Assessment of Emergency Obstetric Care in Kosovo

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SITES VISITED: Kosovo, Lipjan, Prizren, Skenderaj, Mitorivica, Vushtrii, Prishtina, Gjilan, Mirovica North, Decan, Ishtog .

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" Women should have readily available access to essential obstetric care , well equipped and adequately staffed maternal health care services, skill attendance at delivery, emergency obstetric care, effective referral and transport to higher levels of care when necessary, postpartum care and family planning" From ICPD+5 key Actions, 1999

Introduction and Objectives

In 1999, Kosovo came under the administration of the United Nations Mission in Kosovo – UNMIK, in partnership with the European Union (EU) and the Organization for Security and Cooperation in Europe (OSCE). Kosovo is characterized by a lack of accurate demographic data. The last commonly accepted census in Kosovo took place in 1981. Based on estimates Kosovo has a population more than 2.0 million and covers an area of about 10 000 km2 (fig.1)
The maternal, perinatal, infant and child health status of Kosovo's women and children is poor compared to the rest of Europe. The infant mortality rate (IMR) is estimated at 49 per at 49 per 1,000 live births, while under 5 mortality rate is 69 per 1000. (Demographic and Health Survey – DHS 2003) The crude birth rate is 23/1000. The development of perinatal mortality over the past four years is characterized by steady stillbirth rate and a slightly decreasing perinatal and early neonatal mortality rates: 29.1 for 1000 in 2000 to 25.6 per 1000 in 2004. Maternal mortality data in Kosovo are scarce and unreliable. There is no comprehensive vital registration available precluding the conventional approach of counting maternal deaths to monitor trends in mortality. Since year 2000 in total 24 maternal deaths are reported. In 2000 reported 9 maternal deaths, in year 2001 are reported 5 maternal deaths, in year 2003 none, in year 2004 reported 7 deaths and 3 maternal deaths reported in 2007 However, this numbers are not reliable since the maternal deaths are reported only from EmOC facilities and birth centers and during the private meetings obstetrical community express their concern about completeness and accuracy of maternal death causes provided to MOH. Though it is believed that current ascertainment of deaths is good, concern is that an in depth enquiry would uncover more deaths, resulting in increased mortality rates Quality of the post mortem examinations and pathology service is also criticized.
Main causes of maternal mortality in Kosovo attributed to direct causes – pregnancy induced hypertension, hemorrhage, obstructed labor, complications of abortion and indirect causes However, the poor reporting of vital events by the health institutions renders it difficult to estimate the perinatal and maternal mortality and causes reliably.
The high maternal, perinatal and infant mortality rates reflect the need to improve the accessibility, utilization and quality of services for the prevention, detection and treatment of the health problems that occur during pregnancy, childbirth and infancy. In year 2005 Ministry of Health supported by Swiss Red Cross/UNFAP in collaboration with other relevant institutions and organization have created a working group for development and completed the Reproductive Health Strategy and currently is in the final stage for finalizing the Reproductive Healthy Law.
For further development of a focused strategy to improving maternal mortality and morbidity an assessment of the current status of the EmOC services in Kosovo is needed Needs assessment of current EmOC (Emergency Obstetric Care) services in Kosovo was initiated by UNFPA with following purpose:

- Identify capability of facilities at central and district level to provide high-quality EmOC
- Identify the main gaps on EmOC based on UN Process Indicators such as "availability of EmOC", "Geographic distribution of services", "Proportion of expected birth in EmOC facilities", " Met need for EmOC", "Cesarean delivery as a percent of expected birth' " Case fatality rate".
- Identify the possibilities for the future interventions to improve EmOC services at each level of service provision within EmOC approaches.

- Provide recommendations on immediate actions to make quality EmOC available in the country

Methodology

Study tools

Since the International Conference on Population and Development (ICPD) was held in Cairo in 1994 there has been a growing understanding of the pathways to maternal death and disability and the approaches that best produce results.
Emergency obstetric care (EmOC) had been incorporated as a key elements of successful approaches to reduce maternal death and disability. To monitor progress of maternal mortality and to evaluate EmOC have been suggested to use the UN process indicators as more convenient, cheep and less time consuming, (table 1) which replaces the traditional approach - such of measurement of maternal mortality rates or ratios
The UN Process Indicators are based on the understanding that, to prevent maternal deaths, certain types of obstetric services must be available and used.

Table 1 UN EmOC process indicators and recommended level

UN Process indicators	Definition	Recommended level
1. **Amount of EmOC services available**	Number of facilities provide EmOC	Minimum: 1 comprehensive EoMC facilityfor every 500 000 population Minimum: 4 basic EmOC facilities per 500 000 population
2.Georgaphical distribution of EmOC facilities	Facilities providing EmOC well distributed at sub national level	Minimum: 100% of subnational areas have the minimum acceptable numbers of basic and comprehensive EmOC facilities
3.Proportion of all birth in EmOC facilities	Proportion of all births in the population that take place in EmOC facilities	Minimum: 15%
4. Met need for EmOC services	Proportion of women with obstetric complications treated in EmOC facilities	At least 100% [Estimated as 15% of expected births.
5. Cesarean sections as a percentage of all births	Cesarean deliveries as a proportion of all births in the population	Minimum 5% Maximum 15%
6. Case fatality rate	Proportion of women with obstetric complications admitted to a facility who die	Maximum 1%

These are medical functions that are absolutely necessary to save the lives of women experiencing obstetric complications. They are eight such functions:

- parenteral administration of antibiotics
- parenteral administration of oxitocic drugs
- parenteral administration of anti consultants
- manual removal of placenta
- removal of retained products

- assisted vaginal delivery
- surgery
- blood transfusion

Not every health facility has to perform eight all eight function. In fact, to treat complications that lead to maternal death, health facilities should be divided on two levels of care: basic EmOC facilities, which perform six signal functions, and comprehensive EmOC facilities which perform the first six plus surgery and blood transfusions. If a facility has provided the first six functions ***in the past 3 months***, it provides basic EmOC and if it has provided all eight of the functions, it qualifies as comprehensive.

In general above-mentioned process indicators will be able to show whether

- Enough obstetric services exist to serve the population
- Services are within reach of the women who need them
- The community is using these facilities
- The quality of the service provided is of acceptable standard

Unfortunately UN process indicators not able to tell us much about the clinical skills, management/organization within the facility (including personnel, equipment, drugs and supplies) and a respect for human rights Nevertheless, poor organization of existing services is a major contributor to poor facility functioning and one that can often be rectified at little or no cost . To investigate quality in more depth other tools was needed. Recent WHO Regional Euro meeting (Catania 2007) made the basis for development evaluation tool (attachment 1) based on fundamentals and principles of Making Pregnancy Safer Initiative, (table 2) which is successfully implemented in European Region Countries during last year's.

Table 2 Making Pregnancy Safer Fundamentals and Principles

Fundamentals

- Care for pregnancy and childbirth calls for a holistic approach
- Pregnancy and childbirth is an important personal, familial, and social experience
- In pregnancy and childbirth there should be a valid reason to interfere with the natural process
- Medical interventions for pregnant women, mothers and newborns, if indicated, need to be available, accessible, appropriate and safe

Principles

Care should:

- be based on scientific evidence and cost/effective
- be family centered, respecting confidentiality, privacy, culture, belief and emotional needs of women, families and communities
- ensure involvement of women in decision-making for options of care, as well as for health policies
- ensure a continuum of care from communities to the highest level of care, including efficient regionalization, and multidisciplinary approach

This evaluation tool allowed alongside with facility organization, management, and oversight in the context of providing emergency obstetric care (EmOC) at either the basic or comprehensive to check at facility level quality of care for mothers and newborn babies in an homogeneous and valid way, and ultimately contribute to the identification of key areas of pregnancy, childbirth and newborn care that need to be improved. It also may be also useful to introducing the concept and the contents of internationally recommended guidelines and standards.

The tool have been reviewed and interpreted with UNFPA staff and Assessment Team (local professionals) Items were modified if it were not relevant in current situation. The tools were pre-tested in Lipjan PHC EmOC facility and finalized for the field work

A common approach was used during the visits, which included meeting with the head of the EmOC facility to explain the purpose of the mission and to collect general information about the facility, availability of staff, major obstetric complications and data regarding maternal and perinatal mortality during years 2007- and 3 last moth (July – September) of 2008. Following the discussions, a tour of the facility was then undertaken by Assessment Team, accompanied by an local health care providers. During the tour it was possible to observe the readiness of facility, the general condition of the facility i.e. physical structure, presence/absence of supplies, equipment and drugs, cleanliness and organization. The meeting with the head of manager of the EmOC facility was followed by interview with the obstetrician(s) and the midwifes, neonatologist(s) about in service and postgraduate training . At some facilities these discussions were also attended by the neonatologists and anesthetists. In addition, for the assessment of quality of service provided during EmOC, available hospital records with major obstetric complications were asked to present for audit according to the developed questionnaire (attachment 4) on the basis WHO recommended evidence based clinical protocols to access the compliance with current clinical practice. Separate questionnaires (attachment 2 and 3) have been used to collect general information about facility and interviews of staff within facility regarding training

Each reviewed block in facility was evaluated by Assessment Team by different sources (visit, case observation, interview, records) to reach an overall score. For scoring, numbers from 4 to 1 were awarded, **4 - good or standard care**; **3 - need for some improvement to reach standard care**, **suboptimal care but no significant danger**; **2 - need for substantial improvement to reach standard care; 1 - inadequate care or potentially harmful practice.**

Selection of sites

Sampling

Ensuring that the facilities selected for assessment provide an accurate picture of the situation depends largely on avoiding two major pitfalls: systematic bias and the effects of chance variation. Systematic bias can occur when conscious or unconscious factors affect selection of facilities for study. For example, the Assessment Team selecting the facilities might want to present the situation in the most favorable situation, or they might select facilities that are easily accessible (e.g., on a paved road or near a large town). In either case, the data collected might give an excessive favorable impression. The effects of chance are, of course, unpredictable, but they do tend to diminish as the number of facilities studied increases. To avoid such bias all 5 regions of Kosovo were visited (fig1) Selection of sites within regions were made randomly as follows : first - list of all possible basic and comprehensive facilities in Kosovo was prepared in alphabetical order to minimize the possibility of bias and second – facilities were randomly selected (not less that 30%) using random number tables . Facilities randomly included in assessment were - **Prizren region** - Prizren regional hospital , **Region Peje** - Decan and Istog, **Prishtina region** - Prisrina, Lipjan, Skedergai, **Mitrovica region** – Mitrovica, Vustrii, Mitrovica North, **Gjilan region** – Gjilan regional hospital

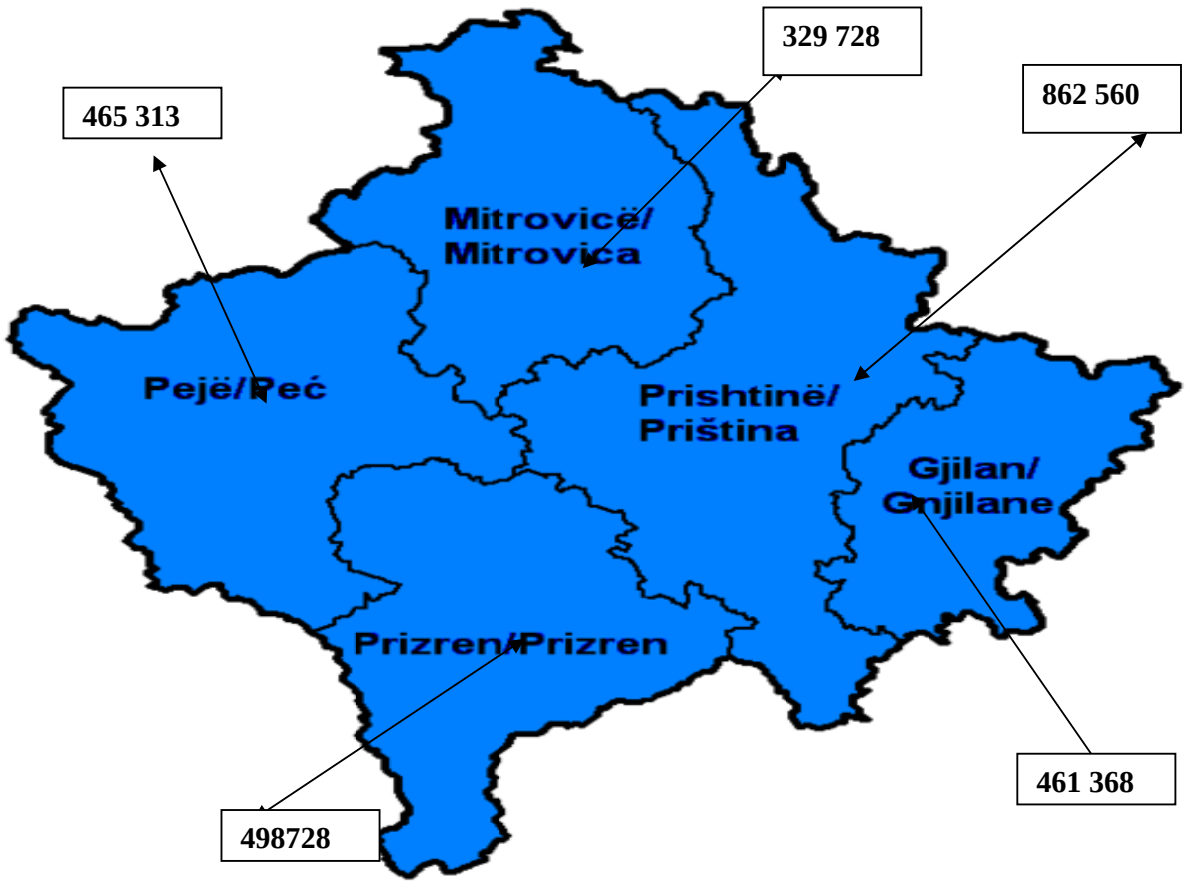


Figure 1 Map of Kosovo with regions and population (in thousands)

The first day of the mission were spent in meetings with UNFPA staff and Assessment Team recruited for this mission (a full list of the contacts made during the mission is included in Annex I). The aim of these meetings was to present to Assessment Team UN Process indicators, evaluation tools, discuss in details the purpose of the mission and methods of how to collect information needed. The field work was implemented during September 30 – October 7, 2008. EmOC needs assessment focused exclusively on the Ministry of Health facilities and only one existing private facility in Pristine town. The population estimate of Kosovo was 2 2617791 million inhabitants. Nationally, the crude birth rate estimate is 23 per 1000 population The number of expected births for each region was based on estimates from source "Komunat e Kosoves (Profil i shkurtër)" Prishtina, 2008 . The statistics reflect women delivering or who were admitted for pregnancy-related complications in the calendar year 2007 and three month (July – September) 2008 The last date of mission was spent in meetings with UNPFA staff and Assessment Team (discussion of mission findings)

THE FINDINGS

Statistical data collected from facilities during this mission needs to be interpreted with some caution. There is a strong opinion that there are inaccuracies in the reported causes of maternal mortality and morbidity and perinatal mortality and in the completeness and accuracy of information provided from the facilities.

Major obstetric complications needed for calculation of UN indicators were quite difficult to collect as we were not able to find in corresponding a column in registry for 'reason for admission' or 'complications'. Reporting of complications was suffered from poor reliability and varying definitions. And yet complications are a key event. Without them, all deliveries would have good outcomes. Efforts were made to standardize the classification of complications by thoroughly given instructions and distributed working definitions, but unfortunately in facilities didn't exist detailed analysis of such complications, but a limited statistical data instead. Therefore extraction of cases of major obstetric complications from EmOC facility registers introduced with considerable heterogeneity, what made calculations approximate. As result we were urged to use proxy for calculation of obstetric complications.

A few word about population of Kosovo , which was used for calculation of expected number of birth, which in turn, served as an important denominator for few UN process indicators. In numerous citations population of Kosovo was found within the range of 1,8-2,2 mln inhabitants. In recently published book "Komunat e Kosoves (Profil I shkruter)" Prisitina, 2008 (Web www. komunat-ks.net) we have found breakdown of population according to small geographical areas, which we needed for calculation of expected number of birth. According to this book population of Kososo is 2 617 791mln. In the absence any other official data , we had to use this figures during calculations.

