basic QI methodology was appropriate to the situation of the worst performing small hospitals with limited human resources but would need to be adapted to these circumstances. Key lessons learned from QI projects rel-
Staff morale as a factor in performance

Dr Molyneux encouraged the meeting not to focus too much on competence to the exclusion of considerations of commitment and motivation. She noted that $e = mc^2$, where $e = \text{excellence, } c = \text{both commitment and competence}$. She drew attention to the major problems with low staffing levels, low salary and lack of career structure in her experience in Malawi.

She shared her own strong feelings about training as a limited response to the problem of poor performance. She felt that external projects focusing on specific areas of practice had detrimental effects on the health system as a whole which counter-balanced the achievements that they might realise in the clinical area which they target. In particular, training held through workshops away from the normal place of work were, in her experience, disruptive to normal clinical services at the staff’s health facilities. In addition, they were typically not supported by adequate supervision to help staff change practice and to check implementation. She recommended that team based training located in the health facility in which the staff worked and followed up by increased supervision was more consistent with the QI principles discussed in this meeting. She suggested that it was more likely to be successful in changing practice and to have an overall beneficial effect on the overall health system. Involvement of paediatric staff from the regional or national level in this supervision would serve to strengthen links between the central and district levels. She identified the ETAT field test training which had been carried out in Malawi as part of the WHO CAH referral care project as an example of how these principles could be applied in practice and of how training should be carried out. She also encouraged the meeting to recognise the importance of pre-service training especially within nursing colleges as a means of improving the quality of paediatric care.

Dr Molyneux set out her own personal set of priorities based on her experience in Malawi:

- develop skills through hospital-based workshops (working with clinical teams)
- improve supervision at all levels
- strengthen nursing training schools
- link NGO and private salaries to a ceiling above government salaries
- strengthen communication between the central and district levels
- question and challenge donor driven short term policies

In the discussion it was clear that there was widespread support for the statements about attention to commitment and motivation. It was stressed that the QI strategy should make an overall status assessment of health practices within the health system and not just focus narrowly on individual competence as measured by knowledge and skills. Some noted that workshops can successfully motivate staff particularly if they focus on teams and where they train non-doctors. It was felt important that any approach recommended to WHO CAH should not only represent the interests of patients (in the development of standards of care) but should also represent the need of health workers (by recognising the importance of motivation and self esteem of staff and the factors that contribute to these). WHO could have a powerful advocacy role in drawing attention to these wider determinants of quality of paediatric care.

South Africa experience with paediatric audit in one province

Dr Malek shared her experience in carrying out a large scale quality of paediatric care project in Mpumulanga province (population of 3 million including 27 hospitals). A diagnostic survey instrument based on that developed for the 7 country study was employed by paediatrician assessors. This included review of records including death records, a questionnaire for the facilities to complete prior to the visit and focus group discussions with the staff. The remit of the visits was broad and covered issues such as policy, supplies, knowledge
and skills of staff, staffing levels and organisation, management and organisation of the hospital and outreach services. The hospital visits took only 2 hours to complete. In addition to the specific recommendations for improvement and action which these structured peer-review visits achieved a number of other outcomes of the project were apparent:

— increased interest and motivation of staff (both those in the small hospital and among the teaching hospitals staff carrying out the survey visits)
— the creation of paediatric support networks which link the various levels, build relationships, create ties and reduce the feeling of isolation felt by small hospital staff
— the development of provincial paediatric QI committee(s) as agents for change
— increased priority given to the need for monthly outreach visits to support continuing professional development and audit

It was proposed that a second visit would be useful to assist local teams with mortality reviews and to develop other aspects of local audit. There is now a proposal that more paediatricians should be appointed jointly by university and state health authorities to teaching hospital posts and that an inter-provincial network should be set up.

Subsequent discussion raised the point that supervisory visits can be helpful for teaching hospital staff to get to know peripheral staff so that their response to future referrals can be informed by their knowledge of them and their working environment. It was agreed that the scale and comprehensive nature of this project (which addressed all paediatric services) was extremely instructive for this meeting to consider. It was encouraging to learn about a positive example of a paediatric quality initiative (albeit preliminary findings) being successful on such a large scale. The development of change agents jointly between the provincial health authority and teaching hospitals, and the creation of a motivated network seemed to be particularly important aspects of this experience. It was suggested that these assessment visits should be used to facilitate the self assessment process and that 2 hours would not be enough to identify detailed problems specific to each hospital. It was recommended that good practice should be identified and acknowledged so that visits did not only focus on problems.

### DAY 2

#### Key quality issues—findings from the 7 country study

Dr. Pierce presented a brief outline of the background to and method employed by the 7 country study followed by a summary of the main findings. This study sought to identify potentially reversible causes of poor quality of care / poor outcomes in 21 hospitals in 7 countries (typically one teaching hospital and 2 district hospitals in each country). It covered a broad range of quality issues including ETAT; in-patient management; knowledge, skills and practices of health workers and support services. It is not appropriate nor easily possible to attempt to summarise the many detailed findings of this study in this report. The study was published in *The Lancet* (2001;357(9250):106–10).

A range of problems were identified in all of these areas with considerable hospital to hospital and country to country variation in the problems encountered. This suggested that an assessment tool would be useful as it would have been inappropriate to apply general problems and solutions to all facilities surveyed. In all instances the quality of care delivered by teaching hospitals was found to be higher than that within small hospitals in the same country. This could be considered to give a useful benchmark of what is achievable in that setting.

Discussion highlighted the fact that ETAT had only received recognition as an important aspect of paediatric care in recent years similar to the delayed recognition as a separate paediatric sub-specialty in industrialised countries. It was identified as an area in which considerable improvement should be possible and should lead to improved outcomes not only among the most sick children who need emergency treatment but also among those who need priority attention for prompt life-saving treatment. It was noted that the quality of care at night...
can be very different to that provided during the day. Another important area that has received little attention and that was highlighted by the study was the importance of monitoring of the progress of the sick child in hospital.

It was felt that there was considerable scope for reducing the 3 day survey period of this research project in any development of an assessment tool which could be applied by health services. One way that this could be achieved would be to require the clinical team to carry out a self-assessment in advance of the visit to help focus the visit on the most important areas.

It was suggested that mortality audits work best in the teaching hospital setting. At the small hospital level it may be more appropriate to focus on the management of near misses or severe cases. The qualitative nature of the assessment tool enabled a comprehensive assessment of services which was in-depth in selected areas but this was at the expense of the precision that a quantitative study can achieve. However the approach of the 7 country study, subsequently adapted and employed in Mpumalanga province in South Africa, was felt to be a very appropriate approach to inform the subsequent development of QI interventions.

Accreditation—the Peru experience

Dr Lanata presented a detailed summary of a QI programme which was been successfully implemented on a very large scale (2,500 health facilities) in Peru (PCMI—maternal and child training programme) and has put into practice many of the QI principles discussed at this meeting. A summary of this presentation is given in the appendix for reference (appendix 2). Dr Lanata began with describing some of the characteristics of the existing MOH training programmes:

— uncoordinated among programmes
— focused uniquely on clinical aspects such as knowledge/ skills
— dominated by the more senior professional staff in urban health services
— not followed by adequate supervision or feedback

He noted that the new approach adopted by PCMI was broader based and encompassed linking the community to the health services and a consideration of the whole health system, including the work environment and the organisation of services. The aim however remained on mortality reduction and improved clinical outcomes. The programme included an assessment of both the supply of health services (organisation and quality of health services) and the demand for these services (communication between the community and the services).

The methodology adopted was described as a "problem-solving teaching methodology". In simplest terms it means that current problems were identified by multi-disciplinary teams who then sought to identify solutions which would meet patient expectations and expressed community needs. It was expected that changes in the attitude and behaviour of health workers (professional, technical and administrative) would result from their team efforts to analyse current practice and identify strategies to improve practice.

A cycle was created that surveyed user satisfaction with services—analysed this with a multi-disciplinary team—used existing data to inform decisions—took action to standardise and improve supplies and then completed the cycle by again considering patient satisfaction with the changed service. Measurement of patient satisfaction required facilities to carry out some simple operational research.

The process involved in standardising clinical practice was an audit spiral, which compared current practice to a series of incremental standards. The principles which were promoted in the clinical areas were:

— primary focus on the patient and their views of the service
— standardised case management
— clear documentation and collation of key clinical data
— focus on explaining treatment of patients and checking understanding
— registration of patients that require follow-up
— attention to reduction of missed opportunities e.g. for immunisation

He described some ways in which training activities had been made more effective:
— holding an “autodiagnosis” workshop in the workplace of the staff to be trained before the training
— ensuring that all staff signed off as having participated in this workshop
— careful selection of staff for training—one requirement was signed participation in the above workshop
— focus training on solving the problems identified by the staff
— identification of common problems across health facilities and shared solutions

Other important aspects of the programme included
— the successful creation of networks
— incremental certification process based on self assessment then assessment against agreed best practice and patient satisfaction with services leading to accreditation (see below)
— linking university and DGH hospitals (e.g. expert paediatricians acting in a supervisory role)

Dr Lanata noted that in Peru the certification process had been essential and had increased motivation, raised public recognition of this issue and led to improved outcomes. The process had led to greatly increased interest in QI, healthy competition between hospitals and the creation of a strong driving agent for change as hospitals wanted to gain public and professional recognition for having a good service. The changes brought about through a clear focus on patient satisfaction resulted in increased demand for services. In Peru this led to increased resources for the hospital. The cost for the overall project involving 2,500 health facilities was USD $2 million per year.

