Tackling Unmet Need for Major Obstetric Interventions

Part 2
Establishment of the Protocol on the Collection of Data

Strengthening Essential Obstetric Care, basic and comprehensive, is the key strategy to obtain rapid improvements in safe motherhood. Essential Obstetric Care encompasses a wide range of interventions. These include a set of major surgical and technical interventions that may be required to treat a number of conditions that directly threaten the life of the mother during labour.

For a number of these interventions, the "major obstetric interventions for absolute maternal indications[1]" it is possible to map under-utilisation: the unmet need for this type of care.

In countries with high levels of maternal mortality policy makers and health care providers are often unaware of the extent of the unmet need for essential obstetric care – and of the often very real possibilities to improve things. Mapping unmet need for these "major obstetric interventions for absolute maternal indications" does not measure all the unmet need for basic or comprehensive essential obstetric care. It can however be useful to trigger the interest of a wide range of actors, lay and professional, in improving maternal health policies and services.

The UON network brings together ministries of health, development organisations, scientific institutions and practitioners who want to map unmet need for "major obstetric interventions for absolute maternal indications" as a starting point – not just to improve maternal health but also the overall functioning of their health care system. The UON-network provides technical support for national teams involved in this kind of work, as well as opportunities to learn from each other.

1 *List of Major Obstetric Interventions* : caesarean section, laparotomy for uterine breach, hysterectomy, internal version, symphysiotomy, craniotomy. *List of Absolute Maternal Indications* : severe antepartum haemorrhage (placenta praevia and abruptio placentae), severe pospartum haemorrhage, foeto-pelvic dystocia, malpresentation (traverse lie and brow presentation).

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Introduction

Guide on the establishment of the protocol on the collection of data

This paper is a guide on carrying out a study of unmet obstetric need. It considers in concrete terms the constitution of the research team, the selection of the areas to be studied, the process of consensual definition of interventions and indications and the preparation of the necessary questionnaires. It should thus be possible to carry out a study adapted to the context in a particular country. This document is therefore conceived as a guide rather than a standard protocol, so that each country can establish its own protocols and include the choices made on interventions, indications, areas to be studied and strategy on the collection of data.

This guide is the second in a series of technical documents produced by the Unmet Obstetric Need for Major Obstetric Interventions Network. The first document set out the general principles of the study and described the international network. Subsequent papers will deal with the analysis of data, the calculation and analysis of deficits in major obstetric interventions for absolute maternal indications and the process of change or adaptation of health policies and strategies required to improve maternal health and the development of health services generally.

Protocols required

In order to collect the information required for a study of Unmet Obstetric Need for Major Obstetric Interventionsit is necessary to develop:

- a document which specifies:
  - the composition of the research team appointed by the Ministry of Health;
  - the preparatory work;
  - the selection of the area to be studied;
  - the arrangements for informing the people concerned and achieving a consensus;
  - the assessment of the health formations concerned in the study;
  - the programme of preliminary visits and the arrangements for reporting on them; and the process for defining major obstetric interventions and absolute maternal indications and the results of the process.
- a specific protocol for a retrospective study, comprising:
  - a questionnaire for women involved in the study;
  - a guide on completing the questionnaire;
  - the arrangements for testing the questionnaire and the guide;
  - a programme of work in hospitals and clinics, including the content of the information required and the training of staff;
  - a description of the process for collecting data and the monitoring of this process;
  - the questionnaire for health formations concerned in the study;
  - a guide on completing this questionnaire; and
  - the arrangements for coding and feeding the data into the computer.
- a protocol for a prospective study, comprising:
  - arrangements for defining the distribution of tasks, the selection of geographical areas and the circulation of the information collected;
  - a summary table presenting the data;
  - a summary table showing MOI for AMI by area and health district; and
  - a guide on completing the tables.

Strategy for the collection of data

There are two possible strategies for the collection of data: either the central research team trains local teams (in provinces and districts) to carry out the collection of data, or the central team visits each of the areas covered by the study and collects the necessary data for each of the health formations serving the local population. The choice of one or other of these strategies will depend on the resources available, the technical abilities of the local teams and the possibility of monitoring the collection of data.

THE RESEARCH TEAM

A study of Unmet Obstetric Need for Major Obstetric Interventions will be launched only if the Ministry of Health of the country concerned (at either central or regional level) supports this initiative and intends to make use of the results. A group of health workers (directed by a coordinator) will be appointed to be responsible for the study from the early stages of preparation to the use of the results. This group will be called the "research team". The team may belong to a research institution, a university or a division of the Ministry of Health or may be made up of members from these different horizons.

The sponsor of the study is the Ministry of Health. The research team therefore acts in its name and in accordance with the directives it issues, whether the team is an integral part of the ministry or attached to a research institution.

The research team consists of health professionals with experience of this kind of study, both from the technical point of view (the collection of data) and in the organisation of the work in coordination with the ministry, with regional, provincial or district teams and with the hospitals concerned.

The research team will work in direct contact with health professionals in the hospitals and with health service managers. This collaboration is an essential point in the research process, both for the reliability of the collection of data and for the subsequent analysis of the results of the study and the consideration of solutions which it will stimulate locally.

