

**Assessment of the capacity of the health
services to provide
essential obstetric care in Tete province,
Mozambique**

Final report of the needs assessment

December 2000

1. INTRODUCTION

Maternal mortality is a serious health problem in Mozambique. While the last census in 1997 and the DHS¹ did not calculate exactly the maternal mortality ratio in the country, careful estimates indicate the MMR to be between 500 and 1500 deaths per 100 000 live births, but no reference is given. The only reliable information that is available comes from a sisterhood survey done in 1995². Even with these important differences in estimation of the exact figure of the maternal mortality, the problem is being recognised as an important one for the health planners and the donors in the country.

Mozambique has made a clear commitment to reduce the maternal mortality in the country. In 1998 a first nation-wide Safe Motherhood needs assessment³ was done, which was followed in the same year by a systematic review of the causes of 90 maternal deaths⁴. Following this dynamism within the ministry of health, a national strategy to reduce the maternal morbidity and mortality and neonatal mortality was formulated in 1999 and adopted in 2000, the document was launched as the: " *...Estrategias para a redução da morbimortalidade materna e neonatal.*" This document⁵ forms the basis for formulating interventions to reduce maternal mortality in Mozambique. It is based on strengthening the health services with the concept of the provision of obstetric care (basic and comprehensive) with an adequate referral system, community involvement and an improved data collection system.

In addition to the nationwide needs assessment for Safe motherhood and the analysis of the causes of the maternal deaths, the Ministry of health has taken the initiative to evaluate the actual capacity of the health system to provide essential obstetric care and deal with obstetric complications. Although this assessment did not cover the entire country, the results of the four provinces can be used to get a representation of the current essential obstetric care provision in Mozambique. This is still an ongoing exercise which will be completed in other provinces in the near future. These provincial level needs assessments on essential obstetric care provision are an essential step in the formulation of the operational plans.

Measuring maternal mortality and the use of health service indicators

The measurement of maternal mortality ratios, however, is a difficult task in Developing Countries, since reliable information is seldom available. Estimates of maternal mortality ratios can only be calculated from the measurements in samples of the population. The information obtained usually gives an idea of the scale of the problem either within the region or a country with large confidence intervals; but most of the time it is retrospective information over a period of five to ten years, and in addition, the data are rarely sufficiently precise to make it possible to take decisions on provincial level and mobilise the health care providers with a measurable progress over periods less than a decade.

Substantial work has been done internationally, on what are called process indicators to measure progress in reduction of maternal mortality. In practise, these process indicators are a useful tool for measuring the capacity of the health services to deal with obstetric complications. Between July-December 2000, the Family Health section of the Community Health department within the Ministry of Health, has engaged, with technical support from UNFPA, in an exercise to construct together with the provincial authorities in four provinces a list of seven process indicators that can be used for monitoring progress, either through direct collection from the health information system, or through low-cost provincial surveys integrated in regular monitor exercises of health activities.

- Availability of Essential obstetric care services for basic and comprehensive care
- Skilled attendance at delivery
- Met need for Essential obstetric care (Basic or Comprehensive)
- Caesarean sections as a proportion of all births (or met need for caesarean sections)
- Case fatality rate (facility based)
- Unmet Obstetric Need for Major Obstetric interventions (MOI for AMI)

In each of the provinces the indicator was calculated from the existing health information system, or from separate that their collection tools. Measures were taken to increase the internal validity of the exercise. The results here under, are classified according to the process indicators.

BACKGROUND INFORMATION ON THE PROVINCE

Tete is one of Mozambique's 11 provinces and is located in the central region of the country, with a population of almost 1.4 million. Administratively, Tete province is divided into 13 districts including the major urban district of Tete Cidade. According to the national statistics the use of reproductive health facilities in Tete during pregnancy and delivery is above the national average, but still too low to be satisfactory. Table A gives an overview of the most common indicators that can be calculated from the health information system.

TABLE A: INDICATORS RELATED TO THE SAFE MOTHERHOOD/RH CARE.

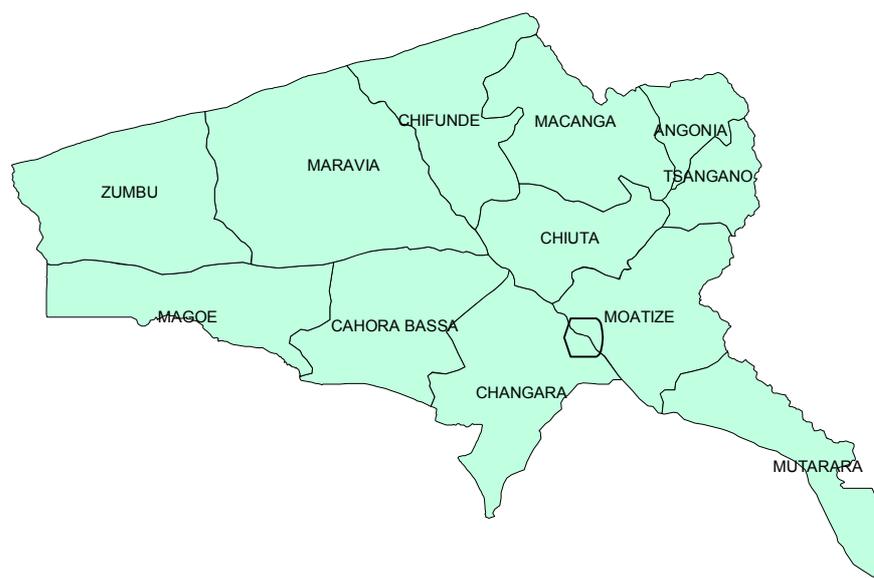
INDICATOR		SOURCE
Total fertility rate	7.0	DHS ¹
Maternal Mortality Ratio	942/100 000	Estimation ²
Skilled attendance at delivery	37%	Provincial statistics
Percentage of women attended at least once during pregnancy	96.2%	Provincial statistics
Percentage of women who attended postpartum care	44.8%	Provincial statistics
Proportion of pregnant women screened for Syphilis (RPR test)	13.4%	Provincial statistics
Proportion positive RPR	2%	Provincial statistics
Contraceptive prevalence rate	7%	Report from the RSC
HIV sero-prevalence in blood donors	12.5%	Provincial blood bank

In the 1997 DHS more than 37% of the woman reported having delivered their last child in a health unit with a maternity ward. The crude birth rate in Tete is 45/1000, equal to the national average. Thus, the province can expect about 69,000 births for the year 2001. The fertility rate in the province is one of the highest in the country and according to the DHS it was estimated at 7.0. The problem of adolescent pregnancies is also important and nearly 10% of the young women at the age of 15 are already mothers or are expecting a child. This proportion rises considerably to over 60% at the age of 18 years.