UN indicators in Pristina region

Indicator 1 Amount of EmOC services available (region Pristina)

As it was mentioned earlier distinction between basic and comprehensive EmOC is to made on the basis of how facilities are **actually functioning during last tree month** and **not on how they are supposed to function.**

List of possible essential obstetric care facilities and available statistics in Pristine region presented on table 3

Table 3 List of possible essential obstetric care facilities in Pristine region

Name of the Region	Population	N/ birth for 2007	CS for 2007	N/birth for last 3 month	CS for last 3 month	Signal functions for last 3 month
				(July – September 2008)		
Pristina	470 000	10 856	2541	2969	662	Yes
Pristine Private EmOC facility		145	69	30	12	C – 2*
Lipjan	87 660	81	0	28	0	B – 4**
Podujeva	130 000	188	0			n/assessed
Glogovc	67000	395	0			n/assessed
Fushe-Kosove	50 000					
Novoberda	3900					
Obiliq	25 000					
Shtime	29 000					
Total	862 560	11665	2610			

* C – 2 (comprehensive EmoC where not performed for last three month such signal functions as parenteral administration of anti consultants and assisted vaginal delivery)
** B-4 (basic EmOC where not performed for last three month such signal functions as parenteral administration of anti consultants, manual removal of placenta, removal of retained products, assisted vaginal delivery)

Table 4 List of facilities in Pristina region with possible EmOC services

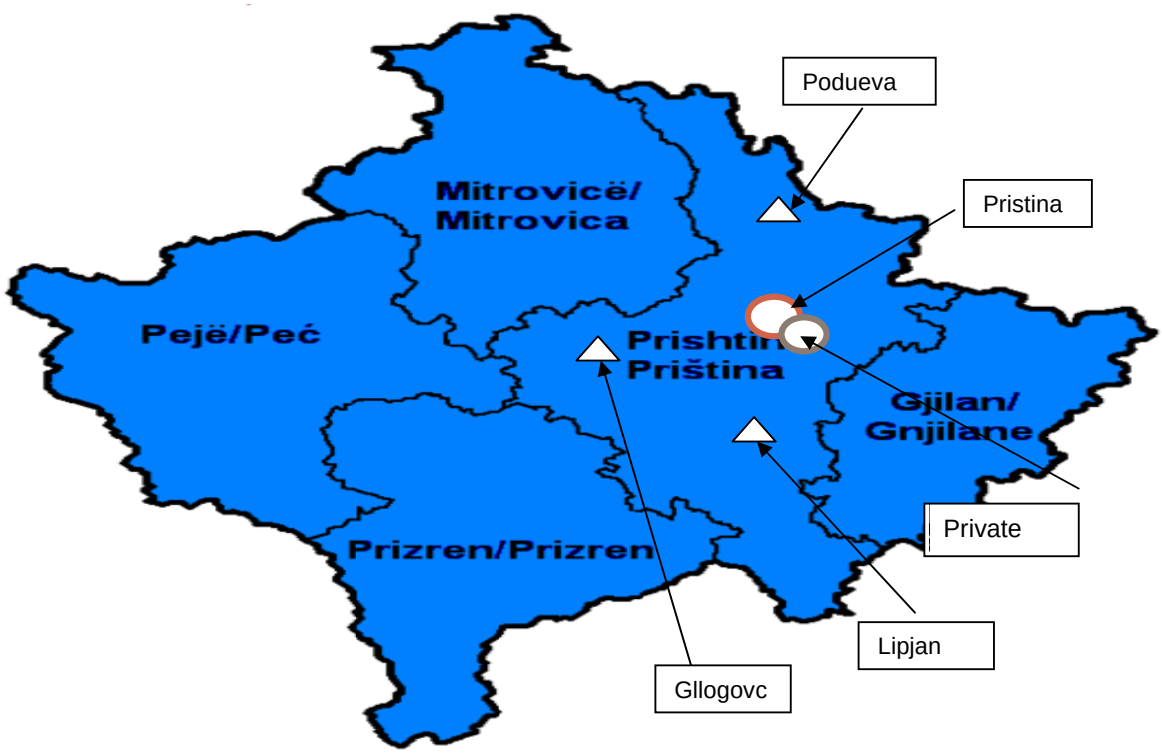
Facilities where basic EmOC might be performed	Facilities where comprehensive EmOC might be performed
Lipjan	Prishtine
Podueva	Pristine private EmOC facility
Glogovc	

Table 5 List of facilities in Pristine region with actual EmOC servises

Facilities with actual basic EmOC	Facilities with actual comprehensive EmOC
Lipjan (B - 4)	Prishtine
Podueva (B - 4)	Pristine private EmOC facility (C – 2)
Glogovc (B - 4)	

During assessment it becomes clear that Pristina region needs 1,5 times as many comprehensive facilities, and 6 basic facilities for adequate coverage of . emergency services (population 862560) With only one Comprehensive EmOC facility there is a considerable unmet demand for services, especially in Prishtina town and in fact we can observed that this facility is overcrowded (more than 10 000 deliveries per year). 3 basic EmOC could be upgraded with little extra cost, but 3 basic EmOc additionally needed for adequate coverage of services in region .

Indicator 2 Geographical distribution of EmOC facilities



O - possible Comprehensive EmOC Δ - possible Basic EmOC

Figure 2 Geographical distribution of EmOC facilities (Pristina region)

Sudden complications during pregnancy and childbirth are the main causes of maternal mortality and morbidity, so time is very important and telling indicator of access to EmOC. Table 6 shows the estimated average time interval from onset to death for the major obstetric complications. If for most complications the average time is 12 hours or more , post-partum hemorrhage can kill a woman in less than one hour. Unfortunately, lack of technology (digital maps, geographic information systems) and consistent methodology makes it difficult to access and express this important indicator of equity. Often calculation the radius around the given facility, distance by road, travel time (using the most common means for transportation) helps to evaluate geographical distribution

Table 6 Estimated average interval form onset to death for major obstetric complications in the absence of medical interventions

Complication	Hours	Days
Hemorrhage postpartum	2	
Hemorrhage Antepartum	12	
Eclampsia		2
Obstructed labor		3
Infection		6

Sourse: Maine et al, 1987

Therefore, the minimum acceptable level for **distribution** of EOC services is the same as that for the **amount** of EOC services, but applied to smaller geographical regions. Monitoring of this indicator would thus involve dividing the country into geographical regions based on existing divisions or population. The numbers of EOC facilities in regions would then provide a better indication of the distribution of facilities

To see if the facilities are well distributed in Pristine we have to look on facilities on the map and distribution of population. Region has approximately 2 347,6 km ^{2} with population 862560 and has not met the minimum acceptable level of 1 Comprehensive and 4 Basic EmOC facilities per 500 000 population as UN indicator 1 required. Considering acceptable quality of roads and referral service (every facility has an ambulance) transportation of pregnant women within region should not be a problematic. However, region accounted for more than 40% of deliveries in Kosovo: Pristine - 10 856 deliveries, Lipjan – 81 deliveries, Podujeva – 188 and Gllogovc 395 deliverires (2007 data). The only one EmoC facility, the Gynecology and Obstetrics Clinic of the University Clinical Centre in Pristine is overburdened mostly due to patients who are self referred or referred (more that 70%) from all over the Kosovo. This is indication that women in most cases are not able to receive services outside the Pristine town. Considering the fact that possible basic EmOC facilities are not able to provide emergency obstetric care, there is clear indication that EmOC facilities in Pristine regions are unevenly distributed, and there is an urgent need to upgrade facilities in EmOC status in remote areas of the region.

Indicator 3 Proportion of all birth in EmoC facilities (Prishtina region)

The proportion of all births that take place in an EOC facility serves as a crude indicator of utilization of EOC facilities. Estimated that 15 per cent of pregnant women will develop an obstetric complication serious enough to require medical care. and if the minimum acceptable level is met for this indicator, it is reasonable to conclude that it is **possible** that **many** women needing EOC are delivering in EOC facilities.
However, since this indicator does not provide any information about the types of deliveries taking place in EOC facilities, one cannot draw conclusions about whether it is **likely** that **most** women who need EOC are in fact receiving it. It may be that a large proportion of women delivering in facilities are those having normal deliveries. Also, there are major obstetric complications that are not usually counted among deliveries — antepartum and post-partum hemorrhage, post-partum sepsis and complications of induced abortion. This indicator provides no information about whether women with these complications are receiving EOC .

Table 7 Proportion of all birth in Emoc facilities in Prishtina region

Region	Population	Number of birth	Crude birth rate	Number of expected birth	Proportion of all birth in EmOC facilities	Required Minimum:
Pristina	862560	14275	23	19838	71,9%	15%

Approximately 72% of women give birth in Pristina region in EmOC facilities which is well above the minimum requirement level of 15%.

4. Met need for EmOC services (Pristina region)

This indicator, is a more refined measure of the utilization of EOC services because it takes into account the type of activities occurring in the EOC facilities. Met Need describes the proportion of women with complications who receive emergency treatment out of the total number of pregnant women that you would expect to have complications (approximately 15% of pregnant women). If facility provides life saving services, and data are well collected, then Met Need should increase, meaning that an increasing proportion of women who need emergency obstetric services are getting them. Assessment team was trying to record the number of each type of complication at the facility during the last three month. Effort were made to standardize the classification of complications by thoroughly given instructions (table 8)
:

Table 8 Direct Obstetric Complications and definitions

Direct Obstetric Complication	Definitions derived from WHO6 and International Federation of Gynecology and Obstetrics
Hemorrhage Antepartum	Any bleeding before labor and during labor: placenta previa, abruptio placenta
Hemorrhage Postpartum	Bleeding that requires treatment (provision of intravenous fluids and/or blood transfusion);
Prolonged / Obstructed labour	prolonged, established, first stage of labor (>12 hours) prolonged second stage of labor (>1 hour), CPD (cephalo-pelvic disproportion), transverse lie, brow/face presentation.
Postpartum sepsis	Fever (temperature 38 degrees Centigrade or more) occurring more than 24 hours after delivery (with at least two readings because labor alone can cause some fever).
Complications of abortion	Hemorrhage due to abortion, which requires resuscitation with IV fluids and/or blood transfusion. **Sepsis** due to abortion (this includes perforation and pelvic abscess)
Severe Pre-eclampsia	Diastolic blood pressure >110 mmHG and proteinuria >3+ after 20 weeks gestation. Various signs and symptoms: headache,hyperflexia, blurred vision, oliguria, epigastric pain, pulmonary oedema.
Eclampsia	Convulsions. Diastolic blood pressure 90mmHG or more after 20 weeks gestation. Proteinuria 2+ or more. Various signs and symptoms: coma and other signs and symptoms of severe pre-eclampsia.
Ruptured Uterus	Uterine rupture with a history of prolonged/obstructed labor when uterine contractions suddenly stopped . Painful abdomen. Patient may be in shock from internal and/or vaginal bleeding.

Ideally, data supposed to come from a single source—the EmOC facility admission registers, however, record system in Kosovo does not make it easy to gather data on obstetric complications. The staff in a facilities have fallen out of the habit of filling in some of the columns of the EmOC facility register or the admissions register. This caused confusion, inconsistency and incompleteness. Several attempts to get such information have failed.
Because of that we followed commonly available information — the total number of deliveries in the facility and the number of 'normal' deliveries during year 2007. The number of 'normal' deliveries in the study period is subtracted from the number of total deliveries, which yields the

number of 'non normal' deliveries. This number is then multiplied by a correction factor (1.25), and the resulting number is a proxy for the number of women with obstetric complications The correction factor is applied because the number of non-normal deliveries is likely to underestimate the number of women with major obstetric complications admitted to the facility. The number of non-normal deliveries will fail to include women admitted for at least three of the major obstetric complications: post-partum and antepartum haemorrhage, post-partum sepsis and complications of induced abortion. On the other hand, non-normal deliveries will include a certain number of complications that are not among those being used here to define a complicated case (e.g., non-obstetric illnesses occurring during pregnancy or post-partum). Thus we were able to produce a liberal estimate of the number of women with complications receiving treatment at a facility .Of course this approach could introduce considerable heterogeneity, what made calculations approximate .

Table 9 Proportion of women estimated to have obstetric complications who are treated in EOC facilities (Prisitina region)

Region	Population	Reported deliveries for 2007	Reported normal deliveries for 2007	Number of treated complications x 1.25	Expected N of deliveries	Expected N of complications 15%	Met Need requirement
Pristina	470 000	10 586	7494	3092	10810		**At least 100%**
Pristine Private EmOC facility		145	76	69			
Lipjan	87 660	81	80	1	2016		
Podujeva	130 000	188	188	0	2990		
Gllogovc	67000	395	393	2	1541		
Fushe-Kosove	50 000				1150		
Novoberda	3900				89		
Obiliq	25 000				575		
Shtime	29 000				667		
Total	**862560**	**11395**	**8231**	**3164x1.25= 3955**	**19838**	**2975**	**132.9 %**

As we can see form the table 9 minimum acceptable level for this indicator is met, so it is reasonable to conclude that most women who need EOC services are receiving them. In Pristine met need of more that 100 per cent was found, however, it should be taken to mean that there might be a problem with the data — e.g., overdiagnosis of complications, as we used proxy fro calculations. For example, number of CS in Pristine town is highest in country - 2610, and we know that approximately only 1/3 (870) usually performed for life serving procedure. If we change number of complications in this way it would also affect met need, which became quite well below required 100% (table 10) Also, Pristine facility are likely to receive referrals from neighboring regions, which explain why met need in this region exceeds 100%.

Table 10 Proportion of women estimated to have obstetric complications who are treated in EOC facilities (Prisitina region) with different approach to complications (C -section)

Region	Population	Reported deliveries for 2007	Reported normal deliveries for 2007	Number of treated complications x 1.25	Expected N of deliveries	Expected N of complications 15%	Met Need requirement
Pristina	470 000	10 586	7494	3092	10810		At least 100%
Pristine Private EmOC facility		145	76	69			
Lipjan	87 660	81	80	1	2016		
Podujeva	130 000	188	188	0	2990		
Gllogovc	67000	395	393	2	1541		
Fushe-Kosove	50 000				1150		
Novoberda	3900				89		
Obiliq	25 000				575		
Shtime	29 000				667		
Total	862560	11395	8231+1740 CS = 9971	1424x1.25= 1780	19838	2975	59.8 %

This indicator shoud not be confused with the MDG indicator births assisted by skilled attendants. While all births in EmOC facilities should be assisted by skilled attendants (or at least have easy access to skilled attendants in case of complication), the inverse is not true The two indicators actually mean two different things, but there is a tendency to confuse them

Indicator 5 Cesarean sections as a percentage of all births (Pristina region)

The C-section rate allows for a comparison of the proportion of women giving birth by C-section in a population to a range of rates considered appropriate on a population level (between 5% and 15% of all births) The range 5-15% used as proportion of complications requiring C sections amongst a group of women giving birth. Below 5% would indicate women are dying or suffering disability because they are not receiving treatment; above 15% may indicate that women are receiving C sections for reasons other that those strictly requited by their medical conditions of fetal conditions

Table 11 C sections as a percentage of all birth (region Prishtina)

Name of the Region Pristine	Population	N/ birth in 2007	CS in 2007	Expected number of birth	Minimum and maximum acceptable level 5-15%
Pristine	470 000	10 856	2541	10 810	23.7%
Pristine Private EmOC facility		145	69		47.5%
Lipjan	87 660	81	0	2017	

Podujeva	130 000	188	0	2990	
Glogovc	67000	395	0	1541	
Fushe-Kosove	50 000			1150	
Novoberda	3900			90	
Obiliq	25 000			575	
Shtime	29 000			667	
Total	862 560	11665	2610	18022	14.4%

Aggregated data can still conceal important discrepancies. In Pristina region 14,4 % birth being accomplished by cesarean section, which is within the acceptable level, nevertheless this life saving procedure occurs only in city Pristina, where the procedure is sometimes over utilized and private sector cesarean sections improves this indicator. Unacceptably high proportion of private patients in Pristina have C section rate 47,5%, while in rural areas women are not able to receive treatment (the proportion of C section is virtually zero.)

Indicator 6 Case fatality rate (region Pristina)

The indicators discussed so far are measures of coverage and utilization of EOC at the population level. Case fatality rates (CFRs), on the other hand, are measures of EOC performance **at the facility level.** They may lose meaning and usefulness when aggregated
The aggregate case fatality rate is calculated by dividing the number of intra-hospital deaths due to major or direct obstetric causes by the number of women treated for those complications in the same facilities. As we can see from table 12 there were 2 maternal death in region in 2008 which were attributed to indirect causes .

Table 12 **Case fatality rate (region Prishtina)**

Causes of maternal death	No of death/complications	Case fatality rate	Recommended maximum %
2 indirect causes	**2/3164**	**0.03%**	<1%

.

Table 13 Summary of UN indicators on Pristina region

UN Process indicators	Recommended level	Actual level	Needs
Amount of EmOC services available	Minimum: 1 comprehensive EoMC facility for every 500 000 population	2 comprehensive, one of them (C-1)* 3 basic (B-3)**	2 comprehensive, 6 basic EmOC facilities
2.Georgaphical distribution of EmOC facilities	Minimum: 100% of subnational areas have the minimum acceptable numbers of basic and comprehensive EmOC facilities	Unevenly distributed	Sub regional areas with Basic EmOC facilities needs to be upgraded
3.Proportion of all birth in EmOC facilities	Minimum: 15%	71,9,%	-
4. Met need for	At least 100%	132,9% - /59.8%	

EmOC services	[Estimated as 15% of expected births.		
5. Cesarean sections as a percentage of all births	Minimum 5% Maximum 15%	14.4%	Unacceptably high proportion of C section rate in town, in rural areas women are not able to receive treatment (C section rate is O%.)
6. Case fatality rate	Maximum 1%	0.03%	

UN indicators in Prizran region

Indicator 1 Amount of EmOC services available (region Prizran)

Table 14 List of possible essential obstetric care facilities in Prizran region

Name of the Region	Population	N/ birth for 2007	CS for 2007	N/birth for last 3 month	CS for last 3 month	Signal functions for last 3 month
				(July – September 2008)		
Prizran	240 000	4273	784	435	74	Yes
Suha-Reca	80 000	158	0			n/assessed
Dragash	35 054	207	0			n/assessed
Rahovec	78 674	256	0			n/assessed
Malisheva	65 000	99	0			n/assessed
Total	498 728	4993	784			

Table 15 List of facilities in Prizran region with possible EmOC services

Facilities where basic EmOC might be performed	Facilities where comprehensive EmOC might be performed
Suha-Reca	Prizran
Dragash	
Rahovec	
Malisheva	

Table 16 List of facilities in Prizran region with actual EmOC servises

Facilities with actual basic EmOC	Facilities with actual comprehensive EmOC
Suha-Reca (B-3)	Prizran
Dragash (B-3)	
Rahovec (B-3)	
Malisheva (B-3)	

* B-3 (basic EmOC where not performed for last three month such signal functions as parenteral administration of anti consultants, removal of retained products, assisted vaginal delivery)

For adequate coverage of emergency services region with population 498 728, needs minimum 1 comprehensive and 4 basic EmOC . Prizran EmOC facility is a regional hospital with more than 4 000 deliveries per year As we can see on fig3 e 10 region would met requirements if mentioned EmoC facilities were basic. However considering a small number of birth per year in these facilities (average – 0,43 birth per day) signal functions supposed to be performed during last three month would be difficult to achieve. These facilities needs to be upgraded for adequate coverage of services in region

Indicator 2 Geographical distribution of EmOC facilities

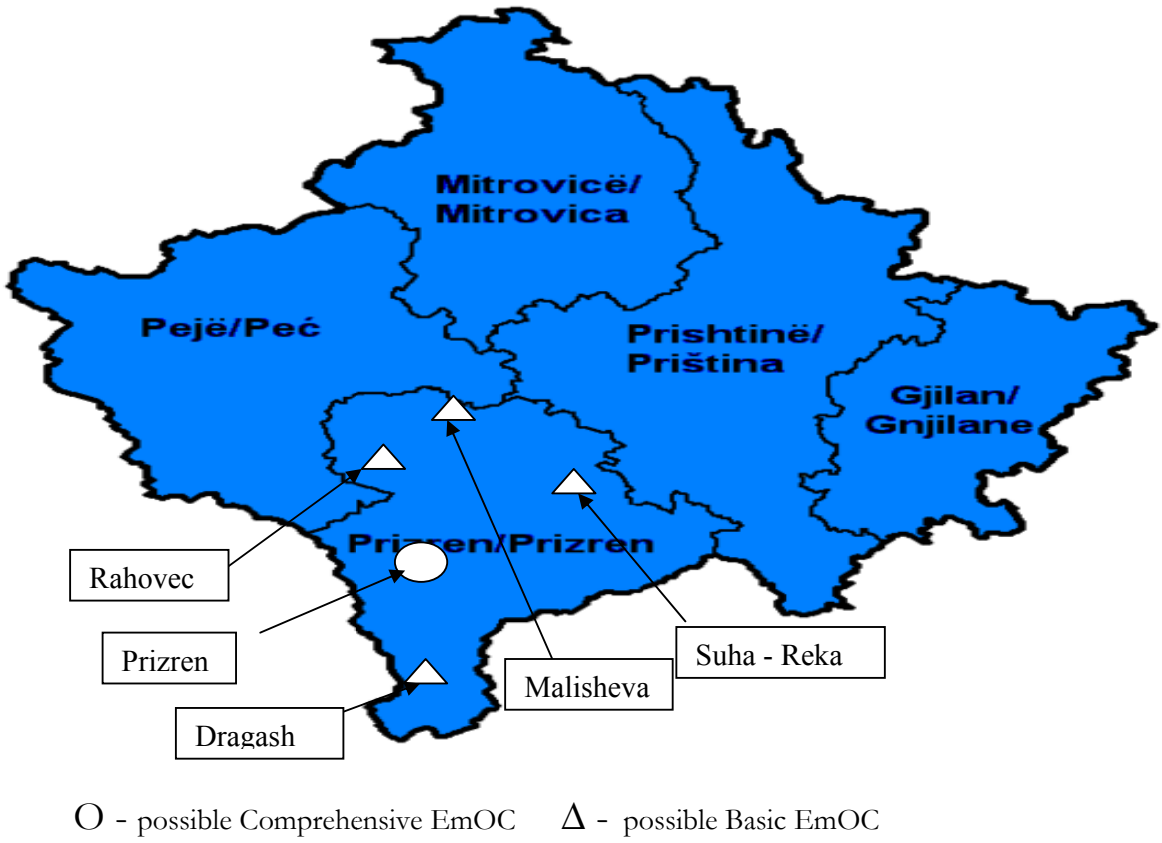


Figure 3 Geographical distribution of EmOC facilities (Prizren region)

Indicator 3 Proportion of all birth in EmoC facilities (Prizran region)

Table 17 Proportion of all birth in Emoc facilities in Prishtina region

Region	Population	Number of birth	Crude birth rate	Number of expected birth	Proportion of all birth in EmOC facilities	Required Minimum:
Prizran	498 728	4993	23	11470	43,5%	15%

Approximately 44% of women give birth in Prizran region in EmOC facilities which is well above the minimum requirement level of 15%.

