

# General Presentation

This document is organized in five volumes

## **Volume 1 Benin Referral Hospital Emergency Obstetrical Care Policy**

This volume presents the emergency obstetrical care policy of the referral hospital (RHEOC) that will be submitted to the Ministry of Health for adoption. It includes a statement on general policy, ten guiding principles for RHEOC delivery, a national definition of the RHEOC, a national definition of operations that permits the classification of emergency obstetrical care facilities and finally, obstetrical complications by type.

## **Volume 2 Standards of Required Resources for Referral Hospital Emergency Obstetrical Care**

This volume presents the specification of resources required for the RHEOC: human resources, infrastructure, drugs, consumables, medical/technical material in strategic sites such as the delivery room, surgery, resuscitation, laboratory/blood bank.

## **Volume 3 Principles for the Organization and Operations of Service Sectors Involved in Referral Hospital Emergency Obstetrical Care**

This volume exposes the principals of organization and operations of service sectors involved in the RHEOC such as administrative services, maternity, surgery, intensive care, laboratory, blood bank, pharmacy, radiology/echography and outpatient services. An estimate of the minimum effective critical human resources is proposed based on an organizational system.

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## **Volume 4 Clinical Management Procedure for Referral Hospital Obstetrical Emergencies**

This volume presents the clinical management procedures for the main obstetrical emergencies in referral hospitals through decision trees and therapeutical schemes the woman arrives as an emergency the woman arrives hemorrhaging, the woman arrives with a difficult delivery the woman arrives with crises of convulsions the woman arrives with hyperthermia, the woman arrives pale

## **Volume 5 Performance Standards and Data Support**

This volume presents nine groups of indicators for performance assessment in RHEOC delivery and potential of RHEOC delivery, health facility level of operations, profile of obstetrical complications availability of RHEOC timeliness in case management, adequacy of case management intensity of activities and level of referral function fulfillment Some new data support for RHEOC have been introduced

## THE MOTTO OF MATER

OUR MOTTO:

TO NO LONGER FACE DEATH  
WHILE GIVING NEW LIFE

This is what Josee GBEDAGBA, midwife at Mater  
inscribed on the delivery room door of her maternity ward

**POLICY AND STANDARDS FOR REFERRAL HOSPITAL  
EMERGENCY OBSTETRICAL CARE  
IN THE REPUBLIC OF BENIN**

**VOLUME 1: BENIN REFERRAL HOSPITAL EMERGENCY  
OBSTETRICAL CARE POLICY**

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## SIGNS AND ABBREVIATIONS

WHO	World Health Organization
RHEOC	Referral Hospital Emergency Obstetrical Care
MPREPE	“Ministere du Plan de la Restructuration Economique et de la promotion de l’Emploi”(Ministry of Planning, Economic Restructuring and Employment Promotion)
MSPSCF	“Ministere de la Sante de la Protection Sociale et de la Condition Feminine (Ministry of Health, Social Protection, and the Feminine Condition)
MSP	“Ministere de la Sante Publique” (Ministry of Public Health)
OMS	“Organisation Mondiale de la Sante” (WHO)
INSAE	“Institut National de la Statistique et de l’Analyse Economique’ (National Institute of Statistics and Economic Analysis)
SSDRO	“Service des Statistiques, de la Documentation et de la Recherche Operationelle” (Statistics Documentation, and Operational Research Service)
MS	Ministere de la Sante” (Ministry of Health)
DSF	“Direction de la Sante Familiale” (Agency for Family Health)
PBA/SSP	“Projet Benino-Allemand des Soins de Sante Primaires” (Benin-German Primary Health Care Project)
UNICEF	United Nations Children s Fund
CHD	“Centre Hospitalier Departemental” (Regional/Departmental Hospital Center)
CSSP	‘Centre de Sante de Sous-Prefecture” (Sub-mayoral Health Center)
CSCU	“Centre de Sante de Circonscription Urbaine” (Urban Division Health Center)

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- Table 4 Summary of complications deaths, mortality rate in the total of 18 health facilities visited - Year 1997

**THE MATERI MOTTO**

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## 1 CONCEPT DEFINITION

### 1 Policy

Concerted way of carrying out a task [1]

Official statement on the way to conduct, manage a situation

### 2 Norms of care

Performance of care generally observed [2]

### 3 Standards of care

Performance of care considered professionally acceptable [2]

### 4 Explanation of the definition of obstetrical care

#### 4 1 Obstetrical care

Prenatal care, per and postpartum and early neonatal care

#### 4 2 Essential obstetrical care

Essential care relative to the management of complications linked to pregnancy and delivery and specific neonatal care This term includes - however not exclusively - emergency obstetrical care including the elements of care that are most needed to manage unexpected complications such as eclampsia, placenta retention postpartum hemorrhaging etc [5]

The total scope of essential obstetrical care can be found in Annex 1

#### 4 3 Emergency obstetrical care

Care directed at managing unexpected complications, such as eclampsia, placenta retention, postpartum hemorrhaging etc [5]

#### 4 4 Basic maternal care

Management of normal pregnancies and deliveries This includes the care delivery under proper hygienic and safety conditions, and postpartum care, specifically during the first days after delivery [5]

5 Emergency obstetrical care at the primary secondary and tertiary levels as used in this document

Care reserved for pregnant women with pregnancy-puerperal pathologies

– Primary level emergency obstetrical care that include

The administration of intravenous antibiotics the administration of intravenous parturifacients, the administration of intravenous anti-convulsants artificial childbirth uterine revision digital treatment curettage manual or electric uterine aspiration and the application of suction,

– Secondary level emergency obstetrical care, including all the care of the primary level as well as blood transfusions,

– Tertiary level emergency obstetrical care including the care of the first two levels as well as delivery by forceps and obstetric surgery (specifically cesarian sections )

6 Health facilities providing primary level emergency obstetrical care These are health facilities that provide the primary level emergency obstetrical care mentioned herein

7 Health facilities providing secondary level emergency obstetrical care These are health facilities that provide the secondary level emergency obstetrical care mentioned herein

8 Health facilities providing tertiary level emergency obstetrical care These are health facilities that provide the tertiary level emergency obstetrical care mentioned herein or delivery of emergency obstetrical care by the referral hospital

9 Referral hospital

Public or private facility where tertiary level emergency obstetrical care is provided as well as medical and pediatric emergency care

## 2 PREAMBLE

### 2.1 SITUATION OF MATERNAL MORTALITY IN BENIN

The maternal mortality rate in Benin is extremely high as in most of sub-Saharan African countries. As illustrated by the results of the Demographic Health Survey carried out in 1996 for every 100 000 live births, 498 women died during pregnancy whether at the time of delivery or during the six weeks following delivery. This rate although lower than in certain African countries such as the Central African Republic (948 per 100,000 live births) and Niger (652 per 100 000 live births) is higher than observed in Namibia (225 per 100 000 live births) and Zimbabwe (283 per 100,000 live births) [6]

The health statistics report of 1996 also shows a high maternal mortality rate of 235 deaths per 100 000 live births in existing health facilities, [7] while paradoxically close to 64% of deliveries are in health facilities [6]. This potential of maternal deaths, even inside the health service system leads us to believe that there is a serious problem in appropriate management of women presenting with obstetrical complications.

A recent review of 18 hospitals and records in Benin shows that women die mostly of hemorrhaging (28%), eclampsia (25%), infections (20%) and pregnancy anemia (11%) (see Table Annex 1 of the first part). In fact however, these different pathologies would not kill as many in the context of a strategically organized and well managed system of health services.

