

# Tackling Unmet Needs for Major Obstetric Interventions

## Case Studies

### Tanzania

#### CONTENTS

ABBREVIATIONS.....	2
1. INTRODUCTION.....	3
2. CONTEXT.....	3
<i>General</i> .....	3
<i>Health policy</i> .....	4
<i>Maternal health policy</i> .....	4
3. THE UON EXERCISE .....	6
4. THE 1999 PILOT STUDY .....	6
<i>Introduction</i> .....	6
<i>Results of study</i> .....	6
<i>Conclusions</i> .....	11
5. THE 2000-2002 STUDY .....	11
<i>Introduction</i> .....	11
<i>Equipment and method</i> .....	11
<i>Methodology of the study</i> .....	11
6. UTILISATION OF RESULTS.....	14
7. DISCUSSION AND CONCLUSIONS.....	14
<i>The conceptual approach</i> .....	14
<i>Methodology</i> .....	15
<i>Conclusions</i> .....	16
ANNEX 1 QUESTIONNAIRE FOR "HEALTH FORMATION" .....	17
ANNEX 2: QUESTIONNAIRE FOR "WOMAN" .....	19
ANNEX 3: SUMMARY SHEET OF MOI FOR AMI .....	21
ANNEX 4 ABSOLUTE MATERNAL INDICATIONS: DEFINITIONS USED IN TANZANIA .....	22

## **ABBREVIATIONS**

AMI: Absolute Maternal Indication

ANC: antenatal care

DEV DG: Development Directorate General (European Commission)

DFID: Department for International Development (of the British government)

DHS: Demographic and Health Survey

EB: Expected births

EC: European Commission

GTZ: Gesellschaft für Technische Zusammenarbeit (German Cooperation)

HC: Health centre

IEC: Information - Education - Communication

LB: Live births

MOI: Major Obstetric Intervention

UNDP: United Nations Development Programme

UNFPA: United Nations Population Fund

UNICEF: United Nations Children Fund

UON: Unmet Obstetric Needs

USAID: United States Agency for International Development

WHO: World Health Organisation

## 1. INTRODUCTION

The study of Unmet Obstetric Needs in Tanzania consists of two phases: a pilot study carried out in 1999 in one hospital and a two years' study at present in progress in five hospitals in two regions.

The data yielded by the pilot study will be critically analysed. Since the database is not documented, it will not be possible to amend the comments made by the Tanzanian research team. This first survey has enabled the team to evaluate the feasibility of this type of study in Tanzania.

The second phase of the study not being yet completed, we have not yet the data collected for the first year of the study, nor any intermediate reports on the study. We are thus not in a position to carry out any statistical analysis in terms of deficits in Major Obstetric Interventions for Absolute Maternal Indications. This paper will therefore be mainly a review of the process followed by Tanzania in carrying out the UON study.

After a brief review of the Tanzanian geo-political context, we have given particular attention to the development of health policies in Tanzania, particularly in the field of maternal health. The chronology of the development of the study will be described, and the two separate phases of the study will then be presented, with the main accent on an analysis of the results obtained in the pilot study. The discussion of the phases at present in progress will be more concerned with the methodology employed.

## 2. CONTEXT

### *General*

Tanzania, with an area of 945,000 sq.km, is the largest country in East Africa, lying on the shores of the Indian Ocean. Its population, estimated at 31 million in 1999<sup>1</sup>, is 75% rural and relatively young, with 44% under 15. Administratively Tanzania is divided into 25 regions, 5 of them on the island of Zanzibar. The regions are divided into districts. The country, consisting of the former Tanganyika (originally a German colony, mandated to Britain after World War I) obtained its independence in 1961 and united with the former British protectorate of Zanzibar in 1964. The first President was Julius Nyerere. In 1967, in the declaration of Arusha, Chinese communism was taken as the model for a socialist republic. This led to the Ujamaa movement, which established model villages based on communal organisation and governed by the villagers themselves. When this model, based on the predominant role of rural collectivities, proved unsatisfactory President Nyerere decided to redirect the country towards a pattern of direct control by the state. He turned towards China, sharing in its political ideas. His support, at great cost, of the Ugandan guerrilla movement led his country to ruin. In 1977, he established a single-party state, and in 1985 handed over power to Ali Hassan Mwinyi, who legalised a multi-party system in 1992. Although now retired from power, Nyerere remains a highly influential figure. In face of the economic crisis, President Mwinyi altered the country's policy, encouraging the development of the private sector and embarking on agricultural reform with the support of the International Monetary Fund. The country then joined the Islam in Africa Organisation and the Organisation of the Islamic Conference, from which it withdrew two years later. In 1995, a new President, Benjamin Mkapa, was elected after a lively election. Since becoming independent, this very poor country has had to cope with widespread corruption.

<sup>1</sup> UNDP Report 1999

## **Health policy**

The Ministry of Health has a pyramidal structure, consisting of the central level (the Ministry of Health), the regional level (the health districts) and, at the base of the pyramid, health centres, dispensaries and village health posts. The health system depends mainly on the public sector (67% of structures), but also on parastatal organisations, non-governmental organisations and private institutions. The health network is extensive, with a total of 3997 health structures, the great majority of which (3500) are rural dispensaries, together with 302 rural health centres and 195 hospitals in the country's 110 districts. There are also four national hospitals. After the Arusha declaration of 1967, the country's health policy aimed at equity and promoted accessibility to care of good quality in a spirit of independence and self-determination. Accordingly, many health centres were built, providing good coverage, with 72% of the population living within 5 km of a health structure (health centre, dispensary or hospital). At the same time, attention was given to the training of personnel, particularly paramedical personnel. Preventive programmes in the fields of maternal health, family planning, vaccination, tuberculosis and leprosy were also established during this period. The Alma Ata conference in 1978 gave fresh impetus to these policies. Importance is placed on access to health services, regarded as being one of the rights of man. The policy is focused on primary health care, and in 1992, a new strategy of primary health care was developed. Its objectives are to strengthen the management capacities of the districts, collaboration between sectors and the involvement of the community. At each level of the health pyramid there are steering committees.

