

# Availability of Obstetric And Neonatal Emergency Cares (Emonc) In Benin

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## Abstract

**Objective:** The aim of our study was to assess the availability of EmONC in Benin.

**Methodology:** It is a descriptive, analytical and transversal study such as SARA (Service Availability and Readiness Assessment) which took place from January 1 to August 31, 2013. The sample consisted of health facilities in public and private sectors located in both urban and rural areas.

**Results:** The delivery services were available in 82% of health facilities (97.7% of hospitals, 92.2% of Health Centers (HC), 40.5% of Primary Care Centers (PCC), 86.1% of public's health facilities have and 75.7% of private). Qualified personnel was available in 88.4% of health-centers. Parenteral administration of antibiotics, oxytocic and anticonvulsants were available respectively 94.2%, 94.2% and 76.1%. The assisted vaginal delivery, the manual removal of placenta and uterine evacuation maneuvers were respectively found in 42.6%, 88.4% and 54.8% of health facilities which practice birth. Neonatal resuscitation was available in 83.9% of facilities including all hospitals, 83% of HC and 47% of PCC. Only a quarter of institutions offering delivery (25.8%) were real BEmONC centers. Cesarean section was available in all hospitals and 3.2% HC. Blood transfusion was available in 25.8% of health facilities surveyed. Actual CEmONC health facilities represent 18.1% of all health facilities offering delivery services.

**Conclusion:** Efforts are still needed to ensure better availability of all EmONC functions to achieve the MDGs.

**Keywords:** Availability; EmONC; Maternal mortality; BEmONC; CEmONC

## Introduction

The situation of maternal mortality is dramatic in Benin. Truly, about 1,500 women die each year from pregnancy complications, childbirth and puerperium with maternal mortality ratios stagnation at unacceptable levels: 473.2 (RGPH 1992), 498 (ICAS 1996), 474.4 (RGPH 2002) and 397 (EDSIII 2006) per 100 000 live births. Regarding neonatal mortality, although progress has been made with a reduction from 38 to 21 deaths per 1,000 live births between 1996 and 2011, efforts are still needed [1-3]. Indeed, the 4 and 5 Millennium Development Goals aim to reduce worldwide maternal mortality by 75% (125 per 100 000 live births for Benin) and infant mortality by two thirds (20 per 1000 live births for Benin) by 2015 [4]. In the roadmap to accelerate the achievement of these objectives related to maternal and newborn health, actions to be taken were directed to three areas namely: family planning, birth attended by skilled personnel and Emergency Obstetrical and Neonatal Cares (EmONC) [5].

They constitute a strategy to offer all pregnant women in emergency situations, the quality of assistance that she and her baby need. The investigation needs EmONC of Benin conducted in 2003 and repeated in 2009-2010, has revealed that Benin has 5 clinics EmONC to 1,465,143 inhabitants (nearly three times the population), a under-utilization of health facilities surveyed particularly by women and newborns who need it most with a national rate of births attended by skilled personnel 58.2%, a satisfied need very low EmONC, 2, 6% and a proportion of cesarean 4.6%. Furthermore, the provision of care does not meet the quality standards as evidenced by the direct fatality rate particularly high in 22 health facilities. Comprehensive Emergency Obstetrical and Neonatal Cares (CEmONC) 1.5% [6,7]. Various actions relating not only to building skills, but also that of the technical facilities have since been taken by the authorities in charge of health in Benin. More than two years after EmONC investigation, and close to the deadline of MDGs 4 and 5, the objective of our study is to evaluate the availability of EmONC in Benin.

## Methodology

This is a transversal, descriptive and analytical study such as SARA (Service Availability and Readiness Assessment) [8,9], which took place from January 1 to August 31, 2013. The study population consisted of health facilities providing care in the public and private sectors located in both urban and rural areas. Were included hospitals, health centers or clinics, public or private recognized by the Ministry of Health, with a service or maternity unit, usually receiving obstetric emergencies, recognized as a health facility cooperating and following the guidelines of Ministry of Health and sending his statistics at the National Information System and Sanitary Management (NISSM). Were excluded, sanitary centers which did not allow access to their data and / or including maternity officials were unavailable.