## **2 2 JUSTIFICATION FOR THE NEED OF REFERRAL HOSPITAL ORGANIZATION FOR THE EFFECTIVE MANAGEMENT OF OBSTETRICAL EMERGENCIES**

Still today in many developing countries and especially in sub-Saharan Africa certain women presenting an obstetrical emergency, arrive at a referral center after having overcome numerous obstacles such as distance access routes, and transportation means, to end up dying there [8 9]

Although it is true that very often many women arrive too late to be helped it is no less true that many of them die because of the current level of emergency obstetrical care system organization in the existing referral hospitals This situation raises questions about the way referral hospitals carry out their primary mission, as defined by the World Health Organization to respond adequately to the needs of patients referred from other health facilities [10]

Strategies based on the community are needed to reduce the maternal mortality rate but their impact is minimal if there are no referral hospitals accessible by the population and providing emergency obstetrical care effectively, such as cesarian sections blood transfusions and antibiotic therapy It is inequitable to refer a woman presenting an obstetrical emergency to a referral hospital that can not manage her correctly It is necessary that this hospital help her or that it has the infrastructure required competent human resources, adequate material resources and drugs and that it practices emergency obstetrical interventions

As a result of their current organizational level the existing referral hospitals in Benin do not strengthen their peripheral health structures and community education, information and communication strategies effectively The high maternal mortality rate of the population in general and in health facilities in particular imposes the need to organize referral hospitals to manage obstetrical emergencies effectively

## 2.3 CURRENT POLICY IN THE SCOPE OF MATERNAL MORTALITY AND DELIVERY SYSTEM OF THE RHEOC IN BENIN

The continuous high maternal mortality rate in our country of 498 per 100 000 live births [6] worried the Benin government, as shown in consecutive declarations in the following documents

Programme National de Sante Maternelle et Infantile (1991)” (National Maternal and Child Health Program [1991]) [13] “Politique et Standards des Services de Sante Familiale en Republique du Benin (1992)” [14] (Family Health Service Policy and Standards in the Republic of Benin [1992]), “Politiques et Strategies Nationales de Developpement du Secteur Sante 1997-2001 (1996)” [15] (National Policy and Strategy for the Development of the Health Sector 1997-2001 [1996]) “Politique et Normes en Sante de la Reproduction en Republique du Benin (1997)” [16] (Reproductive Health Policy and Norms in the Republic of Benin [1997])

National Policy is directed at reducing maternal mortality from 498 to 390 per 100 000 live births by the year 2016 [17] Strategies foreseen include, in general, the improvement of obstetrical care coverage as well as quality improvement recruiting of qualified personnel for maternity wards and referral and back-referral system organization

## 2.4 HEALTH CARE DELIVERY SYSTEM IN BENIN REFERRAL HOSPITALS

A referral hospital is a hospital with the technical level infrastructure and personnel required to handle pediatric, surgical, gynecological and obstetrical medical emergencies. Three sectors are involved in the referral hospitals of Benin:

- the public sector managed by the State,
  - the private non-profit religious or non-religious sector
  - and the for-profit private sector
- Currently, the public sector has 26 referral hospitals grouped into three categories:
- one National and University Hospital Center for national referrals (CNHU)
  - seven departmental/regional and associated Hospital Centers
  - eighteen Sub-mayoral/Urban Area Health Centers (see list in Annex 2)

The following can be concluded after a review of referral hospitals currently existing in Benin:

- The CNHU is a national referral hospital with a hospital capacity of 692 beds, and with 23 clinical and para-clinical services, and with optimum personnel and technical levels permitting research and treatment of highly complex pediatric, surgical, gynecological and obstetrical clinical cases,
  - A Departmental/Regional Hospital Center (CHD) which is a referral hospital with a capacity of at least 120 beds and with 10 to 12 clinical and para-clinical services, personnel and a technical level that allows for the treatment of most highly complex departmental pediatric, surgical, gynecological, and obstetric clinical cases,
  - A sub-mayoral health center (CSSP) or an urban area referral health center (CSCU) which is a health center with 50 to 100 beds, with an average of six clinical and para-clinical services, equipped to treat most surgical, gynecological, and obstetric clinical cases in the sub-prefecture or urban area
- The private religious, or non-religious non-profit sector currently runs 10 referral

hospitals These are autonomous health facilities with a variable amount of beds not-for-profit, with personnel infrastructure and a technical level to treat pediatric surgical gynecological, and obstetrical clinical cases (See list in Annex 2 )

## 2.5 EMERGENCY OBSTETRICAL CARE DELIVERY SYSTEM IN BENIN REFERRAL HOSPITALS (RHEOC)

Emergency obstetrical services are services reserved for pregnant women presenting pregnancy-puerperal pathologies/complications and who need immediate treatment. In Benin, we can distinguish three levels of obstetrical emergency care<sup>1</sup>.

- 1 Primary level obstetrical care including the intravenous administration of antibiotics, parturifacients and anti-convulsants, as well as manual obstetrical interventions such as manual curettage, artificial childbirth, and uterine revision. This care is usually provided in the public sector by maternity wards of community health facilities and sub-mayoral or urban area health centers, who are not equipped with surgical centers or have an inoperative surgical center; in the private non-profit sector without surgical centers; and finally, in certain private for-profit facilities without surgical centers.
- 2 Secondary level emergency obstetrical care includes blood transfusions in addition to the services mentioned above. This care is provided in the public sector by certain sub-mayoral or urban area health centers without surgical centers or inoperative surgical centers, in certain non-profit private sector health facilities and in some for-profit sector health facilities without surgical centers or with inoperative surgical centers.
- 3 Tertiary level emergency obstetrical care includes obstetrical interventions with the use of instruments, such as curettage, delivery by forceps and by suction, and surgical obstetrical interventions such as a cesarian section in addition to services mentioned above. Tertiary level emergency obstetrical care is provided in the public sector by health facilities with operational surgical centers, by some non-profit private health facilities with operational surgical centers, and by some private for-profit health facilities.

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<sup>1</sup> This classification reflects what exists currently and not what is unfortunately foreseen (See classification in the concept definition.)

with operational surgical centers

Currently Benin has 22 public hospitals, 10 religious or non-religious private non-profit hospitals and seven private hospitals, effectively providing tertiary emergency obstetrical care (see list in Annex 2 ) These are the hospitals that are referred to, interchangeably as referral hospital emergency obstetrical care referral hospitals (RHEOC )

In most referral hospitals services and sectors generally involved in providing tertiary level emergency obstetrical care include maternity care, the surgical center, laboratory/blood bank radiology/echography, pharmacy , and medical transport service The care is provided by a team made up of gynecologists, obstetricians, surgeons, general physicians with surgical competence pediatricians, anaesthetists-recuperation specialists, midwives, nurse-anaesthetists, surgical nurses laboratory technicians, practical nurses, and ambulance personnel

The main current obstetrical complications treated in these hospitals consist of hemorrhaging from obstructed labor, pregnancy anemia, pre-eclampsia, eclampsia, and infections

The emergency obstetrical care most currently performed includes cesarian sections laparotomy resulting from ectopic pregnancy and peritonitis curretage, vaginal laceration repair, perineal and cervical procedures, and blood transfusions The availability of this care 24 hours all year is only effective in some health facilities

In most referral hospitals women presenting with an obstetrical emergency are not treated or can not continue treatment until they purchase products of basic necessity

### **3 REFERRAL HOSPITAL EMERGENCY OBSTETRIC CARE POLICY IN BENIN**

#### **3.1 STATEMENT OF GENERAL GOVERNMENT POLICY IN THE SCOPE OF REFERRAL HOSPITAL EMERGENCY OBSTETRICAL CARE DELIVERY**

In Benin, each year, about 1400 women (see annex) lose their life while giving, or trying to give birth. This number represents the entire feminine population of the Monkpa population in Zou or that of the Dekanmey community near the Atlantic. In other words, each year in Benin 1400 women die from pregnancy-puerperal related complications. Nevertheless, effective treatment already exists for a long time, resulting from the use of antibiotics, parturifacients, anti-convulsants, blood transfusions, and cesarian sections.

Benin considers itself a country of rights: the right to health, the right to life, the right of women to participate in the management of public affairs, the right of the weakest to social protection [15]. Consequently, the continuously high maternal mortality rate in Benin appeals to the conscience of all.

Maternity is a privileged moment of life; we should make it safer. In addition, every newborn has the right to have a mother alive and in good health. This is a newborn who runs the risk of dying when his mother dies; it is a family that loses its center of gravity when a mother dies; and finally, it is an entire nation that denies the right to life to a human being divinely conceived to give life.