The execution of this programme has encountered difficulties, mainly because of cuts in the budgets allocated to health services, the deterioration in health structures as a result of inadequate maintenance and the low motivation of under-qualified staff. During the 1980s, in an attempt to restore the country's economy, the budgets allocated to health services were largely diverted to the economic sector. It was only in the nineties that the government and donors of funds again took an interest in health and social needs and a reform plan (1996–99) sought to halt the deterioration in the quality of health services.

A new plan for the reform of the health sector (1997–2001) is aimed at making the Ministry of Health more efficient by reducing its scale and confining its role to the formulation of policy and the creation of an environment enabling the private sector to contribute to the health system. The autonomy and the powers of the health districts will be increased, and the local communities will be expected to play their full part in financing health services through formal and informal mechanisms of health insurance. The total budget for this reform has been estimated at 200 million US dollars.

## **Maternal health policy**

Maternal mortality in Tanzania is high: 529 per 100,000 live births according to the last DHS<sup>2</sup> (1996), 770 per 100,000 in 1990 according to UNICEF<sup>3</sup> or 1059 per 100,000 between 1987 and 1996 according to a survey using the sisterhood method<sup>4</sup>. The Ministry of Health's figures, however, are much more optimistic, estimating maternal mortality in 1991 at 215 per 100,000 LB (200–400/100,000 LB) – a figure which is considered to be much under-estimated. In a document entitled "Strategy for reproductive health and child survival 1997–2001" the Ministry estimates that the country's "real" maternal mortality is under-estimated by 60%. One of the causes of this under-recording is no doubt the low proportion of births in hospital. According to the last DHS (1996), the proportion of births assisted by health personnel is 47%, and seems to have fallen

<sup>2</sup> DHS 1996, <http://www.measuredhs.com>.

<sup>3</sup> The state of the world's children 1998, UNICEF, <http://www.UNICEF.org>.

<sup>4</sup> Hill K, AbouZahr C, Wardlaw T, 2001. Estimates of maternal mortality for 1995, *Bulletin of the World Health Organisation*, 79 (3), pp. 182-193.

since 1991 (53%). Since half the births take place in the mother's home, assisted by a traditional birth attendant, the figures for maternal deaths at home must undoubtedly be treated with caution.

Infantile mortality, which in 1960 was 142 per 1000 according to UNICEF, is now 93 per 1000 according to the same source and 115 per 1000 according to the DHS for 1996.

Since the Cairo conference of 1994, Tanzania has been engaged in a reproductive health approach. The main elements in this are family planning, improvement in the status of women, improvement in basic maternal health services and improvement in the first level of referral (for providing emergency obstetric services).

As regards the improvement of basic health services, the accent has been on preventive services (IEC, vitamin supplements, iron, folic acid and iodine salt), the training of health personnel in the use of the partogramme, the training of traditional birth attendants, the development of post-abortion care at referral structures and the equipment of health structures.

The Ministry of Health believes that the essential factors in maternal mortality are:

- the very low socio-economic status of women;
  - the heavy work performed by women who are often malnourished;
  - abortions, which account for 20% of maternal mortality;
  - inadequate and poorly trained staff;
  - shortage of equipment;
  - the inefficiency of the referral system;
  - the poor management of the emergency obstetric services;
  - AIDS, now becoming an increasingly important factor in maternal mortality.
- In an attempt to find solutions to these problems the Ministry of Health proposes:
- to improve the status of women by IEC and by improving food production;
  - to equip district hospitals to deal with post-abortion haemorrhages;
  - to encourage pregnant women to seek antenatal care in the first trimester and to equip antenatal care centres (ANC);
  - to motivate and train health personnel to a better understanding of reproductive health;
  - to train nurses in each district to deal with obstetric emergencies;
  - to renovate and equip health structures;
  - to supply health structures with medicines and equipment and to make contraceptives widely available;
  - to promote awareness in the community of the importance of early referral in the event of birth problems.

In support of this programme, the Ministry of Health depends on the cooperation of the Ministry of Agriculture, the Ministry of Community Development for Women and Children and various organisations both national (NGOs, Tanzanian Family Planning Association, etc.) and international (NGOs, UNFPA, UNICEF, USAID, GTZ, DFID, etc.).

### 3. THE UON EXERCISE

The UON exercise in Tanzania has two phases: a pilot study carried out prospectively in one hospital in 1999, which served as a basis for the development of a methodological guide and a study protocol, in preparation for the second phase which is at present in progress. This phase, also a prospective study, covers five hospitals in the Mtwara and Tanga regions and is planned to take two years.

### 4. THE 1999 PILOT STUDY

#### *Introduction*

This study, centred on one hospital in Mtwara, which covers both the urban and the rural populations of the district (127,105 inhabitants in urban Mtwara and 201,100 in rural Mtwara), was carried out prospectively on the data for 1999, a year during which there were 2639 births in this structure. This pilot phase was begun after the meeting at Dar-es-Salaam in February 1999 on the initiative of a member of the national study team (Mme Kitundu), who was stationed in the Mtwara hospital and worked in collaboration with the hospital team. The protocol used was based on the UON documents presented at the February meeting. A register of the information required for the study was set up in the maternity department of the hospital, and this was completed each day by Mme Kitundu, basing herself on the register of births and the operating theatre register, as well as the reports of the midwife in charge of the maternity department.

#### *Results of study*

##### *Major Obstetric Interventions*

In view of the poor documentation on the file available to us, it is difficult, and indeed impossible, to reproduce the analysis of the data made in Tanzania.

