

**Evaluation of the Impact of
Integrated Management of Childhood Illness**

Design Issues

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ABBREVIATIONS

| | |
|--------|--|
| DHT | District Health Team |
| FP | Family Planning |
| HF | Health facility |
| HW | Health worker |
| IMCI | Integrated Management of Childhood Illness |
| IMR | Infant mortality rate |
| MCH | Maternal and Child Health |
| MoH | Ministry of Health |
| ORT | Oral Rehydration Therapy |
| U5MR | Underfive mortality rate |
| UNICEF | United Nations' Children Fund |
| WHO | World Health Organization |

Introduction

The IMCI (Integrated Management of Childhood Illness Initiative) was launched in 1995 by WHO and UNICEF, in order to address five leading causes of childhood deaths in the world: pneumonia, diarrhea, measles, malaria and malnutrition. The Initiative has three main components: improvements in case-management skills of health staff; improvements in the health systems; and improvements of family and community practices. Table 1 shows the interventions included in the strategy¹.

Table 1. Interventions currently included in the IMCI strategy.

| | Promotion of growth Prevention of disease | Response to sickness ("curative care") |
|------------------------|---|---|
| Home | <ul style="list-style-type: none"> · Community/home based interventions to improve nutrition · Insecticide-impregnated bednets | <ul style="list-style-type: none"> · Early case management · Appropriate careseeking · Compliance with treatment |
| Health services | <ul style="list-style-type: none"> · Vaccinations · Complementary feeding and breastfeeding counseling · Micronutrient supplementation | <ul style="list-style-type: none"> · Case management of ALRI, diarrhea, measles, malaria, malnutrition, other serious infections · Complementary feeding and breastfeeding counseling · Iron treatment · Antihelminthic treatment |

As of September 1997, early implementation of IMCI was under way in 20 countries throughout the world, and at least 20 others were starting the process of introducing the Initiative².

From the onset of the Initiative, issues related to evaluation were given special attention:

"The impact of IMCI on childhood morbidity and mortality should be investigated in a limited number of countries. Studies are needed to assess whether the implementation of

*IMCI at first-level facilities is associated with reductions in child mortality and morbidity, both overall and, if possible, by specific diseases”.*³

A recent paper⁴ summarizes strategies for IMCI monitoring and process evaluation at the district level. The present paper addresses issues relevant to the design of an evaluation aimed at assessing the impact of IMCI. Its contents include:

- A conceptual framework for evaluating IMCI;
- Identification of the target audience for the evaluation results;
- Choice of indicators for evaluation;
- Choice of study design;
- Sources of data;
- Desirable characteristics of countries to be included in the evaluation;
- External factors and constraints affecting IMCI;

Issues that were not covered in this preliminary paper are also highlighted and will be incorporated in subsequent versions.

Conceptual framework

Three basic questions have to be addressed when designing the evaluation. These refer to a)

whether the evaluation will focus on efficacy or effectiveness, b) what indicators will be used, and c) what type of inference will be made.

Efficacy or effectiveness?

Large-scale interventions may be evaluated from an efficacy or an effectiveness perspective⁵. Public Health efficacy evaluations refer to programmes delivered through health services in relatively restricted areas, under “ideal” circumstances and close supervision. They answer the question of whether - given such ideal circumstances - the intervention has an effect. On the other hand, Public Health effectiveness evaluations assess whether the programme has an effect under “real-life” circumstances faced by health services.

The present paper will focus on effectiveness evaluations, since the programme is already under way - under “real-life” circumstances - in several countries.

However, efficacy evaluations are also important, particularly at this early stage of programme implementation. This will require applying the programme in one or more restricted areas under close supervision. This approach is discussed at the end of the proposal (Appendix A).

What indicators will be assessed?

The framework proposed by Habicht, Victora and Vaughan⁶ will be used to address this question, as well as the next question, regarding the type of inference.