PREPARATORY WORK

Before starting on the collection of data there are a number of necessary preliminaries: (i) to decide on the area to be covered by the study; (ii) to inform those responsible in the districts and hospitals involved in the study and other health workers concerned; (iii) to make an inventory of the hospitals to be visited; (iv) to visit one of these hospitals in order to get some idea of what can be expected from the routine arrangements for the collection of information; (v) to define the various indications to be taken into account in working out the indicator; and (vi) to draw up protocols on the collection and analysis of data.

Selection of the area to be studied

It is for the ministry, in discussion with the research team, to decide whether the study will from the outset cover the whole national territory or will be carried out in one or more regions or in a group of districts. The choice will be guided by the resources available to the research team for carrying out the study and by the information which the ministry desires to obtain on particular areas.

In order to ensure that the study is effective and to permit comparisons between countries the area to be studied must have a population of at least a million. It will as a rule comprise a number of sub-areas (districts or sub-districts) with populations of over 100,000.

The unit of analysis is the population of pregnant women in a sub-area* divided into two categories: urban areas (within not more than 10 kilometres of a hospital which performs major obstetric interventions) and rural areas (more than 10 kilometres from a hospital). The study will then be concerned with obstetric interventions carried out on pregnant women in the sub-area, making use of hospital registers and records in hospitals in the sub-area and in neighbouring hospitals, to which the women in practice go.

To qualify for inclusion in the study each of the sub-areas must meet the following criteria:

1. It must be possible to establish the number of inhabitants (the denominator) and the number of births expected.
2. The population must be at least 100,000 (for reasons of validity connected with the size of the confidence intervals). The number of births expected should be at least 2,000 in an urban area and around 3,000 in a rural area.

* It is possible, within a particular district, to measure intervention ratios by health centre area. It must be borne in mind, however, that the smaller the number of major obstetric interventions the greater the possibilities of chance errors. For example, in an area with a population of 12,500 and an expected 500 births it is to be expected that there will be around 5 major obstetric interventions for absolute maternal indications. If the number actually observed lies between 2 and 11 there will be no statistically significant difference from the figure of 5.

3. The necessary obstetric data must be available in the hospitals to which the women go, whether within the sub-area or outside it.
4. The data collected routinely by the hospitals concerned must specify the areas of origin of the patients. If it is not known where patients come from because their geographical origin is not routinely recorded in the hospital's registers and records, then a system must rapidly be put in place for collecting this data (for example by including an additional column in the hospital's registers): the retrospective study will then from the outset be replaced by a prospective study. The Ministry of Health, in coordination with the research team, will determine the area to be studied and the number of sub-areas in the light of the operational possibilities.

Informing the people concerned

The research team, appointed and given a clear remit by the Ministry of Health, will then establish contact with the people and social groups concerned: that is, either groups concerned in the provision of obstetric care (health personnel) or groups who may influence this provision at either central or peripheral level.

The various people and agencies concerned are:

- obstetricians working at national level in teaching (faculties of medicine) and/or in a technical department responsible for maternal health in the ministry;
- the country's medical association – the professional organisation to which doctors in both the public and the private sector, at national level and in the regions, belong;
- the national association of midwives and its regional branches (if any);
- clinical teams in maternity units and the gynaecological, obstetric and surgical departments and operating theatres in hospitals involved in the study; and
- directors and decision-makers in the sub-areas included in the study:
  - the district directing team of the health district (whether public, private or run by a religious organisation),
  - the directors of hospital structures in the area and members of their organising committees,
  - local elected representatives and political and administrative chiefs,
  - local members of associations of health professionals, and
  - local members of development associations in the area;
- health professionals involved in the conception of the health system, in technical support and the distribution of resources at the level of peripheral health structures:
  - Ministry of Health officials working on the development of key sectors such as health information, financial resources, human resources, hospital policy, the plan for health coverage of the country and the definition of health activities, and
  - officials of regional health directorates who are actively involved in support activities for the development of health services and in working out regional strategies for health action; and
- members of international organisations, bilateral cooperation organisations and non-governmental organisations involved, technically and/or financially, in action to reduce maternal mortality and in the development of the health system.

During these contacts the research team will seek to explain clearly their approach to the problem and will discuss the distribution of tasks. They will take into account existing work or work in progress on the subject in order to create the necessary synergies.

Some of those concerned should be sent a letter from the Ministry of Health or the regional authority before proposing a meeting. The letter should summarise the approach to the study and ask formally for their collaboration.

This informational stage is important as a means of securing the collaboration of those concerned, but also of increasing the chances of stimulating a regional or national dynamic when it comes to devising and implementing solutions.

Inventory of health formations involved

Once the area to be covered by the study has been settled an inventory must be drawn up of the hospitals concerned, including both public and private hospitals in the sub-areas involved in the study and hospitals which are outside the sub-areas but are used by women living within them. This inventory is important for two reasons: it provides an address to which information on the study can be sent, and it makes it possible to assess the work load, since an important factor in deter-

mining the time required to collect the information required is the number of hospitals to be visited (another being the strategy adopted for the collection of data).