**Table 1** below shows the results of the analysis made by the Tanzanian study team at the Islamabad regional meeting in February 2000<sup>5</sup>. The indications considered were those taken into account by the UON study team, and the distinction between Absolute Maternal Indications and non-Absolute Maternal Indications follows the criteria used by that team. The very high proportion of foeto-pelvic disproportions in both urban and rural areas will be noted. Moreover the various problems of obstructed labour (uterine rupture, foeto-pelvic disproportions, obstructed labour and abnormal presentation) account for almost all the Absolute Maternal Indications (91% in urban areas and 94% in rural areas).

<sup>5</sup> Regional meeting of anglophone members of the UON network (Pakistan, Tanzania, Bangladesh) at Islamabad, 14-16 February 2000.

**Table 1.** MAJOR OBSTETRIC INTERVENTIONS FOR ABSOLUTE MATERNAL INDICATIONS (AS DEFINED IN THE TANZANIAN PROTOCOL) ACCORDING TO TYPE OF AREA, MTWARA, TANZANIA, 1999*Urban areas*

Indication	Intervention	C-section	Hysterec tomy	Cranio tomy	Total	%
<b>Absolute Maternal Indication</b>						
Uterine rupture			2		2	2%
Foeto-pelvic disproportion		55			55	64%
Obstructed labour		11		1	12	14%
Malpresentation		9			9	11%
Ante-partum haemorrhage		8			8	9%
<b>Total AMI</b>		<b>83</b>	<b>2</b>	<b>1</b>	<b>86</b>	<b>100%</b>
<b>Non-Absolute Maternal Indication</b>						
Prolonged labour		12			12	18%
Foetal distress		19			19	29%
Previous C-section		22			22	33%
Cord prolapse		2			2	3%
Others		11			11	17%
<b>Total Non-AMI</b>		<b>66</b>	<b>0</b>	<b>0</b>	<b>66</b>	<b>100%</b>
<b>Total AMI and Non-AMI</b>		<b>149</b>	<b>2</b>	<b>1</b>	<b>152</b>	

*Rural areas*

Indication	Intervention	C-section	Hysterec tomy	Cranio tomy	Total	%
<b>Absolute Maternal Indication</b>						
Uterine rupture			8		8	6%
Foeto-pelvic disproportion		88			88	68%
Obstructed labour		10		6	16	13%
Malpresentation		9			9	7%
Ante-partum haemorrhage		8			8	6%
<b>Total AMI</b>		<b>115</b>	<b>8</b>	<b>6</b>	<b>129</b>	<b>100%</b>
<b>Non-Absolute Maternal Indication</b>						
Prolonged labour		16			16	18%
Foetal distress		26			26	29%
Previous C-section		29			29	32%
Cord prolapse		3			3	3%
Others		16			16	18%
<b>Total Non-AMI</b>		<b>90</b>	<b>0</b>	<b>0</b>	<b>90</b>	<b>100%</b>
<b>Total AMI and Non-AMI</b>		<b>205</b>	<b>8</b>	<b>6</b>	<b>219</b>	

Two important observations must, however, be made on this analysis:

- The absence from the indications of post-partum haemorrhages, in spite of the fact that these are considered by the Tanzanian team as the major cause of maternal mortality in Tanzania<sup>6</sup> (see above, **Error! Reference source not found.** page **Error! Bookmark not defined.**).

<sup>6</sup> MacLeod J, Rhode R. 1998. Retrospective follow-up of maternal deaths and their associated risk factors in a rural district of Tanzania, *Tropical Medicine and International Health*, 3, 130-137.

- The definitions of the various indications considered are not in agreement with those in the UON protocol (see Annex 4). The definitions of foeto-pelvic disproportion and obstructed labour present an evident conceptual problem. Cephalo-pelvic disproportions are defined as follows by the Tanzanian team: “Refers to a larger size of foetal head, relative to the size of maternal pelvis. It is a dynamic situation, and many cases of suspected CPD do deliver normally after an adequate trial of labour. To arrive at this diagnosis there should be lack of progress of labour in the presence of adequate uterine contractions on the partogramme, the pattern will be that of protracted descent and/or arrested dilatation, crossing of the action line, and no response to oxytocin.” Their definition of obstructed labour is as follows: “Absolute mechanical (foeto-pelvic) problem, and no further progress is possible without intervention. Associated clinical signs include excessive caput and moulding”: thus much nearer the definition of foeto-pelvic disproportion used in the UON modules.

The Tanzanian definitions of foeto-pelvic disproportion and obstructed labour are very close to one another. The latter (obstructed labour) is the one which is closest to the UON definition of foeto-pelvic disproportion. The former (foeto-pelvic disproportion) seems to refer to a more general situation of dynamic dystocia, which could be considered as foeto-pelvic disproportion after the failure of a directed dynamic trial of labour<sup>7</sup>. Thus if we reconsider **Table 1** using the definitions employed in the UON studies we obtain a very different distribution of MOIs for AMI. In **Table 2** foeto-pelvic disproportions (Tanzanian definition) become dynamic dystocias (UON definition) and obstructed labour (Tanzanian definition) becomes foeto-pelvic disproportion (UON definition).