The organisation of the health services in relation to obstetric care

Within Tete there are 39 maternities scattered over the province but not all of them are operational. The capital district of Tete has 7 maternity wards in the urban health centres and the urban health posts. The provincial hospital of Tete acts as the main referral for the majority of obstetric complications in the province. Services are working well, however staffing is insufficient according to the hospital director and the maternity operates as a teaching unit for the Nurse training school of Tete/Matundo, which trains also basic and medium level MCH nurses. Three rural hospitals provide comprehensive obstetric care in Cahora Bassa district (Songo), Angonia district (Ulongué) and Mutarara district (Mutarara). The hospitals are unequally distributed over the province.

FIGURE 1 DISTRICTS OF THE PROVINCE TETE



For instance the north-western districts of Zumbu, Maravia and Magoe have difficult access to surgical services and most often refer to hospitals in Zimbabwe or Zambia. These isolated districts are also the less populated ones.

OBJECTIVES OF THE NEEDS ASSESSMENT

In absence of reliable data on maternal mortality, the use of process indicators is recommended⁶. These indicators are easy to construct and allow assessing the availability and the use of essential obstetric care. Some give an idea on the quality of obstetric services. Another indicator which has been used in this needs assessment is the Unmet Obstetric Need for major obstetric interventions (UON indicator) ⁷ . The objective of the study in Tete province is to collect data in order to construct these indicators and assess the capacity of the current health system to provide essential obstetric care and deal with the current load in obstetric complications. As a sub-objective the study will provide the baseline data that are necessary for the monitoring process and strengthen further programme planning.

In this report we have defined needs from the perspective of the health professionals. This implicates that needs are determined as the capacity to benefit from health services. The methodology of this is designed to assess the current capacity of the health services from a professional point of view. In the field of maternal health care a maternal death is evidence that this need has not been met. This definition of need is a way of analysing more specifically the health services and subsequently the results can be used to formulate an appropriate intervention to improve the essential obstetric care in the province. This methodology of formulating a needs assessment to evaluate the obstetric services and their capacity to deal with obstetric complications was also used as a basis for a wider needs assessment in the country. Similar assessments have been done in the provinces of Sofala, Inhambane, Gaza and Zambezia.

METHODOLOGY

The methodology that was used was adapted from existing international material for the needs assessment in Safe Motherhood; it was divided in three parts.

a) The first part of the needs assessment looked at the functioning of the health units with the maternity, and was based on the type of services they were delivering and the obstetric complications they were dealing with. UNFPA/WHO and UNICEF jointly described this methodology in the guidelines for monitoring the availability and use of obstetric services. Data were collected from the registers in the maternity wards of the peripheral maternity wards, the rural hospitals and the provincial hospitals.

b) The second part of the needs assessment was designed to evaluate the unmet need for major obstetric interventions or UON in the rural hospitals and the provincial hospitals. Details about this methodology are available in separate modules published within the UON Network, which is a worldwide initiative supported by the European Union, but basically does indicate there is constructed based on a number of major life-saving obstetric interventions which have been performed within a community. In this part of the needs assessment the individual files of all women who received a major obstetric intervention for an absolute maternal indication (MOI for AMI) in the hospitals of Tete, Songo, Mutarara and Angonia were used to construct the indicator.

c) The third part of the needs assessment was designed from the WHO guidelines for Safe motherhood needs assessment and was mainly dealing with the availability of medical material, small medical equipment, availability of essential drugs, infrastructure and staff.

Selection of the baseline indicators

The following indicators were selected as a basis to evaluate the current health care provision for obstetric care:

- Availability of Essential obstetric care services for basic and comprehensive care
- Skilled attendance at delivery
- Met need for Essential obstetric care (basic or Comprehensive)
- Caesarean sections as a proportion of all births (or met need for caesarean sections)
- Case fatality rate (facility based)
- Unmet Obstetric Need for major obstetric interventions

In annex 4 we have attached a table on how these indicators were calculated and what their minimum level is.

Selection of the sample.

A total of 17 units were selected for evaluation in 8 health districts of the province. Annex 1 provides a detailed list of the units, its current status in the health system, the district. All hospitals were included in the sample (1 provincial hospital of Tete, and 3 rural hospitals). The selection of the peripheral maternities was based on the presence of a midwife (elementary midwife or basic MCH nurse) and the present workload. The cut-off point for selection was chosen on the basis of the workload and set to be at least 10 deliveries a month, because below that level the units were not included in the sample.

Data collection

The data collection forms was based on the international guidelines for doing a needs assessment and were afterwards translated into Portuguese. For each part of the assessment specific forms were used. Form one and two assessed the obstetric complications in the health units. Form three to six evaluated the infrastructures, the equipment and medical material to provide the basic equipment for the essential obstetric care provision, the list of the available drugs for obstetric care and the registers for the basic registration of the movements in the maternity wards. The forms to assess the availability of equipment were adapted to the actual context of Mozambique by a specialised operation theatre assistant. For measuring the unmet need for major obstetric interventions a form was designed based on an available protocol. The use and completion of the forms were introduced in a workshop in Tete, before starting the exercise. The forms were pre-tested with the staff during a one-day practical training session. Two teams went out to do the survey. One team concentrated on the rural hospitals, while the other team was surveying the peripheral maternities. The exercise was co-ordinated by the provincial health team assisted by an obstetrician and an instrument nurse. Data were entered and analysed in Epi-Info 6.01b. For the mapping we used standard maps provided by WHO and Mapi-Info Software.

Use of the existing health information system.

With the objective of integrating the construction of the above mentioned process indicators in the existing health information system, the analysis also used data from the existing health information system

as additional information for comparison. For C-section the results of the survey were compared with the information available in the health information system.

RESULTS AND ANALYSIS

Part one: The assessment of the functioning of the health units based on the type of services they are delivering and the complications they are handling.

Availability of the Essential obstetric care services

The criteria for allocation of a basic essential obstetric care status to the health units were the following: the provision of parenteral antibiotics, the provision of parenteral oxytocic drugs, the provision of parenteral sedatives and anticonvulsant drugs, the manual removal of the placenta, the removal of other retained products in the womb and the expertise to perform an assisted vaginal delivery (here were chosen, vacuum extractor, forceps and breech delivery). For the determination of comprehensive services the criteria were the above mentioned plus blood transfusion and caesarean section.

Five of the surveyed peripheral maternities, were providing the full range of basic services, 8 did not. The basic EOC units are: Tsangano, Doa, Moatize, Chifunde and Zobué. All of the hospitals were doing caesarean sections and providing blood transfusions and thus respond to the criteria of comprehensive essential obstetric care provider . Table B gives an overview of the actual coverage.