The first axis of the framework refers to what indicators will be measured. One may evaluate the provision and utilization of services, their coverage and/or impact. Table 2 shows the definitions of these terms, as well as examples from a hypothetical IMCI programme.

Table 2. The first axis of the evaluation framework: type of indicators.

| INDICATOR | QUESTION | EXAMPLE OF INDICATORS |
|--------------------|---|---|
| Provision | Are the services available? Are they accessible? Is their quality satisfactory? | <ul style="list-style-type: none"> · Number of health facilities offering IMCI activities per 100,000 population · Proportion of the population within 30 minutes travel time of a health facility with IMCI activities · Proportion of health workers with appropriate case-management skills |
| Utilization | Are the services being used? | <ul style="list-style-type: none"> · Number of attendances of under fives per 1,000 children |
| Coverage | Is the target population being reached? | <ul style="list-style-type: none"> · Proportion of under-fives in population who were seen by a trained health worker |
| Impact | Were there improvements in disease patterns or health-related behaviors? | <ul style="list-style-type: none"> · Time trends in childhood deaths · Improvements in breastfeeding indicators or in health care seeking behaviors |

A logical order leads from provision to impact. Adequate provision means that the services must be available and accessible to the target population, and that the quality of services must be appropriate. Once services are available, the population may make use of them, in this case by bringing their children to the health services. Utilization will then result in a given population coverage^a. Finally, the achieved coverage may lead to an impact on health or behavior. Any

^a The distinction between utilization and coverage is subtle but important. Utilization data are obtained at the health services by computing, for example, the number of attendances by age group

important shortcomings at the early stages of this chain will result in failures in the later indicators.

Provision or utilization may be assessed by using routine information systems or by surveying health facilities. Coverage or impact, however, almost always require field data collection with important cost implications.

The choice of indicators depends on what types of decisions will be taken as a consequence of the evaluation, and on who the decision-makers are. Evaluations of provision and utilization, and sometimes of coverage, are often sufficient for the needs of local or district managers. On the other hand, national and international agencies often require assessments of coverage or impact to justify further investments in the programme.

What type of inference is required?

The second axis of the evaluation framework is depicted in Table 3. It refers to the type of inference that the decision-maker expects to make, based on the evaluation results. It is important to note that this is not a “hierarchical” axis in which one type of inference is quantitatively superior to the previous levels, but that the types of inference are quantitatively different.

or diagnostic category. However, high rates of attendance may be due to a few children being brought repeatedly to the health services. The information on coverage is of greater interest since it refers the information on attendances to a specific target group, and thus provides a closer picture of how the programme is reaching the population.

Table 3. The second axis of the evaluation framework: type of inference.

| INFERENCE | QUESTIONS | COMMENTS |
|---|--|--|
| Adequacy design | Have the programme goals been achieved? Are trends moving in the right direction? | This is an assessment of whether the original goals - e.g., a reduction in the prevalence of malnutrition of one third - were achieved. |
| Plausibility (“likelihood”) design | Is it likely that the goals were achieved <u>due to</u> the programme? | Plausible means “likely, credible, reasonable, believable”. Plausibility addresses whether one can reasonably rule out external influences that might have caused the observed trends. |
| Probability design | What is the statistical probability that the programme had an effect? | Strictly speaking, probability analysis requires an experimental design with random allocation of individuals or communities to receive (or not to receive) the intervention. |

The most basic type of inference is assessing whether the indicators improved during the duration of the programme. This is achieved by comparing the effect of the programme with pre-defined criteria or goals. These criteria may be absolute - for example, training 1,000 health workers or achieving 80% ORT use rate - or may refer to a change - for example, a 20% decline in reported infant deaths in the program area. Even when specific goals have not been established, performance or impact may still be assessed by measuring general time trends, such as an increase in coverage or a reduction in mortality. The adequacy evaluation may be cross-sectional, carried out on a single occasion, during or at the end of the program. It may also be longitudinal, requiring baseline data or including repeated measurements for detecting trends. This type of adequacy assessment will be sufficient for some decision makers to continue supporting the programme.