**Table 2.** MAJOR OBSTETRIC INTERVENTIONS FOR ABSOLUTE MATERNAL INDICATIONS (AS DEFINED IN THE UON PROTOCOL) ACCORDING TO TYPE OF AREA, MTWARA, TANZANIA, 1999

*Urban areas*

Indication	Intervention	C-section	Hysterec tomy	Cranio tomy	Total	%
<b>Absolute Maternal Indication</b>						
Uterine rupture			2		2	6%
CPD		11		1	12	39%
Malpresentation		9			9	29%
Ante-partum haemorrhage		8			8	26%
<b>Total AMI</b>		<b>28</b>	<b>2</b>	<b>1</b>	<b>31</b>	<b>100%</b>
<b>Non-Absolute Maternal Indication</b>						
Dynamic dystocia		55			55	45%
Prolonged labour		12			12	10%
Foetal distress		19			19	16%
Previous C-section		22			22	18%
Cord prolapse		2			2	2%
Others		11			11	9%
<b>Total Non-AMI</b>		<b>121</b>	<b>0</b>	<b>0</b>	<b>121</b>	<b>100%</b>
<b>Total AMI et Non-AMI</b>		<b>149</b>	<b>2</b>	<b>1</b>	<b>152</b>	

<sup>7</sup> A distinction must be made between a trial of labour and a directed dynamic trial of labour. A directed dynamic trial of labour should be resorted to in the event of a dystocia manifesting itself during labour, when the pelvis and the foetal volume appear normal and there are no complications. Whether the contractile activity is normal or not the dilation of the cervix ceases to progress. The directed dynamic trial of labour calls for an artificial rupture of the membranes and the application of a perfusion of oxytocin. The trial of labour is carried out in the case of a restricted pelvis, in order to establish whether a vaginal delivery is possible; it is, during a certain period of the labour, an attempt at delivery by natural means, the criterion for the success of which is the frank engagement of the foetal head. The beginning of the trial does not depend on the degree of dilation of the cervix nor on the beginning of uterine contractions but is initiated by the rupture of the membranes. Merger R, Levy J, Melchior J, 1985. Précis d'obstétrique, Masson, Paris, 1985, pp. 171-172 for directed dynamic trial and pp. 309-311 for trial of labour.

*Rural areas*

Indication	Intervention	C-section	Hysterec tomy	Cranio tomy	Total	%
<b>Absolute Maternal Indication</b>						
Uterine rupture			8		8	19.5%
CPD		10		6	16	39%
Malpresentation		9			9	22%
Ante-partum haemorrhage		8			8	19.5%
<b>Total AMI</b>		<b>27</b>	<b>8</b>	<b>6</b>	<b>41</b>	<b>100%</b>
<b>Non-Absolute Maternal Indication</b>						
Dynamic dystocia		88			88	49%
Prolonged labour		16			16	9%
Foetal distress		26			26	15%
Previous C-section		29			29	16%
Cord prolapse		3			3	2%
Others		16			16	9%
<b>Total Non-AMI</b>		<b>178</b>	<b>0</b>	<b>0</b>	<b>178</b>	<b>100%</b>
<b>Total AMI et Non-AMI</b>		<b>205</b>	<b>8</b>	<b>6</b>	<b>219</b>	

The results are then very different, with foeto-pelvic disproportions now accounting for only 39% of indications and the various problems of obstructed labour (uterine rupture, foeto-pelvic disproportion and abnormal presentation) for 74% in urban areas and 80% in rural areas. Nevertheless there is no doubt that some of the cases classified here as dynamic dystocias requiring a caesarean are in fact foeto-pelvic disproportions, and the 39% of foeto-pelvic disproportions in urban areas, for example (**Table 2**), is no doubt an under-estimate, while the 78% in urban areas (64% of disproportions and 14% of obstructed labour) presented in **Table 1** is a considerable over-estimate. The truth must lie somewhere between these two proportions.

**Table 2** still gives an incomplete view of the situation in terms of the quantitative handling of Absolute Maternal Indications, since it includes no post-partum haemorrhages.

This revision of the definitions of Absolute Maternal Indications has also major repercussions on the deficits observed. The Tanzanian analysis, recapitulated in **Table 3**, shows considerable excesses over the minimum coverage required (strongly negative deficits of -69% in urban areas and -61% in rural areas), while the calculation of unmet needs using the definitions in the UON modules gives deficits of 39% in urban areas and 49% in rural areas (**Table 3**).

**Table 3. DEFICITS IN MAJOR OBSTETRIC INTERVENTIONS FOR ABSOLUTE MATERNAL INDICATIONS ACCORDING TO TYPE OF AREA, MTWARA, TANZANIA, 1999**

Area	Population	Expected births	MOI for AMI		Deficits		
			Expected	Performed	Number	%	
Urban	127,105	5.084	Tanzanian protocol	51	86	-35	-69%
			<b>UON Protocol</b>		<b>31</b>	<b>20</b>	<b>39%</b>
Rural	201,000	8.040	Tanzanian protocol	80	129	-49	-61%
			<b>UON Protocol</b>		<b>41</b>	<b>39</b>	<b>49%</b>

\*Expected births are calculated on the basis of the referral rate selected by the Tanzanian team, i.e. 1% of MOI/AMI per 100 expected births.

The MOI/AMI rates per 100 EB are also different from those declared by the Tanzanian team (1.7 in urban and 1.6 in rural areas). The urban rate calculated using the definitions in the UON protocol is 0.6 per 100 EB and the rural rate 0.5 per 100 EB. The "Tanzanian" urban rate is much above the referral rate used in the study (1%, selected on the basis of data from the Moroccan study). The "UON" urban rate of 0.6% is below the referral rate, partly because it does

not include post-partum haemorrhages but no doubt mainly because some of the dynamic dystocias, here withdrawn from the list of Absolute Maternal Indications and previously regarded by the Tanzanian team as foeto-pelvic disproportions, are really foeto-pelvic disproportions. Unfortunately, we have no supplementary information which would enable us to distinguish between dynamic dystocias and foeto-pelvic disproportions.

The caesarean rate in the study is 2.9 per 100 EB in urban areas and 2.5 in rural areas. It should be noted, however, that in urban areas more than 80% of these are performed for non-Absolute Maternal Indications (45% if the definitions in the Tanzanian protocol are used). In rural areas, 87% of caesareans (44% if the Tanzanian definitions are used) are performed for non-Absolute Maternal Indications. Of these non-Absolute Maternal Indications, almost half are dynamic dystocias, 15% foetal distress and 18% earlier caesareans. The systematic use, according to the type of problem encountered, of a trial of labour or a directed dynamic trial of labour would no doubt considerably reduce the rate of caesareans performed.