The method of simple random was used for sampling. The sampling frame was the list of health facilities (public and private) that provide data to the National Information System and Sanitary Management (NISSM). Three strata were formed: one involving hospitals (public and private), the second is the Health Centers (HC) (Complete Health Centers: maternity and clinics) and the third is PCC (Primary Care Centers). The sample size was calculated by using SCHWARTZ with an accuracy of 10% was 96. There was made an initial increase in the sample size strata where there was the most likely to have variations. Thus, the sample consisted of 26 public hospitals, 18 private hospitals,

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61 public health centers, 42 private health centers, 28 public and 14 private primary care centers; for a total of 189 health facilities.

The studied variables were related to the type of health facility, in the middle (urban or rural), sector (public or private), the availability of EmONC evaluated on offer delivery services, parenteral administration of antibiotics, parenteral administration of oxytocin, parenteral administration of anticonvulsants, the assisted vaginal route, the placenta and uterine cavity, the uterine evacuation operations (vacuum, forceps), neonatal resuscitation, laparotomy or caesarean section and blood transfusion. The total availability was estimated by the presence of 7 functions for basic Emergency Obstetrical and Neonatal Cares (BemOC) and 9 for CEmONC.

Data were collected by 24 investigators (nurses and midwives) grouped in pairs supervised by 18 supervisors (doctors, statisticians and planners) after initial training on the administration of the questionnaire by the technique of individual interview, checking the quality of NISSM level data registers of health facilities and direct observation. The information was collected simultaneously using a paper questionnaire and a Personal Digital Assistant (PDA). The data quality control was done every day by supervisors through the verification of completion of the questionnaire. The collected data were entered and apu-Rees as CS Pro with double entry (Verify Mode), processed and analyzed by SPSS software, CS Pro, Excel and Epi INFO7. The study was conducted under the supervision of the Ministry of san-side with the consent of managers and providers SURVEY-Tees clinics prior to the administration of the questionnaire in the strict and scrupulous respect for ethical and professional requirements in the Republic of Benin. The data collected were centralized fast in the service of the documentation of Health Department.

## Results

The delivery services were offered in of health facilities surveyed; 82% of the sample. Thus, 97.7% (43/44) of hospitals, 92.2% (95/103) of HC, 40.5% (17/42) of the PCC, 86.1% (99/115) of public health facilities, 75.7% (56/74) of the private. The distribution of these clinics was 75% (78/104) in urban areas and 90.6% (77/85) in rural areas. These clinics that offered delivery services, 88.4% had qualified personnel. In hospitals, the availability of qualified personnel was 97.7%, 90.5% at the HC and 52.9% in the calf or PCC. The public sector had the qualified staff in 86.9% and 91.1% in the private. The rural has 79.2% of the cases and 88.4% for the urban.

Almost all health facilities where delivery was possible, proceeded to parenteral antibiotic administration. This feature was available in all

hos-rate, but in the public sector than in the private. Most of the centers visited was using parenteral administration of oxytocin. Parenteral administration of anticonvulsants was available in most centers visited but absent in a hospital. All BEmONC were offered in the quarter (1/4) of health facilities visited (Table 1).

The CEmONC include the 7 functions BEmONC plus caesarean and blood transfusion. Cesarean section was available in all hospitals and even traveled in three (03) HC. Seven (07) hospitals do not offer blood transfusion. All the CEmONC function was available in only two-thirds (2/3) of hospitals. In addition, five (05) hospitals and (01) HC, all the urban offered CEmONC all functions except blood transfusion (Table 1).

The total availability of BEmONC and CEmONC depended on the type of facility and environment (urban or rural) (Tables 2 and 3).