Plausibility assessments are more complex, since the question is “Were the observed changes due to the programme?”. These assessments require a control group for comparison purposes.

Commonly used control groups include:

- longitudinal or historical controls (study of the intervention area before and after programme implementation);
- cross-sectional geographical controls (comparison with similar geographical areas not reached by the programme);
- cross-sectional internal controls (comparison with individuals who, despite living in the programme area, were not reached by the intervention).

Plausibility assessments also have to address confounding factors, that is, other differences between the programme and control groups that may account for the observed effect.

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Finally, probability evaluations are formal trials of programme effectiveness. They require the random allocation of communities to receive or not to receive the programme. Under most real-life circumstances, this is not possible since either the programme is already under way when the evaluation starts, or political or logistical reasons preclude random allocation.

The remainder of this paper will concentrate on adequacy and plausibility evaluations, due to the difficulties associated with a probabilistic approach in a Public Health effectiveness evaluation. However, Appendix A discusses Public Health efficacy evaluations, in which a probability approach may be applied. Scenario IV in the section on “Choice of Countries” also discusses a probability approach.

It is important to stress that adequacy evaluations may and should be included when undertaking more complex designs, such as those using plausibility or probability approaches. The reason for

this is that an adequacy approach answers the question on whether or not the programme goals have been reached, while plausibility or probability approaches are concerned with the existence of an effect of the programme, not necessarily whether or not the goals have been reached.

The next sections will address issues influencing the choice of evaluation design.

Steps in the design and implementation of the evaluation

Involving decision-makers

The main target audience for any evaluation are the decision-makers whose actions one expects to influence. These individuals or institutions should be involved from the onset of the evaluation exercise, at least at an advisory level. When evaluating the impact of IMCI, the following decision-makers may be involved:

- The international donor community
- International organizations including WHO and UNICEF, and their Regional Offices
- Country offices of international organizations
- National officials, particularly at the Ministry of Health (MoH) level
- District managers
- Staff at first-level and referral facilities

The proposed evaluation has an international scope and will concentrate on the first two

categories of decision-makers. Their early involvement is essential. The needs of the other four categories of decision-makers may be addressed by evaluations at the national or subnational level.

Choosing the indicators

Following consultations with the major decision makers, the primary indicators for the evaluation will be chosen. Preliminary discussions show an interest in addressing the impact of IMCI. The remaining of this paper will be based on this assumption.

Even if impact is the ultimate indicator, a step-by-step approach is required, in which indicators of provision, utilization and coverage will also be addressed. This approach is favored for two reasons:

- If an impact can be demonstrated, the approach will document the underlying steps that led to success, therefore helping adapt and export the programme to other settings;
- If impact is limited or none, the step-by-step approach will reveal where the programme failed and identify areas where improvements are required.

The step-by-step approach is also cost-effective, since complex and costly impact evaluations will only be carried out if simpler evaluations of the preceding steps show that the programme is progressing as expected. For example, if provision and utilization are low, there is no reason to attempt the more costly measurement of coverage or impact indicators, since there is no reason to believe that the programme will have affected such indicators.

The stepwise approach cannot be strictly followed when there is a need to collect baseline data on impact variables; this will have to be done before establishing whether provision and utilization were adequate. Even under these circumstances, however, the step-by-step approach

will provide a logical framework for interpreting the evaluation results.

Designing the study and obtaining the data

A stepwise approach is proposed for the evaluation, according to the conceptual framework. A possible combination of five steps might include:

- Step 1. Provision (adequacy design): Are IMCI HF available, accessible and of appropriate quality?
- Step 2. Utilization (adequacy design): Are IMCI HF used by the population?
- Step 3. Coverage (adequacy design): Did IMCI reach an appropriate level of coverage in the target population?
- Step 4. Impact (adequacy design) : Were there improvements in knowledge, behavior, nutrition and health?
- Step 5. Impact (plausibility design): Is it possible to rule out external causes as being responsible for the observed improvements in knowledge, behaviors, nutrition and health?