### *Uterine ruptures*

The small number of uterine ruptures makes analysis difficult. It may be noted, however (**Table 2**), that they are proportionately more frequent in rural areas (5% in urban areas compared with 19.5% in rural areas). This no doubt reflects a difficulty of access to health structures for women living at some distance from the hospital.

### *Maternal mortality*

Among the 2336 live births in Mtwara hospital in 1999 there are reported to have been 14 maternal deaths (of which only 6 are recorded in the file), representing an intra-hospital maternal mortality rate of 599 per 100,000 live births. Of the 6 deaths included in the file, 5 followed a caesarean (for the sixth the intervention performed is not recorded), representing a maternal mortality rate of 1.6% of MOIs. No further information on these deaths was supplied, so no further analysis is possible. Since post-partum haemorrhage, considered the most important cause of maternal mortality in Tanzania<sup>8</sup>, has not been notified, it seems likely that among these 14 deaths a considerable proportion of those not included in the file were due to a post-partum haemorrhage.

### *Early neonatal mortality*

There are reported to have been 105 stillbirths in Mtwara hospital in 1999, or almost 4% of births. The figures for Tanzania, however, mention 2639 births and 2336 live births, which could mean that in reality 303 children died at birth or of the consequences of birth. The Tanzanian document does not mention any deaths within 24 hours of birth. Early perinatal mortality (whether following an intervention or not) would thus in reality be 303 for 2639 births, or a little more than 11%.

The file on the women covered by the study contains only 36 child deaths (28 stillbirths and 8 deaths within 24 hours), or an early perinatal mortality after Major Obstetric Interventions of 10%.

### *Work load and resources*

The Mtwara hospital has 40 beds, including 7 for maternity cases, and an operating theatre which is functional 24 hours a day. The medical staff consists of 7 doctors (not specialists in

<sup>8</sup> MacLeod J, Rhode R. 1998. Retrospective follow-up of maternal deaths and their associated risk factors in a rural district of Tanzania. *Tropical Medicine and International Health*, 3, 130-137.

obstetrics): 2 chiefs and 5 assistants. The paramedical personnel consists of 2 nurses and 8 midwives.

The hospital was responsible for 20% of all births in the district. In addition there are 4 health centres and 42 dispensaries in the district, though it is not known whether these establishments have staff trained to handle births.

Midwives carry out on average 27 deliveries per month, and doctors (if they all perform MOIs) rather more than 4 Major Obstetric Interventions per month.

## **Conclusions**

The 1999 pilot study, carried out on a small scale in only one hospital, has revealed the problems in defining Absolute Maternal Indications, and suggests that the diagnostic qualities of the hospital staff may pose problems. The considerable excesses over the minimum coverage of obstetric needs required reported by the Tanzanian team seems unconvincing in the context of the Tanzanian health system. Although the urban areas in this relatively small town of 100,000 inhabitants may be adequately covered, this cannot be said of the rural areas.

## **5. THE 2000-2002 STUDY**

### **Introduction**

The 2000–2002 study, also a prospective study, has been in progress now for almost a year. Since we have not been supplied with any data resulting from the study, this chapter will be mainly concerned with a description and analysis of the methodology of the study.

### **Equipment and method**

#### *Introduction*

The Tanzanian study is to take two years, from June 2000, when the collection of data began, to June 2002, when the final report is to be published.

#### *Population studied*

The Mtwara region is divided into four districts: urban Mtwara and rural Mtwara, with a combined population of 300,000, Masasi (pop. 420,000) and Newala (305,000). The three districts in Tanga region which are included in the study are Tanga (300,000), Lushoto (480,000) and Muheza (400,000). The number of births expected in each district will be calculated on the basis of the crude birth rate, which is 40 per 1000 in Tanzania.

#### *Referral rate*

It has not been possible to fix a specific referral rate for the area studied. The rate has therefore been fixed at 1% on the basis of Moroccan experience.

### **Methodology of the study**

In the absence of any recent information on the progress of the study or any documented data from the collection at present in progress, the results cannot be analysed here. On the basis

of working documents prepared by the Tanzanian team<sup>9</sup> some methodological considerations will be presented and discussed here.

### *Criteria for inclusion*

The criteria for inclusion in the study are a Major Obstetric Intervention or the death in hospital of a pregnant woman before having an intervention regarded as major (see Annex 2). All women who have had one of the interventions mentioned below will be included, and a questionnaire will be completed for each case. In order to include all women from the areas studied, hospitals in neighbouring districts are being visited in order to collect information about births to mothers from the districts under study and Major Obstetric Interventions for Absolute Maternal Indications performed on them in those hospitals.

### *The variables studied*

## **Questionnaire for women**

The Major Obstetric Interventions taken account of in the Tanzanian study are caesareans, hysterectomies, laparotomies for suture of breach, craniotomies and blood transfusions (Annex 2). Transfusions were added to the list of MOIs at the Dar-es-Salaam meeting in 1999, because post-partum haemorrhages are a frequent cause of maternal mortality in Tanzania.

The Absolute Maternal Indications taken account of are ante-partum haemorrhage, post-partum haemorrhage, uterine rupture, cephalo-pelvic disproportion, abnormal presentation (transverse or frontal), severe anaemia, previous caesareans (two or more) and puerperal infection. Other indications will also be recorded but will not be taken into account in calculating the indicator.

Internal version and extraction has not been included in the list of Major Obstetric Interventions, but no explanation of this decision has been given.

As regards the Absolute Maternal Indications, the list suggested in the UON protocol has been respected in spirit, but no distinction has been made in the ante-partum haemorrhages between placenta praevias and retro-placental haematomas.

The noting of the outcome of interventions for mother and child and of the time and place of death follows the recommendations of the UON protocol.