To fix this social injustice, the Benin government is involved in reducing the maternal mortality rate from 498 per 100,000 live births in 1996 to 309 per 100,000 live births in the year 2016 [19]. The objectives thus defined will not be achieved unless strategies are implemented to improve health coverage and obstetrical care as well as the quality of the delivery of care in these services.

Among the major program options to consider, we can stress the following:

- 1 Reduction of unwanted pregnancies or overly sequential births by a more dynamic and strategic promotion of family planning
- 2 Make quality care (basic obstetric care essential obstetric care and emergency obstetric care including tertiary level care) available and accessible to women in relation to their health status and convince them to use these services

Family planning will reduce maternal mortality by offering sure and safe contraceptive methods to women, who do not wish to conceive temporarily or indefinitely. The availability, accessibility, and quality of emergency obstetrical care, especially those offered in referral hospitals will provide the women, who want to conceive, the assurance of a safer maternity.

### **3.2 THE TEN GUIDING PRINCIPLES FOR REFERRAL HOSPITAL EMERGENCY OBSTETRICAL DELIVERY OF CARE IN BENIN**

Preamble Every member of personnel should feel responsible for everything entrusted to him/her (tasks, material, etc ) at any level s/he finds him/herself

The provision of emergency obstetrical care in referral hospitals depends on the following ten guiding principles

- 1 The patient transfer should be correctly prepared and executed
  - previous contact between the referring establishment and the receiving center
  - medication treatment during transfer
  - organization and preparation of reception
- 2 Obstetrical emergencies should no longer surprise the RHEOC team. The primary mission of a referral hospital is to respond adequately to the needs of patients referred from primary and secondary health care facilities.

The delivery of emergency obstetrical care should be a planned activity and not be

improvised

- 3 The treatment of women presenting with an obstetrical emergency must take place immediately after their admission. It should not be delayed or differentiated for any reason (obligation of previous purchase of basic necessity products, lack of personnel, lack of materials, insufficiencies in operating room )
- 4 Every concern of payment and cost recovery for the care provided to women presenting with an obstetrical emergency should be of second importance, the priority being to save the couple mother-child. The local government should already have anticipated the financial management of this cost.
- 5 The human resources, critical for the RHEOC should be present or quickly available since the arrival of the woman presenting with an obstetrical emergency.
- 6 Medical commodities and vital drugs for the RHEOC must be available at all times and at the fingertips in strategic sites in referral hospitals (consultation room, reception area, delivery room, surgical center, intensive care unit )
- 7 The medical-technical team required should be maintained appropriately to always be ready for use.
- 8 At least one operating room should be ready for treatment of the next obstetrical emergency.
- 9 Blood should be quickly available, whether from a blood bank or from a refrigerator or laboratory, or alternatively from “motivated” donors ready to give blood.
- 10 The organization of feedback must be effective.

### 3.3 EMERGENCY OBSTETRICAL CARE TO BE PROVIDED BY REFERRAL HOSPITALS IN BENIN

Considering obstetrical complications and circumstances of death frequently observed in Benin the referral hospitals in Benin should provide, at least, the following emergency obstetrical care

- 1 Administration of intravenous antibiotics,
- 2 Administration of intravenous parturifacients,
- 3 Administration of intravenous anti-convulsants,
- 4 Manual curage
- 5 Artificial childbirth
- 6 Uterine revision
- 7 Hemostatic curettage
- 8 Manual or electric uterine aspiration
- 9 Application of suction
- 10 Blood transfusion
- 11 Application of forceps
- 12 Caesarian section and other obstetrical surgery “(grande evacuation uterine?) GEU ” (major uterine evacuation?), uterine rupture, peritonitis, embryotomy

### 3.4 FUNCTIONS PERMITTING THE CLASSIFICATION OF EMERGENCY OBSTETRICAL CARE HEALTH FACILITIES IN BENIN

**Table 1 Functions Permitting the Classification of Emergency Obstetrical Care Health Facilities in Benin**

<p>Primary level EOC</p> <ol style="list-style-type: none"> <li>1 Administration of intravenous antibiotics</li> <li>2 Administration of intravenous parturifacients</li> <li>3 Administration of intravenous anti-convulsants</li> <li>4 Manual curage</li> <li>5 Artificial childbirth</li> <li>6 Uterine revision</li> <li>7 Curettage</li> <li>8 Manual or electric uterine aspiration for debris</li> <li>9 Application of suction</li> </ol>
<p>Secondary level EOC</p> <ul style="list-style-type: none"> <li>- Primary level EOC</li> <li>10 Blood transfusion</li> </ul>
<p>Tertiary level EOC</p> <ul style="list-style-type: none"> <li>- Secondary level EOC</li> <li>11 Delivery by forceps</li> <li>12 Obstetrical surgery (cesarian section embryotomy)</li> </ul>
<p>A primary level health facility provides all the care from 1-9</p> <p>A secondary level health facility provides all the care from 1-10</p> <p>A tertiary level health facility provides all the care from 1-12</p>

### 3 5 OPERATIONAL DEFINITION OF OBSTETRICAL COMPLICATIONS/ EMERGENCIES IN BENIN

**Table 2 Operational definition of obstetrical complications/ emergencies in Benin**

[1]

<p>A - Hemorrhaging</p> <ol style="list-style-type: none"><li>1 Hemorrhaging from pregnancy<ol style="list-style-type: none"><li>1 Abortion</li><li>2 Major uterine evacuation</li><li>3 Hemorrhaging placenta previa</li><li>4 Retroplacental hematoma</li><li>5 Uterine rupture</li><li>6 Molar pregnancy</li></ol></li> <li>2 Hemorrhaging during delivery<ol style="list-style-type: none"><li>■ Hemorrhaging from delivery<ol style="list-style-type: none"><li>1 Placenta retention</li><li>2 Placenta Accreta</li><li>3 Uterine inertia</li><li>4 Uterine inversion</li></ol></li><li>■ Other causes for hemorrhaging during delivery<ol style="list-style-type: none"><li>5 Vulvo-perineal lesions</li><li>6 Vaginal lesions</li><li>7 Cervical lesions</li></ol></li></ol></li> <li>3 Coagulopathies</li></ol> <p>B- Dynamic and mechanical obstructed labor</p> <ol style="list-style-type: none"><li>1 Retracted or abnormal pelvis</li><li>2 Atypical presentations<ol style="list-style-type: none"><li>- Shoulders</li><li>- Head</li><li>- Face</li></ol></li><li>3 Breech position</li><li>4 Retention of the second twin</li><li>5 Ovum grandis + shoulder obstruction</li><li>6 Septum / vaginal diaphragm</li><li>7 Obstacle praevia</li><li>8 Excessive duration of labor (over 18 hours)</li><li>9 Pre-rupture syndrome</li></ol> <p>C- Infections</p> <ol style="list-style-type: none"><li>1 Ovular infection</li><li>2 Puerperal infection/post-abortion<ol style="list-style-type: none"><li>- Peritonitis</li><li>- Septicemia</li><li>- Septic shock</li></ol></li></ol>
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D - Pre-eclampsia, eclampsia

1 Pre-eclampsia

2 Eclampsia

E - Pregnancy induced anemia

F Obstetrical shock and embolism

1 Obstetrical shock

2 Amniotic embolism

G - Vital distress of the newborn

## ANNEXES

### Annex 1

#### **Essential Obstetrical Care**

The scope of essential obstetrical care includes the following

- Obstetrical surgery (cesarian section repair of cervical and high vaginal lacerations laparotomy as a result of uterine rupture and ruptured ectopic pregnancy curettage amniotomy, craniotomy,)
- intravenous administration of antibiotics,
- intravenous administration of parturifacients,
- anesthesia,
- blood transfusion
- artificial delivery repair of episiotomies and perineal lesions extraction by suction supervision of work especially partograph assistance,
- management of risk pregnancies (severe anemia, diabetes, HBP, etc ,)
- special neonatal care (resuscitation, etc )

Source WHO 1995 *Essential or Emergency Obstetrical Care* '

Maternity without risk 18 1-2

**Annex 2**

**Table 3 List of Public and Private Health Facilities in Benin with the Availability of Surgical Centers and Activity Status (Situation in April-May 1998)**