TABLE B: AMOUNT OF ESSENTIAL OBSTETRIC CARE SERVICES

	ACTUAL AMOUNT OR COVERAGE	MINIMUM NORM
Basic EOC	2.3 / 500 000	4 / 500 000
Comprehensive EOC	1.8 / 500 000	1/ 500 000

These minimal norms are references from the literature. It is clear that the number of units that should in theory provide the essential obstetric care should be higher for the province and that the benchmark for Mozambique should be higher. Considering the fact that not all of the components of Basic Essential obstetric care are missing, we hereby suggest a breakdown of the activities. The provision of Basic Essential obstetric care can be broken down according to the different functions of basic care provision in order to clarify where priorities for service strengthening should be defined.

TABLE C: BREAKDOWN OF THE BASIC EOC SERVICES

ACTIVITY	COVERAGE OF ACTIVITIES
Parenteral antibiotics	76.9% (10)
Parenteral Oxyturics	76.9% (10)
Parenteral anti convulsive drugs	76.9% (10)
Assisted delivery (including breech)	76.9% (10)
Manual removal of Placenta	76.9% (10)
Removal of placental rests	54% (7)

Skilled attendance at delivery and proportion of all births in basic and comprehensive essential obstetric care facilities.

Within the context of Mozambique, we can define skilled attendance at delivery as being the deliveries attended by the elementary midwives with one year of training, or by the better-trained and more skilled basic and medium level MCH nurses ; (skilled attendance is excluding the assistance of births by traditional birth attendants). We see that gradually more and more of the peripheral maternities are being

staffed by personnel with one of the above qualifications, and less health units are being staffed by only “serventes” or cleaners with no formal training to assist deliveries. However considering the absolute shortage of skilled staff to assist deliveries, and the fact that most of the time the midwives are working on their own in the health units, we can assume that still a large part of deliveries are being assisted by the non-trained serventes.

A total of 13120 deliveries were registered in the surveyed area. Considering that we expected 50174 deliveries in this area (4.5% of the population and we did not include the whole province in the survey), this means a coverage of 26% of the deliveries by a skilled attendant. This is probably an underestimation, because maternities with a low workload were not considered in this survey. Of the total number of registered deliveries in a health unit , 8746 occurred in one unit where either basic or comprehensive EOC was available. This means that the proportion of deliveries that occur in a essential obstetric care provider unit equals 17.4%.

Met need for essential obstetric care:

This is the proportion of women estimated to have the obstetric complications that are treated in essential obstetric care facilities. As a working definition of obstetric complications includes the following conditions: ante-partum or post-partum haemorrhage, prolonged or obstructed labour, post-partum sepsis, complications of abortion, pre-eclampsia and eclampsia, ectopic pregnancy and ruptured uterus. As a benchmark we can assume that in 15% of the deliveries a complications of the above mentioned origin will occur. The aim is that 100% of the complications are treated in essential obstetric care units.

Here the survey experienced a problem and the registered complications are not very representative for the geographical areas. The main reason is a serious underreporting of the number of obstetric complications in the peripheral maternities and even in the rural hospitals, an earlier performed cross check between the register and the actual clinical records demonstrated a notification of only 20% of the complications that actually occurred.

There is also a sub-notification of the number of caesarean sections. The survey found that 414 C-sections were performed during 1999, in the provincial hospital and the rural hospitals while an earlier preparatory report worked from the provincial health information system, where we found 299 C-sections with a reporting rate of 72 %. The problem areas are: Tete provincial hospital with 68% reporting rate and Songo RH with only 20%.

For a total number of 50174 deliveries we would expect around 15% obstetric complications to occur which equals a total of 7526 cases. A total of only 330 obstetric complications could be found in the registers of the maternities of the surveyed units, which corresponds to a low met met need of only 4.3%.

Case fatality rate (CFR)

The reporting of maternal deaths is also low. In the whole survey only 6 direct maternal deaths were reported. The number of indirect cases was higher: 13 in total (including malaria). The case fatality rate can thus be calculated as 1.84% for the whole province. A breakdown per cause shows the high risk for a fatal outcome in case of ruptured uterus.

TABLE D: CASE FATALITY RATE (CFR) PER CAUSE

CAUSE	CASE FATALITY RATE (CFR)
Haemorrhage	4.9%
Ruptured uterus	57.1%
Sepsis	15.6%

Caesarean sections as a proportion of all births.

For this major obstetric intervention all rural hospitals and the provincial hospital are performing the C-sections although some of the rural hospitals did not give continuity to this service, mainly due to the absence of a medical doctor or a surgery technician able to perform the intervention. A total of 414 c-sections were registered in this survey, however the number of C-sections that were reported to the provincial directorate(and reflected in the annual report) was much lower than the number encountered in the survey. The majority (56%, or 232 interventions) are performed in the provincial hospital of Tete, followed by 92 or 22.2% in Ulongué, 50 or 12.1% in Mutarara, or 40 (9.7%) in Songo. The proportion of C-section of all estimated births is thus $414/50174 = 0.8\%$

The institutional C-Section rate can also be calculated from the data from the survey, and not from the reporting system.

TABLE E: INSTITUTIONAL C SECTION RATE , TETE PROVINCE 1999

HEALTH UNIT	DELIVERIES	C-SECTION TOTAL AND PROPORTION	
Songo	666	40	6,0%
Hp	2979	232	7,8%
Ulongwe	1224	92	7,5%
Mutarara	591	50	8,5%
TOTAL	5460	414	7,6%

Part two: The unmet need for major obstetric interventions

A total of 438 files were collected from the rural hospitals for 1999 and of those 254 were major obstetric interventions (C section, laparatomies for uterine rupture, hysterectomy, podalic version, and craniotomy) for absolute maternal indications performed on parturient from Tete province. (224 c-sections; 16 hysterectomies, 13 laparatomies for uterine rupture, 1 podalic version). As in the other provinces craniotomies were not performed in the rural hospital neither in the provincial hospital. As a benchmark for the number of interventions that should have been performed we set a arbitrary level of 1.5% . This means that for the total province we should have done at least 869 interventions. The coverage is only 254 or 29%, this means that the unmet need for MOI is 71%. These analysis become much clearer if we do it per district.

Table f: major Obstetric Interventions (MOI) per district

DISTRICT	NEED IN MOI	PERFORMED MOI	ABSOLUTE NEEDS	PROPORTIONAL NEEDS
Zumbu	22	1	21	96%
Cahora Bassa	46	33	13	28%
Changara	90	20	70	78%
Chifunde	37	3	34	92%
Chiuta	42	2	40	95%
Maravia	36	0	36	100%
Moatize	81	41	40	49%
Mutarara	94	2	92	98%
Tsangano	84	1	83	99%
Tete capital	88	93	-5	-6%
Angonia	192	54	138	72%
Macanga	31	3	28	90%
Magoe	27	1	26	96%
	869	254	615	71%

These deficits can be put in maps based on the district of residence of the women. Annex 5 -6 are maps of the spatial analysis of the deficit. Annex 5 is the absolute deficit, while annex 6 is a spatial analysis of the relative or proportional deficit. The absolute deficit is most important in Angonia and Mutara. This means that the actual capacity of these hospitals fails to respond to the needs of the population (for major obstetric interventions) and that the services need to be strengthened. In terms of service provision of essential obstetric care, the capital city district of Tete is covering the needs, and most probably a larger part of the neighbouring districts. The map in annex 6 gives the % of Unmet need. This indicator is further analysed in the discussion.