4. Met need for EmOC services (Prizran region)

Region	Population	Reported deliveries for 2007	Reported normal deliveries for 2007	Number of complications x 1.25 treated	Expected N of deliveries	Expected N of complication 15%	Met Need
Prizran	240 000	4273	3407	86	5520		**At least 100%**
Suha-Reca	80 000	158	156	2	1840		
Dragash	35 054	207	205	2	806		
Rahovec	78 674	256	256		1809		
Malishev	65 000	99	99		1495		
Total	**498 728**	**4993**	**4123**	**1087**	**11470**	**1720**	**63,1%**

Minimum acceptable level for this indicator is not met — that is, met need is less than 100 % — then the conclusion to be drawn is that some women with complications are not receiving the medical care they need.

Indicator 5 Cesarean sections as a percentage of all births (Prizran region)

Table 18 C sections as a percentage of all birth in region Prizran

Region	Population	N/ birth in 2007	CS in 2007	Expected number of birth	Minimum and maximum acceptable level 5-15%
Prizran	240 000	4273	784	5520	**6.8%**
Suha-Reca	80 000	158	0	1848	
Dragash	35 054	207	0	806	
Rahovec	78 674	256	0	1810	
Malisheva	65 000	99	0	1495	
Total	**498 728**	**4993**	**784**	**11470**	**6.8%**

Only in regional hospital in Prizran C - section is available, though this indicator even in Prizran is hardly above the minimum acceptable level . In rural areas women are not able to receive C section procedure.

Indicator 6 Case fatality rate (region Prizran)

There was 1 maternal death Prizran hospital during 2008 from hemorrhage after CS

Table 19 Case fatality rate (region Prizren)

Causes of maternal death	No of death/complications	Case fatality rate	Recommended maximum %
Hemorrhage	**1/1087**	0.09%	<1%

Table 20 Summary of UN indicators in Prizran region

UN Process indicators	Recommended level	Actual level	Needs
Amount of EmOC services available	Minimum: 1 comprehensive EoMC facility for every 500 000 population	1 comprehensive, 4 Basic (B-3)	4 Basic needs to upgraded
2.Georgaphical distribution of EmOC facilities	Minimum: 100% of subnational areas have the minimum acceptable numbers of basic and comprehensive EmOC facilities	Unevenly distributed	Sub regional areas with Basic EmOC facilities needs to be upgraded
3.Proportion of all birth in EmOC facilities	Minimum: 15%	43.5%	-
4. Met need for EmOC services	At least 100% [Estimated as 15% of expected births.	63.5%	Minimum acceptable level for this indicator is not met
5. Cesarean sections as a percentage of all births	Minimum 5% Maximum 15%	6,8%	Acceptable level, however in rural regions women are not able to receive treatment
6. Case fatality rate	Maximum 1%	0.09%	

UN indicators in Mitrovice region

Indicator 1 Amount of EmOC services available (region Mitrovice)

Table 21 List of possible essential obstetric care facilities in Mitrovice region

Region	Population	N/ birth for 2007	CS for 2007	N/birth for last 3 month	CS for last 3 month	Signal functions for last 3 month
				(July – September 2008)		
Mitrovica	105 322	522	23	198	11	**Yes**
Vustrri	102 600	973	119	243	24	**Yes**
Skeneraj	72 000	540	0	139	0	**B-4***
Zubin Potok	14 900					
Leposavic	18 000					
Zvecan	17 000					
Mitrovica North		656	146	158	33	**Yes**
Total	**329822**	**2691**	**288**			

During the mission we were able to visit obstetric department in Mitrovica North. We were not allowed to observe activities in the hospital, however, during meeting with midwifes Dr. Doina Bologa (UNFPA, Kosovo) was able shortly visit department and collect some statistical information as well as information regarding equipment ,supply and drug needs.

Table 22 List of facilities in Mitrovice region with possible EmOC services

Facilities where basic EmOC might be performed	Facilities where comprehensive EmOC might be performed
Skenderaj	Mitrovice
	Mitorvice North
	Vustrii

Table 23 List of facilities in Prizran region with actual EmOC servises

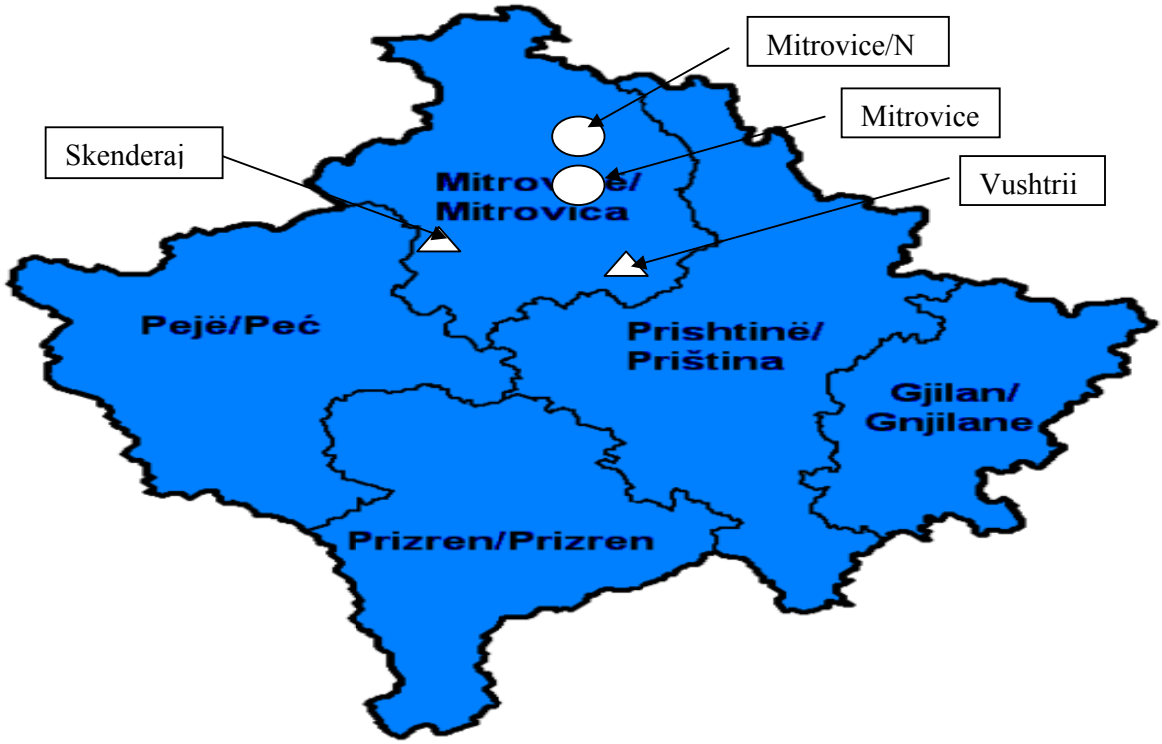
Facilities with actual basic EmOC	Facilities with actual comprehensive EmOC
Skenderaj (B-4)*	Mitrovice
	Vustrii
	Mitorvice North

*(B-4) basic EmOC where not performed for last three month such signal functions as parenteral administration of anti consultants, manual removal of placenta, removal of retained products, assisted vaginal delivery

For adequate coverage of emergency services region with population 280 000 needs minimum 1 comprehensive and 2 -3 basic EmOC . During assessment we found 3 comprehensive EmOC facilities. Department in Mitovice is very small (6 beds), however is still able to maintain a full range of medical activities. Activities in Mitorvice North facility was difficult to monitor, however with statistical data get available (about 600 deliveries is occurred.) and was qualified as Comprehensive. Probably, due political reasons and difficulties in communication between

North and South Mitrovica both of them are needed . Vushrii EmOC facility, though one of the best in terms of equipment and maintenance has provided about 1000 deliveries per year. Skenderaj EmOC facility department needs to be upgraded to basic level and one additional basic EmOC need to open for adequate coverage of services in region

Indicator 2 Geographical distribution of EmOC facilities (Mitrovice region)



O - possible Comprehensive EmOC Δ - possible Basic EmOC

Figure 4 Geographical distribution of EmOC facilities (Prizren region)

EmoC facilities in Mitrovice region are not evenly distributed (figure4)

Indicator 3 Proportion of all birth in EmoC facilities (Mitrovica region)

Table 24 Proportion of all birth in Emoc facilities in Mitrovice region

Region	Population	Total number deliveries	Crude birth rate	Number expected deliveries	Proportion of all birth in EmOC facilities	Required Minimum:
Mitorvice	329822	2691	23	7585	35.4%	15%

Approximately 36% of women give birth in Mitovice region in EmOC facilities which is well above the minimum requirement level of 15%.

4. Met need for EmOC services (Mitrovice region)

Region	Population	Reported total deliveries for 2007	Reported normal deliveries for 2007	Number of complications treated x 1.25	Expected N of deliveries	Expected N of complications 15%	Met Need
Mitrovica	105 322	522	495	27	2353		At least 100%
Mitrovica North		656	510	146			
Vustrri	102 600	973	845	128	2359		
Skeneraj	72 000	540	540	0	1656		
Zubin Potok	14 900				342		
Leposavic	18 000				414		
Zvecan	17 000				391		
Total	329822	2691	2390	376	7585	1127	31.5%

In Mitrovica region women with obstetric complications are not being treated as reflected by 'met need' indicator (31.5%)

Indicator 5 Cesarean sections as a percentage of all births (Mitrovice region)

Table 25 C sections as a percentage of all birth in region Mitorvice

Name of the Region	Population	N/ birth in 2007	CS in 2007	Expected number of birth	Minimum and maximum acceptable level 5-15%
Mitrovice					
Mitrovica	105 322	522	23	2422	6.9%
Vustrri	102 600	973	119	2359	5.%
Skeneraj	72 000	540		1656	
Zubin Potok	14 900			342	
Leposavic	18 000			414	
Zvecan	17 000			391	
Mitrovica North		656	146		22. 2
Total	329822	2691	288	7585	3.7%

CS rate is below minimum acceptable level mostly attributed to Mitrovica and Vustri facilities. Mitovica North showed C section rate 22,2%, however aggregated indicator for region is much below acceptable level of 5%.

Indicator 6 Case fatality rate (region Mitrovice)

There was no maternal death reported in region

Table 26 Summary of UN indicators in Mitrovice region

UN Process indicators	Recommended level	Actual level	Needs
Amount of EmOC services available	Minimum: 1 comprehensive EoMC facility for every 500 000 population	3 comprehensive, 1 Basic (B-4)	1 Basic needs to upgraded 1 Basic needs to open
2.Georgaphical distribution of EmOC facilities	Minimum: 100% of subnational areas have the minimum acceptable numbers of basic and comprehensive EmOC facilities	Unevenly distributed	Sub regional areas with Basic EmOC facilities needs to be upgraded
3.Proportion of all birth in EmOC facilities	Minimum: 15%	35.4%	-
4. Met need for EmOC services	At least 100% [Estimated as 15% of expected births.	31,5%	Women with complications are not receiving the medical care they need. In rural areas women are not able to receive treatment
5. Cesarean sections as a percentage of all births	Minimum 5% Maximum 15%	3,7%	
6. Case fatality rate	Maximum 1%	Not reported	

UN indicators in Gjilan region

Indicator 1 Amount of EmOC services available (region Gjilan)

Table 27 List of possible essential obstetric care facilities in Cjilan region

Region	Population	N/ birth for 2007	CS for 2007	N/birth for last 3 month	CS for last 3 month	Signal functions for last 3 month (July – September 2008)
Gjilan	133 724	2325	216	588	38	Yes
Ferizaj	160 000	1922	64			n/assessed
Kacanik	31 072	4	0			n/assessed
Viti	59 800	29	0			n/assessed
Kamenice	53 000	83	0			n /assessed
Shterpce	13 633					
Hani i Elezit	10 139					
Total	461368	4363	280			

Table 28 List of facilities in Gjilan region with possible EmOC services

Facilities where basic EmOC might be performed	Facilities where comprehensive EmOC might be performed
Kacanik	Gjilan
Viti	Ferizaj
Kamenice	

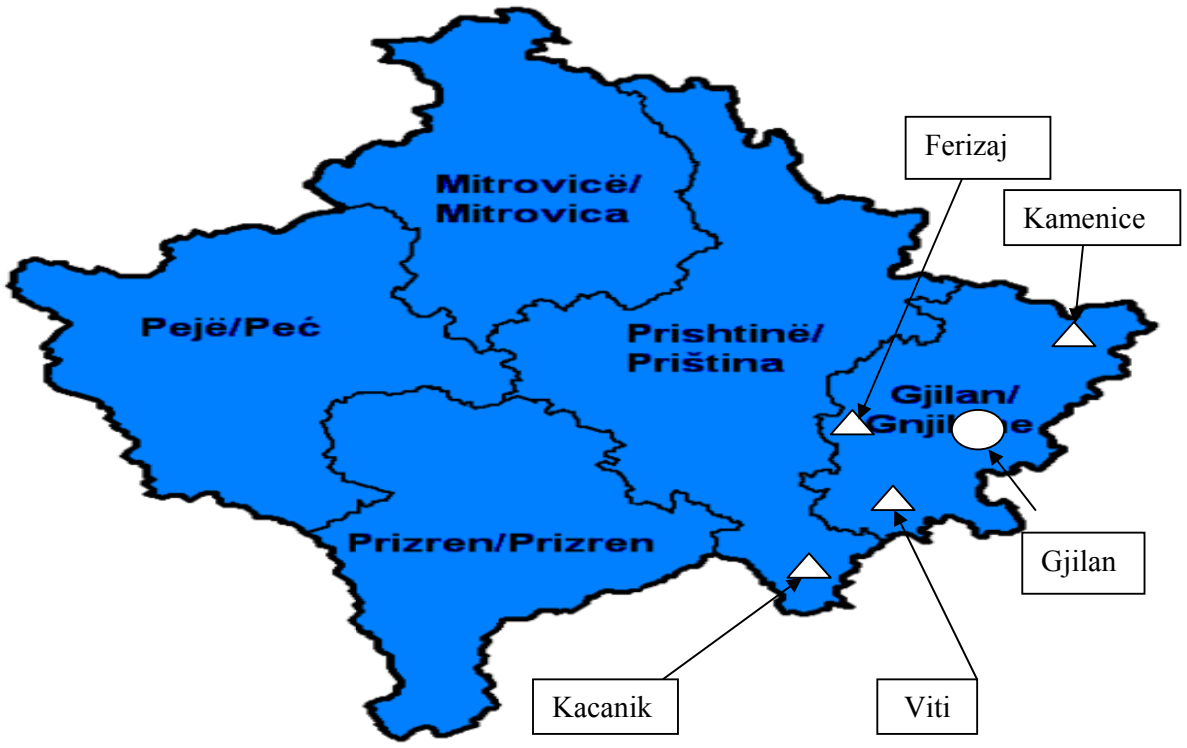
Table 29 List of facilities in Prizran region with actual EmOC servises

Facilities with actual basic EmOC	Facilities with actual comprehensive EmOC
Kacanik (B-3)	Gjilan
Viti (B-3)	Ferizaj
Kamenice (B-3)	

*B – 3 (not performed for last three month such signal functions as manual removal of placenta, parenteral hypotensives, ventose or forceps)

Region needs minimum 1C +4 B facilities with population 461368 thousands . Currently we have 2 comprehensive and 3 possible basic EmOC facilities. Again, considering the number of birth during year in this possible Basic EmOC facilities, very unlikely they are met requirements of Basic. All of them needs to be upgraded for adequate coverage of services in region

Indicator 2 Geographical distribution of EmOC facilities (Gjilan)



O - possible Comprehensive EmOC Δ - possible Basic EmOC

Figure 5 Geographical distribution of EmOC facilities (Gjilan region)

Possible EmoC facilities in Gjilan region are well located (fig 5), however, considering actual EmoC facilities, there is a gap in geographical distribution.