Departments	Public Health Facilities		Private non-profit religious or non-religious facilities		For-profit Private Facilities	
	Name	Surgical Center Activity Status	Name	Surgical Center Activity Status	Name	Surgical Center Activity Status
Atacora	1 CHD Atacora 2 CSCU Natitingou 3 CSSP Kouande 4 CSSP Bassila	+ - - +	1 Hospital 'St Jean de Dieu' 2 Hospital "Ordre de Malte"	0		
Atlantique	5 CNHU Cotonou 6 Maternite Lagune 7 Ambulance Ouidah	+ + +	3 Hospital Minnotin" 4 Hospital "St Luc 5 Hospital "Zinvie"	+ + +		
Borgou	8 CHD Borgou 9 CSCU Kandi 10 CSSP Malanville 11 CSSP Banikoara	+ + + +	6 Hospital 'St Martin (Papané) 7 Hospital "St Jean de Dieu" (Boko) 8 Hospital "Sounon Sero" (Nikki) 9 Hospital "Guerè" (Bembèrèkè)	+ + + +	1 "Clinique Boni" 2 'Polyclinique les Cocotiers 3 'Clinique les Graces" 4 "Clinique Atinkanmey 5 "Clinique Mahouna" 6 "Clinique Lynx' 7 Polyclinique les Ambassades	+ + + + + +
Mono	12 CHD Mono 13 CHU Lokossa 14 CSSP Klouekanmey 15 CSSP Aplahoué	+ + - +	10 Hospital "St Camille" (Dogbo)	&		

**Table 3 (continuation and end) List of Public and Private Health Facilities in Benin  
with the Availability of Surgical Centers and Activity Status  
(Situation in April-May 1998)**

Departments	Public Health Facilities		Private non-profit religious or non-religious facilities		For-profit Private Facilities	
	Name	Surgical Center Activity Status	Name	Surgical Center Activity Status	Name	Surgical Center Activity Status
Quemé	16 CHD Quemé	+				
	17 CSSP Adjohoun	+				
	18 CSSP Pobe	+				
	19 CSSP Ketou	+				
Zou	20 CHD Zou	+				
	21 Hosp Dassa Zoume	+				
	22 CSSP Savalou	+				
	23 CSSP Bantè	+				
	24 CSCU Covè	+				
	25 CSSP Savè	-				
26 CSSP Ouesse	+					
Total	26	22+	10	10+		7+

### Annex 3

**Table 4 Summary of complications, deaths, mortality rate in all 18 health facilities visited - Year 1997**

Types	Complications		Deaths		Rate of obstetrical mortality
	Number	%	Number	%	
Hemorrhages	525	24.3	39	28.3	7.4%
Obstructions	1002	46.5	4	2.9	0.39%
Uterine rupture	56	2.6	11	8	19.6%
Infections	120	5.6	28	20.3	23.3%
Ruptured GEU	76	3.5	2	1.4	2.6%
Pre-eclampsia and eclampsia	171	7.9	34	24.6	19.9%
Pregnancy induced anemia	207	9.6	15	10.9	7.2%
Undetermined	0	0	5	3.6	-
TOTAL	2157	100.0	138	100.0	6.4%

## Annex 4

### **Method of Calculation for 1400 women**

1	Estimated population of Benin in 1997	5 772,220 inhabitants
2	Gross national birth rate	47.3%
3	Total annual live births	273,026
4	Rate of maternal mortality	498 per 100 000 live births
5	Total number of annual maternal deaths	1,359,666

The last number was rounded up to 1400

(\*) Translator's comments

**POLICY AND STANDARDS FOR REFERRAL HOSPITAL  
EMERGENCY OBSTETRICAL CARE  
IN THE REPUBLIC OF BENIN**

**VOLUME 2: STANDARDS OF REQUIRED RESOURCES  
FOR REFERRAL HOSPITAL  
EMERGENCY OBSTETRICAL CARE**

**(NOT TO BE CITED)**

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## SIGNS AND ABBREVIATIONS

WHO	World Health Organization
RHEOC	Referral Hospital Emergency Obstetrical Care
MPREPE	“Ministere du Plan, de la Restructuration Economique et de la promotion de l’Emploi”(Ministry of Planning, Economic Restructuring and Employment Promotion)
MSPSCF	“Ministere de la Sante de la Protection Sociale et de la Condition Feminine (Ministry of Health, Social Protection and the Feminine Condition)
MSP	“Ministere de la Sante Publique” (Ministry of Public Health)
OMS	“Organisation Mondiale de la Sante” (WHO)
INSAE	“Institut National de la Statistique et de l’Analyse Economique” (National Institute of Statistics and Economic Analysis)
SSDRO	“Service des Statistiques de la Documentation et de la Recherche Operationelle” (Statistics Documentation, and Operational Research Service)
MS	Ministere de la Sante” (Ministry of Health)
DSF	“Direction de la Sante Familiale” (Agency for Family Health)
PBA/SSP	“Projet Benino-Allemand des Soins de Sante Primaires’ (Benin-German Primary Health Care Project)
UNICEF	United Nations Children’s Fund

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## THE MOTTO OF MATER

OUR MOTTO:

TO NO LONGER FACE DEATH  
WHILE GIVING NEW LIFE

This is what Josee GBEDAGBA, midwife at Mater  
inscribed on the delivery room door of her maternity ward

## 1 CONCEPT DEFINITION

### 1 Policy

Concerted way of carrying out a task [1]

Official statement on the way to conduct manage a situation

### 2 Norms of care

Performance of care generally observed [2]

### 3 Standards of care

Performance of care considered professionally acceptable [2]

### 4 Explanation of the definition of obstetrical care

#### 4 1 Obstetrical care

Prenatal care, per and postpartum and early neonatal care

#### 4 2 Essential obstetrical care

Essential care relative to the management of complications linked to pregnancy and delivery and specific neonatal care This term includes - however not exclusively - emergency obstetrical care including the elements of care that are most needed to manage unexpected complications such as eclampsia, placenta retention postpartum hemorrhaging etc [5]

The total scope of essential obstetrical care can be found in Annex 1

#### 4 3 Emergency obstetrical care

Care directed at managing unexpected complications, such as eclampsia placenta retention, postpartum hemorrhaging etc [5]

#### 4 4 Basic maternal care

Management of normal pregnancies and deliveries This includes the care delivery under proper hygienic and safety conditions and postpartum care, specifically during the first days after delivery [5]

5 Emergency obstetrical care at the primary secondary and tertiary levels as used in this document

Care reserved for pregnant women with pregnancy-puerperal pathologies

1 Primary level emergency obstetrical care that include

The administration of intravenous antibiotics the administration of intravenous parturifacients the administration of intravenous anti-convulsants artificial childbirth uterine examination digital treatment curettage manual or electric uterine aspiration and the application of suction

– Secondary level emergency obstetrical care, including all the care of the primary level as well as blood perfusions

– Tertiary level emergency obstetrical care including the care of the first two levels as well as delivery by forceps and obstetric surgery (specifically cesarian sections )

6 Health facilities providing primary level emergency obstetrical care These are health facilities that provide the primary level emergency obstetrical care mentioned herein

7 Health facilities providing secondary level emergency obstetrical care These are health facilities that provide the secondary level emergency obstetrical care mentioned herein

8 Health facilities providing tertiary level emergency obstetrical care These are health facilities that provide the tertiary level emergency obstetrical care mentioned herein or delivery of emergency obstetrical care by the referral hospital

9 Referral hospital

Public or private facility where tertiary level emergency obstetrical care is provided as well as medical and pediatric emergency care

## **2 CLASSIFICATION OF RESOURCES REQUIRED TO SUPPLY THE RHEOC**

Based on the elements of literature in the scope of quality of care we have maintained the following classification for resources required in the RHEOC

- Physical resources
  - 1 Physical infrastructure
  - 2 Drugs
  - 3 Medical supplies
  - 4 Medical-technical equipment
  - 5 Means of transportation and communication
  