Subsequent discussion raised the issue of how to achieve consistency if individual hospitals set their own standards. It was noted that the main focus was to ensure that all hospitals improved and kept continuing to improve. It was thought that the main perceived benefits for the hospital staff would vary considerably with the setting. In Peru it appeared to be empowerment of nursing staff and increased revenue for the facility. It was noted that this project had successfully applied, on a large scale, many QI principles including those of incremental improvement (what can be done with existing resources), focus on the overall process rather than just on clinical skills, linking assessment to outcomes of care, improving communication with hospitals at different levels and the power of a system of certification as a driving force for change.

The meeting felt strongly that this experience was very instructive and potentially influential and encouraged Dr Lanata to publish detailed descriptions of the process and the outcomes of this programme.

Care Pathways—recording the key data

Dr Molyneux presented her experience over 4 years in developing and using Integrated Care Pathways (ICPs) in a teaching hospital in Malawi. She noted that these now took the form of an ICP for general paediatric care, an ICP for the management of severely malnourished children and an ICP for neonatal care. The ICPs were all based on locally agreed best practice and outlined what to do and when and how to do it. They were designed to follow on from a one page admission sheet which records the main findings on history and examination and to be quick, simple and instructive to complete. The reverse side of each ICP gives details of standard case management guidelines as an aide memoir (see appendix for examples). She noted that these had resulted in
— improved teamwork and communication between nurses and doctors with improved co-ordination of care and improved recognition of the contribution of all members of staff
— better data capture for the purposes of audit and to inform discussions about change to the service (previously doctor and nursing notes had been separate, overlapping, incomplete and often illegible)

— local ownership of results of this process which had led to changes in guidelines

The ICPs had been popular with the staff after an initial period of some months of scepticism. This successful experience has not been replicated in small district hospitals in part due to staff mobility and lack of adequate supervision to reinforce their use.

In discussion it was suggested that many condition-specific ICPs which can focus in detail on important aspects of clinical management would not be feasible in a small hospital. However the more generic ICP described by Dr Molyneux represented more of a structured progress chart which could be used to promote patient monitoring. It was noted that the ICP did not fully replace the nursing records.

Establishing routine records

Dr Brewster highlighted problems with hospital information systems. They were typically

— time consuming to run

— not designed for the needs of clinical staff but rather served public health or disease notification needs

— not operated in a way that gave feedback to users

— not developed in partnership with clinical staff

— unreliable in the data that they contained

— not useful for QI purposes in that they did not record the key information that would be required to assess quality of care

He presented an outline of a simple data recording system which he had found useful in a number of countries in order to understand disease patterns and the differing problems and case management practices at different levels of care (see appendix 5).

Use of an assessment tool and establishing standards in Brazil

Dr Tamburlini shared his experience utilising an assessment tool within 2 DGHs in Pernambuco in Brazil. He noted that there were pre-existing problems with poor participation of hospital staff in quality projects and poor clinical data which did not form a vehicle for assessing current practice or promoting improvements. Typically any previous quality projects had not linked data collection to subsequent action. Particular aspects of the QI approach adopted included:

— involvement of key hospital staff at all stages

— focus on a few key areas (based on an assessment of the “impact” of various problems)

— development of measurable indicators leading to a 3 grade summary score in each key area

— use of an assessment tool similar to that used in the 7 country study but including an assessment of pre-hospital care such as care-seeking, access to hospital and primary health care received

— incorporation of a process of cross checking of data from different sources to check validity of data

— a short time period between assessment, analysis and action

He described the field test of the assessment tool which was used by senior paediatricians with 4–6 hours training. The assessment took place over a 10–12 hour assessment period (1–1.5 hours interview with the hospital director, 6–7 hours in the clinical areas, 1–1.5 hours collating hospital data and 2 hours de-briefing with hospital staff. He noted that this was well accepted by both hospital staff and assessors and that the inter-evaluator agreement was good. The assessment led to a wide variety of recommendations for action. He concluded that this tool showed good potential for use in QI projects for either external (accreditation) or internal (self-assessment) use and could usefully form part of a national QI strategy. The tool could readily be adapted making it shorter / longer or simpler / more complex depending on the local circumstances (see appendix 4).
Discussion following the presentation brought forward the suggestion that the tool was perhaps not sufficiently detailed to identify specific interventions that should be employed but rather formed the basis for the subsequent QI process in which the local team responded to the findings. A detailed self-assessment by the local clinical team before the assessment was considered to be an essential element. It was suggested that the tool was very structured and it would be important as part of the assessment to allow the local team in the hospital opportunities to identify their own problems and priorities and to give appropriate emphasis to these observations. It was noted that clear criteria and standards are required for this approach to work.

There was clear support for the further development of this tool by WHO CAH so that it could be made widely available. It was suggested that the awareness of problems with quality of care formed a starting point for action. It was considered important to complement this with guidelines on how to institute a QI process to respond to the findings.

**Preservice training**

Dr Lejnev reminded the meeting that pre-service training was as an essential element of improving quality of care. He outlined the WHO CAH approach to supporting pre-service training in developing countries which encompassed both curricular change and development and improvement of the content of paediatric teaching. He noted that such initiatives represented long term efforts. He mentioned a range of activities from working to improve the technical content and relevance to developing countries of standard paediatric textbooks through to working with selected medical schools in planning their curriculum. He stressed that it was essential to take into account the capacity of the health system within a country to deliver paediatric quality when deciding what level of care to teach since there were problems associated with adopting (unattainable) standards of practice from wealthy industrialised countries. It should be recognised that such standards might be not appropriate, not feasible and not the “best” in that every setting. Dr Lejnev mentioned work that was on-going to develop a tool to assist in the process of assuring teaching quality.

Discussion following this presentation highlighted the need to focus particularly on non-doctor pre-service training. It was noted that in South America there were examples of ranking of Universities by teaching quality which were made available to the public and of Ministries of Health specifying their needs in training of doctors or other health workers to medical schools with related quality criteria for this training.

**Ways to improve in-patient care—the Kilifi experience**

Dr English presented his experience as a paediatrician in Kilifi, Kenya. He stressed that standards and therefore appropriate quality criteria were very variable and dependent on setting and on aspects such as staff numbers and availability of supplies. He suggested that any consideration of quality should encompass a broad range of issues such as standard of case management, patient satisfaction with services, movement through the health system and safety and dignity in in-patient care. He...
identified the following major barriers to improving quality of paediatric care:

— understaffing
— overcrowding
— disillusionment
— poor supplies
— poor management of services with lack of priorities
— poor training of staff
— fear of change—fear of confronting real problems

He expressed reservations with previous comments about defining quality in a way in which there are various levels and such that all facilities can be praised for some good practices. He suggested that there was an absolute minimum standard of care and of the factors (noted above) that determined quality such as staffing levels. When quality of care falls below this minimum standard then the appropriate action is advocacy to draw attention to the problem and to challenge the health system. He stressed that there must be a national or regional commitment to improve quality of services before any assessment tool or QI process is employed. He suggested that there was a clear need for more health services research in this area to identify the most effective and efficient quality approaches to improving quality of paediatric care.

Discussion following this presentation reinforced the idea of a minimum standard below which care should be regarded as unacceptable and there was agreement that this should lead to advocacy for action. All QI initiatives should be goal based—focused on improving quality of care. Change is not an end in itself but some intermediate points of improvement are helpful in order to try to stop staff feeling disillusioned and de-motivated by the assessment aspect of the QI approach. The focus should be on trying to improve at all levels—all facilities moving forward rather than some “failing” and some “passing”. The standard should be the best that can be done in the circumstances. Thus any assessment tool would require a tiered approach but with a defined minimum level of care that health systems should be expected to respond to. This was the philosophy that underpinned the WHO CAH guidelines on Management of the child with a serious infection or severe malnutrition and some of the development work in pre-service training (MEDED) which chose to not adopt standards from industrialised countries.

The need for national or regional commitment to improvement was consistent with earlier discussions about the importance of leadership and a driving force for change. This leadership could encompass championing the need to improve resource allocation where this is a major issue. It was noted again that change leading to improvement was a key motivating factor. It was suggested that training workshops should end with a focus on practical ways in which quality could be improved in the setting of the participants.

### Involvement of national paediatric associations

Dr Muhe noted that the number of paediatricians and therefore the ability to form effective national paediatric associations varied depending on the country, with many African countries having very few paediatricians. National paediatric associations tended to focus on their own agendas which typically addressed professional needs rather than child health needs. These associations may be involved in promoting high standards of professional practice, advising in planning and policies in child health services, encouraging research on child health issues and acting as a forum for an exchange of ideas. There is a clear need to involve these associations in advocacy to improve child health services and to highlight the problem of poor and in some cases worsening quality of child health services.

The International Paediatric Association, the various regional paediatric associations and organisations such as Child Advocacy International could be approached to seek their support. Examples of good practice exist such as in South Africa where paediatricians have a provincial responsibility for child health. There is a need to identify dynamic paediatric leaders to become involved in their national associations and to give direct support to quality initiatives in their country. It was suggested
that membership could be widened by admitting non-medical members.