Steps 1 and 2 may be assessed through the review of existing records either at the DHT (supervisor reports) or at HF level. In some cases, HF surveys may be necessary. If Step 1 shows that the provision of services is adequate^b, then data on utilization (Step 2) will be analyzed. A comparison of the number of service units (attendances, vaccinations, supplements, etc) with the

^b It will be necessary to develop or adapt cutoff levels for deciding when an indicator is “appropriate”; for example: having x% of more of the IMCI drugs in all visits, x% or more of the HW classifications being in accordance with the gold standard, etc.

number of underfives in the target population will be used for assessing the adequacy of utilization indicators^c.

Step 3 involves coverage surveys, which have considerable budgetary implications. These surveys will only take place if the HF-based provision and utilization evaluations show that there is reason to expect adequate coverages of the indicators under study. For example, if most provision and utilization indicators are deficient, there will be little need for a survey since coverage will be low, and an impact is therefore unlikely. The results of recent surveys carried out for other reasons, such as Demographic and Health Surveys (DHS) and Multiple Indicator Cluster Surveys^d (MICS) should be used whenever possible.

Step 4 assesses whether trends in the impact indicators have improved. Time lags must be allowed for, when necessary. For example, mortality or severe morbidity due to diarrhoea or pneumonia may decrease relatively soon after IMCI implementation, but it may take some time to produce an impact on indicators such as the prevalence of stunting or the rate of breastfeeding in the second year of life.

Impact indicators such as maternal knowledge, prevalence of malnutrition, breastfeeding duration and hospitalization rates may be collected through the same surveys for assessing coverage

^c Again, specific goals will have to be established, for example, *x* or more attendances per child under five in a year,

^d UNICEF has supported MICS in about 70 countries in 1995/96 . In many of these, MICS are likely to be repeated in 1999, thus providing data for assessing the changes in coverage (immunizations, vitamin A supplementation) and impact (breastfeeding, malnutrition) indicators.

indicators. Data on causes and trends in hospital admissions may be collected through systematic reviews of case-records in selected hospitals⁷. Data on impact on mortality may be obtained from a number of sources, including:

- **Death registration.** In urban areas of many less developed countries, death certificates have a reasonably good coverage and quality. Even if coverage is incomplete, proportionate mortality indicators⁷ may provide evidence that deaths due to diseases covered by IMCI are being reduced.
- **Demographic surveillance.** In a few areas in less developed countries, regular demographic surveillance systems record life events including births and deaths. The possibility of using such areas is discussed in Appendix A.
- **Child mortality surveys.** These surveys are considered separately from those aimed at measuring coverage or behavioral impact, since the latter require considerably smaller sample sizes. Data from existing mortality surveys (e.g., DHS) may be used whenever possible. Otherwise, special surveys may have to be commissioned^e.

Finally, if Step 4 results are encouraging, Step 5 will assess whether the observed impact may be reasonably attributed to IMCI. A further discussion of this issue may be found below in the section on control groups.

Steps 1 to 5 show the logical sequence to be followed. However, due to practical and logistic reasons, it may be possible to pool some of these steps. For example, Steps 1 and 2 may be

^e Details of the methods for assessing mortality levels (e.g., indirect versus direct estimates) and causes (e.g., verbal autopsies) will be included in a later version of the present document.

carried out jointly. The coverage survey (Step 3) may also address some impact indicators, as discussed above (Step 4). Finally, as noted above, it will sometimes be necessary to collect baseline data on impact indicators before IMCI is implemented.

Choosing a control group for plausibility analyses

Step 5 addresses the issue of whether it is likely that the observed impact was due to IMCI. For drawing such inference, a control group is required. The availability of data and discussions with decision-makers will guide the choice of one or more of the control groups below.

1) Longitudinal (historical) design

Description. This is a straightforward before-and-after analysis, with adjustment for changes in external (that is, other than IMCI) factors.