Part three: material and equipment

Analysis of the needs for drugs.

The data are treated at an aggregated level. A total of 17 forms (form nr 6) were filled in. The survey team did not have access to all the pharmacies in the different health units because in some of them the in-charge was not on duty and had locked the cupboard or the store. As a norm for availability we used the presence of the drugs in the maternity ward.

The availability of drugs was poor. 5 units of the 17 that were surveyed did not have sufficient antibiotics. As far as the disinfectants were concerned the majority had only two types available; iodine mixture was the least available. 3.8% of the surveyed units were considered to have sufficient disinfectants. Intravenous fluids were available in 82% of the units. But only 23 % of the surveyed units had sufficient drugs for ant-hypertension treatment, even in emergency situations.

Ergometrin was not available in the maternity ward in 60% of the units and methyl-ergometrin was available in 47% of the units. Only 3 units or 23.1% of the surveyed health facilities were estimated to have sufficient occitocica . There was no lidocaine available in 17.6% of the units. The availability of major analgesics remains poor also. Everywhere there was paracetamol, but only two hospitals had a major injectable painkiller available at the moment of the survey.

All of the units had at least one form of contraception available, and overall the availability was sufficient to offer at least a choice to a possible client after birth. The same was true for anti-malaria treatment.

Availability of medical equipment.

Here the situation was varying but in general the situation for basic equipment could be improved. 70% of the units had a sphygomanometer available and 82% a functioning weighing scale for babies. One hospital did not have a sphygomanometer for the maternity ward. The equipment for sterilisation was insufficient in general for the peripheral maternities as well as for the rural hospitals. Surprisingly only 35% had an oral thermometer in the maternity ward (and ironically 76% had one for the cold chain). Furthermore basic scissors for episiotomies were missing in 41% of the units including in some rural hospitals. Only 58% of the units had a vacuum extractor that was functioning, but not all of them were using it. Except for Songo rural hospital, all of the rural hospitals had a vacuum extractor that was working. 31% of the units did not even have a small pear for freeing the airways of the new-born. Concerning the major equipment in the hospitals, all of the rural hospitals had at least one kit for a laparotomy or a hysterectomy. Some of the material was outdated and used and could be replaced. None of the hospitals had a kit that was conform to the recommendations of the Ministry of Health. 8 units or 47% had a set of instruments that allowed them to do a revision of the uterus in case of incomplete abortion or other pathologies. None of the presented kits corresponded to the list of the Ministry of Health.

Evaluation of the staffing.

In this needs assessment we looked briefly at the current staffing in the surveyed units in relation to their specific training to assist deliveries, their number of years of experience and the last refresher course they received. 30% of the surveyed units had only an elementary midwife as the main responsible and in 35% only one person was qualified to assist deliveries, often assisted by a cleaner. The distribution of the staff is unequal over the province with a concentration in and around the capital city district of Tete and Moatize. Problem areas are the rural hospital of Songo in Cahora Bassa district with only 3 trained staff to attend deliveries. Tsangano health centre has also only one elementary midwife working there while the needs are important. All hospitals had staff with surgical competence but not all of the medical doctors were practising surgery. The refresher courses given over the last two years are varying and the majority of the midwives had a course in STD and AIDS, in 1998, no specific course on obstetric care was given to the staff in the last 4 years.

DISCUSSION

The survey provided us in the first place with a series of indicators that allow us to have an idea on the actual performance of the health services in relation to obstetric care provision, but they also gave us baseline data that will allow programme monitoring and measure progress and programme effectiveness. The following table gives us an overview of the current indicators..

TABLE G: SUMMARY OF THE PROCESS INDICATORS FOR THE PROVINCE OF TETE

INDICATOR	VALUE FROM THE SURVEY
Availability of basic Essential obstetric care	2.3/ 500 000
Availability of comprehensive essential obstetric care	1.8 / 500 000
Skilled attendance at delivery	26 %
Proportion of births in EOC facilities	17.4%
Met need for EOC	4.3%
C-section as a proportion of all births	0.8%
Case fatality rate	1.84%
Unmet need for major obstetric interventions	71%

These indicators have been presented in a radar chart in annex 7. The blue area in this chart is a surface that can be followed for monitoring progress and change, but also for comparing different provinces.

Availability of essential obstetric care.

The number of units that provide basic EOC is low, yet the analysis of the different components of Basic EOC shows that all of the surveyed units have a potential for the provision of basic EOC. The actual provision of Comprehensive EOC is sufficient for the province, yet their reach is insufficient and to improve the accessibility to these services an effective referral system is required. The recommended benchmark of 4 units per 500 000 inhabitants is a theoretical norm for the provision of Basic EOC and is ⁸ is probably not applicable for the province because of the low population density and the unequal population distribution, the poor accessibility in terms of roads and transport possibilities. However even with this low benchmark, the coverage is unfortunately not yet reached which means that the availability for basic essential obstetric care is low in the province. The analysis of the different functions of basic essential obstetric care reveals that the main problem is the removal of placental rests. This act is not allowed to be performed by elementary midwives in the country, the basic MCH nurses are trained to perform the intervention but in practice they do not carry it out in the peripheral maternities.

The rural hospitals are unequally distributed over the province in relation to the population (and hence the need for obstetric care). However this distribution has a historical basis and is not due for review in the coming years.

An algorithm for the selection of the units

A list for the geographical distribution of the units that could be selected for a further development of the basic essential obstetric care is presented in annex 7. This list has been constructed on the basis of equitable distribution of units per district, current workload and current staffing. This list is a minimum and gives an estimated calculation of the estimated ratio.

We suggest to use of process of accreditation and certification for the further development of these units. Certification is a procedure where norms are set as to what services the units should be offering. They can also include norms on equipment and staffing. Accreditation is the process through which the selected units are reviewed and monitored to evaluate if they are meeting these criteria.

Skilled attendance at delivery and proportion of births in essential obstetric care units

The proportion of all deliveries that occur in the maternity of a health facility gives us a crude idea of the use of the services. It is by no means a target that all women should deliver in maternity wards but historical evidence¹¹ shows that considerable reduction of the maternal mortality has been obtained through focussing on the use of skilled midwives to attend the births in the maternity wards (and also for home deliveries). Traditional birth attendants who are also working in the province are not included in the definition of a skilled attendant that assists births. The proportion of all births that occur in basic essential obstetric care units is only a secondary health service indicator.