**Use of a manual / pocketbook of paediatric care**

Dr Campbell described the background to and aims of the Referral Care Working Group and their work in developing the manual *Management of the child with a serious infection or severe malnutrition: guidelines for care at the first referral level in developing countries*. He described the content of the manual and noted that this could be used as a statement of best practice; as a basis for a set of quality standards for quality initiatives and as basis for developing job aids. He noted that work was in progress to develop a pocket book based on these guidelines and a student manual (which includes learning objectives, a summary of the main recommendations and some background technical justification of the guidelines) which could be used in the pre-service training of doctors and nurses. He presented the plans for dissemination of the manual through WHO and Healthlink mailing lists and other WHO, IMCI, UNICEF and relevant NGO channels; through paediatric journals and paediatric association conferences and, for the student manual, through the IMCI preservice initiative and MEDED conferences. He mentioned early discussions regarding trying to carry out an evaluation of the impact of different methods of introducing the manual.

Suggestions made in the discussion included piloting a limited version of the pocketbook before making a commitment to large scale printing and including a section on audit as a means of encouraging local action and acceptance of audit as a means of improving quality of services. It was again suggested that in addition to the production of a manual, pocketbook and student manual WHO CAH consider preparing “organisational guidelines” for health services wishing to adopt a quality improvement approach. This would include some relevant background on the key principles of quality improvement and practical guidance on how to apply these (including an assessment tool, which can be modified for use).

**Day 3**

**GTZ experience with quality assurance**

Dr Huss shared experience with a number of QI programmes supported by GTZ. He highlighted the need to foster a quality culture which encompassed:

- team-work (in all activities from priority setting to problem solving),
- participation as a principle,
- empowerment of the lowest level of health workers (to improve their health services),
- identification with and empowerment of clients,
- improved communication between different levels of the health services
- and community participation in shared administration of health services.

He stressed the need to orientate the service to the user’s perspective. He considered QI or quality management as a holistic concept embracing all of the above principles. He then shared his experience from a project in San Salvador (and to a lesser extent Tanzania, Pakistan, Guatemala and Benin) which illustrated some of these points. He mentioned that the aim should be to instil problem-solving techniques (which he regarded as representing the good practices of good leaders) into the health system. He agreed with previous participants that leadership was vital to achieve and maintain improvements. He suggested that the existing European Foundation of Quality Management guidelines could form a useful basis for WHO CAH or MOHs interested in QI to consider. He mentioned that in his experience acceptance of the basic assessment—improvement quality cycle required a change of culture within health services. He advised that Ministries of Health should involve NGOs, parastatals and other partners from the outset in any new major quality initiative.

Discussion following this presentation focused on trying to identify internal driving forces (when external funding from an NGO or bilateral agency was not present). One suggestion was to develop an as-
assessment tool to help set priorities and identify key issues on which to take action in the expectation that positive results in terms of empowerment of those involved and health improvements may lead to a strong internal driving force for further action.

**Reports from Working Groups**

**Group A—approaches to assessment of the quality of paediatric care**

This Working Group focused on a consideration of an assessment tool and made the following observations.

A tool to assess quality of care at the hospital level is needed. This should be appropriately linked to efforts to improve quality of care with respect to IMCI guidelines. The link between assessment and prompt action is considered essential. The focus should be on what needs to be improved rather than a demoralising judgement cataloguing failures. Actions by health workers, regional or national authorities and by communities should be separately identified. An example of a situation in which a national response would be appropriate would be where common problems across several hospitals are identified.

The procedures and the assessment tool used in Brazil seem appropriate as a starting point although they need refinement. Any refinements should be made with the objective of identifying categories that correspond to specific interventions. Examples of adaptations which should be considered for incorporation include the inclusion of a self-assessment step before the assessment visit, examination of medical records and a incorporation of patient / community perspective. The use of the assessment tool should be linked into to a QI process.

It is important that appropriate instructions are prepared which guide users on how to use this tool within a QI framework and how to use the tool correctly. This should include guidance on how to adapt the tool (e.g. select appropriate methods for areas that are added) and how to select and prepare those who will act as assessors (including attention to development of and possibly training in facilitator skills).

**Group B—formal interventions**

This Working Group focused on a consideration of the most appropriate response to the problems identified by the assessment process and made the following observations.

It was concluded that there was a need to describe a framework which would integrate the existing IMCI activities into a broader quality improvement approach. This would involve a shift in emphasis from improving individual performance towards improving health facility functionality. The response to the problems defined by the assessment tool should be seen as a QI approach and specific interventions (such as training to improve skills and knowledge) should be placed in context within that rather than being seen as a full response in themselves. The QI process was best considered as a step-wise team-based problem-solving process of improvement starting at various base levels but all moving upwards through a number of quality levels. The Group found it helpful to consider two linked QI cycles. Firstly an internal QI cycle within the clinical team in a health facility which focuses on

- building then working within a team
- gathering key data,
- adapting and adopting standards,
- problem solving
- adopting a more explicit patient or caretaker orientation and responding community views / needs

The concept of team-based problem solving is a central aspect of the QI approach discussed. This approach could be applied at all levels—hospital, health centre and community. It was considered that any setting with more than 10 health workers could adopt this process. In smaller units it would be essential to form supportive networks of units within a district.

Secondly an external QI cycle based typically in the Ministry of Health which focuses on

- resource allocation
- development of appropriate national standards
— training
— supervision
— equipment and supplies
— certification (to a set of incremental standards)
— political support
— accreditation

Assessment of current practice as discussed by Group A was considered to be an appropriate entry point to QI activities. There needs to be a shift in emphasis from “what is the current clinical practice?” towards a focus on “what is the current system of care?”.

The importance of a driving force for change was repeatedly highlighted. This may vary in different settings. It would be usual to require high level MOH / political commitment to the QI process. In some settings closer involvement of the communities involved may be a strong driving force for change. The identification of “local champions” is of central importance, where this is possible. The Group recognised the important resource which existed in national IMCI task forces and suggested that it would be important to introduce these changes in approach through this task force.

The balance in the relative support given to supervisory as compared to training activities was thought to be inappropriate (more focus required on supervision). A model of supervision that was based on participatory observation, problem solving and support within a QI framework was identified as appropriate.

There was discussion of what represented the most appropriate incentives to drive the change process. These included

— linking quality to funding
— certification of hospital services (and public and professional recognition of improvement and achievement) either nationally or internationally (the Group felt that there were some important differences to the concept of accreditation)
— linking future training or other interventions to evidence of local teamwork to address quality of care problems and of service improvement

Networks should be encouraged to share experiences—local networks at the district levels bringing together health workers in small units (of 10 or less staff—see above) and regional or national networks linking different levels of care. It was considered that much of the improvements achieved by QI initiatives are often brought about by improved co-ordination of care.

**Recommendations for WHO CAH to consider**

**Raise awareness of the importance of quality of paediatric care**

The 7 country study was considered to represent a very significant study highlighting the importance of quality of paediatric care in developing countries. It was recommended that this experience be published and used by WHO CAH to raise awareness of this problem and to underpin new initiatives to address the problems identified. It was also recommended that support should be offered to Dr Lanata to ensure that the PCMI experience is published in full and presented at major international meetings. WHO CAH should also consider supporting the proposed follow-on meeting on quality of child care in developing countries to be held in 2001 in South Africa. Advocacy by WHO CAH should seek to build national commitment to supporting QI projects in the field of child health in developing countries.

**Give more emphasis to IMCI actions to improve child health systems**

Although the concept of IMCI is appropriately broad it was felt that in practice there needs to be a shift in emphasis from improving individual performance to improving the performance of the organisation (the health facility). More emphasis is therefore required on the IMCI component on improving health systems, especially in hospitals. This could be based on the QI approach discussed at this meeting. Promotion of this approach would also serve as a vehicle to bring together WHO CAH and other WHO programmes dealing with techni-
cal components of child health and WHO programmes (within the same cluster) focusing on the district health system.

**Recognise and embrace the QI approach as a vehicle to improve child health services**

The QI approach can be considered to have the following key elements set within linked internal and external QI cycles (as described above):

- team based and participatory
- based on assessment of current performance in relation to accepted best practice
- problem solving
- seeking incremental improvement in quality
- patient orientated and responsive to the views of the patient / caretaker / community

It was considered that there was sufficient positive experience with this approach in developing countries to justify WHO CAH actively exploring how these methods could be linked to IMCI activities and further assessed in a range of developing countries.

**Advocacy for the introduction of quality of paediatric care initiatives within national IMCI activities**

IMCI currently enjoys the strong support of many developing country MOHs and has a very good reputation as a sound technical approach. IMCI programmes are therefore in a strong position to advocate and lead new initiatives aimed at strengthening child health systems as outlined in this report. The influence of WHO is considerable in developing countries and if WHO CAH were to develop practical tools to enable these QI processes and promote this approach in the context of improving child health systems then this would be a powerful means of raising the awareness of the importance of quality of care and of making MOHs receptive to these approaches. This is likely to be a more effective approach than one that seeks to establish external assessment or accreditation of hospitals within developing countries.