Hypothesis. Implementation of IMCI led to improvements in impact indicators in relation to levels prior to implementation.

Data requirements. Reliable data on impact indicators (e.g., mortality, malnutrition, breastfeeding) before and after IMCI implementation. Such data may be derived from vital statistics, demographic surveillance and/or from surveys.

Interpretation. It will be necessary to rule out external causes for the observed improvements. Data on possible confounding variables (see section on external factors) will have to be collected. Mathematical simulations⁷ may be used for assessing whether the observed impact might have been due to these external causes.

2) Cross-sectional (geographical) design.

Description. This design involves a single cross-sectional comparison of areas with IMCI with areas without the programme, with adjustment for confounding factors.

Hypothesis. Impact indicators are better in areas where IMCI was implemented than in similar areas without IMCI.

Data requirements. Cross-sectional data on impact indicators in programme and control

areas. Such data may be obtained through surveys or record reviews (for example, hospital records or death certificates).

Interpretation. Data on confounding variables is required for ruling out their influence on the observed differences. Such data may be obtained through the same surveys used for measuring impact. Multivariate statistical analyses will be used for adjusting for differences in confounding factors between IMCI and control areas. Matching procedures may also be used for enhancing the similarity between IMCI and control areas.

3) Longitudinal-control design

Description. This design is a combination of designs (a) and (b). It entails a before-and-after geographical comparison.

Hypothesis. Areas where IMCI was implemented show greater improvements in terms of impact indicators than similar areas without IMCI.

Data requirements. Time-trend data on impact indicators from both IMCI and control areas are required. See designs (a) and (b) above for data sources.

Interpretation. Again, adjustment for confounding factors is essential. See designs (a) and (b).

4) Cross-sectional internal design

Description. In this design, individuals living in the same geographical area but who were not reached by IMCI will serve as the comparison group. Controls may include individuals who should have received the full intervention but did not, either because they could not or did not wish to be reached by IMCI. The latter may include private practice or health insurance clients.

Hypothesis. Impact indicators are better among individuals who were reached by IMCI than among those who were not.

Data requirements. This approach requires either (i) survey data on impact indicators and IMCI utilization; or (ii) a case-control design, in which individuals with or without the indicators of interest would be compared in terms of previous exposure to the programme.

Interpretation. Since IMCI utilization may be influenced by self-selection, this design may be strongly affected by bias. Particular attention is therefore required for measurement and control of confounding factors. Parallel ethnographic research is essential for understanding selection biases. This control group should not be used as the sole source of controls, but should be combined with one of the other three types of controls mentioned above.

Whether historical or geographical, the control group may be tailored to answer one of the three following questions:

- Does IMCI have an impact when compared with areas where there are few or no services?

To answer this question, the evaluation should take place in an area where, prior to IMCI implementation, few or no services were available.

- Does IMCI have an impact on top of “typical” health services?

This question investigates whether the IMCI systematic approach results in an impact in areas where health services were already operational.

- How does IMCI compare with “best practice” services?

This addresses the impact of IMCI relative to “best practice” services, for example, private medical care^f.

Choice of countries

^f This question is the most difficult of the three, as it will probably require a cross-sectional internal design. Also, it may be better addressed in terms of provision (quality of care) indicators than in terms of impact. This issue will be further developed in subsequent versions of this proposal, after consultation with the Working Group and with decision-makers.

The proposed evaluation should take place initially in 2-3 countries. The essential criteria for IMCI evaluation are the existence of a strong, committed IMCI central coordination at national (MoH) level, and political receptivity to the evaluation. Given these two conditions, a number of different scenarios are possible. These include:

- **Scenario I.** IMCI is at the expansion stage² and good quality baseline data are available. By the time of the evaluation, IMCI will have been implemented in most of the country. Supervision activities will be under way, thus providing data on provision and utilization. A longitudinal, before-and-after comparison will be carried out. Ideally, there will have been no marked socioeconomic or environmental changes in the time period under study, or at least any changes will have been adequately documented for allowing plausibility analyses.
- **Scenario II.** IMCI is also at the expansion stage. By the time of the evaluation, IMCI will have been implemented in some districts or provinces, but not throughout the country. Supervisory activities will be under way. Ideally, provinces with and without IMCI will not differ markedly in socioeconomic or environmental terms. Areas without IMCI will serve as cross-sectional geographical controls. Ideally, there would be baseline data (mortality, DHS or MICS surveys), but if these do not exist, a cross-sectional comparison will suffice.
- **Scenario III.** IMCI is at an early implementation stage², and some provinces will be reached earlier than others. Baseline data could be collected in a systematic way, and in a few years the data collection cycle would be repeated. Data on external factors (socioeconomic, environmental, etc) would also be collected for assessing plausibility of the IMCI effect. A longitudinal-control design would be possible, but the final evaluation results would only be available after a few years.
- **Scenario IV.** IMCI is at an early implementation stage and there is political receptivity to randomizing the order in which provinces would be enrolled. In these circumstances, a

probability, longitudinal-control design would be possible. Baseline surveys would be collected in all provinces and repeated regularly. Provinces will remain in the control group until IMCI implementation, when they will change to the intervention group (this is known as the “stepped-wedge” design).

Of the four scenarios above, number IV is the least likely, due to political reasons discussed above (section on conceptual framework). Both scenarios III and IV would have considerable cost implications, and evaluation results would only be available after a few years. Scenarios I and II would be limited to the few countries currently in the expansion stage of IMCI.

External factors/constraints

Obtaining data on factors and constraints external to IMCI is essential for interpreting the results of plausibility evaluations. The variables to be collected include:

- Socioeconomic factors, including family income, parental education and occupation, unemployment, land tenure, and the existence of economic crises (inflation rates, structural adjustment, etc);
- Environmental factors, including water supply, sanitation, housing, and environmental pollution;
- Demographic factors, including fertility patterns and family size;
- Health-services related factors, including structure of health services, health manpower, HW pay, drug supply, availability of referral services, and presence of other major health initiatives.

The above variables, as well as other locally-relevant factors, will have to be taken into account

in the plausibility analyses. The techniques for adjustment for external factors include simulations and multivariate analyses.

In countries where the analysis of external factors shows evidence of social deterioration, the possibility that IMCI may have contributed to maintaining health levels in spite of this deterioration (the so-called “safety net” effect) should be considered.

Issues that need further development

An objective of the present paper is to serve as a basis for future country-specific research proposals for IMCI evaluation. In addition to the general issues raised in this paper, these proposals must also address the following issues.

The present paper has been focused on the issue of impact of IMCI. Other dimensions of IMCI evaluation relate to issues of cost, equity and sustainability. These will have to be taken into account in the future evaluation proposals.

In addition to the existing list of IMCI monitoring and evaluation indicators⁸, it will be necessary to define additional indicators for evaluation purposes, particularly in terms of coverage and impact.

The methodological approach in this paper is based on epidemiological methods, including surveys, surveillance and analysis of vital statistics. Simultaneous ethnographic research will be important for interpreting the evaluation results and for understanding the reasons for success or failure. Such methods are particularly relevant to assessing impact on family and community practices.

The actual indicators for use in the evaluation, with the possible exception of those on provision (based on previous work⁴), will have to be agreed upon and operationalized.

Future IMCI evaluation proposals will have to also incorporate a discussion of sample sizes including the number of HF for provision/utilization assessments, the number of households for coverage and mortality surveys, and the number of areas (e.g., districts or provinces) for geographical comparisons.

Conclusions

The present paper sets out the basic issues that have to be addressed in an evaluation of IMCI. Further discussions with decision-makers will help further develop the evaluation design. Ideally, the evaluation procedure will be started at an early stage of IMCI implementation, to enable the collection of baseline data and of process indicators that will be essential for the final impact evaluation. It is proposed that three to four effectiveness studies should be conducted in different scenarios, possibly combined with an efficacy study in a limited area (see Appendix A).