The skilled attendance at delivery in the rural health units remains still low in Tete province despite the opening of new maternities in the last 5 years. Of course what is more important is that the health unit are used by women who actually need them, that is present with obstetric complications.

The met need for essential obstetric care

The met need for essential obstetric care has been difficult to calculate in the population. The table only teaches us that there are probably very many women with obstetric complications who do not arrive in the health units. There is an important bias coming from sub-notification at the health units, not only because people do not register the complications in the proper register of the maternity (we only found them back after careful examining each of the individual clinical files, but probably also do not recognise them. In the majority of the cases these are complications which occurred after the admission, such as post partum haemorrhage and complications of abortion. The majority of the complications in the province are treated in Tete hospital. Delay in seeking the appropriate care by patients is probably also an important reason why there is a low level of met need for essential obstetric care.

The case fatality rate

The case fatality rate is dependent upon the accurate registration of the obstetric complications and of the maternal deaths. The indicator gives us an idea of the performance of the health units however this

should be interpreted with caution. Quite ironically the high CFR here might be an index of activity and high workload rather than of performance in an ill functioning health system. A more detailed analysis of time factors would allow us a better understanding but this was not the scope of this survey. The case fatality rate is rather low in the province but most probably this is the result of the poor registration of complications and maternal deaths as mentioned in the previous paragraph.

C-section as a proportion of all births

Caesarean sections, as a proportion of all births is still low. International recommendations set a benchmark of 5% as minimum to reduce maternal and perinatal deaths and this is still far from being met. This indicator remains somehow controversial because we are not aiming at increasing C-sections only as a way to reduce maternal mortality. It might also lead to an overuse of the intervention and one should be aware of the possible iatrogenic causes of maternal deaths. In fact C-sections should be analysed alongside other major obstetric interventions such as hysterectomy, craniotomy and eventually symphysiotomy.

The unmet need for major obstetric interventions.

Mapping the deficits for major obstetric interventions (MOI) in an absolute number gives the planner an idea where the needs are the highest in terms of number of women that probably died. Projected against the actual health care delivery system it provides evidence for the distribution of resources within that system, for the need for additional health units that provide Major Obstetric Interventions, or set geographical priorities and contribute to the equitable development of the health system. The disadvantage however is that the most densely populated areas are most likely to receive more attention and consequently more resources.

Mapping the deficits as a proportion of the total needs as an annex 6 to be covered has the advantage of expressing the degree to which the health system is performing against a coverage of 100% (figure 3). For example 60% unmet need for MOI/AMI means that 3 out of 5 women do not benefit from the services. Presenting the results in this way reduces the effect of the population in comparison to the absolute figures, and it informs us how well the health services are accessible. However it is less useful in setting priorities for resource distribution.

As mentioned above, the problem areas are Angonia, Tsangano and Mutara. The actual service provision in these districts is insufficient to deal with the absolute maternal indications. The provincial hospital of Tete however is providing services that meet the needs of the capital district and partly of Moatize district.

What about the more distant districts where there are no rural hospitals such as Magoe, Zumbo and others? The analysis shows that the absolute deficit here is much lower compared to the more populated districts. People probably seek care in the neighbouring countries, however the relative need is the highest in those districts. Here it is up to the provincial directorate to further decide how they want to distribute their resources or organise their planning. This could be done on a basis of equity (equal access to the same type of care) or equitable distribution of resources or on a basis of effectiveness and cost-effectiveness (maximise the benefit of the resources).

Medical material and equipment

The availability of medical equipment is minimal for the provision basic essential obstetric care. It are mainly the peripheral maternities that are missing small equipment, while the rural hospitals have a minimal availability of instruments which allows them to perform C-sections, hysterectomies or other major obstetric interventions. The availability of specific kits to do uterus revision and D&C is an urgent requirement considering the high number of post abortion complications. All units should have at least one delivery couch in good conditions to provide appropriate conditions for the labour and delivery and some small instrument kits for normal delivery assistance.

Provision of essential drugs for obstetric care

The availability of essential drugs in the maternities is rather poor in the province. It should be noted that the provision of drugs for the peripheral maternities is dependent of a national drug kit system, which is calculated on the number of consults in the out patient department, not on the actual workload of

the maternity ward. Therefore drugs are not always available. The Ministry of Health is planning to introduce a kit specific for the maternities, in the mean time supplementary drugs should be provided.

Staffing of the health units

The staff is unequally distributed over the province and some units in and around the capital city of Tete are staffed by basic level midwives while their workload is very low; while maternities in the more remote districts with a high workload are staffed by only one low level trained elementary midwife.

Refresher courses were only organised on STD and Aids related problems according to the staff in the surveyed health units.

HEALTH SERVICE INDICATORS CAN BE CONSTRUCTED FROM THE ACTUAL HEALTH INFORMATION SYSTEM.

While this survey was conducted as an exercise separate from the , most of the indicators could also be collected from the existing health information system. The following table gives a brief summary on how these indicators could be constructed and used at provincial/national level.

TABLE H: CONSTRUCTION OF THE INDICATORS FROM THE HEALTH INFORMATION SYSTEM

INDICATOR	COLLECTION OF DATA	Constraints
Availability of basic Essential obstetric care	Supervision and certification/ accreditation process	
Availability of comprehensive essential obstetric care		
Skilled attendance at delivery	Health information system	Sub notification
Proportion of births in EOC facilities	Health information system	BEOc is too low
Met need for EOC	Health information system	Poor registration of complications
C-section as a proportion of all births	Health information system	Sub-notification of major interventions
Case fatality rate	Health information system	Poor registration of complications and maternal deaths
Unmet need for major obstetric interventions	Hospital level prospective data collection	Place of residence is absent form registers

As mentioned above, the internal validity of the health information system in relation to obstetric care registration and notification is poor and could be improved at the level of the peripheral and hospital maternities. To construct these indicators and to measure the progress no new forms need to be introduced. Only if the registration of obstetric complications remains low, we can consider doing a separate small low-cost survey.

CONCLUSIONS

The actual services need to be strengthened in the province. Reinforcing services for the delivery of essential obstetric care in the province can be achieved through different interventions.

- The number of health units providing basic Essential obstetric care can be increased.

An algorithm for selecting these units and up-grading their services was suggested in the discussion. In addition the scope of the actual service delivery in the maternity could be increased to attain the level of 6 interventions as defined for a basic essential obstetric care provider. The monitoring of this upgrading can be done through a certification/ accreditation process by the provincial health directorate. Norms of accreditation can include the functions of basic and comprehensive essential obstetric care, but can also include equipment, staffing levels and registration of the hereby presented health service indicators. Units can be accredited after regular supervisory visits. Other norms could be added which are related to the quality of the care provision. However this gradual accreditation should not be seen as an

upgrading in separate blocks of health units where services should be improved. It is a more continuous process in the province where over regular time periods the units are evaluated and reviewed.

- Update knowledge and skills of the staff working in the maternities.