Preliminary visit

A preliminary visit is essential in order to clarify the procedure for the collection of data and to check its feasibility. Members of the research team will visit a number of hospitals and clinics, both public and private, selected for their representative quality, and will seek in particular to

- check the precision and reliability of routinely recorded data;
- check whether the area of origin of patients is clearly recorded and the staff accept its validity (for example they are sure that the address given in the register is the woman's actual residence and not the address of a family, perhaps living near the hospital, with whom she had been staying in the period before her confinement);
- check whether the indications for intervention are explicitly recorded and whether the doctors concerned recognise their significance (for example, "obstructed labour" means actual foeto-pelvic disproportion and not dynamic dystocia), and take note of the way in which diagnoses are expressed;
- consider the possibility of cross-checks, for example between the hospitals' registers and the patients' records of treatment; and
- take account of any remarks and comments by health personnel on the approach proposed.

All this information will be useful in adjusting the protocol.

Definition of major obstetric interventions for absolute maternal indications

The choice of a definition of major obstetric interventions for absolute maternal indications is guided mainly by its operational and political significance. Its operational significance depends on the feasibility of the collection of information and also on its reliability (reproducibility from one hospital to another). Its political significance depends on the credibility of the indicator selected (the consensus of health professionals and academic authorities on a minimum ratio of interventions necessary to meet the needs) and on the information required by the ministry, which is frequently determined by questions related to resource planning (for example the potential of blood banks) or to local epidemiology (the incidence of eclampsias, or extra-uterine pregnancies).

To take these considerations into account it will be necessary to meet these two groups (ministry officials and academic authorities) and to set up a committee of national experts which will decide on the indications to be included in the indicator.

Account will also have to be taken of inter-country comparisons. In practice a list of major obstetric interventions and a list of absolute maternal indications will be drawn up, and each country should then be able to produce ratios based on this indicator. Each country, however, will be able to add any indications and interventions it wishes. For example, in some countries hypertensive disorders of pregnancy are a major problem, and the inclusion of eclampsia in the indicator may then be considered essential.

The list of major obstetric interventions for absolute maternal indications common to all countries is defined below. The interventions and indications which can be added to the standard indicator for the network are also discussed.

List of interventions to be considered in the definition of the indicator

(a) List of interventions included in the standard definition of the indicator

These are interventions which each of the national teams in the network will have to take into account. It should be noted that obstetric interventions are considered as major when hospital technologies are required to carry them out: surgery, sophisticated obstetric techniques which it is difficult to decentralise (internal version, craniotomy) without hospital facilities for dealing with complications.

- CAESAREAN: This is the major obstetric intervention par excellence. It is easy to identify in hospital registers and patients' hospital records. Attention should, however, be paid to the indications: a caesarean can be performed not only to save the mother's life but also to save that of the child, or for many other reasons which are not always associated with situations threatening the life of the mother or the foetus.

- LAPAROTOMY FOR SUTURE OF A UTERINE BREACH: The intervention is specific, and can be directly related to the indication "uterine rupture".
- HYSTERECTOMY: The intervention is specific: it is performed for certain uterine ruptures or in the event of uncontrollable haemorrhages or severe infection of the uterus. In view of its specificity the indications calling for it are absolute.
- VERSION AND EXTRACTION: The intervention is highly specific, and is carried out in precise situations (for example, transverse presentation of the second twin) by very experienced operators.
- SYMPHYSIOTOMY: An intervention performed in order to avoid a caesarean in a case of foeto-pelvic disproportion. It is usually carried out in a hospital so that if it fails a caesarean can be performed.
- CRANIOTOMY/CRANIOCLASIS: An intervention performed in a case of obstructed labour when the child is dead.

(b) List of interventions not included in the standard definition of the indicator

- BLOOD TRANSFUSION: Without other information it is difficult to say whether this intervention, in a case in which it had not been carried out, would have saved the mother's life; the decision to carry out a transfusion frequently depends to a considerable extent on the action of the health professional concerned and the resources available (blood bank, suitable donor). This intervention could be added on condition that the indications are standardised.
- MEDICAL TREATMENT OF AN ATTACK OF ECLAMPSIA: The treatment in intensive care of an attack of eclampsia can be classed as a major intervention if eclampsia is classed as a major indication (see indications).
- FORCEPS AND VACUUM EXTRACTOR: It is difficult to establish retrospectively whether the use of forceps or a vacuum extractor was an act of vital concern for the mother (even if it was for the benefit of the child). The use of these techniques is not standardised, and seems to depend to a considerable extent on the experience of the obstetrician or midwife. There is no standard ratio. Moreover these techniques can be carried out at the peripheral level, making it necessary – if they are to be taken into account – to extend the collection of data to all peripheral structures where such interventions are performed.
- MANUAL EXTRACTION OF PLACENTA: This intervention could be considered for inclusion. However manual extraction of the placenta is also practised in peripheral maternity units (dispensaries, health centres), which means that it would be necessary to extend the collection of data to all peripheral structures where such interventions are practised.
- CURETTAGE: The indication is, as a rule, a post-partum haemorrhage because of placental remnants. But, like manual extraction of the placenta, this is an intervention which can be carried out in primary-level structures. Including it in the indicator, therefore means extending the collection of data to all structures which practise it.
- SUTURE OF TEARS OF THE CERVIX OR PERINEUM: These complications are sometimes iatrogenic. It will be difficult, therefore, to have a standard ratio. The information could, however, be collected in order to have some idea of the scale of this type of complication.
- MEDICAL TREATMENT OF INFECTION: Many infections are secondary to septic incidents. There can be no standard ratio.
- LAPAROTOMY FOR EXTRA-UTERINE PREGNANCY: This is clearly a problem threatening the mother's life. The epidemiology of ectopic pregnancies is very variable between one country and another, between one region and another in the same country, and between one year and another. The difficulty, therefore, is to obtain a valid standard ratio. An urban ratio calculated for one town or group of towns evidently does not represent the scale of the need in a rural area or in other towns.