**Consider the following specific recommendations for further WHO CAH action**

It was recommended that WHO CAH consider the following actions

- further develop and field test the assessment tool for use in a QI programme aiming to improve child care
- describe the QI process in the context of IMCI and consider how WHO CAH could support national MOHs in adopting and implementing this approach
- set up a few pilot or demonstration projects using this approach which incorporate an evaluation element
- continue with the on-going Referral Care Project activities disseminating the manual, developing a pocketbook and student manual and field testing and revising ETAT guidelines based on feedback and experience

**Consider relevance of these issues to on-going IMCI activities**

WHO CAH should consider including some pre-training activities immediately before IMCI training courses such as the formation of local teams from both health centres and hospitals who meet to discuss local problems (“auto-diagnosis”) before the training and link this to a problem solving session addressing the issues that the team identified during the training. It was recognised that elements of this exist in IMCI materials but this could be formalised—e.g. ensuring that all members of the team participated in and signed off on the problems identified. There was strong support for WHO CAH activities to strengthen supervision and support after training. It was thought that the above locally-identified problems could be addressed at these post-training and supervisory visits.

It was considered important to consider the whole child health system in any evaluation of specific interventions. This should be noted when interpreting results from IMCI evaluation instruments.
# APPENDIX 1

## Agenda and list of participants

### Agenda

<table>
<thead>
<tr>
<th>■ DAY 1</th>
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<tbody>
<tr>
<td>9:00–9:30</td>
<td>Introduction to the meeting: objectives of the meeting and organisation.</td>
<td>Martin Weber</td>
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<td>Introduction of the participants</td>
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<tr>
<td>9:30–10:00</td>
<td>Key quality issues—findings from 7 country study</td>
<td>Nate Pierce</td>
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<tr>
<td>10:00–10:30</td>
<td>Discussion</td>
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<tr>
<td>10:30–10:45</td>
<td>Coffee</td>
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<tr>
<td>10:45–11:30</td>
<td>Review of published experience on quality of inpatient care</td>
<td>Giorgio Tamburlini</td>
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<tr>
<td>11:30–12:15</td>
<td>WHO/OSD approaches to quality of inpatient care</td>
<td>Ferdinand Siem Tjam</td>
</tr>
<tr>
<td>12:15–14:00</td>
<td>Lunch</td>
<td></td>
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<tr>
<td>14:00–14:45</td>
<td>The Quality assurance project</td>
<td>Diane Silimperi/Rashad Massoud</td>
</tr>
<tr>
<td>14:45–15:30</td>
<td>Determinants of health worker performance</td>
<td>Alex Rowe</td>
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<td>15:30–15:45</td>
<td>Tea</td>
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<tr>
<td>15:45–16:30</td>
<td>Staff morale as a factor in performance</td>
<td>Liz Molyneux</td>
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<tr>
<td>16:30–17:00</td>
<td>Approaches to improving quality: the use of clinical audit</td>
<td>Kim Mulholland</td>
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<tr>
<th>■ DAY 2</th>
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<tbody>
<tr>
<td>9:00–9:30</td>
<td>Summary of day 1</td>
<td>Harry Campbell</td>
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<tr>
<td>9:30–10:00</td>
<td>Accreditation: the Peru experience</td>
<td>Claudio Lanata</td>
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<tr>
<td>10:00–10:30</td>
<td>Care pathways—recording key data</td>
<td>Liz Molyneux</td>
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<tr>
<td>10:30–10:45</td>
<td>Coffee</td>
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<tr>
<td>10:45–11:15</td>
<td>Establishing routine records</td>
<td>David Brewster</td>
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<tr>
<td>11:15–11:45</td>
<td>South African Experience with paediatric audit in one province</td>
<td>Elmarie Malek</td>
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## IMPROVING QUALITY OF PAEDIATRIC CARE IN SMALL HOSPITALS IN DEVELOPING COUNTRIES

<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
<th>Presenter</th>
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<tbody>
<tr>
<td>11:45–12:30</td>
<td>Use of an assessment tool and establishing standards in Brazil</td>
<td>Giorgio Tamburlini</td>
</tr>
<tr>
<td>12:30–14:00</td>
<td>Lunch</td>
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<tr>
<td>14:00–14:30</td>
<td>Brief presentation of tool used in 7 country study discussion of its possible use as an audit tool</td>
<td>Antonio da Cunha</td>
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<tr>
<td>14:30–15:00</td>
<td>Discussion of other potential ways of promoting improved quality of paediatric care: preservice training</td>
<td>Ivan Lejnev</td>
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<tr>
<td>15:00–15:30</td>
<td>Ways of improving inpatient care: the Kilifi experience</td>
<td>Mike English</td>
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<td>15:30–15:45</td>
<td>Tea</td>
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<tr>
<td>15:45–16:15</td>
<td>Involvement of national paediatric associations</td>
<td>Lulu Muhe and others</td>
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<tr>
<td>16:15–16:45</td>
<td>Potential other ways: improved access to appropriate management guidelines—use of manual / pocketbook</td>
<td>Harry Campbell</td>
</tr>
<tr>
<td>16:45–17:00</td>
<td>Introduction to group work on day 3</td>
<td>Severin von Xylander</td>
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### DAY 3

<table>
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<tr>
<th>Time</th>
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<th>Presenter</th>
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<tbody>
<tr>
<td>9:00–9:30</td>
<td>Summary of day 2</td>
<td>Harry Campbell</td>
</tr>
<tr>
<td>9:30–10:00</td>
<td>GTZ experience with quality assurance</td>
<td>Gottfried Huss</td>
</tr>
<tr>
<td>10:00–12:00</td>
<td>Group work: Discussion to define options for WHO CAH to consider as programme approaches to promote improved quality of referral care paediatric services Group A: Approaches to the assessment of the problem Group B: Formal interventions</td>
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<tr>
<td>12:00–13:30</td>
<td>Lunch</td>
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<tr>
<td>13:30–14:30</td>
<td>Presentation of group work</td>
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<tr>
<td>14:30–15:00</td>
<td>Summary and closure</td>
<td>Martin Weber</td>
</tr>
</tbody>
</table>
**Participants**

David Brewster, Darwin, Australia  
Harry Campbell, Edinburgh, Scotland  
Antonio da Cunha, Rio de Janeiro, Brazil  
Mike English, Kilifi, Kenya  
Gottfried Huss, Eschborn, Germany  
Claudio Lanata, Lima, Peru  
Elmarie Malek, Witbank, South Africa  
Rashad Massoud, Bethesda, USA  
Elizabeth Molyneux, Blantyre, Malawi  
Lulu Muhe, Addis Ababa, Ethiopia  
Nate Pierce, Baltimore, USA  
Alex Rowe, Atlanta, USA  
Diane Silimperi, Bethesda, USA  
Giorgio Tamburlini, Trieste, Italy

**WHO staff**

John Clements, VAB  
Mercedes de Onis, NHD  
Munir Islam, RHR  
Kim Mulholland, VAB  
Robert Scherpber, TBS  
Ferdinand Siem Tjam, OSD  
Jelka Zupan, RHR

Ivan Lejnev, CAH  
Shamim Qazi, CAH  
Hans Troedsson, CAH  
Severin von Xylander, CAH  
Martin Weber, CAH
APPENDIX 2

The Maternal and Child Training Program – PCMI

Introduction

The maternal and child training program (PCMI) is one of the most important components of Project 2000, a project of the Peruvian Ministry of Health (MOH) and the United States Agency for International Development (USAID). It was implemented by “Consortio Esan” a consortia of four Peruvian institutions selected after a public competition, headed by ESAN, a prestigious business school in Lima; the Instituto de Investigación Nutricional, a research non-governmental organisation; the Movimiento Manuel Ramos, a non-governmental organisation dedicated to protect women’s rights; and the “San Fernando” Medical School of the “San Marcos” National University. Esan Consortia worked under the supervision of CARE-PERU, Pathfinder International, and Development Associates, institutions in charge of technical assistance of Project 2000, supported by USAID.

The PCMI program recognised that previous training activities at the MOH were focused on clinical aspects of care and neglected key managerial and logistic aspects which are essential for a service to provide good care. The training activities were also uncoordinated and did not address community and patients’ views and complaints. Supervisory activities did not include performance-related indicators and almost none of the individual health services used data to make decisions. The MOH health information system was based on routine reporting of data that was sent to the regional and central levels of the MOH without any feedback or local use. National programs disseminated several standard protocols but very few knew about or used them.

Aims and objectives

The overall aim of the PCMI program was to contribute to the reduction of maternal and perinatal deaths.

The objectives of the PCMI program were:

- To improve the quality of the work environment and the organisation of maternal and child services
- To improve the quality of maternal, perinatal and childcare.
- To improve the relationship between the health services and their patients and community.

Conceptual Framework

PCMI concentrated their efforts on improving two main areas within health services:

1. To improve the organisation of health services, by implementing a quality assurance system as described below; and

2. To improve the quality of care by improving the user-provider interaction, the delivery of information, the registry and follow-up of high risk patients, the integration with related services, and the technical competence of all providers of maternal, neonatal and perinatal care, such as general physicians, Obstetrics and Gynaecology specialists, midwives, and nurses.