## Discussion

### Availability of BEmONC

Benin has enough health facilities offering delivery services but assistance by a staff of quality is not effective everywhere. Indeed, 88.4% of facilities have qualified staff with a remarkable lack of PCCin rural areas. This could be explained partly by the fact that most of health workers want to exercise in urban areas, and secondly, by preferential settling private structures in the city. The same disparity was observed in Mali [10].

In general, the availability of BEmOC is irregular depending on the components. Parenteral administration of antibiotics and oxytocin are available in almost all health facilities offering delivery and availability of EmONC rates are virtually identical in urban and rural areas. This result is broadly in line with the national survey conducted in 2010 EmONC which found 95.9% and 99.8% respectively for the parenteral administration of antibiotics and oxytocin [6]. The same has been done in other countries including Madagascar and Malawi [11,12]. But these rates are lower in Zambia [13]. This good availability of parenteral administration of oxytocin found in Benin may be due to the scaling of the active management of the third stage of labor (AMTSL). The latter requires health facilities to obtain oxytocin that must be continuously available since each parturient benefits of AMTSL.

Parenteral administration of anticonvulsant is absent in half of the PCC in the third of HC and even a hospital. In our study, it is offered by 76.1% of health-formations. This is lower than in 2010 (89.3%) [6] and also to 83.3% of Malawi in 2008 [12]. By cons, it is higher than those

Type of health facility	Availability of functions EmONC										
	ATB	Oxytocin	Anticonvulsants	AD/UR	Assisted vaginal delivery	MVA	Neonatal resuscitation	BEmONCtotal	CS	Blood Transfusion	EmONC total
Hospital (N=43)	43 (100)	43 (100)	42 (97,7)	43 (100)	37 (86)	40 (93)	43 (100)	33 (76,7)	43 (100)	36 (83,7)	28 (65,1)
HC (N=95)	89 (93,7)	87 (91,6)	67 (70,5)	84 (88,4)	26 (27,4)	43 (45,3)	79 (83,2)	7 (7,4)	3 (3,2)	4 (4,2)	0 (0)
PHC (N=17)	14 (82,4)	15 (94,1)	9 (52,9)	10 (58,8)	3 (17,6)	2 (11,8)	8 (47,1)	0 (0)	0 (0)	0 (0)	0 (0)
<b>Sector</b>											
Public (N=99)	96 (97)	94 (95)	78 (78,8)	88 (88,9)	41 (41,4)	46 (46,5)	78 (78,8)	23 (23,2)	27 (27,3)	24 (24,2)	18 (18,2)
Private (N=56)	50 (89,3)	52 (92,9)	40 (71,4)	49 (87,5)	25 (44,6)	39 (69,6)	52 (92,9)	17 (30,4)	19 (33,9)	16 (28,6)	10 (17,9)
<b>Environment</b>											
Urban (N=78)	76 (97,4)	76 (97,7)	70 (89,7)	75 (96,2)	50 (64,1)	65 (83,3)	76 (97,4)	37 (47,4)	43 (55,1)	36 (46,2)	26 (33,3)
Rural (N=77)	70 (90,9)	68 (89,6)	48 (62,3)	62 (80,5)	16 (20,8)	20 (26)	54 (70,1)	3 (3,9)	3 (3,9)	4 (5,2)	2 (2,6)
<b>Total (N=155)</b>	<b>146 (94,2)</b>	<b>146 (94,2)</b>	<b>118 (76,1)</b>	<b>137 (88,4)</b>	<b>66 (42,6)</b>	<b>85 (54,8)</b>	<b>130 (83,9)</b>	<b>40 (25,8)</b>	<b>46 (29,7)</b>	<b>40 (25,8)</b>	<b>28 (18,1)</b>

ATB : antibiotics, AD /UR : artificial delivery/uterine revision, MVA : manual vacuum aspiration, N : number, CS : cesarean section.

Table 1: Availability of EmONC functions in Benin in 2012.