List of absolute maternal indications to be considered in the definition of the indicator

(a) List of indications included in the standard definition of the indicator

- SEVERE ANTEPARTUM HAEMORRHAGE: This is an absolute maternal indication if it is brought on by a placenta praevia or the separation of a normally implanted placenta (or retro-placental haematoma). Other cases are not sufficiently specific to be accepted as absolute maternal indications.
- POST-PARTUM HAEMORRHAGE: It is difficult to standardise a definition of post-partum haemorrhages which can be dealt with by révision utérine, the administration of Oxytocin or a trans-

fusion; but it is probably a very specific indication when a hysterectomy is performed as the only possible means of stopping the haemorrhage. The criterion will then be: post-partum haemorrhage for which a hysterectomy has been performed.

- FOETO-PELVIC DISPROPORTION AND UTERINE RUPTURE: Mechanical dystocias of this type are the result of a narrow pelvis or a hydrocephalic foetus, and uterine rupture can be a dramatic complication. It is sometimes difficult, however, to make a clear distinction between mechanical and dynamic dystocia in notifying the condition. It will be necessary to evaluate the reliability of this indication locally.
- DYSTOCIC PRESENTATIONS: These are transverse presentations – including prolapse of the arm and shoulder presentation – or other relatively rare presentations such as frontal, bregma or facial with incarceration of the foetal head (chin in sacral position). These are absolute maternal indications for which the only solution is a caesarean or version and extraction in a case of transverse position, for obstetricians who are competent to practise this.

NOTE: It is important for the analysis of the data to take account also of pregnant women who died before undergoing any major obstetric intervention. Whatever the problem is, all the women who die before an intervention have by definition an absolute maternal indication and should be included in the register.

(b) List of indications not included in the standard definition of the indicator

- HYPERTENSIVE DISORDERS OF PREGNANCY: Hypertension and pre-eclampsia, and even eclampsia, are not systematically fatal to the mother. The criteria for considering these indications as absolute are not clear. Moreover the treatment of these complications of pregnancy can be decentralised, making it necessary that the collection of information should be extended to all structures where hypertensive disorders are treated. Finally the "versatile" epidemiology of these pathologies, even within the same country, makes it difficult to define a standard ratio. In some countries, however, eclampsia is a relatively frequent problem and could be added.
- CORD PROLAPSE, BREECH PRESENTATION OR FACIAL (ANTERIOR) PRESENTATION: These problems are not considered as absolute maternal indications. Some of them will sometimes necessitate a major obstetric intervention, but the probability of this is not known and depends to a considerable extent on the attitude of the obstetrician and pressure from the family to avoid any risk for the mother or for the child.
- SEVERE ANAEMIA: Severe anaemia could be considered as an absolute maternal indication, but it would be necessary for a threshold to have been defined in advance and for that threshold to be uniformly applied. It is possible that this will not be the case and that the standard ratio measured in an optimal situation may over-estimate the need in relation to criteria for intervention in peripheral areas. Moreover ratios of prevalence of severe anaemia vary considerably from one place to another, and this makes it difficult to define a standard ratio, particularly when it is established on the basis of an urban population, who will as a rule have better access to preventive care.
- POST-PARTUM INFECTIONS: The measurement of the need to be met in this field would be a difficult matter, for the time spent in the health structure after the birth, and thus the possibility of picking up and treating infections, varies very considerably (from a few hours to a week). Moreover most infections are iatrogenic and thus depend on the quality of care at the birth, which makes it difficult to define a standard ratio.
- ABORTIONS: The great variability of clinical situations does not make abortion an absolute maternal indication for which a specific intervention will save the mother's life. Since alternatives exist it is difficult to calculate a standard ratio without first carrying out a complex study of abortions (particularly since ratios will vary considerably from place to place and from one year to another).

There are a further series of rare complications (pulmonary embolism, psychosis, heart disease, etc.) which could be integrated into the indicator of the need to be met. To add them, however, will not significantly increase the intervention ratio observed and will probably not make it possible to estimate the need for interventions for these types of problem. Moreover in many hospitals the technical equipment available does not make it possible to make this type of diagnosis.

It will be necessary to appoint an expert committee consisting of the research team, professors of obstetrics and practitioners in the field (obstetricians, surgeons or generalists who normally carry out major obstetric interventions). The task of this committee will be to validate the "major obstetric interventions for absolute maternal indications" indicator. The involvement of this group of experts is essential if the methodology and the results of the study are to be credible.

Retrospective study of major obstetric interventions for absolute maternal indications

Preparation of the individual questionnaire for women

The questionnaires for women and for health formations will be finalised by the research team of the country in which the study is being conducted. Some indications are given in this paper, but it would be illusory to cover every possible situation. The research team will work in collaboration with specialists and senior officials at national level in finalising their national versions of the forms.

Information to be collected

Information is required on a fairly limited number of points, mainly directed to identifying the health formation where the intervention took place, the women's area of origin, major interventions, indications and results for the mother and child.