The PCMI expected to obtain qualitative changes in the way services were produced and provided, which in turn would improve the utilisation of health services, and indirectly affect the demand for services. However, the PCMI also included strategies to increase the demand of health services in a more direct way by promoting a closer link between services and patients, and between services and community health workers and traditional birth attendants in areas where those two health providers played an important role.
Methodology

Training approach

PCMI selected the problem-solving methodology, applied by multidisciplinary teams and focused on discussion of recently observed events in the clinical service, as the main educational tool. When the teams were not able to solve the problem by themselves, they requested help from the local health authorities, referral hospital or the central level of the MOH where other components of Project 2000 responded with specific training packages.

Intervention strategies

The PCMI intervention strategies comprised:

- establishing a quality assurance system in each of the participating health facilities,
- establishing a training network compatible with a continuous quality improvement process,
- establishing an external monitoring and supervision system.

However, the PCMI strategies would not have been successful without a simultaneous intervention on the political and formal context of the project. Some of the essential activities for each of these strategies are described in the following paragraphs.

Political context

1. PCMI Co-ordinating Committee. This was headed by the General Director of Health Services and with participation of the Directors of the National Health Programs related with child and maternal health. This committee was to play a key role in extending PCMI to the rest of the country. It also gave PCMI the political backing, as well as the visibility that was required for its success.

2. Collaborative Agreements signed with Regional Health Offices. Collaborative agreements were signed with all participating health regions. Project 2000 organised annual meetings with the participation of all regional Directors and their key staff where they were informed of the progress made in all aspects of project activities and consulted for future developments.

The Quality Assurance System

PCMI required the following components to be introduced in each participating health facility (figure 1):

1. A multidisciplinary team to be in charge of quality improvements in the health service or facility was created, with members truly committed to their services or institution. Most teams included a mix of persons with different professional backgrounds, expertise, strengths, leadership, and power. The teams worked independently but in coordination with the official power structure of the organisation and held meetings at least twice per month. PCMI required them to keep a book where all meetings were recorded. The mandate of these quality teams was to be in charge of implementing and monitoring the strategies to improve the quality of care in the facility, which would allow them to be accredited. They discussed a series of problems (clinical, logistic and managerial) applying problem-solving methodologies to identify solutions that could be implemented with existing resources.

2. Use of existing data to make decisions. PCMI promoted the use of the data already being col-
lected to produce reports to MOH vertical programs. In addition, the PCMI promoted the use of the Perinatal Information System (SIP) which included a self-teaching tutor that guided in the computer how to use the SIP and do several types of analysis. PCMI required that data generated by the health facility were presented and discussed monthly by the majority of service members. The decisions taken needed to be written in the quality team record book. Many health facilities produced data including trends over time of selected indicators that were displayed to the public in bulletin boards. An additional source of data included results of operational research studies done by each institution.

PCMI developed a list of essential drugs, supplies and equipment. Equipment needed to be regularly checked to assure its proper functioning. Most of participating health facilities made better use of the existing resources by implementing different changes such as reallocation of available equipment for emergencies, or continuous monitoring of the drugs available in the delivery room.

4. Standardised Care. PCMI asked services to standardise the care given to all mothers and children, and to expand the discussion from diagnostic and therapeutic issues to all aspects of care. To achieve this, the following strategy was proposed to the quality teams:

a. Each maternal and paediatric service needed to select and prioritise three routine and three emergency conditions seen in their facility that they wanted to standardise in the next 6 month period.

b. All professional and non-professional staff were asked to describe the current practice of care given to the selected topic, describing all steps involved since the patient crossed the facility's door until the patient left the facility, including diagnostic and therapeutic steps. Particular attention was focused on variants of care given by doctors who were not specialists.

c. Variations existing in the current practice and pathways of care were contrasted with a standard protocol promoted by the MOH or the one selected by the chief of service or the most knowledgable doctor (when no national norms were in existence).

d. The group then reached consensus on which was going to be an improved practice and pathway of care that all participants agreed to implement.

e. The members of the group then observed themselves as well as their peers when the next patient (or patients) with the discussed pathology arrived to the facility.

f. The group met two or three times to discuss the observations of practice and to introduce modifications in practice. This was repeated two or three times until the group felt that everybody was applying the agreed protocol.

g. Once the group felt that the care was standardised, only then the last version of the agreed protocol and standard of care was printed and distributed. This printed version was used as a reminder to the staff, but most importantly, as a teaching tool for newcomers used by any service member, since all knew it.

h. The next selected pathology was then discussed and standardised, repeating these steps.

Not all facilities applied these steps, but they use some of them in their efforts to standardize their practice.

To improve patient satisfaction
A key element in PCMI process was to request participating institutions to measure, discuss and introduce changes that may eliminate or diminish the main reasons of patient's complaints. This provided a very strong and enduring driving force for changes within health facilities. Many facilities implemented a series of suggestion boxes, surveys to interview patients, surveys of households around the health facility, group discussions with mothers and suggestion boxes for staff members.
Implementing a Quality Assurance System

1. Selection of National Training Centres in Lima.

2. Selection of Hospitals and Health Centres candidates to become PCMI regional training centres.

3. Training of each Training Hospital (TH) and Training Centre (TC)

The following process was implemented:

a. Sharing the vision and developing an initial work plan. Directors of each health facility that was going to participate were asked by the National Health Service authority to organise a workshop following the guidelines prepared by PCMI. PCMI created statements describing ideal visions that were presented and discussed. The group was asked if they shared the vision and what they could achieve. A work plan was produced for each quality domain proposed by PCMI. After that exercise was completed, the group selected one doctor and one nurse or midwife to be trained. The professionals thus selected were highly motivated and committed and had the support from their services, with a very clear idea of their needs. In many facilities, it was the first ever meeting where everybody had an option to speak out about the current situation and possible solutions.

Training TC and TH representatives in Lima.

The training period in Lima lasted 3 weeks, half that period was spent in one of the larger hospitals and the other half in one of the three smaller PCMI National Training Centres. Trainees learned the most important component of PCMI training: how to conduct problem-solving sessions based on recently observed events. Key issues like community participation, how to solve power conflicts and use negotiating tools, clinical management of malnourished children, nutritional issues in pregnancy, etc were discussed. There were three additional components on how to use the SIP information system, how to improve their initial work plan and the implementation of a “quick and dirty” research project that they could also do in their hospitals or health centres.

4. Accreditation of TC and TH centres. The accreditation was conceived as an evaluation to determine if institutional resources (human and material) were organised to provide good quality of care. For health facilities, the accreditation was designed as a mechanism to stimulate and motivate the staff to participate in PCMI activities, and to recognise the efforts and achievements obtained by them, including obtaining public recognition. The PCMI accreditation process was designed as a progressive level of quality, requiring health facilities to be accredited on level 1 (lower standards, defined as an achievable goal not too far from where they were) and then be re-accredited 12 to 24 months later (according to the speed of improvements) on level 2 (with higher standards), and later on level 3 (with even higher standards and many more variables to evaluate) and so on, so staff were always motivated to keep improving quality.

The following steps were taken to design the accreditation system:

Definition of Quality Standards. Instead of naming the process accreditation, a different term was chosen, “qualification”, to separate the PCMI process from a hospital accreditation program of the MOH, which was mainly based on infrastructure and organization characteristics.

a. Self-Evaluation. PCMI considered that the accreditation process needed to be voluntary and that all participating institutions should be able to be accredited. Health facilities were asked to implement the self-evaluation when the quality team considered that they were ready. If the results of the self-evaluation indicated some persistent deficiencies, further improvements were done until the results were satisfactory. Then the visit by the evaluators was requested.

b. Methodology. The methodology to measure the standards on each facility included qualitative and quantitative methods

c. Evaluation. A team of two PCMI supervisors...
spent between 3 to 4 days on each health facility.

d. Accreditation Criteria and Process. All five categories of the accreditation process needed to be approved to accredit a health facility. After discussing all these results, the following decisions were taken:

i. The health facility was accredited as a PCMI regional training centre or training hospital

ii. The health facility was pre-accredited as a PCMI training centre or hospital with full accreditation dependent on successful resolution of the few outstanding deficiencies

iii. The health facility was not accredited and a full evaluation would need to be repeated after two or three months

e. Accreditation Public Ceremony and Certificates.

f. Re-accreditation. The accreditation system developed by Consortia ESAN required a process of continuous re-accreditation, with new and more challenging standards.

5. Training of Community Health Workers and Traditional Birth Attendants. PCMI proposed that health facilities should look for ways to establish a communication system with the community, to discuss ways to identify high-risk pregnancies and obstetric and neonatal emergencies so they could be rapidly transported to the appropriate health facility. It was proposed that those representatives would be community health promoters (CHP) and traditional birth attendants (TBA).

Training of regional health facilities by certified Training Centres and Hospitals

Once each health region had their regional hospital (TH) and at least one peripheral training centre (TC) accredited, they were ready to start training their regional health facilities. A workshop was organised at which a Regional Training Plan was elaborated.

Evaluation and results

The evaluation system developed for PCMI included:

- A baseline and final impact evaluation
- A baseline, mid-term, and final process evaluation
- The PCMI supervision and accreditation process.
- An anthropological study on a sample of health facilities

Baseline Survey Evaluation

This showed that the quality of care given to mothers and children was appropriate in some variables but not in others. Particularly poor were areas related with nutrition evaluation and counselling, the use of health card and visual materials, the quality of the interaction between health providers and patients, particularly between non-professional staff with patients (cashiers, medical record clerks, etc). No systems existed to identify and assure follow-up actions on critical patients. Clinical services did not co-ordinate between them and health professionals did not meet between them to discuss how to improve the quality of care given and to solve existing problems. The quality of the medical records was poor. The majority of maternal deaths and an important proportion of child deaths occurred more than 24 h after admission. In the majority of maternal deaths and a third of child deaths a significant delay existed in initiating the procedures or treatment and/or the admitting diagnosis missed the diagnosis associated with the cause of death. Motivation was low and no system existed to motivate health workers.