Indicator 3 Proportion of all birth in EmoC facilities

Table 30 Proportion of all birth in Emoc facilities in Gjilan region

Region	Population	Number of birth	Crude birth rate	Number of expected birth	Proportion of all birth in EmOC facilities	Required Minimum:
Gjilan	461368	4663	23	10610	43,9%	15%

44% of women give birth in Gjilan region in EmOC facilities which is well above the minimum requirement level of 15%.

4. Met need for EmOC services (Gjilan region)

Region	Population	Reported total deliveries for 2007	Reported normal deliveries for 2007	Number of complications treated x 1.25	Expected N of deliveries	Expected N of complica 15%	Met Need
Gjilan	133 724	2325	1992	333	3075		At least 100%
Ferizaj	160 000	1922	1837	85	3680		
Kacanik	31 072	4	4	0	714		
Viti	59 800	29	29	0	1375		
Kamenice	53 000	83	82	1	1219		
Shterpce	13 633				313		
Hani i Elezit	10 139				233		
Total	461 368	4363	3944	523	10610	1591	32.8%

This is third region where met need is less than 100 % - some women with complications are not receiving the medical care they need

Indicator 5 Cesarean sections as a percentage of all births (Gjilan region)

Table 31 C sections as a percentage of all birth in region Gjilan

Name of the Region	Populati on	N/ birth in 2007	CS in 2007	Expected number of birth	CS for last 3 month	Minimum and maximum acceptable level 5-15%

Gjilan						
Gjilan	133 724	2325	216	3075		7%
Ferizaj	160 000	1922	64	3680		1,7%
Kacanik	31 072	4	0	713		
Viti	59 800	29	0	1375		
Kamenice	53 000	83	0	1220		
Shterpce	13 633			313		
Hani i Elezit	10 139			233		
Total	461 368	4363	280	10610		2.6%

There is serious problem in region in terms of providing of such life saving procedure as C section In spite of acceptable range of C section in regional hospital of Gjilan, aggregated data for region 2,6 %, which is well below minimum level.

Indicator 6 Case fatality rate (region Gjilan)

No maternal death reported in region

Table 32 Summary of UN indicators in Gillan region

UN Process indicators	Recommended level	Actual level	Needs
Amount of EmOC services available	Minimum: 1 comprehensive EoMC facility for every 500 000 population	2 comprehensive, 3 Basic (B-4)	3 Basic needs to be upgraded
2.Georgaphical distribution of EmOC facilities	Minimum: 100% of subnational areas have the minimum acceptable numbers of basic and comprehensive EmOC facilities	Unevenly distributed	Sub regional areas with Basic EmOC facilities needs to be upgraded
3.Proportion of all birth in EmOC facilities	Minimum: 15%	43.9%	-
4. Met need for EmOC Services	At least 100% [Estimated as 15% of expected births.	32.8%	Some women with complications are not receiving the medical care they need
5. Cesarean sections as a percentage of all births	Minimum 5% Maximum 15%	2,6%	C section rate in regions in well below minimum acceptable level
6. Case fatality rate	Maximum 1%	0	

UN process indicators in Peje region

Indicator 1 Amount of EmOC services available (Peje region)

Table 33 List of possible essential obstetric care facilities in Peje region

Region	Population	N/ birth for 2007	CS for 2007	N/birth for last 3 month	CS for last 3 month	Signal functions for last 3 month (July – September 2008)
Peja	170 000	2661	609			n/assessed
Decan	40 000	84		55	0	No* (B-4)
Giakova	150 000	2111	501			n/assessed
Ishtog	50 000	214		46	0	No (B-4)
Kline	42 813					
Junik	12 500					
Total	**465313**	**5070**	**1110**			

*(B-4) basic EmOC where not performed for last three month such signal functions as parenteral administration of anti consultants, manual removal of placenta, removal of retained products, assisted vaginal delivery

Table 34 List of facilities in Peje region with possible EmOC services

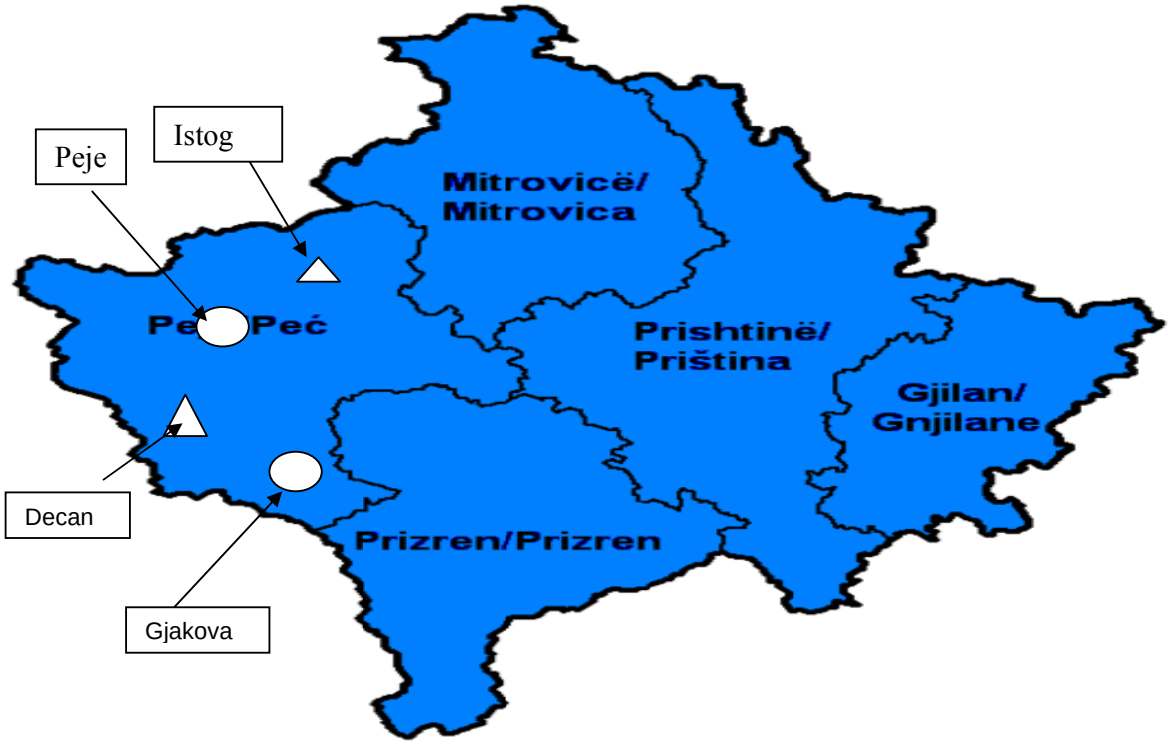
Facilities where basic EmOC might be performed	Facilities where comprehensive EmOC might be performed
Decan	**Peja**
Ishtog	**Giakova**

Table 35 **List of facilities in Prizran region with actual EmOC servises**

Facilities with actual basic EmOC	Facilities with actual comprehensive EmOC
Decan (B-4	**Peja**
Ishtog (B-4)	**Giakova**

For adequate coverage of emergency services region with population 465313 needs minimum 1 comprehensive and 3 basic EmOC . Peje and Jiakova EmOC facilities are comprehensive with about 2000 deliveries per year each . Region would met requirements if mentioned basic EmoC facilities were actually basic. However considering a small number of birth per year in these facilities (average – 0,43 birth per day) signal functions supposed to be performed during last tree month would be difficult to achieve. These facilities needs to be upgraded for adequate coverage of services in region

Indicator 2 Geographical distribution of EmOC facilities (Peje region)



O - possible Comprehensive EmOC Δ - possible Basic EmOC

Figure 6 Geographical distribution of EmOC facilities (Peje region)

Possible EmoC facilities in region are well distributed

Indicator 3 Proportion of all birth in EmoC facilities

Table 36 Proportion of all birth in Emoc facilities in Peje region

Region	Population	Number of birth	Crude birth rate	Number of expected birth	Proportion of all birth in EmOC facilities	Required Minimum:
Peje	465313	5070	23	10702	47,3%	15%

Approximately 47 % of women give birth in Peje region in EmOC facilities which is well above the minimum requirement level of 15%.

4. Met need for EmOC services (Peje region)

Region	Population	Reported total deliveries for 2007	Reported normal deliveries for 2007	Number of complications treated x 1.25	Expected N of deliveries	Expected N of complications 15%	Met Need
Peja	170 000	2661	1959	702	3910		At least 100%
Decan	40 000	84	84	0	920		
Giakova	150 000	2111	1552	559	3450		
Ishtog	50 000	214	211	3	1150		
Kline	42 813				984		
Junik	12 500				287		
Total	**465313**	**5070**	3806	**1580**	**10702**	**1605**	**98.4%**

Indicator 5 Cesarean sections as a percentage of all births (Peje region)

Table 37 C sections as a percentage of all birth in region Peja

Region	Population	N/ birth in 2007	CS in 2007	Expected number of birth	Minimum and maximum acceptable level 5-15%
Peja	170 000	2661	609	3910	**15.5**
Decan	40 000	84	0	920	
Giakova	150 000	2111	501	3450	**14.5**
Istoc	50 000	214	0	1150	
Kline	42 813			984	
Junik	12 500			287	
Total	**465 313**	**5070**	**1110**	**10702**	**10.3%**

In both comprehensive EmOC facilities in region C section rate is within acceptable level , however in remote rural areas women are not able to receive C section procedure.

Inducator 6 Case fatality rate (region Peje)

No maternal death reported in region

Table 38 Summary of UN process indicators in Peje region

UN Process indicators	Recommended level	Actual level	Needs
Amount of	Minimum: 1 comprehensive	2 comprehensive,	2 Basic needs to be

EmOC services available	EoMC facility for every 500 000 population	2 Basic (B-4)	upgraded
2.Georgaphical distribution of EmOC facilities	Minimum: 100% of subnational areas have the minimum acceptable numbers of basic and comprehensive EmOC facilities	Unevenly distributed	Basic EmOC facilities in sub regional areas with needs to be upgraded
3.Proportion of all birth in EmOC facilities	Minimum: 15%	47,3%	
4. Met need for EmOC services	At least 100% [Estimated as 15% of expected births.	98,4	Almost 100%
5. Cesarean sections as a percentage of all births	Minimum 5% Maximum 15%	10,3%	C section rate is within acceptable level
6. Case fatality rate	Maximum 1%	Not reported	

Summary

If women are to receive prompt adequate treatment for complications, then facilities for providing essential obstetric care (EOC) must:

1. exist;
2. be distributed in a useful fashion;
3. be used by women; and
4. be used by women who really need them.

Indicator 1 Amount of EmOC facilities in Kosovo

Below is presented findings of UN process indicators in Kosovo with sub national regions breakdown. Indicators 1 and 2 deal with coverage or availability, answering the question: Do enough EmOC services exist to serve the population? Indicator 3 deals with utilization, answering the question: Are the EmOC services being used by pregnant women? Indicators 4 and 5 also deal with utilization, but focuses on the question of complications: Are the EmOC services being used by women who really need them, i.e. women experiencing obstetric complications? Indicator 6 tells us something about the quality of service, by answering the question of whether the facilities are saving women's lives.

As we can see from the table 39 there are 24 possible EmOC facilities in Kosovo. During assessment we could found 9 possible Comprehensive EmOC (marked red) facilities and were able to assess 6 of them, which have met requirements of Comprehensive. From possible 16 Basic EmOC facilities, we were able to evaluate 4 (marked green), which not have met of requirements of Basic. Considering the activities which is observed in those facilities during year 2007 and the last three month in 2008 we were sought that all these facilities have not met requirements of Basis.

Table 39 List of possible EmOC facilities in Kosovo

Regions		Populatio n.	N/ birth for 2007	CS for 2007	N/birth for last 3 month	CS for last 3 month	Signal functions for last 3 month
					(July – September 2008)		
1	Pristina	470 000	10 586	2541	2969	662	Yes
2	Pristine Private EmOC facility		145	69	30	12	C – 2
3	Lipjan	87 660	81	0	28	0	B – 4
4	Podujeva	130 000	188	0			n/assessed
5	Glogovc	67000	395	0			n/assessed
6	Fushe-Kosove	50 000					
	Novoberda	3900					
	Obiliq	25 000					
	Shtime	29 000					
7	Mitrovica	105 322	522	23	198	11	Yes
8	Vustrri	102 600	973	119	243	24	Yes
9	Skeneraj	72 000	540	0	139	0	B-4
	Zubin Potok	14 900					
	Leposavic	18 000					
	Zvecan	17 000					
10	Mitrovica North		656	146	158	33	Yes
11	Prizran	240 000	4273	784	435	74	Yes
12	Suha-Reca	80 000	158	0			n/assessed
13	Dragash	35 054	207	0			n/assessed
14	Rahovec	78 674	256	0			n/assessed
15	Malisheva	65 000	99	0			n/assessed
16	Peja	170 000	2661	609			n/assessed
17	Decan	40 000	84		55	0	(B-4)
18	Giakova	150 000	2111	501			n/assessed
19	Ishtog	50 000	214		46	0	(B-4)
	Kline	42 813					
	Junik	12 500					
20	Gjilan	133 724	2325	216	588	38	Yes
21	Ferizaj	160 000	1922	64			n/assessed
22	Kacanik	31 072	4	0			n/assessed
23	Viti	59 800	29	0			n/assessed
24	Kamenice	53 000	83	0			n /assessed
	Shterpce	13 633					
	Hani i Elezit	10 139					
	Total	**2617791**	**28522**	**5072**			

Figure 7 Distribution of Comprehensive EmOC facilities in Kosovo

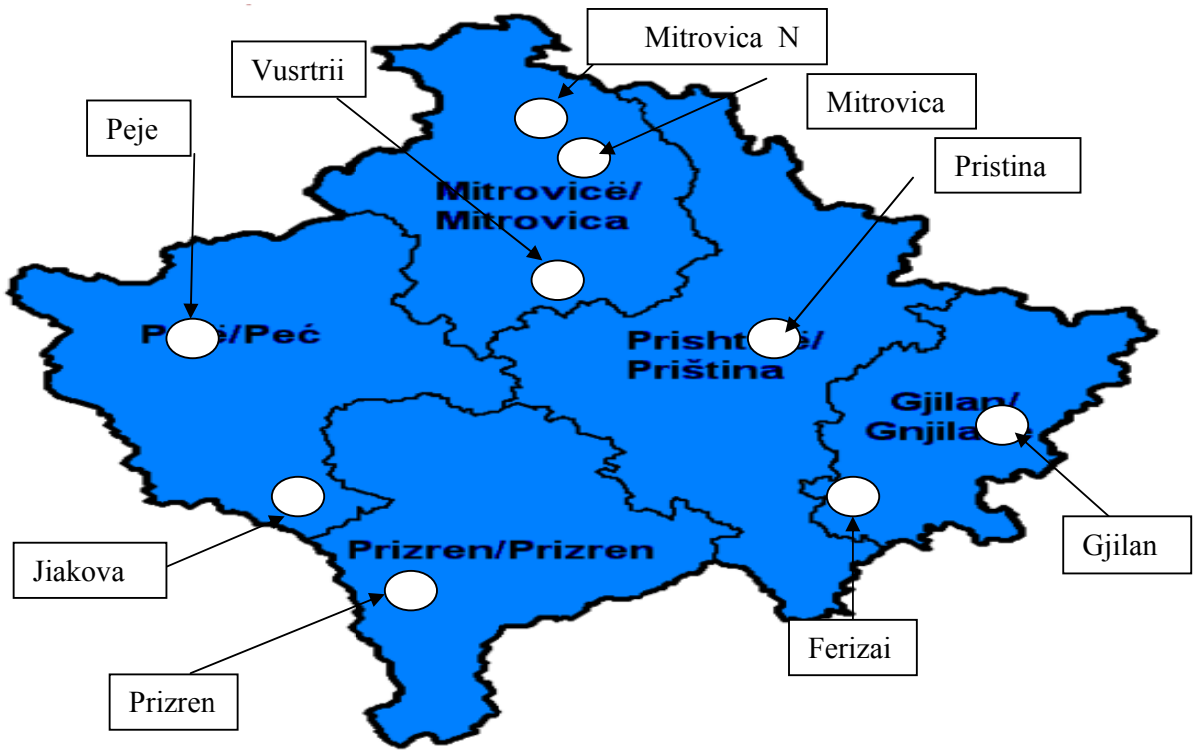


Table 40 Availability of EmOC facilities in Kosovo

Regions	Population	Baseline availability		Recommended level	
		Basic	Comprehensive	Basic	Comprehensive
Prisitina	862560	3 (B-3)	1+ (1 C-2)	6-7	2
Prizren	498728	4 (B-3)	1	4	1
Mitrovica	329822	1 (B-4)	3	4	2 (political reason)
Gjilan	461368	3 (B -3)	2	4	1
Peje	465313	2 (B -4)	2		1
Kosovo	2617791	13	9 + (1C-2)	20	5-6

As table **40** shows there is relatively good availability of comprehensive EmOC and deficiency in the availability of ACTUIAL basic care For a population of 2617791 million inhabitants, 5-6 comprehensive and 20 basic EmOC facilities are recommended. However, none of these BAsic facilities surveyed provide the services needed to be considered fully functioning as basic EmOC. Thus, it appears that the health system in Kosovo operates without basic facilities So far, there are urgent need to upgrade all 16 Basic facilities and make additional 4, to be met UN indicator 1.