A questionnaire is to be completed for every woman who has undergone a major obstetric intervention and for every pregnant woman who died in hospital before undergoing one of the interventions listed as major.

The data collected is for one year. If the year 1998 is chosen as study time, this means that all women who underwent a major obstetric intervention between 1st January and 31st December in that year will be recorded.

The questionnaire has three columns: the number of the question, the question and answer, and the code for the answer. The coding can be decided just before the data is fed into the computer. It is, however, necessary, before the collection of data begins, to decide on the level of precision required for some items and to clarify what form of answer is required to each question, in order to facilitate the analysis and interpretation of the data. These decisions will be set out in the guide on the completion of the questionnaires.

No. of Quest'n	Questions and Answers	Code
Q1	**Identification of health formation** Province/district : ..... Name :	☐☐☐
Q2	**Identification of parturient :** Admission number:	
Q3	Date of admission : ...../...../.....	
Q4	Year of birth :	
Q5	Address of parturient : District : ..... Village/town : ..... Quarter/street :	☐☐☐
Q6	Health centre area :	☐☐☐
Q7	Type of area : Urban Rural Unknown	
Q8	**Place of delivery :** - at home - this health formation - another formation : ..... - which other? :	☐
Q9	**Major obstetric intervention** Date of intervention : ...../...../.....	
Q10	**Type of intervention :** - caesarean - hysterectomy - laparotomy - version and extraction - craniotomy/cranioclasis/embryotomy - symphysiotomy - other (specify) :	☐
Q11	**Indication :** - uterine rupture - obstructed labour for transverse presentation - obstructed labour for frontal presentation - obstructed labour for foeto-pelvic disproportion - obstructed labour for other presentation - obstructed labour for dynamic dystocia - obstructed labour for other cause - complications connected with cord - ante-partum haemorrhage for placenta praevia - ante-partum haemorrhage for retro-placental haematoma - ante-partum haemorrhage for other cause - post-partum haemorrhage - hypertension, pre-eclampsia - toxaemia, eclampsia - puerperal infection - breach presentation - antecedent of caesarean - other obstetric antecedent - other cause - foetal distress - cause not recorded	☐☐

Q12	**Results for child** - born living and emerged living - still-born - born living and died within 24 hours - not recorded	☐
Q13	**Results for mother** - nothing to report - complication : see Q14 - referred to another health formation : ..... - died : see Q15 and Q16	☐
Q14	Type of complication :	☐
Q15	**When mother died :** - before intervention - during intervention - after intervention - not recorded	☐
Q16	**Cause of mother's death :** - hypertensive disorder - haemorrhage - infection - other (specify) : ..... - unknown	☐
Q17	Date of mother's discharge : ...../...../.....	
Q18	Form completed by :	☐
Q19	Date of completion of questionnaire : ...../...../.....	
Q20	Check :	☐☐☐

Guide on completion of questionnaire

It is essential to produce a guide on the completion of the questionnaire. Its prime aim is to help members of the research team to enter the answers to the questions, but the preparation of the questionnaire is also of more general value to the research team, since this exercise will allow them to clarify what they want to analyse. The questionnaires must, of course, be adapted to the local context. Particular attention should be paid to the way in which diagnoses are formulated in the registers, and the items in the questionnaire should be worded in a form as close as possible to the way they are usually expressed.

Among the matters to be clarified the most frequently recurring are the following:

- Number of the questionnaire: should it be pre-printed or can it be generated locally; and in the latter case how can duplicate numbering be avoided? There are at least two ways of avoiding the pre-printing of numbers. Either the numbers generated at district level for each hospital by the district research team are preceded by the number of the district and of the hospital; or the district team assigns numbers beginning at 1 in each hospital and new numbers are assigned when data from the questionnaires is fed into the computer at central level.
- What numbers should be assigned to health formations? The number might consist of four figures, the first two representing the number of the district and the other two the number of the hospital in the district. For example 10 to 19 might be assigned to public hospitals, 20 to 29 to para-public hospitals, 30 to 39 to military hospitals and 40 to 49 to private hospitals. It is essential to draw up a list of hospitals by district with the numbers assigned to them. This will facilitate identification later: otherwise it will be necessary to look through all the questionnaires on which the full name of the hospital is given.
- Identification of the parturient. The admission number or the number of the woman's hospital record is entered in the data base and constitutes her identification code. A decision must be made to use systematically either the admission number or the record number.
- Address of the parturient. This is identified by a unique code, which will consist of four figures, the first two giving the number of the district of origin and the other two the number of the village or the quarter in a town within the district. A list of the numbers assigned to villages and quarters in towns should be drawn up.
- For most of the questions it might be recommended that the answer should be surrounded by a circle, or alternatively that the questionnaire should include at each question a small circle to be filled in when the question is answered.
- The definition of urban and rural areas should be clarified. The object, in the analysis of the data, is to compare the intervention ratio for women living near a hospital with that for women living at some distance from a hospital. The definition of urban and rural, therefore, is more closely related to accessibility than to socio-cultural environment.
- Place of delivery. When a woman has given birth in another health formation it is important to check whether this was a hospital, and if so whether a questionnaire has already been completed by the hospital which referred her.
- If there has been more than one intervention (for example a symphysiotomy and a caesarean) or more than one indication they must all be recorded. The officer completing the questionnaire must make sure that the question "other (specify)" is answered. A strategy must also be developed for dealing with a case where the information is insufficiently precise or of doubtful quality. For example a caesarean may be recorded, with a diagnosis of uterine rupture: if the uterus has been removed this amounts to a hysterectomy. Or the indication may be given as foeto-pelvic disproportion, followed by a reference to transverse position: it is the transverse position that should be recorded.
- Result for the mother. Where a mother has been referred to another health formation the questionnaire completed at that formation must be recovered and the two questionnaires associated.