As regards the mother's area of origin, all women living within 10 km of a hospital in which Major Obstetric Interventions are performed are considered to be living in an urban area. Particular attention was paid to checking the mother's address. The study team believed that 15% of the parturients admitted to Mtwara hospital give an address in the town of Mtwara, where they have been staying while waiting for their confinement, although in fact their habitual place of residence is outside the town. When admitted to hospital, therefore, the women were required to make clear their normal place of residence. In a prospective study this variable is more easily verifiable than in a retrospective study, since the information gathered when the woman is admitted to hospital can be checked in case of doubt.

## **Questionnaire for health formations**

An inventory was made of health structures performing Major Obstetric Interventions (Annex 1). Hospitals situated outside the districts covered by the study will also be visited if it is found that they are performing Major Obstetric Interventions for women resident in the area covered by the study.

<sup>9</sup> Massawe S and Jahn A, Proposal for unmet obstetric needs (UON) assessment in Tanzania (draft), May 2000, and Guidelines for the unmet obstetric needs assessment in Tanzania (draft), May 1999.

### *Collection of data*

#### **Source of data**

The registers of the delivery room and the operating theatre were identified as the main sources for the collection of data. In order to ensure that the data was exact, guidance on the method of recording cases and information required for calculating the indicator was given to the staff of the departments concerned.

Staff were recommended to check the correctness of the number of cases recorded in each register, since it was observed during an evaluation of the quality of the records that some admissions were not systematically entered in both registers (certain women, being unable to meet the cost of hospital treatment, were not included in the register of deliveries, while others referred from a health centre were directly admitted to the operating theatre without passing through the labour room and were thus not entered in the delivery register).

Since certain information, particularly concerning the outcome of an intervention for mother and child, is frequently missing from both registers, arrangements are made in such cases to look for the information in other documents and, on the discharge of the mother, to carry out a systematic check of the information recorded.

The indications and interventions to be taken into account have been standardised, and lists of these have been drawn up. Each indication has been defined (Annex 4).

The partogrammes which are routinely used in health structures are preserved so that if necessary the notification of the interventions performed can be checked.

#### **Method of collecting data**

The Tanzanian study, unlike the studies carried out in other countries belonging to the UON network, is a prospective study. The period of study planned must be at least six months and must be the same for all the hospitals involved. Each hospital is required to submit a weekly summary sheet recording all Major Obstetric Interventions performed during the week, the indications for the interventions, the mother's area of origin (urban or rural) and the outcome for mother and child. The regional co-ordinator carries out a monthly supervision, checking that the questionnaire for women is completed daily and that the weekly summary is duly submitted. He then collects the weekly reports and sends them to the national co-ordinator to be coded. Visits by this co-ordinator also provide an opportunity to deal with any problems in the collection of data.

Four supervisions by the regional co-ordinator are planned in each region.

### *Analysis of data*

The centralised data is theoretically analysed in periods of three months. Quarterly reports are prepared as a basis for discussions at regional and district level with those involved in the study. These documents will also form a basis for comparisons between districts.

So far we have not received any of these reports. The first of them was due in August or September 2000, the second in November or December of the same year. A report after six months of the study is planned for January 2001. In June or July 2001, after a year of the study, the results of the collection of data in 2000 should in theory be available and used for a first dissemination of the results.

According to the study team, the process of collection of data is proceeding in accordance with the timetable worked out in May 2000.

## 6. UTILISATION OF RESULTS

Since there was no provision in the Tanzanian study protocol for interviews of the staff concerned, the only data available to us for evaluating the impact of the study is the information supplied directly by the study team. We are told that the Mtwara hospital team decided, on seeing the results of the pilot study, to launch a programme aimed at improving the quality of care. A meeting was held at the hospital in May 2000, when the team decided to concern themselves more particularly with the system of referral and planned a comparative analysis of the results of its establishment with the data for 1966<sup>10</sup>.

The results of the pilot study also led the study team to extend the study to two regions, increasing the population covered from 300,000 to 2.2 million. In addition, in order to improve the quality of the information gathered, particularly in terms of precision of diagnosis, the Absolute Maternal Indications were better defined; we can therefore hope that the databases for 2000 and 2001 will be of better quality.

## 7. DISCUSSION AND CONCLUSIONS

### *The conceptual approach*

The UON approach developed in Tanzania is unusual in being conceived from the outset as a prospective study. This has obvious advantages.

The study team, with the benefit of a pilot study, has been able to reveal the problems connected with the sources of information and, by putting in place specific tools for the collection of data, improve the quality of the process for the gathering of data.

The active involvement of the staff of health structures is facilitated, since the collection of information can be integrated into their daily work at the cost of a limited addition to their workload. This participation at the peripheral level also limits the risk inherent in the centralisation of methodological know-how in a study team established for the occasion and liable to disintegrate after the study. The assimilation of the study by workers in the field is thus a guarantee of the continuity of the exercise and for the later utilisation of the results.

Since the daily recording of information rapidly becomes routine, it will be possible in the longer term to integrate the information required for the calculation of the UON indicator in the national system of health information with less risk of resistance on the part of health service staff, the increase in their work load being progressive rather than violent.

An approach of this kind ought also to be financially advantageous, since those involved in the study are not specifically employed for the task but are already remunerated for their normal work and require no supplementary payment. The only staff costs involved are the expense allowances paid to supervisors for their field visits, together with similar allowances paid to regional co-ordinators.