Indicator 2 Geographical distribution of EmOC facilities in Kosovo

Geographical distribution of EmOC in several regions remains an issue to be addressed considering uneven distribution of a Comprehensive and ACTUIAL Basic EmOc facilities. Regions

have more than adequate ratios of comprehensive facilities to the population, but fewer basic facilities Fig 7 reflects 9 actual comprehensive EmOC facilities in Kosovo where 24 457 (85,7%) deliveries took place and 100% C – sections being performed in 2007. Remaining 15 possible EmOC facilities responsible only for 4055 birth (15,3%). This point out important discrepancies in geographical distribution of EmOC facilities in Kosovo, especially in region Pristina, which needs 1,5 times as many comprehensive facilities, and 6 basic facilities for adequate coverage of emergency services. In order to prevent maternal deaths, the minimum acceptable level of EOC facilities should be met not only in the aggregate, but in smaller geographical areas as well It should be a priority to increase the availability of EOC services in the underserved areas (possible basic should became actual basic EmOC facilities)
The sampling design in each of the sites did not allow for an extensive survey of all facilities that might be or potentially could became basic, however there is a strong evidence that all POSSIBLE basic facilities in Kosovo needs to be upgraded and additional 4 should be open

Indicator 3 Proportion of women estimated to have obstetric complications who are treated in EOC facilities

The proportion of all births that take place in an EOC facility serves as a crude indicator of utilization of EmOC facilities. Estimated that 15 per cent of pregnant women will develop an obstetric complication serious enough to require medical care. Thus, if the number of women receiving care in an EmOC facility is not at least 15 per cent of all women giving birth in the population, then it is certain that some proportion of obstetric complications are going untreated.
Approximately 40- 70 % of women give birth in Kosovo in EmOC facilities which is well above the minimum requirement level of 15%. This indicator, therefore, is a more refined measure of the utilization of EOC services because it takes into account the type of activities occurring in the EOC facilities. Again, the goal is to have 100 per cent of women with obstetric complications delivering in EOC facilities, (this is approximately 15%) **not** 100 per cent of all pregnant women. In Kosovo case complications managed in EOC facilities are greater than 15 per cent of births — indicating that more than 100 per cent of the estimated need is met. One reason that this could happen is that, in reality, more than 15 per cent of pregnant women in the population develop these obstetric complications and of course, overdiagnosis of complications could also cause this ratio to be greater than 100 per cent, since it would make the numerator artificially high.

Table 41 Proportion of birth in EmOC facilities in Kosovo

Region	Population	Number of birth	Crude birth rate	Number of expected birth	Proportion of all birth in EmOC facilities	Required Minimum:
Prisitina	862560	11665	23	19838	71,9%	**15%**
Prizren	498728	4993	23	11470	43,5%	**15%**
Mitrovica	329822	2691	23	7585	35.4%	**15%**
Gjilan	461368	4663	23	10610	43,9%	**15%**
Peje	465313	5070	23	10702	47,3%	**15%**
Kosovo	**2617791**	**28512**	**23**	**60209**	**47,3%**	**15%**

Indicator 4 Met need for EmOC services

Women with obstetric complications are not being treated in Kosovo as reflected by 'met need' indicator in Kosovo as well as on sub regional levels (table 45) The Pristine facility are likely to receive referrals from neighboring regions, which explain why met need in this region exceeds 100%. Moreover, if the proxy method used like we did it is likely that the number of women with complications will be overestimated. Even under these conditions minimum met need for EOC in Kosovo is not satisfied, which reasonably allowed to assume that the situation in country is probably even worse.

If met need is less than 100 per cent some women with complications are not receiving the medical care they need. If the preceding indicators have all met the minimum acceptable levels and met need is less than 100 per cent, then the national priority must be to improve utilization of EOC facilities by women with complications. Depending on the individual country's situation, strategies for meeting this objective may include improving quality of care at facilities, providing community education about recognition of complications and the importance of seeking care, or other interventions.

Table 42 **Met need for EmOC services**

Region	Population	Reported total deliveries for 2007	Reported normal deliveries for	Number of complications treated (x 1.25)	Expected N of deliveries	Expected N of complications (15%)	Met Need
Pristine	862560	11395	8231	3164 x1.25= 3955	19838	2975	**132.9 %**
Prizren	498 728	4993	4123	870 x1.25 = 1087	11470	1720	**63,1%**
Mitrovica	329822	2691	2390	301 x1.25 = 376	7585	1127	**31.5%**
Gjilan	461 368	4363	3863	419 x1.25 = 523	10610	1591	**32.8%**
Peje	465313	5070	3806	1264 x1.25 =1580	10702	1605	**98.4%**
Kosovo	**2617791**	**28512**	**22413**	**6099 x1.25 =7623**	**60209**	**9031**	**83.4%**

Indicator 5 Cesarean sections in EmOC facilities as a proportion of all births

An indicator of whether EmOC facilities are, in fact, providing life-saving obstetric services is the number of Caesarean sections as a proportion of all births . National data show that C section rate in Kosovo is within acceptable level - (8.4%), however, aggregated data can still conceal important discrepancies. Regional data in Mitrovica, Gjilan shows that less than 5 per cent of births are by Caesarean section this means that some women and their newborns with life-threatening complications are not receiving necessary care, suggesting uneven access to cesarean delivery. (table 46) In Prisitina town the rate continues to be high (2007 – 23.7, three month of 2008 – 22.2, private maternity – 2007- 47.5%, three month of 2008- 40% and this is a red flag that some cesareans may not be medically indicated and audit should examine what policies and other factors are contributing to the high cesarean delivery rate. The high rate of cesarean delivery is only reinforced by the abandonment of assisted vaginal delivery (vacuum extraction or forceps), which although not a substitute for all cesareans, could resolve some of the cases of women whose labors fail to progress.

Table 43 Cesarean deliveries in regions as proportion of all births

Regions	Population.	N/ birth for 2007	CS for 2007	Expected number of birth	Minimum and maximum acceptable level 5-15%
Pristine	862 560	11665	2610	18022	**14.4%**
Prizren	498 728	4993	784	11470	**6.8%**
Mitrovica	329822	2691	288	7585	**3.7%**
Gjilan	461 368	4363	280	10610	**2.6%**
Peja	465 313	5070	1110	10702	**10.3%**
Kosovo	**2617791**	**28512**	**5072**	**60209**	**8.4%**

Indicator 6 Case fatality rate in EmOC facilities

Table 44 Case fatality rate in regions

Regions	Causes of maternal death	No of death/complications	Case fatality rate	Recommended maximum
Pristine	2 indirect	2/3164	0.03%	<1%
Prizren	Postpartum hemorrhage	1/1087	0.09%	<1%
Mitrovica	Not reported			
Gjilan	Not reported			
Peje	Not reported			
Kosovo	2 indirect 1 postpartum hemorrhage	3/7535	0.03%	<1%

It is difficult to make judgment about CFR in Kosovo, as number of maternal death reported is too small. CFR was calculated only for Comprehensive EmOC facilities – where maternal deaths were reported (Pristina and Prizren), and for Kosovo as well, where this indicator is below recommended level of 1%. If, however, the aggregate CFR is at an acceptable level and EmOC coverage and/or utilization are **insufficient**, (as indicator 1-5 above showed) the interpretation is quite different. In this case, the data imply that while women who deliver in EmOC facilities are likely to survive, maternal deaths **outside** health facilities are likely to be unacceptably common.

Quality of care in EmOC facilities

As we mentioned while talking about UN Process Indicators, they are not able tell us much about the quality of care. However, it was very important during assessment to identify key areas of pregnancy, childbirth and newborn care that need to be improved.
Developed walk through tool (fig 8) based on WHO recommendations reflects the physical path that a patient with an obstetric emergency and the staff who treat her, might follow from the moment she enters to facility through the various blocks of facility Tool presented as a checklist of items that should be found in this room-to-room trajectory and if present and functioning, should constitute an enabling environment for providing quality emergency care. Ancillary services,

specifically the laboratory, blood bank and autoclave room, are included in the tool. These services, as well as the pharmacy and maintenance services (including backup electricity, water and laundry), and their availability 24/7 are critical to a facility's preparedness for an emergency.

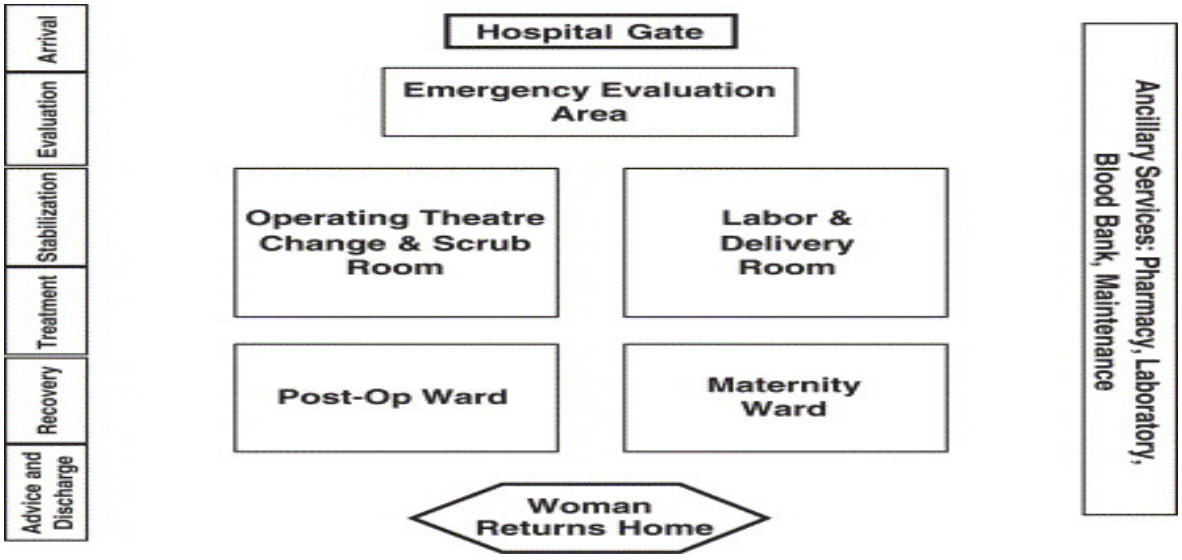
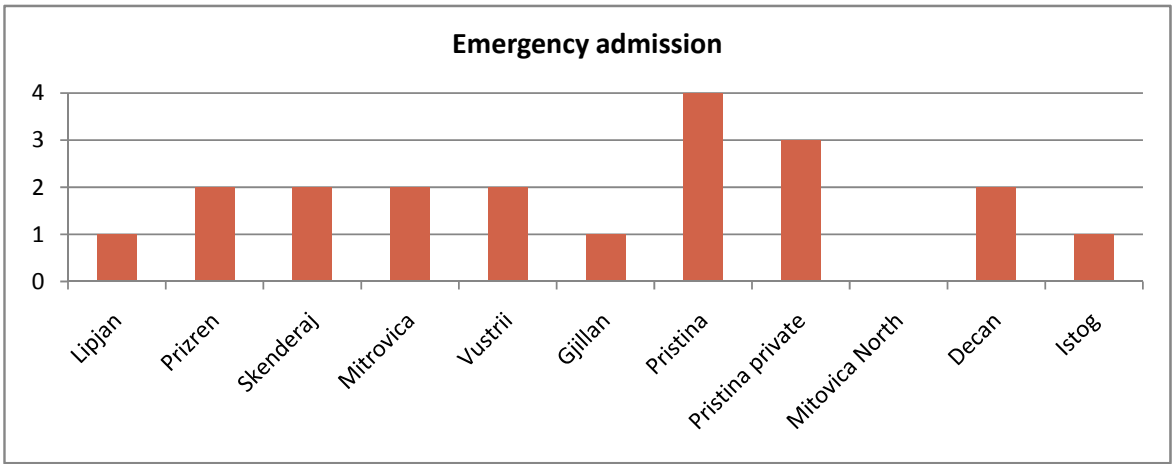


Figure 8 Walk through tool

Each block in visited facilities was evaluated with Assessment Team independently. Scoring numbers from 4 to 1 was awarded: 4 - good or standard care; 3 - need for some improvement to reach standard care, suboptimal care but no significant danger; 2 - need for substantial improvement, 1 - inadequate care or potentially harmful practice after achievement of consensus.

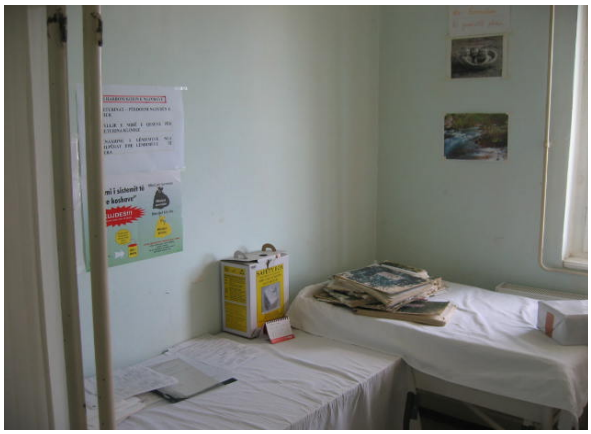
Emergency admission

In all visited facilities general infrastructure was in satisfactory conditions . Basic amenities like running cold water is found in in all EmOC facilities but not a hot water except a few . There is some problems with electricity, short cuts were observed even in Pristina.
The concept of "readiness" is at the core of handling any medical emergency since survival is often highly dependent on timing. Readiness is defined by "achieving and maintaining a state of preparedness in the facility to provide quality EmOC. This includes sufficient numbers of staff available with requisite skills and a willingness to respond to clients 24 hours a day, 7 days a week, available and functional equipment and supplies, and adequate infrastructure" (author)
Table below reflects evaluation of emergency admission block and readiness in every visited Basic and Comprehensive facilities in Kosovo. All of them, except Pristine Gynecology and Obstetrics Clinic of the University Clinical Centre need substantial improvement but some (possible Basic EmOC) are not able to provide emergency obstetric care.



There was lack of wheel chairs or trolleys found in admission area to facilitate transport of patient to the emergency evaluation area In most facilities Assessment Team observed only examination table with limited emergency drugs, IV solutions, without oxygen supply, either in cylinder or through the central line, lack amby and face masks, suctions. There is an impression that emergency admission area in some facilities turned into information and consulting room (Pic 1 and 2). There were no skilled staff available 24 hours a day in Lipjan, Skenderaj, Decan. Istog.

Picture 1

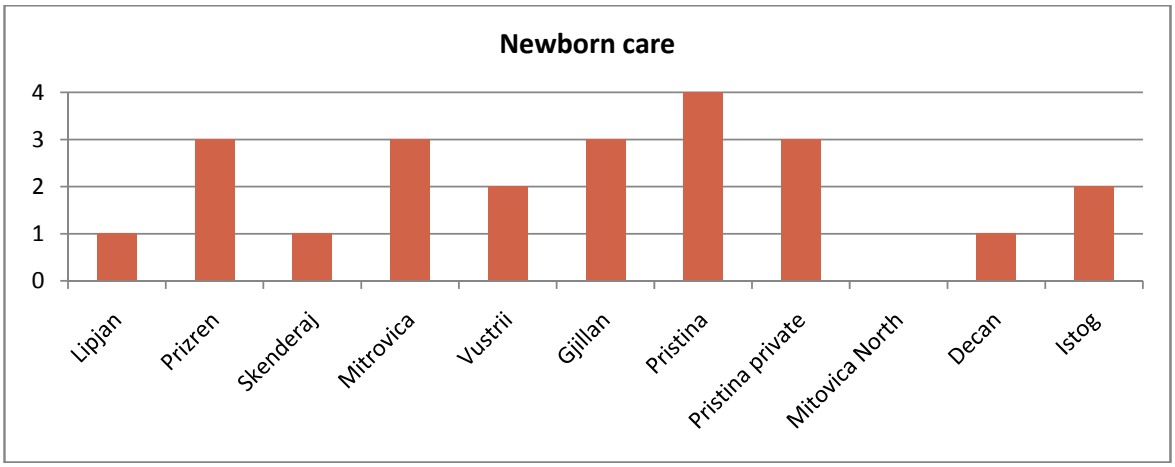


Picture 2

Basic items for delivery management (delivery tables , delivery sets, lamps,) was found in all EmOC facility settings. However, delivery rooms maintained in old fashion - all delivery rooms, including Pristine Pristine Gynecology and Obstetrics Clinic of the University Clinical Centre not friendly and family oriented , rooms not equipped to support a free delivery position and mobility during labour, women and families have no emotional support, accompanying person is not allowed. (Pic. 3 and 4) Emergency drugs - like oxitocics, prostaglandins, hypertensive drugs, tocolitics, wide spectrum antibiotics is not in sufficient quantities In all possible Basic EmOC facilities the life saving procedure - assisted vaginal delivery (forceps, ventouse) not performed. Parthogram is not in use Active management of third stage of labor is not practiced .Some service protocols have been revised according to latest evidence , (for example in Gjilan consultant was able to have a look on file management of hypertension in pregnancy kept in computer) but this guideline has not been implemented .

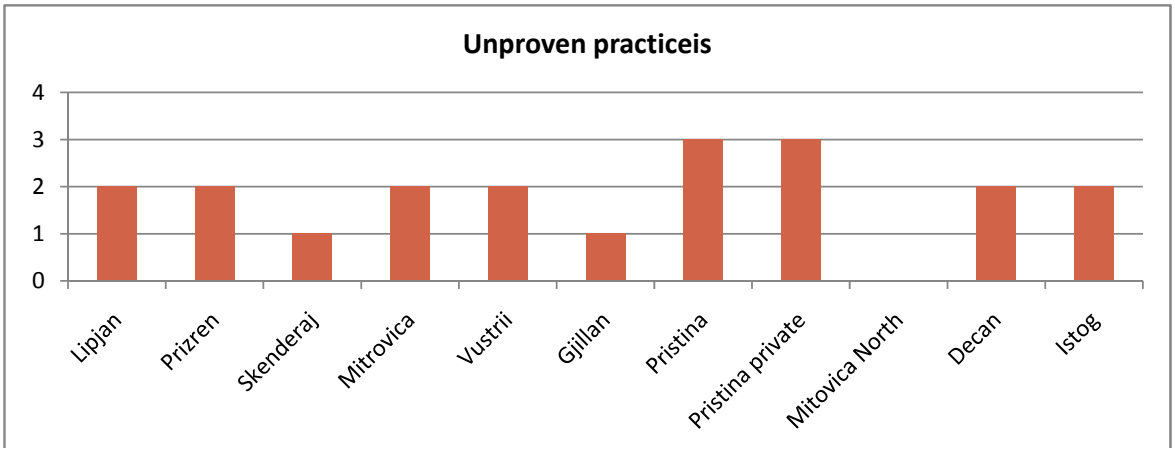
Picture 3

Picture 4



Deficiencies with regard to maintain warm chain were observed almost everywhere - most common shortcoming – absenceof temperature check in 30 min and 2 hours after birth, lack of electronic thermometers, low as 16° – 19° centigrade in labor wards in spite of well known and visible information .(Pic7) In Prezran there was a lack of infant laryngoscopes, disposable suction bulbs, sterile endothracheal tubes and gloves, tetracycline eye treatment , In Vustrii - lack of infant laryngoscopes, warm dress (caps, socks), blankets for to cover mother and baby, adrenalin , vit. K, in some places, tetracycline eye ointment. In Vustrii we were able to observe modern incubators, but staff did not have training how to use them. (Pic 5) Resuscitation and treatment of asphyxiated newborns cannot be undertaken successfully, considering the inability to maintain in visited facilities infant body temperature . Majority of newborn care blocks were evaluated and assessed by Dr. Njazi Shala, pediatrician, represemtative from MOH.