Preparation of the questionnaire for health formations

Information to be collected

The questionnaire for health formations makes it possible to draw up a list of all health formations carrying out major obstetric interventions. It gives health planners a picture of the distribution of these formations, their current resources and their output. Analysis of the data will also make it possible to measure the work load and the distribution of personnel working in hospital maternity units.

The questionnaire records four types of information: the category and location of the hospital; its material resources; its human resources; and its activity in the field of obstetric care.

The items on which information is asked for under each head must be adapted to the national or regional context and directed towards specific questions with which health planners are concerned. For example the names of particular categories of personnel such as specialist midwife or certificated nurse vary from country to country; and the precise terms used in the particular country must be adopted in the questionnaire.

SPECIMEN QUESTIONNAIRE FOR HEALTH FORMATIONS

No. of Quest'n	Questions and Answers	Code
	Identification of formation	
Q1	Province/district :	☐☐☐
	Health formation (name) :	
	Address of formation :	
Q2	Type of hospital	
	- public: see Q3	1
	- university hospital centre	2
	- military	3
	- private	4
	- para-public	5
	- other :	6
Q3	Category of formation	
	- regional hospital	1
	- district/provincial/prefectural hospital	2
	- area hospital	3
	- other (specify) :	4
	Material resources	
Q4	Number of maternity beds	☐☐☐
Q5	Number of gynaecological and obstetric beds	☐☐☐
Q6	Total number of beds	☐☐☐☐
Q7	Number of operating theatres	☐☐
Q8	Number of operating theatres reserved for obstetrics	☐☐
Q9	Number of functional vacuum extractors (mechanical)	☐☐
Q10	Number of functional vacuum extractors (electronic)	☐☐
Q11	Number of functional forceps	☐☐
Q12	Number of ambulances	☐☐
	Human resources	
	Medical	
Q13	Number of gynaecologists	☐☐☐
Q14	Number of surgeons	☐☐☐
Q14	Number of junior doctors (gynaecology and obstetrics)	☐☐☐
Q15	Others (specify)	☐☐☐
	Paramedical	
Q16	Number of midwives with state diploma	☐☐☐
Q17	Number of certificated midwives	☐☐☐
Q18	Number of specialist midwives	☐☐☐
Q19	Number of other paramedicals (certificated)	☐☐☐
Q20	Number of other paramedicals (with state diploma)	☐☐☐
	Activity of health formation	
Q21	Number of admissions to maternity unit	☐☐☐☐☐
Q22	Total number of deliveries	☐☐☐☐☐
Q23	including dystocic deliveries	☐☐☐☐☐
Q24	including eutocic deliveries	☐☐☐☐☐
Q25	Total number of still-births	☐☐☐

Q26	Total number of maternal deaths	☐☐☐
Q27	Total number of caesareans	☐☐☐☐
Q28	Total number of uterine ruptures	☐☐☐
Q29	Form completed by :	☐☐☐
Q30	Date of completion of questionnaire:	☐☐☐☐
Q31	Result of survey	dd mm yy
	- questionnaire completed	1
	- questionnaire not completed	2

Guide on completion of questionnaire

Most of the items are sufficiently clear and simple, but there is frequently a difficulty over the personnel. In some hospitals some of the staff work part-time, and sometimes the number of doctors has changed in the course of the year. One solution to the difficulty is to give an average number, calculated in men/months (MM) divided by 12. For example someone working half-time is equivalent to 0.5% of a unit, so that if in a given hospital there are two doctors working throughout the year, plus one who leaves after three months and another who arrives at the beginning of October, this gives a total of 2 * 12MM for the doctors who worked all year, 3MM for the one who left after three months and 3MM for the one who arrived in October, making a total of 30MM/12 = 2.5.

The guide will explain, item by item, how to complete the questionnaire.

Testing the questionnaires and guides

The questionnaires on the patients and on the health formation must be tested in at least one structure of each type (public general hospital, university hospital, private clinic, hospital run by a religious body, any other type).

The feasibility of the questionnaire should be checked, particularly in relation to the indications for interventions. It is at this level that interpretations are most varied, depending on particular medical cultures. These cultures differ between one country and another, and the difference will be very evident if those carrying out the survey and the clinicians concerned have not had the same training. They also differ within the same country as between those working in the public, religious and private sectors. A term such as "obstructed labour" has a very different significance (sensitivity) to those working in different sectors. These differences must be sorted out during the testing process.

Collection of data

Preliminary remarks

PROGRAMME OF VISITS TO HOSPITALS AND CLINICS

The programme of visits will be drawn up on the basis of

- the final list of sub-areas (provinces, districts, regions, towns or other geographical entities) which are to be covered by the study;
- the list of hospital-type health formations in these sub-areas;
- the list of hospital-type health formations outside the sub-areas to which women go to be delivered or in a case of dystocia;
- preliminary contacts during the visits for testing the feasibility of the study, at working meetings with health professionals and Ministry of Health officials and in the light of the results of the testing process;
- the availability of the research team; and
- the resources allocated for the study.