REFERENCES

APPENDIX A

A probability evaluation of IMCI efficacy

In a few research areas in less-developed countries, health and demographic surveillance systems have been under way for a number of years. One such area is Matlab in Bangladesh, where ICDDR,B (International Center for Health and Population Research) has kept a population of over 100,000 under surveillance since 1963^g.

Such a setting will allow an evaluation of IMCI impact under “ideal” circumstances, that is, a Public Health efficacy evaluation. For example, half the health workers delivering health care to the population in the surveillance area could be trained in IMCI and closely supervised. Their performance would then be compared with that of HW’s who were not trained in IMCI.

Furthermore, the coverage and impact of IMCI-related actions could be compared between the intervention and control areas. The availability of long-term baseline data from the surveillance system would allow a more thorough evaluation of IMCI impact than would be possible in large-scale evaluations. This type of design would also allow the random allocation of HWs to IMCI or control, and therefore constitute a “probability” evaluation.

^g

See, for example: van Ginneken J, Bairagi R, de Francisco A, Duffy G. Past, present and future activities of the Matlab Health and Demographic Surveillance System. Dhaka: ICDDR,B, 1997.

In Matlab, a trial has been under way since 1977 in which half of the 150 villages receive an intensive Maternal, Child Health and Family Planning Programme (MCH-FP) while the other half receive the usual government services. Introducing IMCI in half of the control villages would allow comparing its impact with both the MCH-FP and the governmental services^h. This would help answer two of the questions raised on page 17.

This approach would have considerable cost implications, including maintenance of demographic and health surveillance, as well as the establishment of IMCI in half of the study area. On the other hand, it would help answer the question of how efficacious IMCI is under closely supervised circumstances, as opposed to the effectiveness evaluation proposed in the body of this paper, which investigates impact under “routine” conditions.

^h Sample size calculations are required to establish what magnitude of mortality reduction would be detectable in this trial; in any event, sample sizes would appear to be sufficient for measuring impact on behavior, knowledge and malnutrition.

APPENDIX B

PRELIMINARY LIST OF INDICATORS

Indicators are listed in four major headings: provision, utilization, coverage and impact.

Whenever possible, existing IMCI indicators were used. For convenience, the abbreviation IMCI HF stands for a health facility with at least 80% of HW who manage children have been trained in IMCI⁴.

1. Provision of IMCIⁱ

Information on provision will be obtained from HF records and from the DHT monitoring system based on observations by supervisors during routine visits⁴. In some areas, HF surveys may be required.

The proposed indicators for service provision include:

1.1. Availability of IMCI

- 1.1.1. Number and proportion of HF with at least 80% of HW who manage children trained in IMCI (*)
- 1.1.2. IMCI supported by health system (chart booklets available, regular supervision, equipment, essential IMCI drugs) (*)

1.2. Accessibility of IMCI

- 1.2.1. Estimate of the proportion of the population living within x minutes travel time from a HF with at least 80% of HW who manage children trained in IMCI

1.3. Quality of care provided

- 1.3.1. Integrated approach used (*)
- 1.3.2. Correct treatment (*)

ⁱ The document on district-level monitoring and evaluation of IMCI⁴ provides a number of useful indicators of provision of IMCI. All of these are included in the list above, marked by an asterisk (*).

- 1.3.3. Missed opportunities for immunization avoided (*)
- 1.3.4. Effective counseling provided (*)
- 1.3.5. Caretaker satisfaction (*)

Indicators of provision of services at the community level (as opposed to the HF level) will also have to be developed.

2. Utilization of IMCI

Information on utilization may be obtained from HF records. The indicators listed below may be divided by the target population of underfives, and expressed as proportions of the number expected given the size of the population. (This is known as “utilization-based coverage”).