Results

All variables selected for the accreditation in each of the five PCMI quality areas improved over time, reaching its highest level at the time of the final accreditation visit. The differences were highly statistically significant. Some variables improved smoothly over time, like team work or standardi-
sation of care, while other groups of variables, like patient’s satisfaction, seem to have had its greatest improvement prior to the first accreditation attempt, suggesting to be areas more resistant for an initial improvement. These improvements were quite striking, compared with previous experiences in Peru. More importantly, these improvements were also reflected in other groups of variables that were not selected to be part of the initial accreditation evaluation, as well as in many indicators that were easily recognised by any person visiting PCMI health facilities as well as by patients. Anecdotal information captured during supervisory visits have indicated that in most PCMI centres there have been an impressive increment in the demand for care, as well as in the income generated by the hospital or health centre, as predicted in the PCMI conceptual model. Some hospitals went from 50-60 deliveries per month, to 150–250 deliveries, which created a series of managerial problems. Outpatient visits for paediatric or prenatal care had similar increases. It became evident that the PCMI process has yielded impressive results, with more satisfied patients and health personnel being quite excited and happy with their work and results.

Preliminary results from the last DHS survey, as well as from the analysis of the regular health information system of the Peruvian Ministry of Health has confirmed these results, showing a trend towards a difference in the Project 2000 regions as compared with the rest of the country, including a reduction in maternal mortality, while no reduction has been observed between 1996 and 2001 in health regions that did not participate in Project 2000 (Lanata C, Butrón B, Espino S et al. La experiencia del PCMI. Lima: Ministerio de Salud, 2001:107 páginas). The preliminary findings of the anthropological study currently underway, have also identified permanent and significant changes in the way health professionals’ function in health facilities that have participated in PCMI, as compared with those who did not, which have been maintained for more than a year after the initial accreditation.

Conclusions and recommendations

PCMI has been the most successful training experience in Peru, and probably in any developing country. The changes observed in the quality of care not only in the training centres, but also in the network of health services, the motivation achieved in health personnel at all levels, the satisfaction of patients and their increased demand and use of health services, and the impact on maternal mortality are significant achievements, never seen as a result of a training strategy in Peru. For many it has been a surprise that these achievements have been obtained without using any sort of traditional training methods or any formal training sessions where a particular topic was presented to health professionals in a structured way, as it is currently done with the Integrated Management for Child Illnesses (IMCI) training package, for instance. If any, the problem solving methodology has been the main focus of PCMI training activity. With this tool, health professionals, above and beyond the few individuals initially trained by PCMI, were able to solve most of the problems observed with their quality of care, including the management of maternal and neonatal emergencies. These results indicate that health professionals in countries like Peru are not lacking a source of knowledge or information to improve their quality of care for the standards selected for this first accreditation (it may be different for more complex criteria). In fact, most health professionals in Peru have participated in several training courses in the past, many promoted by national programs of the MOH. However, they have never used this knowledge in their practice and health services. This is most likely due to the fact that all previous training efforts have assumed that the lack of knowledge was the main factor behind a poor quality of care. In fact, PCMI indicates that is not the lack of knowledge but, more importantly, the quality of the work environment that determines the quality of care. If health professionals and supporting staff are given an adequate work environment, with open participation of all persons involved in the decision-taking process, they are given a challenging objective to be achieved, and the mechanisms exist for obtaining public recognition of the efforts made, changes do
occur. It has been impressive to see how these changes have happened in health facilities that have underpaid personnel (as compared with other health providers like the social security administration), with minimal resources and equipment, in many cases understaffed, and with many of the selected health facilities with very low morale and a history of a series of problems in the past.

Training in clinical problems is important but as an aid, and should be given mostly to those individuals who have identified their training needs as a consequence of problem-solving activities in their health facilities. Only then training will have a direct impact on the quality of care given in a health facility. PCMI experience has clearly indicated that it is time to move away from traditional training programs and rather develop interventions that improve the management and provision of services, like PCMI, where training in clinical problems should be a component of the strategy, if needed, and not the main focus.

There have been several aspects that were problematic in the implementation of PCMI. To highlight the most important ones:

- The PCMI quality model was not clear at the beginning of the project.
- The National Training Centres should ideally gone through the accreditation process before training activities were started to show those who are rotating through them how to solve the problems they are facing at that time.
- There were no control areas to have a proper evaluation of the intervention.
- While PCMI was not fully co-ordinated with other training activities promoted by the MOH national programs
- The community component of PCMI was initiated quite late and not in a universal way to involve all participating centres.

Based on this experience we propose the following recommendations:

- The MOH should not create an office or program in charge of quality improvements, as it is being considered. Instead, a Department of Human Resources should be created, in which quality improvements, training, salary scales and promotions, and other components should be integrated. This political decision should be considered and given full political and budgetary support.

- The accreditation process with independent external supervision and evaluation has been one of the main motivation factors in PCMI. An accreditation body independent from the MOH should be identified

- The quality model promoted by PCMI excluded the satisfaction of health personnel as a component of the model. However, several components of PCMI touched variables involved with the satisfaction of health workers and their work environment. It would have been helpful to include this component as an explicit one, coupled with specific strategies to focus on how to solve conflicts and power problems.

- The quality strategies implemented by PCMI in health facilities should also be used by health officials in charge of administration of health services, to assure that the same language and principles are applied at all levels

- There is a need to develop an integrated supervisory system and tools

- Budgetary resources for training and supervisory activities should be given to the regional health offices

- Consideration should be given to change the current training strategies of the MOH and to incorporate the quality improvement techniques, conceptual framework and tools used in PCMI.
APPENDIX 3

Integrated Care Pathways (ICPs)

Integrated care pathways have been developed by a multidisciplinary team comprising both medical and nursing staff at the Queen Elizabeth Central Hospital, Blantyre, Malawi. They consist of a number of sections.

Admission sheet

This is completed by the admitting officer and records details of the name of the child, presenting symptoms and signs, important examination findings and diagnosis or diagnoses. The sheet has been designed to capture only the key items of information and to be easy to complete. Many sections are completed by circling the appropriate option. Diagrams are used where possible so that examination findings can be recorded quickly by marking abnormalities on, for example, the diagram of the chest or abdomen. This chart then follows the child who is to be admitted to the inpatient ward. Admitting officers are trained in the use of the ICP and encouraged to fill in the sheet completely so that basic minimum information is
QUEEN ELIZABETH CENTRAL HOSPITAL
CHATINKHA NURSERY: ADMISSION SHEET

LABOUR WARD/postnatal ward

Date and Time: _______________  Hosp No: _______________

Mother's Name: _______________  Address: _______________

Maternal history:
Parity (before this delivery) G_____ P_____  Children alive: _______________

Date and time labour started: _______________

Date and time membranes ruptured: _______________  Meconium Y/N: _______________

Date and time of 2nd stage: _______________

Date and time of delivery: _______________  Mode of delivery: _______________

Resuscitation required: Yes ☐ No ☐ Specify if you: _______________

Place of Delivery: _______________  Birth weight (gms): _______________  Sex M ☐ F ☐

VDRL Reactive ☐ Treated ☐ Not treated ☐ Nonreactive ☐ Done ☐

Problems during delivery:

With mother
BP: Normal/High/Low
Convulsions: Yes ☐ No ☐
Sepsis: Yes ☐ No ☐
Offensive liquor: Yes ☐ No ☐

Other (specify): _______________

With baby
Fetal bradycardia: Yes ☐ No ☐
Prolonged 1st stage: Yes ☐ No ☐
Prolonged 2nd stage: Yes ☐ No ☐
Meconium aspiration: Yes ☐ No ☐
Abnormal presentation: Yes ☐ No ☐

Other (specify): _______________

Reason for referral to Nursery: _______________

CHATINKHA NEONATAL UNIT

Date and Time admitted to Nursery _______________ a.m./p.m

Reason for admission: _______________

Condition on arrival in nursery:

General condition: Good/Fair/Poor/Miserable

Skin colour: Pink/Pale/Cyanotic/Jaundiced

Heart beat: Normal/Weak/None

Respiration: Normal/Grunting/Tachypnoea/Apnoea/Indrawing

Abdomen: Normal/Distended  Sucking reflex: Yes ☐ No ☐

Abnormalities: _______________

Admission weight (gms): _______________  Temperature: _______________ ¹C

Dextrostix: mmol/L

Vitamin K given: Yes ☐ No ☐

Comments: _______________

Diagnosis 1: _______________

2. _______________

See CCP for management

Signature Nursery: _______________
recorded on all children who are admitted. Once staff become familiar with the admission form they find that they can access information quickly since it is recorded legibly and always in the same place.