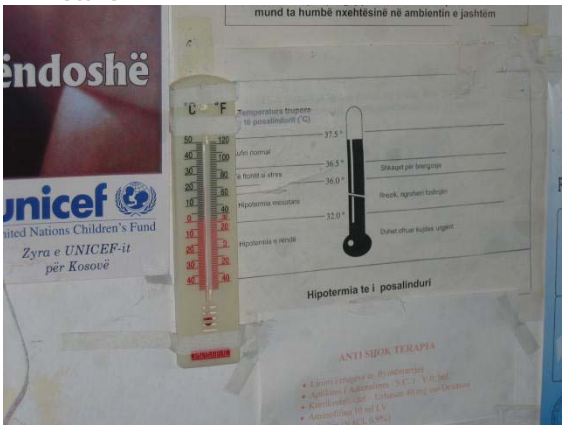
Picture 5

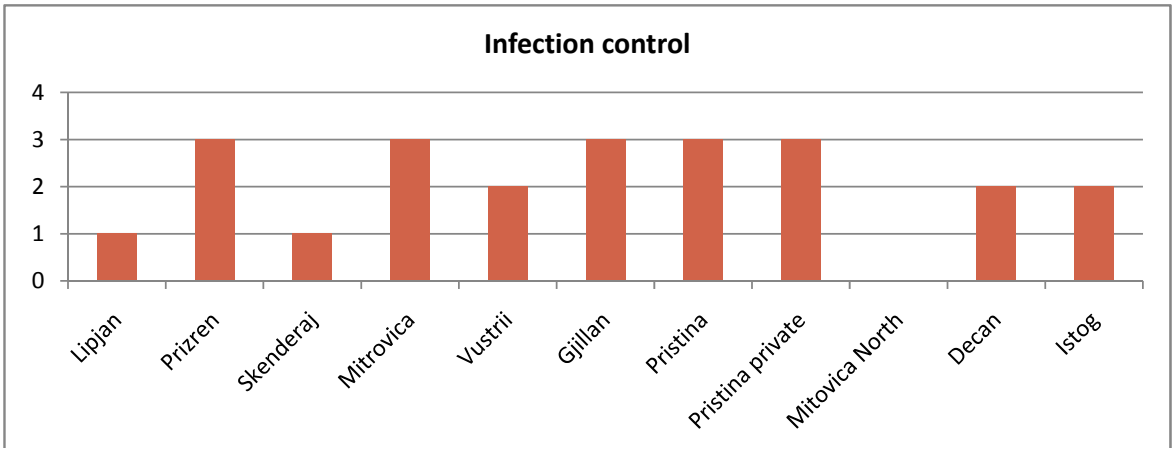


According to the conversation with staff of visited facilities enema and shaving are not used. However, some of unproven practice still in use – ice packs, use of disinfectant. Very popular is so called pre labour rooms where women positioned while not in labour. (pic 6) Vaginal check is performed every two hours without clear indications. Impression is that most unproven practices is still widely used. Efforts should be taken to reorient services towards evidence based practices.

Picture 6

Picture 7

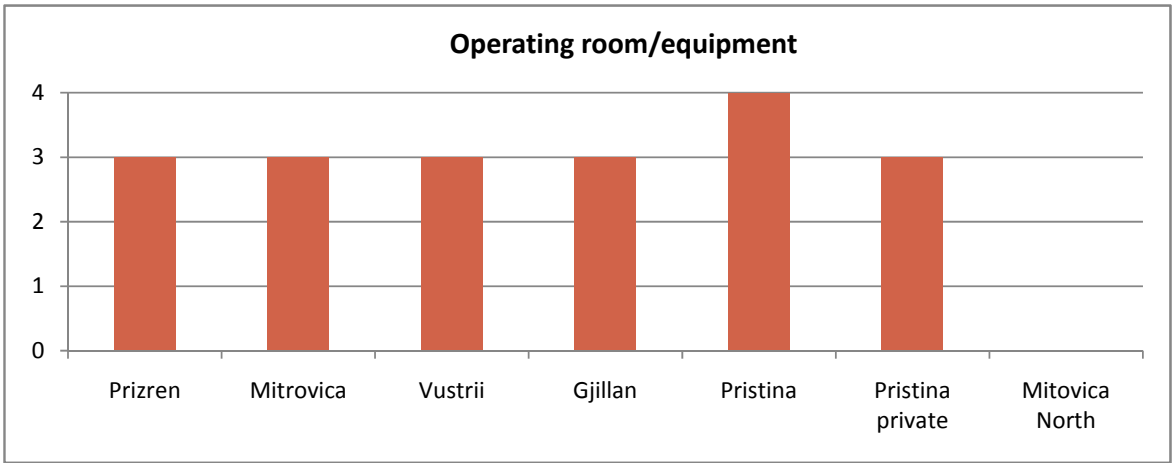




Prevention of nosocomial infections requires an integrated, monitored, programme approach Pathogenic organisms (bacteria) can be transmitted to patients via the hands of medical staff and/or other patients. Therefore appropriate hand washing is one of the key ways to prevent nosocomial infections. Assessment Team evaluated appropriate hand washing technique, availability of liquid soap and disposable towels, decontamination process in facility, how sharps are disposed, availability of sterile gloves and gowns for providers for delivery and surgery. Besides, we tried to determine management of labour with PROM, if antibiotics prescribed in PROM > 18 hours, whether prophylactic (single dose) antibiotic used during CS. Overall picture is not satisfactory. (pic 8 and 9) Staff is not familiar with prophylactic evidence based approach to infection , especially during labour and delivery. Antiseptics appears to be in sufficient amount, but it was difficult to find bucket for contamination and puncture proof containers for needles and sharps disposal absence of which pose the hazards to patients and staff.

Picture 8

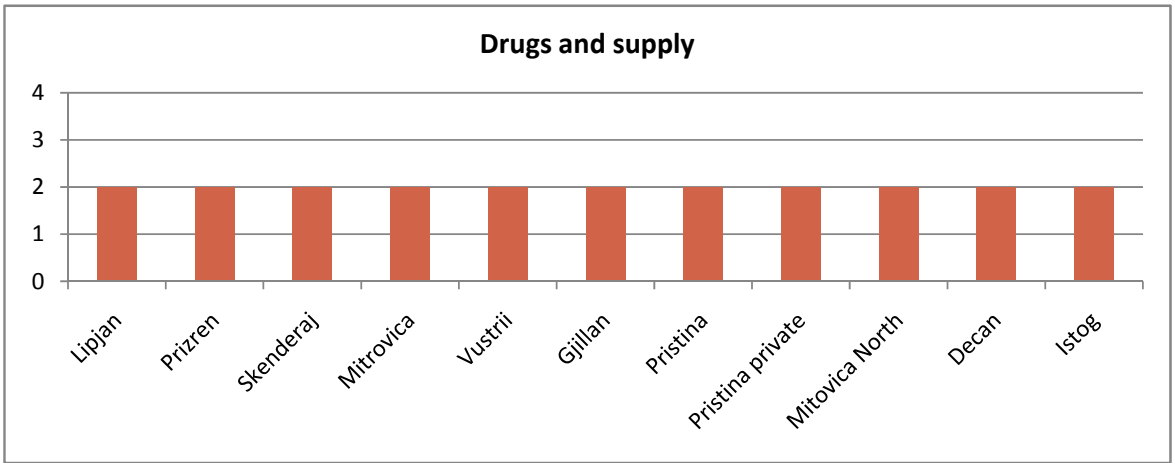
Picture 9



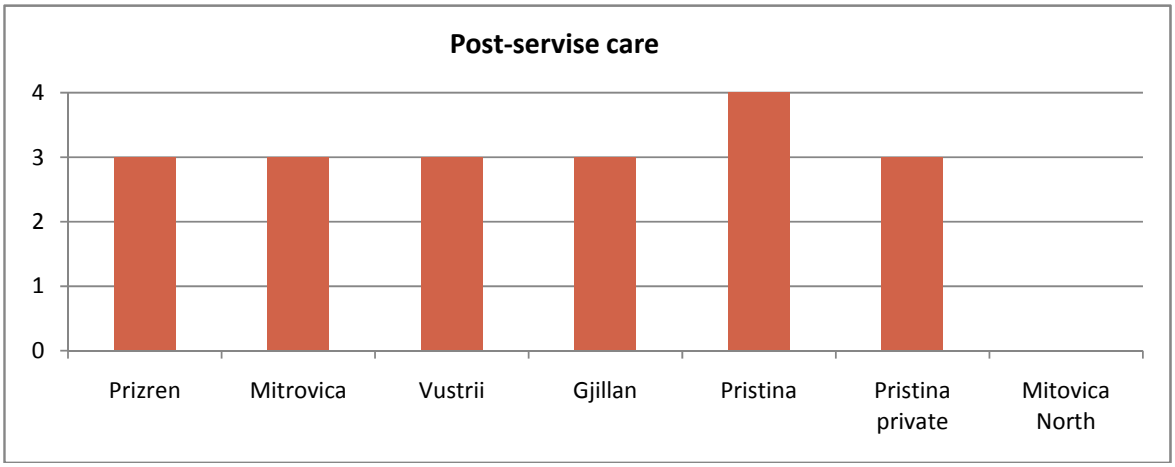
Picture 10

Assessment Team evaluate operating rooms only in Comprehensive EmOC facilities, except Mitrovica North , as at Basic are not able, and do not need to provide surgery, except assisted vaginal delivery. Assessment Team check availability and functionality of equipment such as instrument sets, oxygen, anesthesia machines, suction machines, infusion pumps , laryngoscopes, bed table monitors blood supply – how fast it is available, availability suture material (silk, catgut, vicril) All available equipment was functioning and was in good condition (Pic 10) However, most of the staff interviewed at the facilities visited identified shortages of sets of instruments for cesarean section and hysterectomy, outdated anesthesia machines and suctions, lack of anesthetic agents for regional anesthesia, spinal needs and epidural kits, suture materials (only silk is available in sufficient amounts) , infusion pumps, pulsoximeters and equipment for monitoring the vital signs . Rh negative blood needed in case of emergency was not found in all visited facilities. However, blood is available by request from blood bank located within the general hospital a with 60 -90 min. Problems were identified during visits of change and scrub rooms, where was difficult to understand how staff scrubs, how long, what they use as disinfectants. No wall clock or sand glass were available.

Inspection of staff revealed that experienced on call staff (anesthesiologists and experienced obstetricians) is ready to perform emergency procedure within 30 – 40 min. Laboratory service is available during day time in all Comprehensive EmOC to perform clinical (haemoglobin measurement, blood count, blood cell differential, hematocrit, blood glucose level measurement ,urine protein measurement, urine bacteriology screening, cross math and screen blood) , and biochemical analysis. During the night hours laboratory technician is on call. Each visited facility has a designated central sterile supply area with special stuff training in autoclaving and high level disinfection. Problems were found in Mitovica North, where autoclave didn't function and instruments sent in neighboring hospital for distane of 150 km.



Although a visit to the pharmacy does not appear on the tool, Assessment Team evaluate a stock management system so that drugs are in stock and dispensed by a qualified person. We check supply cabinets, drug trolleys, emergency trolleys, availability of antibiotics, hypotensives, anticonvulsants, oxitociscs, prostaglandins, analogs (Misoporostol), indometacin, nifedipin, betamethason or dexametason. Stock management system operates unsatisfactory. Patients must seek medicaments in the commercial markets. The drugs that are essential for Mother and Child Care are on the national drug and commodity list but these drugs are not available in sufficient amount or properly in place

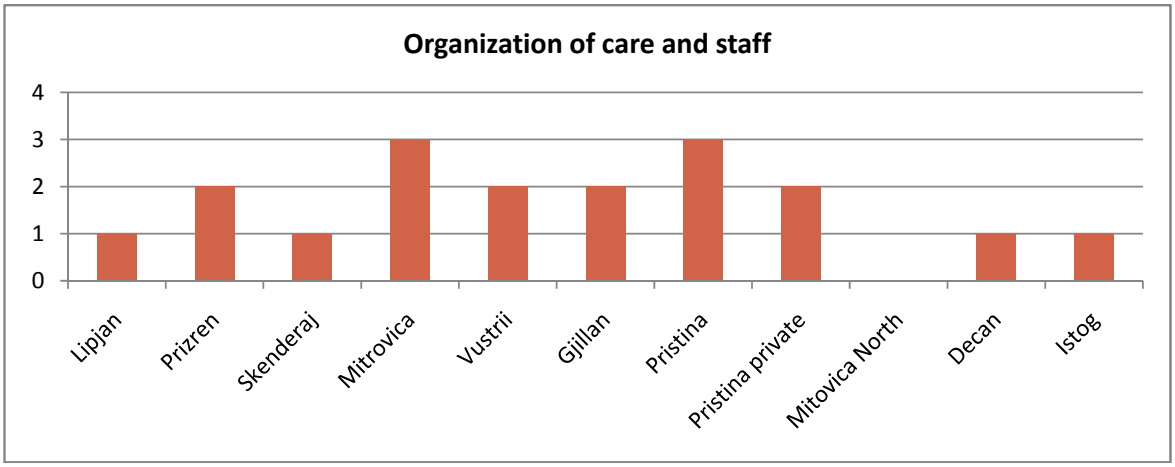


Recovery generally takes place in a recovery room or a ward and facilities are likely to have more than one obstetric ward—at least a postpartum ward and a post-operative ward. Assessment team evaluate how staff is receive and monitor patients recovering from emergencies, recognize the signs of new complications and stabilize a patient should any occur. Overall assessment was satisfactory However, 1 maternal death was reported form hemorrhage after CS, which is no doubt, attributed to poor monitoring and delayed interventions after surgery. Post service care and discharge cancelling was assessed by Dr Merita Berisha, Chief of Mother and Child Health Observatory Department of Social Medicine, National Institute of Public Health of Kosova.

Completed registers and records are important to improving quality of services because they are provide the basis for monitoring the patients care, tracking utilization, service delivery, and medical statistics, and for facilitating case review. The purpose of the registers and records review was to help Assessment Team to evaluate the current status of facility registers for completeness to identify areas of improvement However, during the assessment, incomplete or poor records were encountered while gathering data for EmOC indicators. We were not able to find in in the maternity register a column for 'reason for admission' or 'complications' whereas proxy for obstetric complications used. Ideally, data supposed to come from a single source—the EmOC facility admission registers, however, record system in Kosovo does not make it easy to gather data on obstetric complications. The staff in a facilities have fallen out of the habit of filling in some of the columns of the EmOC facility register or the admissions register. This fact caused confusion, inconsistency and incompleteness during assessment. . There is a question as to the validity of record experiencing complications, which almost does not exist. These records may be completed by health care providers involved in the patient's care with an attempt to maintain the appearance that management is as mandated by recommendations. This might be the reflection of the knowledge gaps underlined above. The findings revealed the need for further focused trainings for Ob/Gyn's in management of labor and delivery, especially complicated cases. Inspections of facilities and record keeping should become a part of an ongoing quality improvement process.

Client records with major obstetric complications including maternal mortality cases were reviewed and compared with accordance with WHO/UNICEF promoted technical guidelines Only one maternal death from postpartum hemorrhage after CS was available for review Staff of visited facilities was not able to present any case of severe preeclampsia, eclampsia, obstructed labor . Brief analyses of case of maternal death from postpartum hemorrhage after CS revealed the following shortcoming : poor multidisciplinary team approach, low quality of post service monitoring, underreporting of blood loss, clinical monitoring to detect early deterioration not

done at least quarter hourly for 2 hours (pulse, blood pressure), crystalloids and/or colloids ratio during resuscitation is not maintained , postpartum fluid balance chart not maintained.



Human resources

With regard to human resources Assessment Team looked at round-the-clock availability of staff, current day roster with names and contacts of obstetricians, midwifes and neonatologists and anesthetists, availability of consultants, skill practice and how is training attended by obstetricians, midwifes, neonatologists and anesthetists. Assessment team did not investigate their practice and counseling skills by observation . Availability of staff in each facility presented in table 42

Table 45 Availability of health care providers in visited EmOc facilities

Facility	Midwifes	Nurses	Obstetricians	Neonatologists	Anesthetists	Other
Li[jan	10		2			1
Prizren	41	14	19	7	Provided by Hospital	1
Sakenderaj	13	1	2			2
Mitrovica	26	4	7		5	2
Gjilan	26	2	13	7		4
Pristina	266		37	7	Hospital by Hospital	2
Vustrii	11		5			1
Decan	5		2	1		1
Istog	7		2	2		4
Private maternity	4	2	4	1	2	1

Possible basic EmOc facilities which supposed to provide similar medical assistance to women has different number of health care providers (Lipjan, Skederaj, Decan, Istog) which likely make difficult to provide at round-the-clock emergency obstetric care. Necessary to scale up production of necessary numbers and skills of human resource cadres to provide quality and EmoC services. For participation in training overall was interviewed 27 health care providers in all visited EmOC facilities (15 midwifes, 9 obstetricians, 2 neonatologists, 1 anesthetists) table 43

Table 46 Recent participation in trainings

Trainings	In the past 6 month	In the past year	In the past 3 years	Never	Total
Obstetricians	1	5	3		9
Midwifes	4	3	6	2	15
Neonatologists		2			2
Anestesisits		1			1
Total	5	11	9	2	27
	18.5%	40.7%	33.4%	7.4%	100%

40.7% interviewed received training in the past year. In the same time 7.4% never had training. M**idwifes'** topic of training were as follows: contraception – 1 day; family medicine – 6 month; breastfeeding – 3 days; antenatal care – 6 days; management of disposals – 3 days; autoclaving - 3 days; normal delivery – 10 days **For obstetricians** – ALARM course - 3 days, breastfeeding – 2 days, family planning – 7 days, use of ultrasound – 3 days. Respondents declared that courses have mostly didactic nature without use of visual aids and mannequins. Assessment team also tried to assess individual skills in providing emergency obstetric care by evaluating number of basic interventions (hypertension in pregnancy, bleeding, normal labor, malpresenation, complicated delivery, surgical procedures , pain management) performed by staff **in the last three month**. However, this endeavor was failed, as majority of interviewers replied positively on questionnaires , whereas the number of complications provided and low average annual number of birth of deliveries they encounter in visited facilities show that staff are not able to reach adequate experience in emergency obstetrics care in some Basic and even Comprehensive facilities (Lipjan, Skenderaj, Mitrovica, Vustrii, Decan, Istog) table 44. Apart from the practical skills their theoretical knowledge is also unsatisfactory (active management of third stage of labour, level of blood pressure hypotensive therapy starts, initial load dose of IV magnesium sulfate in preeclampsia, normal temperature range in newborns after birth and etc.