- Human resources

### **3 GENERAL SPECIFICATION OF RESOURCES REQUIRED FOR THE RHEOC**

#### **3 1 General Specification for Material Resources**

A health facility fully qualified to supply RHEOC should have the following

- Operational infrastructure adapted to the treatment of obstetrical emergencies
  - Essential and vital drugs available at all times and at the fingertips in different strategical points
  - Medical supplies
  - Medical-technical equipment in good repair, close to where they will be used and strategically located
  - An ambulance or at least a vehicle to transport emergency cases to the referral hospital or from the referral hospital to other health facilities, if required
- Means of communication in good repair appropriately placed close to where they will be used (telephone radio communication) for constant communication and allowing for appropriate decision making
- Competent human resources performing in sufficient numbers, and working as a team

### **4 STANDARDS FOR PHYSICAL RESOURCES**

#### **4 1 Specifications for Infrastructure Adapted to Obstetrical Emergencies**

- **Specific policy**

Minimal infrastructure required to treat obstetrical emergencies must be available at all times operational and always ready to receive emergencies

This includes

- 1 A receiving examination and treatment room for women admitted with emergencies
- 2 A delivery room adapted to the treatment of obstetrical and neonatal emergencies

- 3 A surgical center with at least two operational surgical suites equipped for obstetrical surgical interventions especially cesarian sections
- 4 An intensive care unit or at least a functional recovery room with the minimum of resources required for resuscitation
- 5 A pharmacy that dispenses to the maternity ward regularly supplied (double-stock system) with drugs and essential/vital medical supplies strategically positioned (emergency stock at consultation reception and delivery room )
- 6 A laboratory equipped and operational 24 hours to perform exams in relation to emergency obstetrical care
- 7 A blood bank or at least a reserve of dependable blood products operating 24 hours for emergencies
- 8 A functional ambulance and maintenance service available 24 hours

## 4.2 Specifications for Essential and Vital Drugs for the RHEOC

### ■ Specific policy

- Essential drugs including vital drugs (those used for obstetrical emergencies) should always be available at the following strategic points: consultation room, reception room, delivery room, surgical center, and intensive care.
- Drugs should be financially accessible to the dispensing pharmacy. Any concerns about payment and cost recovery for care provided women presenting with an obstetrical emergency should be of secondary consideration, the priority being the survival of the mother and child (see Annex 3 for the list of specific drugs for resuscitation of the newborn in the delivery room and preventive care).
- Supply of the dispensing pharmacy and of other strategic points will take place through the hospital warehouse. The supply of the warehouse should be a constant concern of hospital administration.

**Table 1 List of essential/vital drugs that should be available to the dispensing pharmacy in health facilities fully equipped as RHEOC**

Types of drugs	Drugs (Designation - DCI ) and means of administration	Dosages and Presentation
1 Antifibrinolytics	1 Aminocaproic acid inj (Hemocaprol) 2 Fibrinogene inj 3 Desmopressine inj (Minirin)	Amp 4ug/ml amp 1ml
2 Uterotonics (Parturifacients and others)	4 Oxytocine inj 5 Ergometrine maleate inj (Methergin)	10Ul/ml 1ml 5 UL/ml 1 ml 0.2 mg/ml 1ml 0.5 mg/ml 1 ml
3 Uterorelaxants ( $\beta$ mimetic and others)	6 Salbutamos inj (Salbumol Ventoline) 7 Ritodrine inj (Pre par) 8 Drazepam inj 9 Progesterone retard Inj	0.5 mg/1ml amp 1ml 5ml 50 mg/5ml amp 5 ml 5mg/ml amp 2ml 250mg/ml amp 1ml 2ml
4 Crvstalloid perfusion solutions	10 Saline solution inj perf Sol At 9% 11 Dextrose inj perf Sol at 5% 12 Dextrose inj perf Sol at 10% 13 Ringer lactate 14 Bicarbonate serum inj perf 14 0/00 42 0/00	500ml 500ml 500ml 500ml and 1000ml 250ml and 500ml
5 Macromolecules	15 Dextran 70 perf 16 Hydroxvethylamidon 200 000 perf (Elohes 6%)	250ml 500ml vial 500ml vial
6 Anticoagulants	17 Heparine inj 18 Fraxiparine inj s/c	5000 Ul/ml 1ml 0.3 0.6 0.8 ml seringe
7 Electrolytes	19 Calcium gluconate inj at 10% 20 Potassium chloride at 10% 21 Sodium chloride at 10% and at 20% 22 Distilled water	Amp 10ml Amp 10ml Amp 10ml Amp 5ml
8 Anticonvulsants	Diazepam inj (Valium) 23 Phenobarbitol inj (Gardenal)	5mg/ml 2ml 40mg/ml 2ml
9 Anti-hypertensives and similar	24 Clonidine inj (Catapressan) 25 Nifedipine (Adalate) Sublingual 26 Methyl dopa inj (Aldomet) 27 Dehydralazine inj (Nepressol)	0.15 mg/ml amp 1 ml 10 mg capsule
10 Diuretics	28 Furosemide inj	10 mg/ml amp 2ml
11 (*) Anticedemateux cerebral	29 Magnesium sulfate inj 15%	Amp 10ml and 20ml
12 Oxygenation	30 Oxygen	
13 Catecholamines	31 Ephedrin inj 32 Adrenalin inj 33 Epinephrine inj	1mg and 50mg/ml amp 1ml 1mg/ml amp 1ml 1mg/ml amp 1ml

**Table 1 List of essential/vital drugs that should be available to the dispensing pharmacy in health facilities fully equipped as RHEOC (cont )**

Types of drugs	Drugs (Designation - DCI) and means of administration	Dosages and Presentation
14 Non morphine containing analgesics and antipyretics	34 Acetylsalicylic acid inj (Aspegic) 35 Propacetamol inj (Prodafalgan) 36 Lamalin supposit	500mg vial 1 g vial supposit
15 Morphine containing analgesics	37 Morphine base inj 38 Pethidine chloride inj (Dolosal) 39 Buprenorphine inj (Temgesic) 40 Sublingual Buprenorphine 41 Fentanyl inj	10mg/ml amp 1ml 50mg/ml amp 2ml 0.3mg/ml amp 1ml 0.2mg/ml pill subling 0.1 mg/ml amp 2ml 10ml
16 Antispasmodics	42 Hyoscine Butyl-bromide (HBB) inj 43 Phloroglucinol inj (Spasfon)	10mg/ml amp 2ml 40mg amp 4ml
17a Wide specter antibiotics	44 Ampicillin inj 45 Cotrimoxazol inj (Bactrim) 46 Claforan inj 47 Amoxicillin inj	125mg 500mg 1g fl 480mg vial 500mg and 1g vial 500mg 1g 2g vial
17b Antibiotics for gram negative infections and anaerobes	48 Metronidazol inj (Flagyl) 49 Gentamycin inj (Gentalline) 50 Chloramphenicol inj	500mg vial 20 40 80 160 mg Amp 1 g vial
18 Anti malaria drugs	51 Quinine inj 52 Chloroquine inj 53 Sulfadoxin-pyrimethamine inj (Fansidar)	300mg/ml amp 2ml 600mg 300mg inj 400mg amp 2ml
19 Psychotropes	54 Chlorpromazine inj (Largactil) 55 Sulpiride (Dogmatil) inj	25mg/ml amp 5ml 100mg/2ml amp 2ml
20 Corticoids	56 Dexamethosone inj (Soludecadron) 57 Hydrocortisone inj 58 Betamethasone inj (Celestene)	Amp 100mg 500mg 1g vial 4mg 8mg 20mg amp
21 Broncho-dilators	59 Salbutamol inj (Salbumol) 60 Salbutamol sprav 61 Aminophylline inj	0.5mg/1ml amp 1ml 5ml sprav Amp

**Table 1 List of essential/vital drugs that should be available to the dispensing pharmacy in health facilities fully equipped as RHEOC (cont and end)**