	Yes	No	Total	Chi 2	p
<b>Type of health facilities</b>					
Hospital	33	10	43	81,052	<<<0,001
HC	7	88	95		
PHC	0	17	17		
Total	40	115	155		
<b>Sector</b>					
Public	23	76	99	0,6127	0,4337
Private	17	39	56		
Total	40	115	155		
<b>Environment</b>					
Urban	37	41	78	36,1244	<<<0.0001
Rural	3	74	77		
Total	40	115	155		

**Table 2:** Availability of basic EmONC related to the type of Health centers, public or private sector, rural or urban in Benin in 2012.

	yes	No	Total	Chi 2	p
<b>Type of health facilities</b>					
Hospital	28	15	28	89,009	<<<0,001
HC	0	95	95		
PHC	0	17	17		
Total	28	127	155		
<b>Sector</b>					
Public	18	81	99	0,0278	0,8674
Private	10	46	56		
Total	28	127	155		
<b>Environment</b>					
Urban	26	52	78	22,6984	0,000003
Rural	2	75	77		
Total	28	127	155		

**Table 3:** Availability of EmONC related to the type of Health centers, of Benin in 2012.

of Madagascar and Zambia respectively surveys found an availability of 48% [11] and 45% [13] for this function. This lack of administration of magnesium sulfate can be explained by the need for a rigorous and effective monitoring of patients by qualified personnel in this matter; which reduces the use of some particularly at peripheral health facilities. But this lack of anticonvulsant does not include diazepam which is the first anticonvulsant used in the mother and the child. This raises the problem of the acquisition of these products by the central purchasing of essential drugs, then by the distribution depots sanitary zones and finally by the facilities.

The assisted vaginal delivery includes the fetal extraction maneuvers, particularly the vacuum extraction application in dystocia. Despite the great importance of this maneuver, it is available only in a minority of the covered facilities. It is found in only 42.6% of the total (86% of the hospitals, 27.4% of HC and 17.6% of PCC) and urban (64.1%) than in rural areas (20.8%). This rate is much higher than the 8.6% achieved by the Ministry of Health in 2009, reflecting the creditable effort made in the field in terms of personnel training and equipment of health facilities. However, the coverage is still low. But more than the overall lack is that six (06) of the sampled hospitals do not. The same trend is observed in other countries, but to varying degrees with Zambia and Togo 42%, 26.2% in Madagascar, Niger, 18.2% [11,13-15]. In Senegal and Mauritania, it was almost absent in 2000 and 2004 [16,17]. The main reason is the lack of vacuum extraction in these sanitary centers, despite training and delegating this tasks midwives and maternity nurses.

Manual removal of placenta is available in the majority (88.4%) of

health facilities without disparity among communities and sectors; only half of the PCC and one fifth (1/5) of HC without. Our results confirm those of other African countries [11,13-15]. Despite this availability, we must consider the conditions for its implementation, including the use of sterile uterine revision gloves.

As for uterine evacuation maneuvers involving the cleaning, curettage and MVA, although emergency actions, they are not available in all sanitary training (54.8%). Three (03) hospitals, more than half of the HC and almost all PCC are not able to offer post-abortion care. These results are lower than the rate in 2010 (78.9%) [6]. But remain well above those obtained in Madagascar -(30.9%) [11] and Niger (17%) [14]. One of the main reasons is the lack of equipment MVA. But we know that the syringe MVA costs only 60US \$ and the majority of staff have been trained in this function. This raises the problem of pro-renewal of medico equipment after donations from partners. The low availability of this feature explains the high rate of post-abortion bleeding and infectious complications, both direct obstetric causes of maternal death.

Neonatal resuscitation is available in 83.9% of facilities including all hospitals, 83% of HC and 47% of PCC. These results are better than those obtained in 2009 by the Ministry of Health in Benin (43%) [6], in 2010 in Madagascar (26.2%) [11] and Niger (19%) [14]. But they are not yet satisfactory. It calls on the availability of resuscitation equipment in delivery rooms especially when we know that first aid for an infant in distress must be given immediately, without re-later on-site in accordance with "Minute of or "dear to neonatologists.