Table 47 Average annual number of deliveries per one ob/gyn and neonatologists in 2007

Facility	N/of birth	N/obstetricians	N/ Midwifes	N/Neonatologists	Average number of deliveries p/day
Lipjan	81	2	10		0.22

Prizren	4273	19	41	7	11.1
Skenderaj	540	2	13		1.48
Mitrovica	522	7	26		1.43
Gjilan	2325	13	26	7	6.37
Pristina	10.586	37	266	7	29.00
Vustrii	973	5	11		2.67
Decan	84	2	5	2	0.23
Istog	214	2	7	1	0.59

To question what is the greatest problems in your facility in providing quality emergency obstetric care respondents indicated on lack of emergency drugs and equipment, disposable items ventose, lack of equipment and anesthetics for regional anesthesia, not adequate continuous medical education, referral transport and lack of transportation incubators, difficulties with maintaining of existing equipment, heating problems and hot water supply, lack of midwifes, lack of protocol and guidelines, poor team work. These questions were raised and highlighted by Assessment Team in previous sections of report.

It was difficult to assess the content and the quality of the trainings conducted. Based on the results shown above , consultant assumed that trainings were not as effective as it was needed for the concrete segment of trainees. Staff lacks not only practical skills, but in number of cases theoretical knowledge as well. The above data shows that it is extremely important that intensive, regular on-the job trainings on delivery management are organized for ob/gynecologists, midwifes and neonatologists. This can be achieved through continuous education at place of occupation as well as in the sites with large number of deliveries occurs and should follow WHO recommended standards.

Referral system

With regard to the maternal referral system, assessment revealed that it is not fully operational Although ambulance cars available free of charge at all the facilities , assessment of referral patterns during the last three month (table 47) revealed that the vast majority (64%)of their referral were self -referrals triggered by women upon beginning of labor.
This confirmed by aggregated data from Gynecology and Obstetrics Clinic of the University Clinical Centre in Prishtina which is overburdened (10 586 deliveries in 2007) mostly due to patients who are self referred or referred (more that 50%) from all over the Kosovo (table 45)

Table 48 Number of referred or self referred and delivered women to Gynecology and Obstetrics Clinic of the University Clinical Centre of Pristine from different regions of Kosovo during 2007

Regions *	Number of women delivered	% to all birh in Prisitina Gynecology and Obstetrics Clinic
Podujeva	1491	14.1
Gllogovc	667	6.3
Ferizai	615	5.8
Obiliq	386	3.6
Lipjan	879	8.3
Malisheva	444	4.2
Mitrovica	580	5.5
Skenderaj	424	4.1
Vustrii	407	3.8
Total	5486	55.7%

* only regions where number of referred of self referred women exceeds 300

As we can see form the table vast majority of women came from places where Basic and even Comprehensive EmOC facilities are exist – Lipjan , Podujeva, Gllogovc, , Obiliq, Malisheva, Mitrovica, Skenderaj, Vustrii. This is clear indication that women in this sub regions women do not relay on services provided locally. In rural settings indication for referral (usually previous caesarean section, breech presentation, transverse lie, multiply gestation, hypertension, and severe anemia) would produce referral rates in the range of 5-10%.

Table 49 Number of referred women to higher level of care (July – September 2008)

Place	Number of deliveries (July – September 2008)	Number of women referred (before and after delivery)	Number of newborns transferred
Lipjan	28	9	2
Skenderaj	139	18	4
Gjilan	588	5	8
Prizren	1307	7	11
Istog	46	4	0
Decan	55	12	0
Vustrii	243	19	5
Mitrovica	198	88	3
Total	**2604 (100%)**	**162 (6.2%)**	**33**

This is confirmed by data collected during assessment (table 46) where number of referred women from visited facilities make up only 6.2% As antenatal risk assessment has poor predictive value, emphasis should have been shifted to improving the accessibility, quality and utilization of emergency obstetric care for women who develop complications, rather than on having contact with all pregnant women, and much needs to be done to upgrade this services to desired level.

Table 50 Indication for referral to higher level of care

Indication	Lipjan	Skenderaj	Gjilan	Prizren	Istog	Decan	Vustrii	Mitorivica	Total
Preterm birth (in utero)			3		1			18	22
Severe preeclampsia				2		1	3	6	12
Eclampsia									
Severe anemia (< 7g/l)			1		1			5	7
Twins				2				3	5
Bleeding before labor			1	1				5	7
Malpresentation							1	1	2
Ectopic pregnancy									
Extragenital diseases (specify)									
Not specified	9	18		2	2	11	15	50	105
Total	**9**	**18**	**5**	**7**	**4**	**12**	**19**	**88**	**162**

As we can see form the table 47 in the list of possible indication for referral 105 referrals (64.8%) not specified, which makes difficult to evaluate fully referral patterns in Kosovo. Currently, list of maternal conditions that require consultation / referral seems are not specific, that result in unnecessary utilization of the referral service. There is a strong need to develop locally adapted and operational referral guideline, based on specific epidemiological situation, the capacity of health services, and community preferences

Transfer of neonates occurred to tertiary level of Neonatology Unit of the Pediatric Clinic in Gynecology and Obstetrics Clinic of the University Clinical Centre in Prishtina with highest volume of service, staff and equipment. Unit has a ability to supply adequate ventilator support and parenteral nutrition to preterm neonates. Surfactants replacement therapy is available This facility provides relatively high level of perinatal technology and have a capacity to reduce perinatal losses, however sustainability of those achievements strongly depends on the health system organization in the country as a whole, as well as on social-economic conditions of the population..

During assessment period 33 neonates were referred – indication for referral is not clear. However, if maternal transfer is likely possible by ambulance (pic 11 and 12), though some equipment is needed for maintaining of vital signs, for neonates this mode of transport is not acceptable.

Picture 11

Picture 12

Picture 13

Picture 14

Transport incubators (pic 13 and 15) are out of order and not operational. The transfer of the mother prior delivery or planned delivery of the high risk mother in designated facility (Neonatology Unit of the Pediatric Clinic of Pristina) is essential for optimum early institution of care . There must also be an adequate neonatal transport system for those infants who whatever reason can not be delivered in the center. Perinatal referral patterns must be well established .
If we look at the table 47, reflecting perinatal mortality figures in visited facilities, one can noticed that number of stillbirth (n= 50) prevail over the number of early neonatal death (n= 36). Usually stillbirths comprise 45-50% of all perinatal losses. Absence of stillbirth in rural EmOC facilities and increase in the share of stillbirths in Prisitina to 59.4% indicates at inadequate reporting or very poor antenatal care. Surprisingly small number of deaths of very low weight birth infants are registered in early perinatal period. Without denominator, representing the number of birth this specific birth weight infants, difficult to judge about weight-proportional foetal-neonatal mortality,

but according experience of many countries number of such birth should be approximately 0.8-1% observed birth . (author)

Table 51 Number of birth , stillbirth and early neonatal deaths (July- September 2008)

EmOC facilities	Number of birth	Number of live birth	Stillbirth	Intranatal death	Early neonatal death			Perinatal mortality
					500 - 1500	1501 - 2499	2500 +	
Pristina	3065	3015	50			5	11	21.5‰
Vushtrii	243	240				1	2	12.3‰
Mitrovica	198	198						
Istog	46	46						
Preizran	1307	1301			2	1	3	4.5‰
Skenderaj	139	139						
Gjilan	588	578			3	4	3	17.0‰
Lipjan	28	28						
Decan	55	54					1	18.1‰

This is seriously questioned the validity of reported data. Particular attention deserves data presenting the mature newborns. Deaths of foetus weighing 1500-2500+ g. - serves as an indicator of the medical care quality related to neonatal resuscitation, thermal control, treatment of congenital infections. Experience of economically developed countries, where the perinatal mortality is on a comparatively low level (10-12 per 1000) shows that only 15% of perinatal mortality comes on full-term infants, demonstrates the inadequacy of perinatal services provided in visited EmOC facilities , where 55 % (20 out of 36) of early perinatal mortality comes on full-term infants (2500+.) Such deaths reflects the quality of delivery care and management. In general, such losses are sensitive indicators of the quality of emergency obstetrical care and may reflect the so-called "near to losses" of maternal mortality. Most important interventions in such cases are implementation of rational approach for perinatal management and increasing the quality of emergency care, provision of quality neonatal resuscitation with timely referral to a higher level of medical care.

The walk trough tool is support consultant's general conclusion regarding quality of emergency obstetric care in Kosovo which is operates below the standard level. Expanding the coverage of existing referral networks, improving community recognition of obstetric emergencies, and improving the ability of existing EmoC facilities to deliver quality obstetric care - are all necessary intervention.

Recommendations

1. Put into accordance requirements determined by UN process indicators
   - upgrade 16 Basic facilities and make additional 4
   - redistribute Basic and Comprehensive EmOC facilities geographically
   - Increase met need utilization in Prizren, Mitrovica, Gjilan, by improving quality of care at facilities, providing community education about recognition of complications and the importance of seeking care

- Increase cesarean section rate in regions Mitrovica, Gjilan to the acceptable level 5-15% and examine policies and other factors which are contributing to the high cesarean delivery rate in Pristine town

2. Introduce a concept of licensure and accreditation for EmOC facilities through official body (independent agency with governmental and nongovernmental representation) for :
   - Open or reduce the number of EmOC Basic and Comprehensive facilities
   - Rationalize payment/reimbursement/fund allocation
   - Improve quality
   - Increase public trust

3. Professional Association with collaboration of MOH should ensure:
   - Development and institutionalization of clinical evidence based standards and guidelines by normative legislative documents reflecting the major obstetric complications and attributed to main causes of maternal and perinatal mortality.
   - Clinical practice guidelines and protocols should be revised and updated regularly

4. Introduction of evidence based practices into clinical practice:
   - Implementation of WHO training curricula in Essential Perinatal Care for training and improvement of skills of personnel at all level of care
   - Increase effectiveness of the training courses by applying optimal methodology and sufficient follow up of the trainings

5. Assessment of available human recourses in system and development of National Strategy for Human Recourses in Health for a sustainable supply of new generation of personnel (including MNHC staff categories, e.g. midwives, staff with obstetric and newborn care skills, etc**.)** especially in rural parts of the country

6. Create job description for health care providers in for all EmOC facilities at all levels of service (including the community)

7. Further regionalization of the maternal/perinatal care services, by introduction of levels of care with defined volume and complexity of services, human resources and equipment. This will result in more rational distribution of financing allocated for EmOC facilities and tertiary level centers where high-risk pregnant women and preterm deliveries should be concentrated.

8. To development locally adapted and operational maternal/perinatal referral guideline, based on specific epidemiological situation, the capacity of health services, and community preferences.

9. Development of maternal and newborn component of Health Management Information System to monitor quality and effectiveness of services provided by EmoC facilities. It implies revision of existing reporting forms, introduction of standardized medical records, registries, admission and discharge forms and etc.

10. Procurement of essential equipment for EmOC facilities according to findings with evaluation tool

11. Design and implementation of logistics system for continuous supply of essential drugs for EmOC facilities, including the availability of safe blood and blood products;

12. Implementation of different auditing system of healthcare service providers (confidential enquiry, criterion based, near miss) with appropriate level of confidentiality to investigate causes of maternal and neonatal mortality. They should focus on identifying preventable deaths that are caused by health system failure or quality of care.

Annex 1

Contacts made during the mission

UNFPA

1. Doina Bologa - Deputy Representative
2. Zarife Miftari – Project Manager
3. Gezim Visoka – National Programme Assistant

Contacts in the field

1. Dr. Drita Fazliu - Director of Regional Hospital - Mitrovoca
2. Dr. Dergut Aliy - Lindja private maternity - Pristina
3. Dr Xhavit Hajdari - Executive Director - Gjilan
4. Dr.Emina Feke Cekesi , obstetrician - Vustrii
5. Dr. Ahmad Duva - obstetrician Decan
6. Dr. Dragan Cvetic – Manager, Mitrovica North

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6. Koblinsky; M Beyond Maternal Mortality - Magnitude, Interrelationship, and Consequences of Women's Health, Pregnancy-Related Complications and Nutritional Status on Pregnancy Outcomes'. 1995

7. UNICEF; WHO; UNFPA Guidelines to monitoring the availability and use of obstetric services 1997

8. UNFPA Demographic, social and health situation in Kosovo, 2003

9. WHO Euro Perinatal meeting, Catania, 2007

Attachment 1 Walk through tool

Service category	How to assess		What to look for		
Emergency admission	• Walk through Client areas (waiting areas, latrines, exam areas, procedure areas • Observe structure • Discuss with stuff		Is area clean and structurally sound? Is there running water? Is there functional electricity? Is there back up system for electricity and water? Wheel chair, trolley? Stands, iv solutions? (Ringer, NaCl) Emergency drugs ? BP apparatus, stethoscope, thermometer? Examination table with privacy? Availability of oxygen (central or cylinder)		
Evaluation	Visit	Case observation	Interview	Records	All
standard care (4)					
suboptimal care (3)					
substantial improv. needed (2)					
inadequate (1)					
Emergency readiness	• Observe emergency case if possible • Ask staff about the last emergency case, how it was handled, what went well, what needs improvement • Ask about existing emergency protocols • Review medical records with emergencies (hemorrhage, severe preeclampsia, labor dystocia, etc)		• Skilled staff available 24 hours a day who know how: Recognize signs of complications Initiate emergency management Manage complications Locate the nearest emergency trolley • Availability of emergency trolleys with emergency equipment (oxygen, amby mask, face mask, suction) in all client care areas • Transportation (car, driver, fuel) and referral facility available for complications that the facility cannot		

<table>
<tr><td></td><td colspan="2"></td><td colspan="3">handle</td></tr>
<tr><td>Evaluation</td><td>Visit</td><td>Case observation</td><td>Interview</td><td>Records</td><td>All</td></tr>
<tr><td>4</td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td>3</td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td>2</td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td>1</td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td>Labor delivery room</td><td colspan="2">• Availability of individual labor rooms
• How many labor beds are there?
• What is the condition of the labor beds
• Availability of accompanying person
• Ask about woman/ nurse ration
• Non client areas (instrument processing area, waste disposal site, blood bank, syringes disposal)</td><td colspan="3">• Delivery room free of draught?
• Good light in the delivery room?
• Delivery room equipped to support a free delivery position?
• Delivery room “family-oriented” and friendly?
• Mobility during labor
• Free positions during second stage
• Use of partograph
• Use of infusion pumps
• Care of perineum
• Early or late cut of umbilical cord
• Availability of guidelines and protocols
• Use of active management of third stage of labor (assess care during childbirth and emergency routines) .</td></tr>
<tr><td>Evaluation</td><td>Visit</td><td>Case observation</td><td>Interview</td><td>Records</td><td>All</td></tr>
<tr><td>4</td><td></td><td></td><td></td><td></td><td></td></tr>
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<tr><td>1</td><td></td><td></td><td></td><td></td><td></td></tr>
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Newborn care	• Observe practices during normal newborns care (warm chain) • Review contents of equipment for newborn resuscitation		• Check temperature in labor ward • Drying of newborn baby • Skin to skin contact • Breastfeeding • Weighting and bathing postponed • Warm dress (caps, socks) • Availability of electronic thermometers and it's use (30 min and 2 hours after birth) Equipment for resuscitation (bag, masks in two sizes and T-piece) Table with radiant warmers Oxygen supply Suction apparatus Sterile suction catheters Disposable suction bulb Infant laryngoscope Sterile endotracheal tubes Sterile gloves Sterile materials (cotton, gauze napkin) Linens/ towels for drying the infant Blanket to cover mother and baby Cord clamp Adrenalin Vitamin K % tetracycline eye ointment Syringes		
Evaluation	Visit	Case observation	Interview	Records	Score combi ned
4					
3					
2					
1					
Unproven practices during labor	• Observe labor and delivery		Enema Shaving Ice pack Cervix check after delivery Disinfectants on perineum Vaginal check if not in labour		

Evaluation	Visit	Case observation	Interview	Records	Score combined
4					
3					
2					
1					
Infection control	• Observe practices before, during and after client are (i.e exams, procedures, surgery) • Observe or ask staff to describe how instruments are processed • Observe how medical waste (i.e. placenta, sharps are processed and disposed • Appropriate antibiotic prophylactics		Appropriate hand washing Liquid soap Disposable towels Decontamination: instruments place in 0.5% chlorine solution for 10 min before processing Sharps disposed in puncture proof containers immediately after use Chlorine (supply adequate and dry storage) Sterile gloves and gowns for providers for surgery and delivery Instruments sterilized and packed properly PROM PROM > 18 hours (antibiotics) CS (prophylactic) Preterm birth Fewer > 38		
Evaluation	Visit	Case observation	Interview	Records	Score combined
4					
3					
2					
1					
Supplies/ Drugs	In each room look at equipment, supplies, drugs and discuss with stuff Review contents of • Supply cabinets • Drug trolleys • Emergency trolleys • Cesarean section kit		Ventous Forceps Antibiotics Hypotensives Anticonvulsants Oxitocics Prostaglandins, analogs (Misoporostol) Indometacin Nifedipin Betamethason Dexametason		

			Suture material		
Evaluation	Visit	Case observation	Interview	Records	Score combined
4					
3					
2					
1					
Operating theater /equipment	• Observe location of operating theater • Room for close change • Discuss with Chief operating nurse - methods of hand wash use • do they have written instructions visible • how does she monitoring the time (clock, sand glass) • availability of 24 hour electricity and running water		Check availability and functionality of equipment such as • Oxygen tank • Anesthesia machine • Instrument sterilizer • Light • Suction machine • Refrigerator • Infusion pumps • Endotracheal tubes • Laryngoscopes • Bed table monitor • Blood supply – how fast it is available • Suture (silk ketgut, vicril)		
Evaluation	Visit	Case observation	Interview	Records	All
4					
3					
2					
1					
Clinical technique	• Observe as many procedures as possible (evaluation, labor exam, delivery, assisted delivery, repair, repair of lacerations, manual removal of placenta, cesarean section • Conduct or observe a case review of complication case		Staff who able to make emergency laparatomy (look into log book) How many emergency laparatomies performed during last three month? How many assisted delivery during the last three month?		
Evaluation	Visit	Case observation	Interview	Records	All
4					
3					
2					