Indicators of utilization by disease category should be understood as “negative” indicators. For example, a low rate of attendances due to diarrhoea will suggest that the impact on diarrhoea case-management will be limited. This will identify shortcomings in utilization patterns, since attendance rates will be below what would be expected based on the HF’s catchment population.

On the other hand, a high attendance rate does not necessarily signal that the programme is performing in an adequate fashion.

The indicators of utilization include:

- 2.1. Annual number of attendances of underfives in IMCI HF
- 2.2. Proportion of attendances by main diagnostic category (diarrhea, ARI, measles, malaria, malnutrition, anaemia)
- 2.3. Comparison of actual attendances with expected number of episodes in target population of underfives
- 2.4. Number of children immunized, by type and dose of vaccine
- 2.5. Number of drugs distributed for use in children, by type

- 2.6. Number of micronutrient supplements distributed for use in children, by type
- 2.7. Number of impregnated bednets distributed

3. Coverage of IMCI

Coverage data usually require surveying representative samples of the target population. These indicators must be tailored to the characteristics of IMCI in the region. For example, not every HF may distribute micronutrient supplements or impregnated bednets.

- 3.1. Proportion of children in the target population who, having presented a given sign or symptom (diarrhoea, cough, fast breathing, fever, rash, etc) in the last x days, received health care by an IMCI HW (coverage of curative services).
- 3.2. Proportion of caretakers who, having brought their children to an IMCI HF, complied with the advice provided (additional ethnographic research may be needed).
- 3.3. Proportion of children in the target population who are fully vaccinated according to their age.
- 3.4. Proportion of children with diarrhoea in the last x days who received ORT.
- 3.5. Proportion of children who sleep regularly under impregnated bednets.
- 3.6. Proportion of children aged under two years who received nutrition counseling within the last x months.
- 3.7. Proportion of children aged under two years whose mother has a mother's card (nutrition counseling).
- 3.8. Proportion of children who received micronutrient supplements within the last x months/weeks/days.
- 3.9. Proportion of children who were weighed in a HF in the last x months, and whose weight was recorded in a growth chart.
- 3.10. Proportion of children aged 2-5 years with a weight under -2 S.D. who have received nutrition counseling in the last x months

4. **Impact of IMCI**

4.1. Impact on mothers' knowledge

(Indicators on mother's knowledge of danger signs, feeding recommendations, vaccinations, bednets, ORT, etc. These will have to be adapted to the locally developed educational messages)

4.1. Impact on behavior

4.1.1. Proportion of infants **less than 4 months of age who are exclusively breastfed.**

4.1.2. **Proportion of infants 6–9 months of age receiving breast milk and complementary foods.**

4.1.3. **Proportion of children 20–23 months who are breastfeeding.**

4.1.4. Proportion of children in the target population who, having presented a given sign or symptom (diarrhoea, cough, fast breathing, fever, rash, etc) in the last *x* days, were taken to an IMCI HW (careseeking behavior).

4.2. Impact on health and nutrition

4.2.1. Prevalences of wasting, stunting and underweight.

4.2.2. Prevalences of micronutrient deficiencies (iron, vitamin A - actual indicators to be decided).

4.2.3. Rates of hospital admissions due to diarrhoea, ALRI, malaria, measles, malnutrition and anaemia.

4.2.4. Distribution of hospitalized children according to severity of illness at admission.

4.2.5. Infant and underfive mortality rates.

- 4.2.6. Proportionate infant and underfive mortality rates^j.
- 4.2.7. Underfive mortality rates due to selected causes (pneumonia, diarrhoea, malaria, etc).
- 4.2.8. Proportion of all underfive deaths due to selected causes (pneumonia, diarrhoea, malaria, etc).

Of the above listed indicators, those relating to mortality impact will be more difficult to measure than those on nutrition, behavior or knowledge, particularly due to the large sample sizes required. This will be further developed in subsequent versions of the paper.

It should be stressed that the above list of indicators is preliminary, and will have to be expanded and adapted.

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^j Even in areas where mortality statistics are incomplete, proportionate mortality rates may be useful for showing time trends.

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