The availability of all functions in 7 BEmONC Benin's health facilities is very low or insignificant. Indeed, 25.8% of institutions offering child birth are real BEmONC centers. No PCC offers all BEmONC and a quarter of hospitals does not. Furthermore, the distribution is uneven across environments (47.4% of the urban environment, against 3.9% in rural areas). These results corroborate previous studies in Africa, which shows that facilities BEmONC are inadequate, and that the few existing structures is concentrated in urban areas where the population is less than that of rural areas. However, our results taken as a whole, indicate a remarkable progress in the availability of BEmONC features compared to previous studies from Benin and even several other African countries [6,10,13]. But they are still far from leading us to the achievement of 4 and 5MDGs. The most missing components, both in the city than in the countryside, are: Childbirth assisted base channel (43%) and uterine evacuation maneuvers (55%). This is indeed functions require special equipment and it is the event of the latter is blamed.

### Availability of CEmONC

In addition to all the hospitals that offer cesarean section, it is available in 3.2% of HC. With a proportion of 29.7% of health facilities providing delivery, we are beyond the ratio of 1 CEmONC clinic for 5 clinics EmONC re-ordered. But the stumbling block in the geographical distribution of these centers, since the cesarean is possible in only 3.9% of health facilities in rural areas. Our results are similar to those in Madagascar where 27.2% of health facilities offer caesarean section. When this specialized function is not available in hospitals, personal evoke as the main reasons, for the same frequency, lack of skilled personnel and inadequate supplies and materials [11].

Blood transfusion is available in 25.8% of health facilities surveyed, 46.2% of urban and 5.2% in rural areas, equally distributed between the different sectors. This is higher than the 19% found in Madagascar [11].

Unexpectedly, all the hospitals in Benin do not offer blood transfusion, while they all practice cesarean section. Indeed, blood transfusion is available in 83.7% of hospitals in Benin. This raises the problem of the management of bleeding complications in intraoperative or postoperative. This result contrasts with that of Niger where all hospitals performing caesarean offer blood transfusion [14]. The problem of availability of blood should be reviewed, as well as the number of eligible sites as blood product storage centers to be as close as possible to this vital medicine for the survival of women.

Actual CEmONC health facilities represent 18.1% of all health facilities offering delivery services. This set consists of hospitals only.

There is a significant disparity between the media (33.3% in urban areas against 2.6% in rural areas). This is not as striking as the absence of 35% of hospitals in the ranking of health facilities offering CEmONC. Indeed, any hospital offering health facility with an obstetrical service and operating room should be a health center of CEmONC training. But the fact is that the fourth of Benin hospitals [18] do not offer all the basic functions; and among those that offer, there are some which do not offer blood transfusion (05 in our sample). This phenomenon calls into question the adequacy of such denominations of health facilities in the country, given to their real possibilities. Our results are still well above those of Ethiopia where health facilities CEmONC represented to 7.3% in 2008 [19].

## Conclusion

In less than thousand days before the deadline for achieving the 4 and 5MDGs, Benin does not yet have adequate health facilities and not able to offer EmONC. Definitely, the total health facilities in the country where childbirth is offered, 25.8% are real health facilities BEmONC with predominantly in urban areas. The most missing features are those that require hardware namely: assisted vaginal route and post-abortion care. As for CEmONC their complete availability is 18% made up of a few hospitals in the country, concentrated in urban areas. A separate study of functions shows that cesarean section is sufficiently available in health units of higher standing. It is offered by all hospitals and even by some HC of the country; which is not the case of the blood transfusion because it is not enough. Some hospitals in the country are in deficit.

In sum, it is clear that efforts have been made since the last needs assessment of EmONC in Benin. It remains true that these efforts are

insufficient to achieve the MDGs. It would therefore be appropriate to re-energize the strategies implemented to facilitate the access of women to obstetrical and emergency neonatal cares.

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