There are, however, some not insignificant disadvantages in a prospective rather than a retrospective approach. The lapse of time between the collection of data and the practical utilisation of the results can be longer than in a retrospective study. With 5 hospitals involved, the collection of data for a retrospective study would no doubt have necessitated between 10 and 20 days, and the first analyses would have been available after a month. Here it will be necessary, even if partial results are supplied every three months as planned, to wait a year to complete the collection of data. One of the undoubted advantages of retrospective studies is the "surprise effect" produced by the announcement of the results in terms of deficits. Even if those involved in

<sup>10</sup> Jahn A, Kowalewski M, Kimatta s, 1998. Obstetric care in southern Tanzania: does it reach those in need? *Tropical Medicine and International Health*, 3, pp. 926-932.

health services are aware of their existence they frequently under-estimate their scale. In a prospective analysis supplying quarterly reports this “surprise effect” is compromised; the staff may become accustomed to the deficits observed, and the impact of the study will thus be minimised.

## **Methodology**

### *Referral rate*

There is a certain inconsistency here between the selection of a referral rate based on the results of the Moroccan study and the selection of interventions and indications taken into account in Tanzania for the calculation of the indicator. The referral rate of 1% (based on Moroccan experience) was calculated by including in the indicator a precise and documented series of interventions and indications. The referral rate is thus conditioned by these. Except in the Tanzanian study the considerable divergences in the selection of MOIs and AMIs threaten to make the referral rate used inappropriate:

- The inclusion of blood transfusions among Major Obstetric Interventions. This is justifiable only if the indications are properly standardised; for it is always difficult to be certain about the vital necessity of transfusions.
- The non-inclusion of version and extraction, usually performed for transverse presentations so as to avoid a caesarean.
- The inclusion of severe anaemias among the indications. A threshold of 6g/dl of haemoglobin has been applied; nevertheless, the prevalence of these anaemias being very variable between one place and another (particularly between urban and rural areas), it is difficult to calculate a reliable referral rate.
- Having had two or more previous caesareans is often considered an Absolute Maternal Indication. This is certainly the case when the earlier caesareans were performed because of mechanical problems of delivery (foeto-pelvic disproportion); but when these caesareans were performed for other, non-absolute indications (foetal distress, eclampsia, etc.) a vaginal delivery may be envisaged if the conditions for surveillance of the labour are good. The decisions of practitioners may vary considerably from one health structure to another and according to their level of competence. The standardisation of this indication is therefore not easy and a reliable referral rate difficult to determine.

The referral rate is thus in this respect biased, and no doubt too low if it is intended to reflect the real frequency of the indications and interventions included in the Tanzanian list. Transfusions, severe anaemias and previous caesareans are likely to be fairly frequent.

It would no doubt have been preferable either to follow the criteria for selecting indications and interventions laid down in the UON protocol or to try to estimate a referral rate specific to Tanzania by carrying out a small-scale study in an urban population with access to a hospital capable of dealing with obstetric emergencies.

Another problem resulting from the failure to adopt the UON list of indications and interventions is the difficulty – indeed the impossibility – of obtaining comparable results at the international level, since the other countries belonging to the UON network have all chosen to follow the UON protocol suggested in the basic modules.

### *Definitions of indications*

A particular effort has been made reconcile the “habits” of practitioners in terms of diagnosis and the recognised international specifications of the various indications. The effort made to standardise indications would be a major feature of the study if the definitions suggested were more precise, but this is unfortunately not always the case (see Annex 4). As has been

noted above (see Major Obstetric Interventions page 6), some of the definitions present problems. The definitions of “foeto-pelvic disproportion” and “obstructed labour” seem wrong, the former being defined as a dynamic dystocia and the latter envisaged as a mechanical problem with which are associated signs of uterine pre-ruptures.

### *Sources of data*

After the pilot study revealed a problem in the recording of certain variables (exact address of the mother, outcome of intervention for mother and child) a change was made in the registers of the labour room, specific columns being added to the register to permit the recording of this information. In view of the limited number of health structures involved the introduction of the new registers did not entail much additional cost (less than 1000 euros in total). If the study were to be extended to cover the whole country, however, it would be necessary to take account of the need to introduce the modified registers in all hospitals.

### **Conclusions**

The essential objective of the UON study in Tanzania is merely to evaluate the country's Unmet Obstetric Needs. The results of the study, from the Tanzanian point of view, will complement the studies, particularly in the field of maternal mortality, which have already been carried out or are in progress in Tanzania. The unusual feature of the Tanzanian exercise is its prospective approach, which is thus of great interest to other countries in the UON network, most of whom plan in future to include the calculation of the indicator in their national systems of health information. The first results of the study, which are expected in the summer of 2001, together with the analysis of the quality of the data collection and the assessment of the tools put in place specifically for the gathering and analysis of data will undoubtedly be very useful for assessing the feasibility of prospective studies.

Unfortunately, as has been noted above, the results of the study will not lend themselves directly to international comparisons. It will be possible to contemplate such comparisons only after a minute examination of the bases of the data and a correction a posteriori of the criteria for inclusion in the UON indicator.

The analysis of the impact of the study on maternal health programmes at national and regional level is not explicitly provided for in the Tanzanian protocol. It will therefore be necessary to wait for the national publication of reports on the study (planned for July 2001 and June–December 2002) to obtain the first information on the perception of the study by the various health workers concerned with maternal health.

Since the study is still in progress and the crude data not yet available, we shall have to wait to assess the advantages and disadvantages of a prospective study of Unmet Obstetric Needs.