**Monitoring sheet**

This is designed to capture key pieces of clinical information essential for monitoring the treatment and progress of each child. Once again it is designed to be easy to complete. Although apparently complex at first sight, trained staff soon become familiar with these sheets and are able to complete them quickly. Experience has shown that the time taken to complete these sheets can be less than with the medical and nursing records that were in place prior to their introduction. A number of different monitoring sheets have been developed—for neonatal care, general paediatric care, care of the severely malnourished child, care of the child with TB. This is necessary since the care of these conditions and hence the nature of the monitoring required differs significantly. However they all have common elements:

- An indication of how many monitoring visits are to be made each day
- Recording of all treatments given
- Recording of fluid intake and output
- Recording of vital signs
- Recording of other important clinical signs which track improvement / deterioration or show the development of complications
- Recording of lab results
- Recording of final outcome of care

Information is recorded in the small boxes provided under each day. Forms can be amended to accommodate monitoring visits which are more or less frequent than those in the examples provided here. By compressing all this information into a single sheet many parameters of clinical progress can reviewed together “at a glance” and paper costs are...

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**Monitoring sheet—general paediatrics**

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31
Monitoring sheet—general paediatrics

PLEASE MAKE A NOTE OF ANY VARIATIONS FROM THE CRITICAL PATHWAY OVERLEAF. ALSO ANY COMMENTS THAT MAY BE HELPFUL

<table>
<thead>
<tr>
<th>Time and Date</th>
<th>Intervention</th>
<th>Explanation (why not done or delay etc)</th>
<th>Signature</th>
<th>Status (Doctor, Nurse etc)</th>
</tr>
</thead>
</table>

**ANTICONVULSANT DOSES:**
- Phenobarbital 0.1 - 0.2 mg/kg PR or 0.3 - 0.4 mg/kg PR
- Diazepam 0.2 mg/kg IV bolus or 0.4 mg/kg PR
- Phenytoin 10 mg/kg IM then 5 - 10 mg/kg 12 hry.

Check the blood glucose on admission AND every time the child fits if glucose is low (2.2 mmol/l give 1 ml/kg 50% dextrose)

**ANTIMALARIALS**
- SP Doses by age:
  - 0 - 4 years: 1/2 tablet stat 1st IV dose 20 mg/kg. All IM and 4 - 8 years: 1 tablet subsequent IV doses are 10 mg/kg.
  - 9 - 14 years: 2 tablets IM dose to be repeated after 4 h, over 14 years: 3 tablets then 12 h, IV doses given 12 hry.
- Quinine IV is infused over 3 - 4 h in at least 100 ml of 1/2 1/2 D5S

**BLANTYRE COMA SCALE (BCS):**
- Best motor response: localised pain = 2
  - no response to pain = 0
- Best verbal response: appropriate = 2
  - inappropriate = 1
  - no response = 0
- Best eye movement: appropriate = 2
  - not following = 0

**IV FLUIDS IN SEVERE DEHYDRATION**

<table>
<thead>
<tr>
<th>Age</th>
<th>First dose 20 - 30 ml/kg in 1 hour</th>
<th>Then give 70 ml/kg in 5 hours</th>
<th>Other 30 minutes 2 1/2 hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Infants under 2 months</td>
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<tr>
<td>Older</td>
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**ANTIBIOTIC DOSES**

**FOR ARI AND EFFUS**
- X-PEN 60,000 1/2 fl/kg dose 8 hry IM or IV
- CHLORAMPHENICOL 20 mg/kg dose 8 hry IM or IV
- GENTAMCIN 1 mg/kg QD IM or IV
- AMPCILLIN 75 mg/kg dose 8 hry IM or IV

**FOR Meningitis**
- X-PEN 100,000 1/2 fl/kg dose 8 hry
- CHLORAMPHENICOL 25 mg/kg dose 8 hry under 5 months of age, replace chloramphenicol with gentamicin 2.5 mg/kg 8 hry

**GIVE ANTIBIOTICS (1/2 fl) IM FOR AT LEAST 10 DAYS TO CHILDREN, 21 DAYS FOR INFANTS**

Videos kept to a minimum. Doctors and nurses can still keep additional notes if it is essential.

These sheets are completed by nursing staff responsible for the in-patient care of the admitted child. With training and experience in their use they can be completed quickly and they ensure that key clinical information on each child is recorded. Once again the fixed structure results in staff being able to review clinical progress quickly once they become familiar with the forms. Their use results in greatly improved recording of clinical information without a great increase in time being spent on filling in forms. Their use also encourages appropriate attention being given to monitoring the progress of the sick child.

The other side of the monitoring sheets consist of two main sections:
- A note of variations from the ICP
- Details of standard procedures and treatment regimens

The first section gives staff the chance to explain why the treatment given to that child may not have followed the standard treatment for that condition agreed by the paediatric team. If the paediatric department review the case notes of children who die or develop severe complications then this section can be helpful in understanding the reasons why certain actions / treatments were or were not given. This form of audit can be useful in helping to identify areas where care or hospital practices could be improved. However, this section is often completed poorly by hospital staff. This is probably because they are concerned that it may attract criticism of their clinical decisions. This highlights the importance of conducting any review of care in a positive manner—seeking to improve the performance of the overall paediatric team rather than criticising individuals.

The second section provides a useful reminder to all staff of assessment scales (such as the Blantyre scale), agreed treatment regimens and details of dosages to be given. It can include instructions on
## APPENDIX 3. INTEGRATED CARE PATHWAYS (ICPS)

### Monitoring sheet—neonates

<table>
<thead>
<tr>
<th>NAME</th>
<th>Date of birth</th>
<th>Date of Admission</th>
<th>Birth weight</th>
<th>Placental weight</th>
<th>Gestational age</th>
<th>Apgar score at 1 min</th>
<th>5 min</th>
<th>Mode of delivery</th>
<th>NEONATAL CCP</th>
<th>VIT K</th>
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**Hours of the day**

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<th>Hours</th>
<th>Day 1</th>
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**DRUGS: real time given**

- ng/mL/h
- mg/kg/h
- mg/kg

**Food intake**

SF

**POING**

- Oxygen (mm Hg)
- Temperature (°C)
- Hourly observations

**OBSERVATIONS**

- Twice daily
- Use first column to record findings on admission

**VITAL SIGNS**

- RR
- HR

**Weight**

- Daily weight
- Blood glucose (mmol/L)
- Temperature (°C)

**Incubator Temperature**

**LAB results**

**Progress ( Ease/Fair Poor)**

**Explanation to Parents**

**Anticoagulant doses**

- Phenobarbital 15 mg/kg IM (dose 9 – 12 mg/kg 12 hourly)
- Dicoumarol 0.2 mg/kg N/6 times or 0.4 mg/kg PR
- Paracetamol 0.5 – 0.6 mg/kg IV or 0.2 – 0.4 mg/kg PR

**Antibiotic doses**

- Xyphenidate 0.2 mg/kg IM or IV 12 hourly
- 4 mg/kg IV 1000 – 1500 mg
- 5 mg/kg IV 1500 but < 7 days, 6 mg/kg IV 1500 mg and > 7 days

**Low Birth Weight (LBW) 1000 – 1500g**

- 3-6 ml 2 hourly increasing by 2-6 ml per feed
- Days 1-4: 60 - 120 ml/kg/24 hrs
- Days 5-7: 120 - 200 ml/kg/24 hrs
- 2nd week: 150 - 200 ml/kg/24 hrs

**Full Term Infants**

- Day 1: 60 ml/kg/24 hrs
- Day 2: 90 ml/kg/24 hrs
- Day 3: 90 ml/kg/24 hrs
- Day 4: 100 ml/kg/24 hrs

**Feeds in ml/kg to be given 2 hourly**

<table>
<thead>
<tr>
<th>WEIGHT KG</th>
<th>DAY 1</th>
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**Feeds in ml/kg to be given 2 hourly**

<table>
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<th>WEIGHT KG</th>
<th>DAY 1</th>
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**Please make a note of any variations from the critical care pathway overleaf – Also any comments that may be helpful**
calculation of drug dosages, if required. Ideally medical and nursing staff should be given the opportunity to decide which information they would find most useful to be printed here. If found helpful these can be magnified to a larger size and provided as posters in the appropriate clinical areas.

In summary the use of these ICP sheets should promote good clinical practice in a number of areas:

- Developing the ICP should bring together medical and nursing staff to agree on local best practice thus improving communication and understanding between doctors and nurses
- Completion of ICP forms should improve the capture of key clinical information in a legible and accessible format and so help in the review of the child's progress
- Provision of important selected clinical information such as treatment details on the form should assist in promoting good prescription practice
- Staff training in ICP helps to draw attention to the importance of monitoring of sick children
- ICP data can form the basis of clinical audit as a means of reviewing and improving child care

Examples of ICPs forms appended to this report:

- Admission sheet—general paediatrics
- Admission sheet—neonates
- Monitoring sheet—general paediatrics
- Monitoring sheet—neonates
Context of the assessment—internal review or external accreditation

The appendix contains examples of an assessment tool which can be used to assess the quality of pediatric care given in a hospital. The assessment protocol provides guidance for a process of improving pediatric care in hospitals. This process might be embedded into a national quality improvement programme, or it might be done by interested health authorities at a provincial, district, or hospital level, involving one or several hospitals. After a period of change, the process might be repeated to document improvements.

Ideally, a general policy framework related to quality of services should be defined at the outset at national or provincial level. It should consider motivation or accreditation options and incorporate a general plan of action to improve quality of hospital (pediatric) care which includes the identification of persons in charge, suitable evaluators and available resources for the assessment. However, it could also be adapted to be used by a local team who wish to review their practice through self-assessment.