1					
Anesthesia practice	• Observe use of anesthesia • Ask anesthetist what he or she uses for cesarean section and how • Observe anesthesia equipment (spinal, epidural kits) • Review emergency protocols to manage obstetric complication		• Is client monitored during procedure and post procedure? • Is client pain controlled? • Are staff available who are trained in the safe use of anesthesia? • Is regional and local anesthesia used - spinal, epidural		
Evaluation	Visit	Case observation	Interview	Records	All
4					
3					
2					
1					
Client - provider Interaction	• Observe during any interaction between providers and Client Family members or other accompanying delivering women		Treatment with • Respect • Kindness and empathy • Privacy and confidentiality • Appropriate information provided		
Evaluation	Visit	Case observation	Interview	Records	All
4					
3					
2					
1					
Post service Care	• Observe post surgical ward recovery room • Speak with staff		• Clients monitored after procedure and delivery • A place is available with skilled care 24 hours a day fro clients returning in an emergency		
Evaluation	Visit	Case observation	Interview	Records	All
4					
3					
2					
1					
Discharge counseling	• Observe discharge counseling		Staff provide information (oral and written) routine care, warning size, and where to come for emergency		
Evaluation	Visit	Case observation	Interview	Records	Score combined
4					

3					
2					
1					
Records and registers	Review client entries in facility registers, such as • Labor and delivery • Operating room • Maternity ward Review five to 10 client records of • Normal cases Complicated cases (eclampsia, severe preeclampsia, hemorrhage, blood transfusion, cesarean section, obstructed labour		In facility register • Are they always completed? • Is there column for complications and is it always filled out? • Is there a column for procedures and is it always filled out? • Is there a column for outcome of mother and baby? • Is the reason, for cesarean section noted? In client record Do records always contains - Admitting exam including BP, HR. RR Diagnosis? Treatment? Outcome? Procedural notes (drugs, indication, finding, procedure) Postop and discharge notes (status/instruction) Informed consent		
Evaluation	Visit	Case observation	Interview	Records	All
4					
3					
2					
1					
Organization of care and staffing	1. Observe availability of the staff 2. Review current day roster for 24 hour duty assignment 3. Contact the provider on duty now, make trial call Ask staff Experiences with getting providers during the night and holidays		Current day roster with names and contacts Staff available on site who can Perform normal labor and delivery Manage a complications (such as eclampsia, hemorrhage, infection, etc) Availability of anesthetists for 24 hour Availability of neonatologist for 24 hour Check availability of guidelines and protocols		

	If staffing is adequate and functional? Discuss with stuff what are the main challenges and obstacles?		Infection control committee? Referral service? Consultants?		
Evaluation	Visit	Case observation	Interview	Records	All
4					
3					
2					
1					

Attachment 2 General information

General information of visited institution – name and location (specify)					
Indicators	Years				
	2007	2008			Total
		1-3	4-6	7-9	
Number of birth					
Number of live birth					
Number of CS					
Number of hysterectomies (after birth)					
Number of blood transfusions					
Number of eclampsia					
Number of preeclampsia					
Number of hemorrhage with blood transfusion					
Perinatal death in maternity (22-40 weeks) 500-1500					
Perinatal death in maternity 1500 – 2500					
Perinatal death in maternity 2500+					
Perinatal death occurred in referral hospital(500 – 1500 gr)					
Perinatal death occurred in referral hospital(1500–2500 gr)					
Perinatal death occurred in referral hospital (1500–2500gr)					
Number of women transferred to higher level of care before delivery					
Indication for referral					
1. Preterm birth (in utero)					
2. Severe preeclampsia					
3. Eclampsia					
4. Severe anemia (< 7g/l)					
5. Twins					
6. Bleeding in pregnancy before labor					

7. Twins					
8. Malpresentation					
9. Ectopic pregnancy					
10. Extragenital deseases (specify)					
11. Other (specify)					
Number of women transferred to higher level of care after delivery					
Indication for referral					
1 Postpartum hemorrhage					
2 Postpartum infection					
3 Other (specify)					
Number of newborns transferred to referral hospital					

Individual assessment of emergence obstetric care

Date individual assessment was completed day month year

Name of the facility

Type of the facility

Type of facility: ____ Hospital
Health Center
Health Post
Other (specify):

Facility administration: Government
Private

Qualification of person competing assessment

Nurse
Midwife
Obstetrician
Neonatologist
Anesthetist
Other: specify

1. Have you received any training
   - in the past 6 month
   - in the past year
   - in the past 3 years
   - never

2 Name of training course -

3. Place of training -

4 Duration of training -

5 Have you received practical , theoretical skills - No Yes Specify

Attachment 3 Individual assessment of emergence obstetric care

Skills	Performed in last 3 month		Confident in performing skill	
	Yes	No	Yes	No
Hypertension in pregnacy				
1. Manage preeclampsia				
2 Manage eclampsia				
Bleeding				
3 Manage bleeding in earl pregnancy				
4 Manage bleeding in late pregnancy and labour				
5. Mange postpartum bleeding				
6. Active				
Fever				
6.Manage amnionitis				
7. Manage endomttritis				
Normar labour				
9 Use a partograph				
10 Manage abnormal latent phase				
11Manage abnormal active phase				
12. Manage abnormal pushing stage (second stage)				
13 . Manage abnormal pushing stage				
14. Induce labour				
15. Manage labour after prior cesarean section				
16 Perform forceps delivery				
17 Perform a vacuum delivery				
Abnormal presentation				
18 Manage a breech delivery				
19 Manage a prolapsed cord				
20 Perform external cephalic version				
Procedures for labour and delivery				
Repair second degree tear				
Repair third degree tear				
Make and repair episiothomy				
Complicated delivery				
Perform manures for shoulder distocia				
Manage twin delivery				
Perform manual removal of placenta				
Perform manual vacuum aspiration for retained				

placenta				
Perform bimanual compression				
Manage abdominal aortic compression				
Surgical procedures				
Perform a cesarean section				
Stark incision				
Phanneshtille incision				
Perform a subtotal laparatomy				
Perform a hysterectomy				
Perform laparotomy for ectopic pregnancy				
Perform B - Linch suture				
Perform uterine artery ligation				
Pain management				
Perform regional anesthesia (spinal, epidural) during cesarean section				
Perform endotracheal intubation				
Procedures for newborn resuscitation				
Procedures for newborn Care				
Perform newborn resuscitation				
Other				
Manage shock form bleeding				
Manage shock form sepsis				
Implement infection prevention measures				
Proper Hand washing				
Prophylactic antibiotics				
Conduct maternal death review				

Hypertension in pregnancy

At what level of blood pressure usually do you start hypotensive therapy?
Specify _____

Which hypertensive drugs usually do you use ? –
Specify_____

Which value of proteinuria is considered pathological ?
Specify_____

How do you determine proteinuria at admission ?
Specify_____

What is the initial (load) dose of IV Magnesium sulfate in pre-eclamsia?
Specify_____

Normal birth

On which minute after birth do you usually do cord clamping?
Specify_____

How many times and when after birth do you measure temperature on newborn?

Specify_____

What is normal temperature range in newborns after birth ?
Specify_____

In what time interval do you perform vaginal exam during normal birth?
Specify_____

Indicate steps 1,2,3 and so on steps in active management of labour.

early cord clamping

use of oxitocics 10 IU

use of oxitocics 5 IU

massage of uterus

controlled cod traction

delayed cord clamping

In your opinion, what are the two greatest problems in your facility in providing quality emergency obstetric care ?
In your opinion, what are the solutions to these problems?

	PROBLEMS	**SOLUTIONS**
A		
B		

Attachment 4 Case extractions forms

Case extraction form - severe preeclampsia			
Question number	**Questions and filters**	**Response categories**	**Remarks**
1	Was the case diagnosed correctly?	Yes ..... No……..	
2	Was a management plan formulated for this case?		
3	What was the highest diastolic blood pressure recorded in the case notes?	mm Hg	
4	Is it severe hypertension? *(Severe hypertension is either > 120 mm Hg spot, or > 100 mm Hg on measured on two occasions at least 4 hours apart).*	Yes ..... No.....	
5	What was amount of proteinuria?		
6	Were neurological symptoms recorded?	Yes ..... No.....	
7	Was anti-hypertensive treatment given?	Yes ..... No……	
8	What was the drug used?		
9	Was Magnesium sulphate used?	Yes ..... No……	
10	Was concentration of magnesium sulphate correctly calculated?	Yes ..... No……	
11	Was infusion pump used?	Yes ..... No……	
12	How long after delivery magnesium sulphate was used?	< 12 hours > 12 hours	
13	Were the following measurements taken whilst the woman was receiving Magnesium sulphate:		
14	Respiratory rate	Yes ..... No……	
15	Tendon reflexes	Yes ..... No……	
16	Urine output	Yes ..... No……	
	Were the following investigations performed at least once during the		

	woman's in-patient stay?		
17	Bleeding time	Yes ..... No……	
18	Clotting time	Yes ..... No……	
19	Platelet count	Yes ..... No……	
20	Urine albumin	Yes ..... No……	
21	Did the woman labour at the hospital?	Yes ..... No……	
	Was a fluid balance chart maintained:		
22	During labour?	Yes ..... No……	
23	What was amount of infused fluids ?	more that 500 more than 1000	
24	Was urine output monitored after delivery?	Yes ..... No.....	
25	How often was urine output monitored?	At least once every hour ..... Longer than every hour	
26	How long after delivery did this monitoring continue?	< 48 hours…… ≥ 48 hours……	
27	Date of delivery	day noths year not recorded	
28	Time of delivery	time not recorded	
29	Mode of delivery	Normal vaginal ..... Ventouse ..... Forceps ..... Vaginal Breech ..... Caesarean-Emergency..... Caesarean-Elective ..... Other (specify) ..... Not recorded	
30	In case of caesarean section what kind of aesthesia have been used?	General Spinal Epidural	

Eclampsia

Question number	Questions and filters	Response categories	Remarks
1	Where did the first convulsion occur?	In the hospital..... In another hospital ..... In a health centre/clinic..... At home..... Other (specify) ..... Not recorded	
2	Date of the first convulsion?	Day..... Month ..... Year..... Not recorded	
3	Time of the first convulsion?	Time: _____ am/pm Not recorded	
4	Was a management plan formulated for this case?	Yes ..... No……..	
5	What was the highest diastolic blood pressure recorded in the case notes?	mm Hg	
6	Is it severe hypertension? *(Severe hypertension is either > 120 mm Hg spot, or > 100 mm Hg on measured on two occasions at least 4 hours apart).*	Yes ..... No.....	
7	Was anti-hypertensive treatment given?	Yes ..... No……	
8	What was the drug used?		
9	Was Magnesium sulphate used?	Yes ..... No……	
10	Was concentration of magnesium sulphate correctly calculated?	Yes ..... No……	
11	Was infusion pump used?	Yes ..... No……	
12	How long after delivery magnesium sulphate was used?	< 12 hours > 12 hours	
	<u>Were the following measurements taken whilst the woman was receiving Magnesium sulphate</u>:		
13	Respiratory rate	Yes ..... No……	
14	Tendon reflexes	Yes ..... No……	
15	Urine output	Yes ..... No……	
	<u>Were the following investigations performed at least once during the woman's in-patient stay?</u>		
16	Bleeding time	Yes ..... No……	
17	Clotting time	Yes	

		No……	
18	Platelet count	Yes ..... No……	
19	Urine albumin	Yes ..... No……	
20	Did the woman labour at the hospital?	Yes ..... No……	
	Was a fluid balance chart maintained:		
21	During labour?	Yes ..... No……	
22	What was amount of infused fluids ?	more that 500 more than 1000	
23	Was urine output monitored after delivery?	Yes ..... No.....	
24	How often was urine output monitored?	At least once every hour ..... Longer than every hour	
25	How long after delivery did this monitoring continue?	< 48 hours…… ≥ 48 hours……	
26	Date of delivery	day noths year not recorded	
27	Time of delivery	time not recorded	
28	Mode of delivery	Normal vaginal ..... Ventouse ..... Forceps ..... Vaginal Breech ..... Caesarean-Emergency..... Caesarean-Elective ..... Other (specify) .... Not recorded	
29	In case of caesarean section what kind of aesthesia have been used	General Spinal Epidural	

Case extraction form (haemorrhage)			
Question number	**Questions**	**Response categories**	**Remarks**
1	When did the haemorrhage start?	Before admission ..... After admission ..... Not recorded	

2	At what time of day did the haemorrhage start?	Time: .....am/pm Not recorded	
3	Total estimated amount of blood loss	..... ml Not recorded	
4	How the blood loss was calculated	As % to body mass As% to CVO	
5	Was an experienced member of staff informed? *(See list of experienced staff)*	Yes ..... No.....	
6	At what time did a senior member of staff first examine the patient?	Time: .....am/pm Not recorded	
	<u>Were the following investigations carried out?</u>		
7	Blood typing	Yes ..... No.....	
8	Cross-matching of blood	Yes ..... No.....	
9	Haemoglobin/Haematocrit	Yes ..... No.....	
10	Was a request made for units of blood?	Yes ..... No.....	
11	How many units of blood were requested?	Number of units..... Not recorded	
	<u>Were there any of the following indications of the need for coagulation tests?</u>		
12	Placental abruption	Yes .....1 No.....2	
13	Pre-eclampsia	Yes .....1 No.....2	
14	Sepsis	Yes .....1 No.....2	
15	Transfusion of more than 2 units blood	Yes .....1 No.....2	
	Were any of the following tests carried out?		
16	Bleeding time	Yes .....1 No.....2	
17	Clotting time	Yes .....1 No.....2	
18	Platelet count	Yes .....1 No.....2	
19	Was a blood transfusion given?	Yes .....1 No.....2	
20	Were intravenous fluids (crystalloids and/or colloids) given?	Yes .....1 No.....2	

21	How many units of fluids (crystalloids and/or colloids) were given ?	Less than 3 litres.....1 3 litres or more 2	
22	Was the pulse rate monitored at all in the first two hours after the haemorrhage was recognised?	Yes .....1 No.....2	
23	At what intervals was the woman's pulse measured during the first two hours after the haemorrhage was recognised?	15 minute intervals.....1 30 minute intervals.....2 Other (specify).....3	
24	Was the blood pressure monitored in the first two hours after recognising the haemorrhage?	Yes .....1 No.....2	
25	At what intervals was the woman's blood pressure measured?	15 minute intervals.....1 30 minute intervals.....2 Other (specify).....3	
26	Was a urinary catheter inserted?	Yes .....1 No.....2	
27	Was urine output measured at all?	Yes .....1 No.....2	
28	Was it measured at least once every hour?	Yes .....1 No.....2	
29	Was the patient ever taken to the operating theatre because of the haemorrhage?	Yes .....1 No.....2	
30	Which operation was performed?	.....	
31	What was the date of operation?	Day..... Month ..... Year..... Not recorded	
34	At what time was the operation performed?	Time: .....am/pm Not recorded 99	
35	Was the haemorrhage ante-, intra- or postpartum?	Antepartum.....1 Intrapartum.....2 Postpartum.....3	
	<u>In the event of antepartum haemorrhage, were any of the following examinations conducted:</u>		
36	Abdominal	Yes .....1 No.....2	
37	Scan	Yes .....1 No.....2	
38	Vaginal	Yes .....1 No.....2	
39	Was the placental site known (by scan) at the time of vaginal examination?	Yes .....1 No.....2	

40	Where was the vaginal assessment conducted?	Operating theatre .....1 Labour/maternity ward .....2 Other (specify).....3	
41	Was the active management of third stage labour carried out ?	Yes .....1 No.....2	

OBSTRUCTED LABOUR

Question number	Questions and filters	Response categories	Remarks
1	Date of the diagnosis of obstructed labour?	Day ..... Month..... Year ..... Not recorded.....99	
2	Time of diagnosis of obstructed labour?	Time: .....am/pm Not recorded.....99	
3	Was the interval of time between the diagnosis of obstruction and delivery of the fetus:	Less than 2 hours.....1 Two hours or more 2	
4	Mode of delivery	Normal vaginal .....1 Ventouse .....2 Forceps .....3 Vaginal Breech.....4 Caesarean-Emergency .....5 Caesarean-Elective.....6 Other (specify).....7 Not recorded.....	
5	Were any reasons given in the case notes for this delay in delivery?	Yes (specify).....1 .... No reasons 2	
6	Was parthograph used?	Yes .....1 No 2	
7	Was the augmentation used ?	Yes .....1 No 2	
8	Was the infusion pump used during augmentation	Yes .....1 No 2	
9	Was a urinary catheter inserted?	Yes .....1 No 2	
10	<u>Were any of the following measurements taken:</u>		
11	Urine output	Yes .....1 No 2	

12	Blood pressure	Yes .....1 No 2	
13	Pulse	Yes .....1 No 2	
14	Temperature	Yes .....1 No 2	
15	Was intravenous access achieved?	Yes .....1 No 2	
16	Which antibiotics were given at any time:	Specify ……	
17	What were the routes used for administering the antibiotics:	Oral…… Intravenous…….. Intramuscular……	

GENITAL TRACT SEPSIS ASSOCIATED WITH PREGNANCY

Question number	Questions and filters	Response categories	Remarks
1	Date of diagnosis of genital tract sepsis?	Day ..... Month ..... Year ..... Not recorded 99	
2	Were any antibiotics started?	Yes .....1 No 2	
3	At what time were any antibiotics first started?	Time: .....am/pm Not recorded 99	
4	Which antibiotics were given at any time:	Specify	
5	What were the routes used for administering the antibiotics:	Oral Intravenous Intramuscular	
6	Were any of the following measurements taken:		
7	Urine output	Yes .....1 No 2	
8	Blood pressure	Yes .....1 No 2	
9	Pulse	Yes .....1 No 2	
10	Temperature	Yes .....1 No 2	
11	Do the case notes indicate that the possibility of retained products was considered?	Yes .....1 No 2	

12	Were any surgical procedures carried out to explore the uterus for retained products?	Yes ..... 1 No 2		
13	What procedure(s) was carried out?	....		
14	Were any surgical procedures carried out to evacuate the uterus of retained products?	Yes ..... 1 No 2		
15	What procedure(s) was carried out?	....		