## **ANNEX 1 QUESTIONNAIRE FOR "HEALTH FORMATION"**

### **1 Identification of the Health facility:**

- (1) Region:
- (2) District:
- (3) Name of the hospital:

### **2. Type of hospital:**

- (1) Public district hospital
- (2) Designated district
- (3) Private hospital/Mission hospital

### **3 Category of hospital:**

- (1) Regional hospital
- (2) District hospital
- (3) Municipal hospital

#### **Material resources:**

4. Number of maternity beds (labour, antenatal, postnatal):
5. Number of gynaecological beds:
6. Total number of beds:
7. Number of operating theatres:
8. Number of operating theatres reserved for obstetrics:
9. Number of functional vacuum extractors (mechanical):
10. Number of functional vacuum extractors (electrical):
11. Number of functional forceps:
12. No. of cars available for patient transfer:
  - (1) Ambulance
  - (2) Landrover
  - (3) Pickup

#### **Human resource MEDICAL:**

13. Number of gynaecologists (specialists):
14. Number of surgeons (specialists):
15. Number of Medical officers (MD):
16. Number of Assistant Medical Officers (AMOS):
17. Number of Clinical Officers (CO):

#### **MIDWIVES:**

18. Number of trained midwives:
19. Number of MCH - AIDS (MCHA):
20. Number of nursing assistants (NA):

#### **ACTIVITY OF THE HEALTH FACILITY: (Per annum)**

**(Period from \_\_\_\_\_ dd/mm/yy)**

21. Number of admissions to maternity unit:
22. Total number of deliveries:
23. Number of normal deliveries:
24. Number of vaginal operative deliveries:
25. Number of caesarean sections:
26. Number of live births:
27. Number of stillbirths:

28. Number of ruptured uterus:
29. Number of maternal deaths:
30. Form completed by:
31. Date of completion of questionnaire: dd/mm/yy:
32. Check by co-ordinator:

Results:

- 1) Questionnaire completed
- 2) Questionnaire not completed

**ANNEX 2: QUESTIONNAIRE FOR "WOMAN"**

This questionnaire will be filled in for EVERY WOMEN who has undergone a Major Obstetric Intervention, and for every pregnant woman who died in Hospital before undergoing one of the intervention listed as major (see appendix I).

**1. Name of the Region:**

(1) Tanga

(2) Mtwara

**2. Name of the District:**

(1) Tanga municipality

(2) Lushoto

(3) Muheza

(4) Mtwara Urban

(5) Mtwara Rural

(6) Masasi

(7) Liwale

**Identification of the woman:**

3. Name of the woman:

4. Year of Birth:

5. Date of admission:

6. Admission number:

7. Address/Residence:

(1) Village (Kijiji)

(2) Street (Mtaa)

8. Type of residence:

(1) Urban

(2) Rural

(3) Unknown

9. Estimated distance of place residence to the m.

10. Major Obstetric Intervention ate dd/mm/yy

11. Type of intervention (MOI)

(1) Caesarean section

(2) Hysterectomy

(3) Laparotomy for repair of ruptured uterus

(4) Blood transfusions

(5) Destructive operation

(6) Other (specify)

12. Indication for interventions (AMI)

(1) Uterine rupture

(2) CPD

(3) Ante-partum haemorrhage

(4) Postpartum haemorrhage

(5) Two or more previous CS

(6) Puerperal infection

(7) Severe anaemia

(8) Others specify

13. Outcome for the baby:

- (1) Born alive and discharged alive
  - (2) Stillborn
  - (3) Born alive and died within 24 hours
  - (4) Born alive and died > 24 hours ≤ 7 days
  - (5) Not recorded
14. Outcome for the mother:
- (1) Normal delivery
  - (2) Developed a complication (see no. 15)
  - (3) Referral to another hospital
  - (4) Died (see of 16 and 17)
15. Type of complication in the mother:
16. (Maternal death) mother who died when did it occur?
- (1) Before intervention
  - (2) During intervention
  - (3) After intervention
  - (4) Not recorded
17. Cause of maternal death:
- (1) Hypertensive disorder/eclampsia
  - (2) Haemorrhage
  - (3) Infection
  - (4) Anaesthetic complication
  - (5) Severe anaemia
  - (6) Others (specify)
  - (7) Unknown
18. Date of discharge:
19. Form completed by:
20. Date of completions of questionnaire:
21. Check by co-ordinator:

**ANNEX 3: SUMMARY SHEET OF MOI FOR AMI**

(To be filled in by each district Hospital) - weekly

1.Name of the district:

2.Name of the hospital:

3.Period from:                      o

**Form for collection of data:**

N°	Admission number	OK	Indication (AMI)	Area of origin (urban/rural)	Result for the mother			Result for children	
					OK	Died	Complication	OK	Stillbirth

**ANNEX 4 ABSOLUTE MATERNAL INDICATIONS: DEFINITIONS USED IN TANZANIA**

Ante-partum haemorrhage due to placenta praevia or abruptio placenta	Vaginal bleeding during pregnancy after 28 completed weeks of pregnancy
Cephalo-pelvic disproportion (CPD)	Refers to a larger size of foetal head, relative to the size of maternal pelvis. It is a dynamic situation, and many cases of suspected CPD do deliver normally after an adequate trial of labour  To arrive at this diagnosis there should be lack of progress of labour in the presence of adequate uterine contractions on the partogramme, the pattern will be that of protracted descent and/or arrested dilatation, crossing of the action line, and no response to oxytocin.
Obstructed labour	Absolute mechanical (foetal-pelvic) problem, and no further progress is possible without intervention. Associated clinical signs include excessive caput and moulding
NB: Prolonged labour/"poor (progress)" Very often given as an indication for CS	This is a "vague" indication. The reason for prolonged labour should be clear and indicated e.g. CPD, inadequate uterine contractions, malposition e.g. OPP, cervical dystocia
Malpresentation	This should be clearly specified: e.g. breech, transverse lie, brow presentation.(what else)
One previous CS	Indicate the reason for a repeat CS (previous CS is not per se an indication for another CS)
Two or more previous CS	This is an absolute indication for repeat CS
Ruptured uterine	Indicate whether spontaneous rupture or rupture of previous CS scar includes
Hypertensive disorders	Severe pre-eclampsia and eclampsia give the reason for CS in each case
Severe anaemia	Hb<6 gr/dl and ≥ 36 weeks gestation  CF at any gestation
Others	Includes medical conditions in the mother e.g. sickle cell, diabetes, neurological conditions, etc.
Foetal indications	Includes foetal distress, "bad obstetric history" IUGR, "cord prolapse", "precious baby", big baby, etc.