Types of drugs	Drugs (Designation - DCI) and means of administration	Dosages and Presentation
22 Antiemetic	62 Metoclopramide inj (Primperan) 63 Navidoxine	100mg amp 3ml Supposit
23 Anti-acid	64 Cimetidine inj (Tagamet)	200 mg amp 2ml
24 Non-steroid anti inflammatory (NSAID)	65 Ketoprofene inj (Proferid) 66 $\alpha$ chymotrypsine inj 67 Diclofenac inj (Xenid)	100 mg amp 3ml 5 mg amp 5ml 75 mg/3ml amp 3ml
25 Parasympatholitic	68 Atropine inj	1 mg and 0.5 mg amp
26a General anesthetics	69 Morphine base inj Pethidine inj (Dolosal) Fentanyl inj Buprenorphine inj (Temgesic) - Halothane solution (Fluothane) 70 Ketamine inj (Ketalar 10 50 100) 71 Thiopenthal inj 72 Gallamine inj (Flaxedil) 73 Suxamethonium inj 74 Vecuronium inj (Norcuron)	10 mg/ml amp 1ml 50 mg/ml amp 2ml 0.1 mg/ml amp 2 10ml 3 mg/ml amp 1ml vial 10 50 100 mg amp 500 mg 1g vial 40 mg amp 2ml 0.1g 1g amp 4 mg amp 2ml
26b Local anesthetics	75 Lidocaine 2% inj (Xyllocaine) 76 Bupivacaine 0.5% inj (Marcaine)	amp 2ml vial 20ml amp 5ml vial 20ml
27 Cardiotonic glycosides	77 Digoxin inj 78 Cedilanide inj	0.5 mg amp 2ml 0.4 mg/2ml amp 2ml
28 Specific antidotes	79 Naloxon inj (Narcan) 80 Nalorphin inj 81 Flumazenil inj (Anexate) 82 Neostigmin inj (Prostigmin) 83 Protamin sulfate inj	0.4 mg/1ml amp 10 mg/2ml amp 2ml 0.5 mg/5ml amp 5-10ml 0.5 mg/ml amp 1ml 10 mg/ml amp 5ml

**Table 2 List of vital drugs that should be available in the delivery room in the RHEOC**

Types of drugs	Drugs (Designation - DCI) and means of administration	Dosages and Presentation
1 Antifibrinolytics	1 Aminocaproic acid inj (Hemocaprol) 2 Fibrinogen inj 3 Desmopressin inj (Minirin)	amp 4ug/ml amp 1ml
2 Uterotonics (Parturifacients and others)	4 Oxytocine inj 5 Ergometrine maleate inj (Methergin)	10UI/ml 1ml amp 1-5ml 0.2 mg/ml - 0.5 mg/ml amp 1ml
3 Uterorelaxants ( $\beta$ mimetic and others)	6 Salbutamol inj (Salbumol Ventoline) 7 Ritodrine inj (Pre-par) 8 Diazepam inj	0.5 mg/1ml amp 1.5ml 50 mg/5ml amp 2 ml 5mg/ml amp 2ml
4 Crystalloid perfusion solutions	9 Saline solution inj perf Sol At 9% 10 Dextrose inj perf Sol at 5% 11 Dextrose inj perf Sol at 10% 12 Ringer lactate 13 Bicarbonate serum inj perf 14 0/00 42 0/00	500ml 500ml 500ml 500ml and 1000ml 250ml and 500ml
5 Macromolecules	14 Dextran 70 perf 15 Hydroxyethylamidon 200 000 perf (Elohes 6%)	250ml 500ml vial 500ml vial
6 Oxygenation	16 Oxygen inhalation	
7 Electrolytes	17 Calcium gluconate inj at 10% 18 Distilled water	Amp 10ml Amp 5ml
8 Anticonvulsants	- Diazepam inj (Valium) 19 Phenobarbital inj (Gardenal)	5mg/ml amp 2ml 40mg/ml amp 2ml
9 Anti-hypertensives	20 Clonidine inj (Catapressan) 21 Dehydralazine inj (Nepressol) 22 Nifedipine (Adalate) Sublingual	0.15 mg/ml amp 1 ml Amp 10 mg capsule
10 Diuretics	23 Furosemide inj (Lasix)	10 mg/ml amp 2ml
11 (*) Anticerebral edema	24 Magnesium sulfate inj	Amp 10ml and 20ml
12 Catecholamines and cardiotonics	25 Ephedrin inj 26 Cedilanid inj 27 Adrenalin inj	1-50mg amp 1ml 0.4 mg/ml amp 2ml 1mg/ml amp 1ml
13 Non morphine containing analgesics and antipyretics	28 Acetylsalicylic acid inj (Aspegic) 29 Propacetamol inj (Prodafalgan) 30 Lamalin	250mg 500mg vial 500 mg vial supposit
14 Morphine containing analgesics	31 Pethidin chloride inj (Dolosal)	50 mg/ml amp 2ml

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**Table 2 List of vital drugs that should be available in the delivery room in the RHEOC (cont and end)**

Types of drugs	Drugs (Designation - DCI) and means of administration	Dosages and Presentation
15 Antispasmodics	32 Hyoscine Butyl-bromide (HBB) inj	10 mg/ml amp 2ml
16 Antibiotics	33 Ampicillin inj 34 Amoxicillin inj 35 Metronidazole inj 36 Gentamicin inj 37 Chloramphenicol inj	125mg-500mg 1g vial 0.5-1 and 2 g vial 500mg vial 20 40 80 160 mg Amp 1 g vial
17 Psychotropes	38 Chlorpromazine inj (Largactil)	25mg/5ml amp 5ml
18 Corticoids	39 Dexamethosone inj (Soludecadron) 40 Hydrocortisone inj 41 Betamethasone inj (Celestene)	100mg 0.5 1g vial 4mg 8mg 20mg amp
19 Broncho-dilators	42 Salbutamol inj (Salbumol Ventolin)	0.5mg/1ml amp 1ml 5ml
20 Local anesthetics	43 Lidocaine 2% inj (Xyllocaine)	Amp 2ml vial 20ml
21 Anti-malaria drugs	44 Quinine inj 45 Chloroquine inj	300mg/ml amp 2ml Amp

**Table 3 List of vital drugs that should be available in the surgical center in the RHEOC**

Types of drugs	Drugs (Designation - DCI) and means of administration	Dosages and Presentation
1 Antifibrinolytics	1 Aminocaproic acid inj (Hemocaprol) 2 Fibrinogen inj 3 Desmopressin inj (Minirin)	amp 4ug/ml amp 1ml
2 Uterotonics (Parturifacients and others)	4 Oxytocine inj 5 Ergometrine maleate inj (Methergin)	10-5UI/ml amp 1ml 0.2 - 0.5 mg/ml amp 1ml
3 Perfusion solutions	6 Saline solution inj perf Sol At 9% 7 Dextrose inj perf Sol at 5% 8 Dextrose inj perf Sol at 10% 9 Ringer lactate 10 Bicarbonate serum inj perf 14 0/00 42 0/00	500ml vial 500ml vial 500ml vial 500ml and 1000ml vial 250ml and 500ml vial
4 Macromolecules	11 Dextran 70 perf 12 Hydroxyethylstarch 200 000 perf (Elohes 6%)	250 500ml vial 500ml vial
5 Oxygenation	13 Oxygen inhalation	
6 Anticoagulants and antidotes	14 Heparin inj 15 Fraxiparin inj 16 Protamin sulfate inj	5000 UI/ml 1ml 0.3 0.6 0.8 ml syringe 10 mg/ml amp 5ml
7 Electrolytes	17 Calcium gluconate inj at 10% 18 Potassium chloride at 10% 19 Sodium chloride at 10% and at 20% 20 Distilled water	Amp 10ml Amp 10ml Amp 10ml Amp 5ml
8 Anticonvulsants	21 Diazepam inj (Valium) 22 Phenobarbitol inj (Gardenal)	5mg/ml amp 2ml 40mg/ml amp 2ml
9 Anti hypertensives	23 Clonidine inj (Catapressan) 24 Dehydralazine inj (Nepressol) 25 Nifedipine (Adalate) Sublingual	0.15 mg/ml amp 1 ml Amp 10 mg capsule
10 Diuretics	26 Furosemide inj (Lasix)	10 mg/ml amp 2ml
11 (*) Anticedemateux cerebral	27 Magnesium sulfate inj	Amp 10-20ml
12 Catecholamines	28 Dopamine chloride inj 29 Ephedrin inj 30 Adrenalin inj 31 Epinephrin inj	40 mg/ml amp 5ml 1-50mg amp 1ml 1mg/ml amp 1ml 1 mg/ml amp 1ml
13 Non morphine containing analgesics and antipyretics	32 Acetylsalicylic acid inj (Aspegic) 33 Propacetamol inj (Prodafalgan)	250mg 500mg vial 500 mg vial