Elementary midwives and MCH nurses should receive practical training in treating complications. This is part of their training curriculum however very few put them into practice. This practical training can be organised in the central hospital of Tete in collaboration with an obstetrician or with tutors of the nurse training school. Medical doctors without sufficient surgical experience should receive additional training. The creation of teams of staff dealing with essential obstetric care at the rural hospitals is a means to assure the continuity of care. The vicinity of the nurse training school is an opportunity to strengthen the skills of the staff.

In addition the actual staffing levels in the maternities need to be reviewed and staff redistributed according to their obstetric skills and the workload of the peripheral maternities.

- Maintain the actual level of prenatal care coverage and use this opportunity to inform pregnant women and their husbands on danger signs during pregnancy and the importance of early consults for obstetric complications

There is a need for interventions, which aim to increase the awareness within the population on the importance of recognising the early signs of obstetric complications and the importance of early medical treatment in case of obstetric danger symptoms. The antenatal care services form a good opportunity for providing this kind of essential information.

- Install a proper system of referrals with ambulances and a radio-network

The rural hospitals require fulfilling their role as an important referral point in the obstetric care provision. An adequate referral system is necessary. Moreover the medical doctors working in those rural hospitals should be encouraged to perform the major obstetric interventions which are life saving for the mothers, and not delegate all the surgical tasks to the surgery technicians.

- Focus on management and monitoring

When developing the essential obstetric care in the province there is a need to look at the health system as a whole and the management of the service plays an important role. This management should be seen at two levels. A first level is the internal management at the health unit for the provision of essential obstetric care. However considering the very basic training of the elementary midwives and the basic MCH nurses they need to be supported by the provincial health directorate for the organisation of the services and receive on the job clinical support for strengthening their skills. A second level of management is more concerned with the interaction of the health units, the referral system and the reporting. The formulation of district plans, which are fed into an overall provincial plan, is essential in this process.

The health information system (HIS) needs to be strengthened in relation to the obstetric care provision. The process indicators should be gradually included in the existing HIS at provincial level but the health units that are registering obstetric complications and reporting them to the provincial health directorate should also be able to analyse their own data and thus measure their own progress. This feedback on the process indicators should be done through supporting visits from the provincial health directorate.

- Provide at least some basic equipment for assisting deliveries and deal with obstetric complication and assure the availability of drugs for the treatment of obstetric complications.

Awaiting the introduction of a drug kit specific for maternities, supplementary drugs should be provided. All units selected for the provision of essential obstetric care should at least have basic medical equipment. A sufficient provision of gloves and other disposal medical material to protect patients and staff is elementary in the actual HIV epidemic.

It should be noted that the presented indicators do not all measure quality of care, only the case fatality rate gives an idea on the QOC in the maternities. However they form an ideal basis for evaluating programme effectiveness and measure progress.

ANNEX 1: LIST OF THE SURVEYED UNITS

DISTRICT/AREA	TRAVEL TIME	ASSESSMENT
<i>Tete capital district</i>		
• Tete Provincial Hospital		2 days
• Matundo		
• Boroma		
<i>Cahora Bassa District</i>		
• Songo Rural Hospital	1	2 days
• Chitima maternity		
• Chirodzi ponte		
<i>Mutarara district</i>		
• Mutarara Rural Hospital	2 days	2 days
• Doa maternity		
• Traquino maternity		
<i>Angonia District</i>		
• Ulongué Rural Hospital	2 days	2 days
• Domué maternity		
•		
<i>Tsangano district</i>		
• Tsangano maternity		
<i>Moatize District</i>		
• Moatize	2 day	2day
• Zobué		
<i>Chiuta district</i>		
• Manje	2 1/2 day	3 day
<i>Chifunde</i>		
• Chifunde		
<i>Changara district</i>		
		1 day
• Changara (sede distrital)		

ANNEX 3: TABLE I ALGORITHM FOR THE SELECTION OF THE UNITS WHO COULD BE PROVIDING EOC

DISTRICT	NAME OF THE UNIT	STAUTS
<i>Angonia</i>	<i>Ulongué</i>	<i>Rural hospital</i>
	Font Boa	<i>Health Centre</i>
	Dome	<i>Health Centre</i>
<i>Cahora Bassa</i>	<i>Songo</i>	<i>Rural hospital</i>
	Chitima	<i>Health Centre</i>
	Chirodzi - Ponte	<i>Health Centre</i>
<i>Changara</i>	<i>Changara</i>	<i>Health Centre</i>
	Ntemangau	<i>Health Centre</i>
	Chioco	<i>Health Centre</i>
<i>Chifundé</i>	<i>Chifunde</i>	<i>Health Centre</i>
	Luia	<i>Health Centre</i>
	Nsadzo	<i>Health Centre</i>
	Thequesse	<i>Health Centre</i>
<i>Chiuta</i>	<i>Manje</i>	<i>Health Centre</i>
<i>Macanga</i>	Furancungo	<i>Health Centre</i>
<i>Magoé</i>	Magoé	<i>Health Centre</i>
	Mucumbura	<i>Health Centre</i>
	Mussengueze	<i>Health Centre</i>
<i>Maravia</i>	<i>Fingoé</i>	<i>Health Centre</i>
	Uncanha	<i>Health Centre</i>
<i>Moatize</i>	<i>Moatize</i>	<i>Health Centre</i>
	Zobué	<i>Health Centre</i>
	Cambulatsitsi	<i>Health Centre</i>
<i>Mutarara</i>	<i>Mutarara</i>	<i>Rural Hospital</i>
	Traquino	<i>Health Centre</i>
	Sinjal	<i>Health Centre</i>
	Doa	<i>Health Centre</i>
	Villa Nova fronteira	<i>Health Centre</i>
<i>Tsangano</i>	<i>Tsangano</i>	<i>Health Centre</i>
	Ntengomalame	<i>Health Centre</i>
<i>Zumbo</i>	<i>Zumbo</i>	<i>Health Centre</i>
	Zambué	<i>Health Centre</i>
<i>Tete Cidade</i>	<i>Matundo</i>	<i>Health Centre</i>
	Boroma	<i>Health Centre</i>
	HPT	<i>Provincial hospital</i>

ANNEX 4: PROCESS INDICATORS FOR THIS STUDY.