Information and training for the staff of hospitals and clinics

The prime object of the study is to identify deficits in the performance of obstetric interventions and to induce changes in health policies and strategies. The involvement of health personnel

in the study is therefore essential to its success, if the information collected is to bring about the necessary changes and if hold-ups in the collection of data are to be avoided.

A brief session of information and training in each health formation will enable the staff to collect the data themselves from the registers and records of the hospital or clinic. This participatory approach will be equally important at the later stage of setting up a prospective study, for this will be wholly the responsibility of the staff of each health formation. The concern to ensure the reliability of data in this prospective study and the bringing about of the changes which it may be possible to introduce locally are two reasons which give the retrospective exercise an indispensable training role.

Collection of information on obstetric interventions

IN HOSPITAL

Register of births

References to an obstetric intervention are most frequently found in the register of the delivery ward, and this is therefore the document to be consulted in the first place. But in the course of the survey (which on average will take one or two days) all possible sources of information should be consulted – registers of births, register of the operating theatre, patients' records of hospitalisation and confinement and partograms. All these records should be brought together in one room to facilitate the extraction and cross-checking of data.

Then, starting from the first admissions on the sellected period of time (usually one year), the person carrying out the survey picks out all women in whose entry there is a reference to a major intervention. If this was the case, he opens a questionnaire and enters all the information available in the register. He then looks for additional data in other sources of information.

In the event of a contradiction between two sources of information the file will be put on one side and after the questionnaires have been completed will be brought forward for discussion with the caring team. A decision will then be taken on a consensual basis. At worst the information will be recorded as "missing".

Supplying missing information

When information from the register of births has been entered in the questionnaires the research team will check from the register of the operating theatre that no other intervention has been carried out but not recorded in the register of births. They then make sure in the accident and emergency department, the intensive care department, the gynaecology (and/or women's surgical) department that no pregnant woman has been admitted (and/or has died) but has not been recorded in the register of births.

He questionnaires in which some information is lacking will be reviewed along with the caring team, who will be able to supplement the data already entered on the basis of other documents or their own recollections. As a general rule, if the information is not certain it is better not to enter it.

Checking the information

When all the questionnaires have been completed a member of the research team will count the numbers of each type of intervention and compare them with the number calculated from the operating theatre register. Each questionnaire will be reviewed, and the research team will check the consistency and completeness of the answers.

Control

During the process of data collection one member of the research team will be given specific responsibility for checking that there are no errors in the completion of the questionnaires.

The checking could be done as follows in each health formation included in the study:

1. For one month, randomly selected, count the number of interventions performed and compare it with the number recorded in the survey.
2. For 5 per cent of cases, randomly selected, complete a second questionnaire independently and compare it with the first one.
3. For 5 per cent of cases, randomly selected, check that the information provided is complete.
4. If any errors are found, check all the data collected in the health formation.

The checking officer will also make sure that steps have been taken to recover the file (questionnaire) of a women who used more than one health formation for her confinement (referred from or to).

When the checking of a questionnaire has been completed the checking officer will enter a number in the questionnaire which makes it possible to identify the checker and the level of quality of the questionnaire.

Verify that each hospital has been visited

It should also be checked that all hospitals have been visited. This can be done by comparing the questionnaires on health formations (see below) with the list of hospitals supplied by the authority. The authorities may not, however, be fully aware of the practices of small private clinics in performing major obstetric interventions, and this information may have to be obtained by asking local health personnel, who will probably know about them.

Collection of information on hospitals

In theory the completion of the questionnaire on health formations should not take long. During the visit to a hospital for the completion of the questionnaire on women patients a member of the research team should have a meeting with the director or administrator of the hospital, who will provide the routine statistics which will be sufficient to answer most of the questions.

Private health institutions are sometimes reluctant to supply information to a government authority. The research team should therefore be provided with letters of introduction from the national medical association and the health authorities (signed by the regional director of health services or the minister himself). It is important to take time to explain the object of the collection of data and to assure the management of a private hospital that the information will remain confidential (and will have no fiscal repercussions).

If the research team are refused access to a private hospital or clinic it may be possible to negotiate the completion of the questionnaires and the checking of the figures by the staff of the hospital. If this is not possible it will be necessary to make an estimate of the number of major obstetric interventions carried out in the hospital. This figure will appear in the analysis as "no response".

Circulation of questionnaires

If the research team is collecting information district by district and directly supervising the collection process the data can be fed into the computerised data base as they go along. In this case the questionnaires will remain at district level.

If, however, the data is fed into the computer at central level after all the information has been collected the questionnaires should be sent to central level, and will be returned to the district teams after the data has been entered in the data base.

Processing of data

For the entry of data into the data base one of the widely available programs, such as EPI-INFO, can be used. The system of coding should be devised with care, districts, health centres, villages, quarters in towns and hospitals being assigned codes at the outset of the study. The data should be rigorously checked to eliminate major inconsistencies and duplicate records.

PROSPECTIVE STUDY OF MAJOR OBSTETRIC INTERVENTIONS

Preparation of a prospective study

After the collection of data on major obstetric interventions performed during the selected period of time and on the output of health formations has been completed, arrangements can be put in place, for a continuing process of collecting data (i.e. a prospective study).