**Table 3 List of vital drugs that should be available in the surgical center in the RHEOC (cont and end)**

Types of drugs	Drugs (Designation - DCI) and means of administration	Dosages and Presentation
14 Morphine containing analgesics	34 Morphine base inj 35 Pethidine chlorhydrate inj (Dolosal) 36 Fentanyl inj 37 Buprenorphine inj (Temgesic)	10mg/ml amp 1ml 50mg/ml amp 1ml 0.1mg/ml amp 2ml 0.3mg/ml amp 1ml
15 Antibiotics	38 Ampicillin inj 39 Amoxicillin inj 40 Metronizadol inj 41 Gentamycin inj 42 Cotrimoxazole inj (Bactrim)	125mg-500mg 1g vial 0.5-1 and 2 g vial 500mg vial 20 40 80 160 mg Amp 480 mg vial
16 Broncho dilators	43 Salbutamol inj (Salbumol Ventolin) 44 Salbutamol spray	0.5mg/ml amp 1ml Spray
17 Antiemetic	45 Metoclopramide inj (Primperan)	100mg amp 5ml
18a General anesthetics	46 Atropine inj Morphine base - Pethidine inj (Dolosal) - Fentanyl inj Buprenorphine inj (Temgesic) 47 Nitrogen protoxide inhalation 48 Halothane inhalation 49 Ketamine inj 50 Thiopenthal inj 51 Gallamin inj 52 Suxamethonium inj 53 Vecuronium inj (Norcuron) 54 Nalorphine inj 55 Flumazenil inj (Anexate) 56 Neostigmin inj (Prostigmin)	0.5-1 mg amp 10 mg/ml amp 1ml 50 mg/ml amp 2ml 0.1 mg/ml amp 2-10ml 0.3 mg/ml amp 1ml  10 50 100 mg amp 0.5-1g amp 2ml 40 mg amp 2ml 0.1g-1g amp 4 mg amp 2ml 5 mg/ml amp 2ml 10 mg/2ml amp 2ml 0.5 mg/ml amp 5 10ml
18b Local anesthetics	57 Lidocaine 2% inj (Xyllocaine) 58 Bupivacaine 0.5% inj (Marcaine)	amp 2ml vial 20ml amp 5ml vial 20ml
19 Cardiotonic glycosides	59 Cedilanide inj	0.4 mg/2ml amp 2ml

**Table 4 List of vital drugs that should be available in the intensive care unit of the RHEOC**

Types of drugs	Drugs (Designation - DCI) and means of administration	Dosages and Presentation
1 Hemostatics and antifibrinolytics	1 Phytomenadione inj (Vit K 1) 2 Aminocaproic acid inj (Hemocaprol) 3 Fibrinogene inj 4 Desmopressine inj (Minirin)	10 mg/ml amp 1ml Amp 4ug/ml amp 1ml
2 Uterotonics (Parturifacients and others)	5 Oxytocine inj 6 Ergometrine maleate inj (Methergin)	5-10UI/ml amp 1ml 0.2-0.5 mg/ml amp 1ml
3 Perfusion solutions	7 Saline solution inj perf Sol At 9% 8 Dextrose inj perf Sol at 5% 9 Dextrose inj perf Sol at 10% 10 Ringer lactate 11 Bicarbonate serum inj perf 14 0/00 42 0/00	500ml 500ml 500ml 500ml and 1000ml 250ml and 500ml
4 Macromolecules	12 Dextran 70 perf 13 Hydroxyethylamidon 200 000 perf (Elohes 6%)	250-500ml vial 500ml vial
5 Oxygenation	14 Oxygen inhalation	
6 Anticoagulants and antidotes	15 Heparine inj 16 Fraxiparine inj 17 Protamine sulfate inj	5000 UI/ml 1ml 0.3 0.6 0.8 ml seringe 10 mg/ml amp 5ml
7 Electrolytes	18 Calcium gluconate inj at 10% 19 Potassium chloride at 10% 20 Sodium chloride at 10% and at 20% 21 Distilled water	Amp 10ml Amp 10ml Amp 10ml Amp 5ml
8 Anticonvulsants	22 Diazepam inj (Valium) 23 Phenobarbitol inj (Gardenal)	5mg/ml amp 2ml 40mg/ml amp 2ml
9 Anti hypertensives and similar	24 Clonidine inj (Catapressan) 25 Dehydralazine inj (Nepressol) 25 Nifedipine (Adalate) Sublingual	0.15 mg/ml amp 1 ml Amp 10 mg capsule
10 Diuretics	28 Furosemide inj	10 mg/ml amp 2ml
11 (*) Anticedemateux cerebral	29 Magnesium sulfate inj 15%	Amp 10ml and 20ml
12 Catecholamines and cardiotonics	30 Dopamine chlorhydrate inj 31 Ephedrin inj 32 Cedilanid inj 33 Adrenalin inj 34 Epinephrine inj	40 mg/ml amp 5 ml 1mg and 50mg/ml amp 1ml 0.4 mg/2ml amp 2ml 1mg/ml amp 1ml 1mg/ml amp 1ml
13 Non morphine containing analgesics and antipyretics	35 Acetylsalicylic acid inj (Aspegic) 36 Propacetamol inj (Prodafalgan) 37 Lamalin supposit	250 mg 500mg vial 500 mg vial supposit
14 Morphine containing analgesics	38 Morphine base inj 39 Buprenorphine inj (Temgesic)	10mg/ml amp 1ml 0.3mg/ml amp 1ml

**Table 4 List of vital drugs that should be available in the intensive care unit of the RHEOC (cont and end)**

Types of drugs	Drugs (Designation - DCI) and means of administration	Dosages and Presentation
15 Antibiotics	40 Ampicillin inj 41 Amoxicillin inj 42 Metronizadol inj 43 Gentamycin inj 44 Cotrimoxazole inj (Bactrim)	125mg 500mg 1g fl 0.5 and 2 g vial 500mg vial 20 40 80 160 mg Amp 480 mg vial
16 Anti malaria drugs	45 Quinine inj 46 Chloroquine inj	300mg/ml amp 2ml Amp
17 Psychotropes + sedatives	47 Chlorpromazine inj (Largactil) 48 Dipotassium Chlorazepate inj (Tranxene)	25mg/5ml amp 5ml 20 50 100 mg vial
18 Corticoids	49 Dexamethosone inj (Soludecadron) 50 Hydrocortisone inj 51 Betamethasone inj (Celestene)	100mg 0.5 1 g vial 4-8 20mg amp
19 Broncho dilators	52 Salbutamol inj (Salbumol Ventoline) 53 Salbutamol sprav 54 Aminophvline inj	0.5mg/ml amp 1 5ml sprav Amp
20 Antiemetic	55 Metoclopramide inj (Primperan) 56 Navidoxine	100mg amp 5ml Supposit
21 Non steroid anti-inflammatory (NSAID)	57 Ketoprofene inj (Proferid) 58 $\alpha$ chymotrypsine inj 59 Diclofenac inj (Xenid)	100 mg amp 5ml 5 mg amp 5ml 75 mg/3ml amp 3ml
22 Parasympatholitic	60 Atropine inj	1 mg and 0.5 mg amp
23 Antacids	61 Cimetidin inj (Tagamet)	200 mg amp 2ml
24 Laxatives	62 Debridat inj	Amp

#### **4.3 SPECIFICATIONS FOR ESSENTIAL AND VITAL MEDICAL SUPPLIES FOR THE RHEOC (EXCEPT LABORATORY / BLOOD BANK)**

- **Specific policy**

- Essential medical supplies, including vital supplies (those destined for obstetrical emergencies) should always be available at the following strategic points: delivery room, surgical center, intensive care unit, and laboratory / blood bank.
- The medical supplies should be financially accessible to the dispensing pharmacy of the maternity ward. Any concern about payment and cost recovery for women presenting with an obstetrical emergency should be considered secondary, the priority being the life of the mother and child.
- Supply of the dispensing pharmacy and other strategic points will be done through the hospital warehouse. Supply of the warehouse should be a constant concern of hospital administration.