The assessment tool was first developed for use by an external team of experienced pediatricians for the purposes of accreditation. It has been used in a number of countries and has been revised accordingly after this experience. Results from an international review of pediatric practices utilising this assessment tool were published in the Lancet (Nolan T et al 2000) and further details of this review are available from WHO CHD.

Timing of the review

The initial tool as described in the Lancet study was designed to be used a part of a three day evaluation of hospital pediatric services. However a revised tool has been used as the basis for hospital reviews lasting two days. Thus the tool can be adapted to serve the needs of the user. Decision about the scope and the selection of the key areas to review are important decisions to be made at the outset of the review. These decisions will determine the extent and time required for the review. The tool which is shown in this appendix takes approximately 10–12 hours to complete. The approximate timings are as follows:

- Meeting with senior hospital staff to communicate purpose and organisation of review: 1–1.5 hours
- Visit to pediatric ward, emergency area, nursery; staff interviews; record review and case observations: 6–7 hours
- Completion of hospital data: 1–1.5 hours
- Final de-briefing, discussion of findings and formulation of plans to improve care: 1.5–2 hours

Thus, the sources of information included are: visit to facilities, examination of clinical records, direct case observation and interview with staff and mothers.

Aims and objectives of the assessment visit

The overall aim is:

- To assist the hospital to improve the quality of hospital based pediatric care.

The specific objectives are:

- To identify areas of pediatric care with potential for feasible and cost-effective improvements.
- To develop a plan for sustainable improvements of pediatric care at the hospital.
- To establish a long term supportive collaboration between the hospital and the pediatric-
Deciding the scope of the assessment and which clinical areas to assess

The tool is designed to cover many aspects of paediatric care guided by the results of the WHO study of quality of hospital care noted above and includes pre-hospital care, in-patient management and the organisation of care within the hospital. The inclusion of pre-hospital care acknowledges the importance of these factors in determining hospital outcomes of care and emphasises the need to improve communication between the hospital and the community. It is important that those who provide the care which is being reviewed are integrally involved in all stages of the review.

Making a judgement on the quality of care—quality criteria and scores

Information is collected on 29 items divided in three areas—pre-hospital care, in-patient management and organisation of care. The assessment tool is based on an acceptance of the guidelines in the WHO Manual Management of the child with a serious infection of severe malnutrition, representing the standard of care to be achieved. Criteria which can be scored are then identified based on these standards. For a few items not included in the WHO manual (for example, essential newborn care and care of low birth weight babies) complementary guidelines are provided. These criteria form the basis of the assessment process and all assessors are trained to score by these criteria. The exact number of items depends on local epidemiological features and health service needs eg prevalence of malaria, measles or HIV. By this means a set of quality scores across a number of important areas of paediatric practice are calculated. For each of the assessment items data is collected on 2–4 sub-items in order to assess quality of care. For each of these a 3 grade score is given:

**Good:** The item is of very good or excellent quality and there is usually little reason for improvements.

**Requires improvement:** There is potential for improvement but the quality does not pose an immediate threat to the life or well being of patients

**Requires substantial improvement:** The quality is poor and may directly affect negatively the outcome of children treated at the hospital.

The information and the relevant scores deriving from the various sources are merged in one summary quality of care score for each area so that an overall view of the quality of care and of areas that need most to be improved is ultimately obtained.

It is recognised that some of the assessments made may not be fully objective so an important aspect in the design of the tool has been to cross-refer-ence findings from a number of assessment areas so that key conclusions can be supported by data which are cross-referenced from different findings.

Deciding the priority areas for action to improve quality of care

The quality scores are complemented by an impact score which summarises the degree of impact that this area has on the quality of child care. The quality and impact scores are then considered together by the assessors. At the end of the hospital visit, the assessors discuss their findings, and transfer the areas in need of improvement onto a summary form which forms the basis of discussion with the hospital authorities. In those discussions, an action plan which details priorities for action to improve child care is decided upon, with a time line attached and a responsible person nominated.

Important principles in the use of this assessment tool are:

- Involvement of key local professionals
- Focussing data collection in a number of key areas in order to keep the exercise as simple as possible and to ensure that it can be completed in 2 days
- Use of data from various sources to help reinforce conclusions
- Linking data collection to action to improve care
Further detailed description of the use of the assessment tool—assessment tool guide

This section outlines the key elements of the use of the assessment and some of the principles underlying its use. However in order to be able to use this tool it is necessary to train assessors thoroughly in the criteria for assessment and the scoring system. The purpose of the programme and the methods to be used in the assessment process should be introduced to the evaluators and the participating hospitals. Experience has shown that the training of the evaluators takes about 4–6 hours to complete. The details of these procedures are complex and beyond the scope of this brief summary. However, a guide for assessors has been prepared and can be requested from WHO CHD. It is important that contact be made with those with previous experience with this tool to learn from their experience.

Examples of assessment tool forms appended to this report:

- Assessment criteria—management of children with cough and difficult breathing

<table>
<thead>
<tr>
<th>ITEMS</th>
<th>Records</th>
<th>Case Observation (C)</th>
<th>Interview (I)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>To be strongly improved</td>
<td>To be improved</td>
<td>Good</td>
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<tr>
<td>C1. Severity of pneumonia correctly assessed</td>
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<tr>
<td>C2. Appropriate antibiotics administered</td>
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<tr>
<td>C3. Oxygen correctly administered when necessary (RCM page 109)</td>
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<tr>
<td>C4. Inhaled bronchodilators given appropriately when indicated</td>
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<td></td>
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<tr>
<td>C5. Appropriate treatment given for TB</td>
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<td></td>
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<tr>
<td>C6. Correct use of chest X-ray</td>
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Notes and comments:

Assessment score sheet—management of children with cough and difficult breathing
Example of guide to the assessment tool

C. Cough or difficult breathing

C1. Severity of pneumonia correctly assessed
   → Hw correctly diagnoses pneumonia and classifies/recognizes severity
   → Assessment is based on chest indrawing, respiratory rate, presence of cyanosis and general condition (*)

C2. Appropriate antibiotics administered
   → Antibiotics are given only to children with cough and difficult breathing who need them (pneumonia, severe pneumonia, very severe pneumonia or very severe disease)
   → Appropriate antibiotics at correct doses are administered for pneumonia (according to severity and age) (*)

C3. Oxygen
   → Oxygen is administered to all children who need it (*)
   → Oxygen is given only to children who need it
   → Oxygen administered correctly (device, correct flow, no interruptions) (*)
      • By nasal prongs or nasal catheter
      • Mask and headbox avoided due to consumption of oxygen

C4. Inhaled bronchodilators
   → Children in need of bronchodilators are correctly identified/diagnosed (*)
   → Inhaled bronchodilators are correctly administered (way, dose and frequency) (*)
      • Nebulizer or spacer minimum standard
      • Not acceptable if parents have to buy
   → Children with asthma who are discharged have follow-up treatment prescribed and explained to parents

C5. Tb treatment
   → Correct anti-tuberculous treatment is given to children with suspected Tb
      (p. 42 + Annex 2.2, page 138 RCM)
   → Tb is considered in the differential diagnosis of unresolved pneumonia and malnutrition.
   → Not every child with malnutrition receives anti Tb treatment (balance the likelihood of having Tb)

C6. Correct use of chest X-ray
   → Chest x-rays are performed when signs of pneumonia are present in:
      ♦ young infants
      ♦ cases of suspected complications (empyema, pneumothorax, abscess etc).
      ♦ Patients not responding to appropriate antibiotic treatment administered for 48 hours (*)

Assessment score sheet—management of children with cough and difficult breathing
APPENDIX 5

Routine recording of patient data

Hospital information systems should be maintained to gather useful information for the management of patients and to monitor the quality of care. Many existing systems serve mainly reporting purposes for public health authorities. They are not developed in consultation with clinical staff, ask for unreliable data, and are not useful for quality assurance issues in clinical practice. One essential missing component is often feedback to those who are collecting data.

As simple recording system, which is useful for the monitoring of clinical practice, collects the following data:

* Hospital number (Unique identifier of the patient)
* Date of admission
* Age (or date of birth)
* Sex
* Referral (self, nurse, doctor, clinic)
* Measurements (weight, height)
** Final diagnoses (several possible)
** Lab results (Hb, PCV, oxygen saturation, malaria blood film)

** Special interventions (transfusion, oxygen therapy)
** Date of discharge (or duration of stay)
** Outcome (survived, died)

* recorded on admission, ** recorded on discharge

It is essential that the completeness of the recordings and the quality and completeness of data, especially the final diagnoses, are checked by a senior clinician.

The collection of these data allows to monitor the seasonality of diseases, their age and sex distribution, the mortality of conditions by season and age, duration of hospital stay by age and diagnoses, referral patterns (especially to what degree the hospital is sued as a primary care and a referral facility), the use of special interventions such as transfusion, and to what degree they are supported by lab results. Having such a baseline allows to address specific problems, such as high mortality at particular times of the year, and to judge the impact of interventions.

Entering data into a simple computer data base (e.g. EpiInfo) facilitates easy summaries which can be shared with staff and therefore allow quick feedback, which results in better data quality.