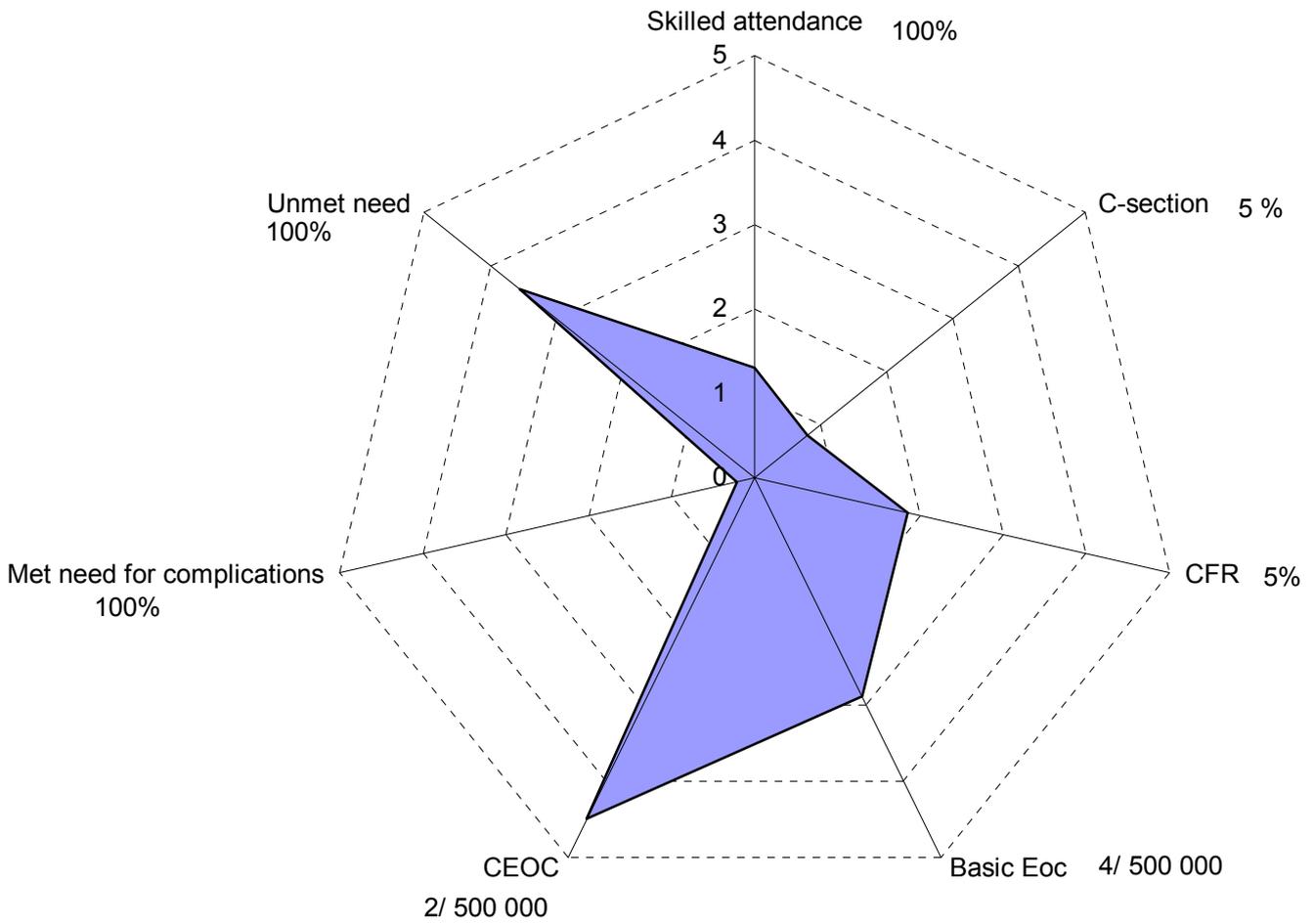
TABLE J PROCESS INDICATORS

INDICATOR	DEFINTION	NUMERATOR	DENOMINATOR	MINIMUM LEVEL
<i>Availability of basic Emergency Obstetric care</i>	<i>Number of health facilities providing BEOC functions per unit of population</i>	<i>Nr of facilities providing Basic EOC</i>	<i>Population of catchment area / 500 000</i>	<i>4 units per 500 000</i>
<i>The availability of comprehensive essential obstetric care</i>	<i>Number of Health facilities providing CEOC per unit of population</i>	<i>Nr of facilities providing CEOC</i>	<i>Population of catchment area / 500 000</i>	<i>1 unit per 500 000</i>
<i>Skilled attendance at delivery</i>	<i>Proportion of all deliveries taking place in health facilities</i>	<i>Nr of deliveries occurring in all health units within one year</i>	<i>Total number of expected deliveries in the area in one year</i>	<i>At least 100% take place in a health facility</i>
<i>Met need for EOC</i>	<i>Proportion of women with obstetric complications treated in EOC units</i>	<i>Nr of women with obstetric complications who were treated at EOC facilities in one year</i>	<i>Expected number of deliveries x 15%</i>	<i>100 % of all women with obstetric complications should be treated at the EOC facilities</i>
<i>C-section as a proportion of all births</i>	<i>Proportion of C-section to all births</i>	<i>Nr of C-sections in all health facilities during one year</i>	<i>Total number of expected deliveries in the area in one year</i>	<i>At least 5% of all the deliveries</i>
<i>Case fatality rate in facilities</i>	<i>Proportion of women with an obstetric complication admitted to a facility who die</i>	<i>Nr of direct obstetric deaths in facility in one year</i>	<i>Number of admissions for obstetric complications in a year</i>	<i>CFR should be less than one %</i>
<i>Unmet need for major obstetric interventions</i>	<i>Absolute or relative deficit for major obstetric interventions</i>	<i>Difference between the number of interventions that should have been done and the ones that were performed in the hospitals</i>		<i>Should be between 1% and 2% of the estimated number of deliveries</i>