This second phase has a double aim:

1. to refine the arrangements for the collection of data, taking account of problems encountered in the course of the retrospective study, for example as regards the place of origin of the patients, the maternal indications, the interventions or the consistency of the information from different health formations; and

2. to seek to develop attitudes to the meeting of obstetric needs, and thereby health needs in general, by using the data collected as a continuing stimulus to the analysis and discussion of the services by directing teams in the sub-area (health district) or region.

If a decision is taken to begin collecting data prospectively, the research team should set the process in motion at the end of the retrospective exercise. The process consists of:

- preparing the summary table on the basis of the matrix suggested below;
- establishing mechanisms for the circulation and use of this information at meetings of the caring teams and the directing team;
- organising the distribution of tasks between the staff and the departments concerned, even if the collection of data involves practically no additional work;
- settling the detailed changes required in the health information system, for example as regards the patient's area of origin; and
- if necessary, defining sub-areas for a more detailed study of specific deficits.

Forms for collection of data

Two summary forms are suggested. One records case by case all major obstetric interventions (one sheet per hospital); the other presents a summary at district level.

Table summarising hospital data for an UON prospective study

SPECIMEN FORM

Unit / area / health district :
Hospital :
Period : from ..... to .....

No.	No. of file	MOI	Indication	HC area of origin	State of mother			State of child		
					OK	Died	Complicns	OK	Still-born	Died within 24 hrs

INSTRUCTIONS

A line must be completed for each major obstetric intervention.

MOI: enter the type of major obstetric intervention (caesarean, hysterectomy, version, laparotomy, craniotomy/embryotomy, symphysiotomy).

Indication: enter the indication for the intervention (one of the indications listed in the questionnaire for women).

HC area of origin: enter the health centre area from which the woman came (the unit of analysis for the district). It should be noted whether it is an urban or a rural health centre. In the case of a mixed (partly urban and partly rural) health centre area the reference to urban or rural will define accessibility (more or less than 10 kilometres from the hospital).

State of mother: tick the appropriate box.

State of child: tick the appropriate box.

SUMMARY TABLE SHOWING MOI FOR AMI BY AREA AND HEALTH DISTRICT

At the end of the period selected for the prospective study each team will produce a summary of their results in the form of a table, making it possible to calculate deficits in the performance of major obstetric interventions. This exercise will be greatly facilitated by the experienced gained by health workers through their participation in the retrospective study.

SPECIMEN FORM

Region / province / prefecture :
Unit / area / health district : (1)
Number of inhabitants in urban areas : (2)
Number of inhabitants in rural areas : (2)
Period: from ..... to ..... (3)
Number of births expected in urban areas : (4)
Number of births expected in rural areas : (4)
Number of births expected in the area as a whole : (4)
Number of MOI for AMI expected in urban areas : (5)
Number of MOI for AMI expected in rural areas : (5)
Number of MOI for AMI expected in the area as a whole : (5)

Health area (6)	MOI for AMI		Total MOI		Births		Deficit MOI / AMI	
	No. (7)	Prop. (8)	No. (9)	Prop. (10)	No. (11)	Prop. (12)	No. (13)	Prop. (14)
							X	X
							X	X
							X	X
							X	X
Total urban								
Total rural								
Total district								

INSTRUCTIONS ON THE USE OF THE SUMMARY TABLE AND THE CALCULATION OF DEFICITS

(1) The main unit of health administration in the country, with a population of at least 100,000.
(2) An urban population is defined for this purpose as a population living within 10 kilometres of a hospital in which major obstetric interventions are performed. If any other definition is used (for example the administrative definition of an urban population) this must be clearly stated.
(3) The period must be the same for all hospitals. The minimum period is six months.
(4) The number of births expected during the period of study in urban and rural areas and in the area as a whole, calculated on the basis of the birth rate adjusted for the period.
(5) Number of MOI for AMI expected in urban and rural areas and in the area as a whole, calculated with the help of the referenceratio applied to the total number of births expected in the area as a whole.
(6) Names of health centre areas (or sub-areas of the district). If the area is partly "urban" and partly "rural" the two sectors should be listed separately.
(7) Total number of MOI for AMI performed on women from each of the health centre areas within the district. The totals are compiled from the summary tables for each of the hospitals.
(8) Proportion of MOI for AMI performed on women from the health centre area (column 7) to the number of births expected in the health centre area x 100.
(9) Total number of MOI performed on women from each of the health centre areas within the district. The totals are compiled from the summary tables for each of the hospitals.
(10) Proportion of MOI performed on women from the health centre area (column 9) to the number of births expected in the health centre area x 100.
(11) Total number of births during the period in hospitals either within the district or outside it to women from each of the health centre areas. The totals are compiled from the summary tables for each of the hospitals.
(12) Proportion of births during the period in hospitals either within the district or outside it to women from each of the health centre areas x 100.
(13) Total deficit – in urban/rural/total areas – of MOI for AMI, calculated by subtracting from the expected number of MOI/AMI in urban/rural/total areas the total number of MOI/AMI actually performed in all health centre areas (distinguishing between urban and rural).
(14) MOI/AMI deficit ratio, calculated by dividing the deficit (column 13) by the number of MOI/AMI expected for urban and rural areas and the district as a whole x 100.