ANNEX 5: UNMET OBSTETRIC NEED FOR MAJOR OBSTETRIC INTERVENTIONS: ABSOLUTE DEFICIT SEE MAP

ANNEX 6: UNMET OBSTETRIC NEED FOR MAJOR OBSTETRIC INTERVENTIONS: RELATIVE DEFICIT

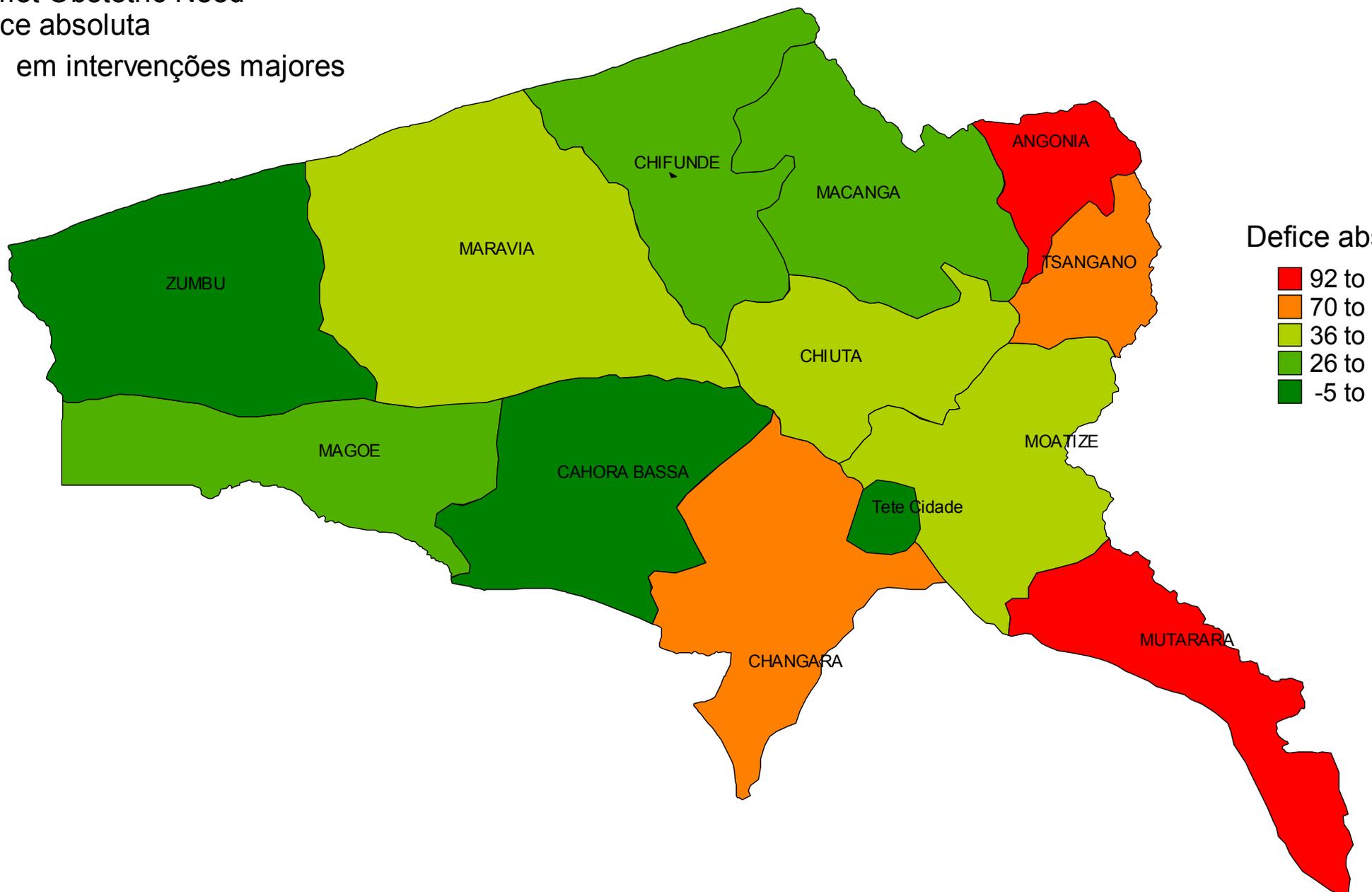
ANNEX 7: SUMMARY OF THE INDICATORS IN RADAR CHART.



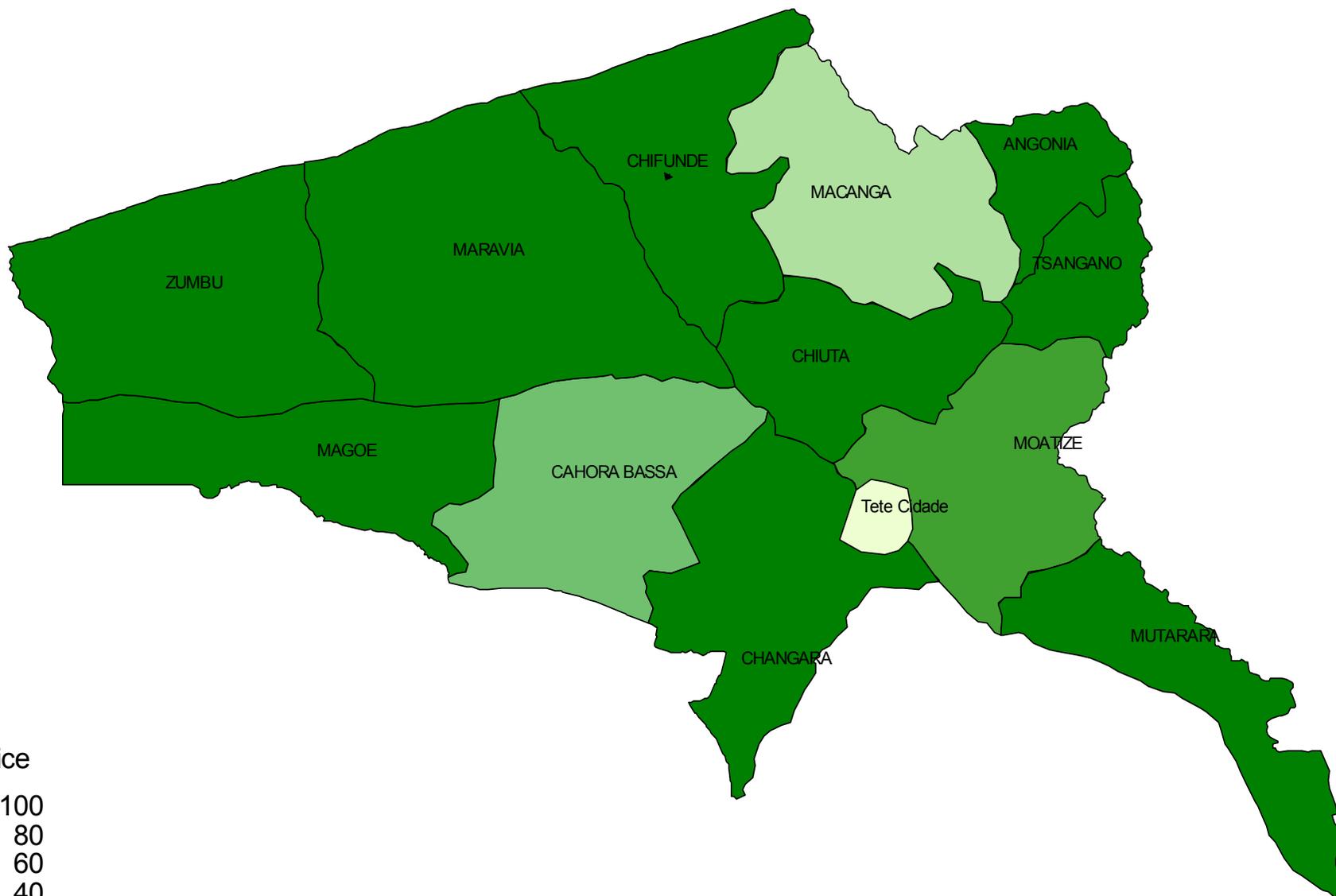
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Provincia de Tete
Unmet Obstetric Need
defice absoluta
em intervenções maiores



Provincia de Tete
defice em %



% de defice