**Table 5 List of essential / vital medical supplies that should be available at the dispensing pharmacy of the health facility**

<b>SUPPLIES BY ITEM</b>	
1 - Required for perfusion	1 Disposable syringes and needles (one-time use) 2 Short catheters 16 18 20 and 24 gauge 3 Perfusion devices 4 Tape 5 Serum overheads 6 Intravenous catheters
2 - Required for disinfection and asepsis	7 Gloves 8 Compresses 9 Cotton wool 10 Alcohol / Iodized alcohol 11 Eau de Javel / chlorhexidine 12 Blades / Disposable razors 13 Eosine 14 Gloves for uterine examination 15 Soap / Iodized Polyvidone at hand
3 - Required for sterilization	16 Cidex 17 Hexanios
4 - Miscellaneous	18 Disposable vesical sounds (no 16) 19 Suture line 20 Gastric sound 22 Urinal 22 Reactive tabs 23 Aspiration sound 24 Peridural set 25 Disposable spinal needles 23 or 25 G 26 Tuohy needle 27 Disposable Trocart 20G needle

**Table 6 List of essential / vital medical supplies that should be available in the delivery room**

<b>SUPPLIES BY ITEM</b>	
1 - Required for perfusion	1 Disposable syringes and needles (one-time use) 2 Short catheters 16 18 20 gauge 3 Perfusion devices 4 Tape 5 Serum overheads 6 Intravenous catheters
2 - Required for disinfection and asepsis	7 Gloves 8 Compresses 9 Cotton wool 10 Alcohol / iodized alcohol 11 Eau de Javel / chlorhexidine 12 Linens 13 Blades / Disposable razors 14 Eosine 15 Napkins 16 Brushes 17 Uterine examination gloves 18 Plastic aprons 19 Sterile water 20 Soap / Iodized Polyvidone at hand 21 Frocks 22 Caps 23 Masks 24 Boots
3 Required for sterilization	25 Cidex 26 Hexanios
4 Data support	27 Temperature charts 28 Examination forms 29 Blood request forms 30 Obstetrical chart 31 Liaison (transfer) form 32 Birth registry 33 Parturiometer 34 Monitoring sheet 35 Insertion sheets
5 Miscellaneous	36 Disposable vesical sounds (no 16) 37 Suture thread 38 Guedel cannula 39 Gastric / aspiration sound 40 Reactive tabs 41 Drapes 42 Identification tag for the newborn

**Table 7 List of essential / vital medical supplies that should be available in the surgical center**

<b>SUPPLIES BY ITEM</b>	
1 - Required for perfusion	1 Disposable syringes and needles (one-time use) 2 Short catheters 16 18 20 and 24 gauge 3 Perfusion devices 4 Tape 5 Intravenous catheters
2 - Required for disinfection and asepsis	6 Gloves 7 Compresses 8 Cotton wool 9 Alcohol / iodized alcohol 10 Eau de Javel / chlorhexidine 11 Linens 12 Blades / Disposable razors 13 Napkins 14 Gauze bandages 15 Brushes 16 Frocks 17 Cap 18 Masks 19 Boots 20 Plastic aprons 21 Soap / Iodized Polyvidone at hand
3 - Required for sterilization	22 Cidex 23 Hexanios
4 Data support	24 Anesthetic charts 25 Register for anesthesia 26 Operation protocol registry 27 Examination forms 28 Blood request forms
5 Required for anesthesia	29 Intubation catheters 30 Tracheal aspiration catheters 31 ECG tablet (sic *) 32 Guedel cannula 33 Gastric sound no 16 18 and 20
6 Miscellaneous	34 Disposable spinal needles 23 or 25G 35 Tuohy needle 36 Drawsheet for the operation table 37 BrushS 38 Suture thread 39 Disposable scalpel blades 40 Disposable Trocart needle 20G 41 Peridural set 42 Disposable vesical sounds (no 16) 43 Disposable urine bags

**Table 8 List of essential / vital medical supplies that should be available in the intensive care unit**

<b>SUPPLIES BY ITEM</b>	
1 - Required for perfusion	1 Disposable syringes and needles (one-time use) 2 Short catheters 16 18 20 gauge 3 Perfusion devices 4 Tape 5 Intravenous catheters
2 - Required for disinfection and asepsis	6 Gloves 7 Compresses 8 Cotton wool 9 Alcohol / iodized alcohol 10 Eau de Javel / chlorhexidine 11 Blades / Disposable razors 12 Eosine 13 Napkins 14 Gauze bandages 15 Frocks 16 Cap 17 Masks 18 Boots
3 Required for sterilization	19 Cidex 20 Hexanios
4 Data support	21 Monitoring sheets 22 Therapy sheets 23 Entry and exit register 24 Liaison (transfer) chart 25 Temperature charts 26 Examination forms 27 Blood request forms 28 Insertion forms
5 Miscellaneous	29 Disposable urine bags 30 Linens 31 Brushes 32 Drawsheets for the operation table 33 Disposable vesical sounds no 16 34 Gastric sounds no 16 18 and 20 35 Tracheal aspiration sounds 36 Guedel cannula

**Table 9 List of essential / vital medical supplies that should be available in newborn resuscitation**

<b>SUPPLIES BY ITEM</b>	
1 Required for perfusion	1 Disposable syringes and needles (one time use) 2 Short catheters 24 and 26 gauge 3 Perfusion devices 4 Tape 5 Serum overheads 6 Umbilical catheters
2 Required for disinfection and asepsis	7 Gloves 8 Compresses 9 Cotton wool 10 Alcohol / iodized alcohol 11 Eau de Javel / chlorhexidine 12 Eosine 13 Napkins 14 Gauze bandages 15 Frocks 16 Boots 17 Caps 18 Masks
3 - Required for sterilization	19 Cidex 20 Hexamos
4 Data support	21 Liaison (transfer) sheets 22 Monitoring sheet for neonatal treatment
5 Required for anesthesia	23 Guedel cannula 24 Gastric sound 25 Aspiration sound
6 Miscellaneous	26 Identification tag

**4 4 SPECIFICATION OF ESSENTIAL / VITAL MEDICAL-TECHNICAL MATERIAL  
FOR THE RHEOC  
(WITH THE EXCEPTION OF THE LABORATORY / BLOOD BANK)**

■ **Specific policy**

Except for other supplies the following required medical-technical material necessary to assure prompt treatment of emergency obstetrical and gynecological cases must be available all the time functional in all places, readily available and to be used

**Table 10 List of Essential / Vital, Critical Medical-Technical Material  
in the Reception Room**

Functions	Material
1 General examination material	1 Tensiometer 2 Medical stethoscope 3 Thermometer 4 Wall clock with timer 5 Clinical scale 6 Swabs 7 Adjustable stool 8 Tongue depressors 9 Reflex hammer
2 Sampling material especially venous	10 Tourniquet 11 Vials for sampling 12 Pressure gauge + bowl
3 Obstetrical examination material	13 Tape measure 14 Delivery table 15 Pinard stethoscope 16 Examination lamp 17 Gynecological / obstetrical examination kit (annex) 18 Bed pan 19 Screen 20 Drum 21 Fetal pulse detector 22 Box of gloves and / or two finger sterilized fingerstall 23 Washing basin + cannula 24 Kidney dish 25 Puncture kit (annex) 26 Dishes 27 Treatment table 28 Plastic container for decontamination 30 Compresses 31 Cotton 32 Cart 33 Urine exam identification tags
4 Support for reception room activities	34 File cabinet 35 Table and desk 36 Chair 37 Ladder 38 Gynecological / obstetrical registers 39 Admission records 40 Examination chart 41 Insertion sheets

**Table 11 List of Essential / Vital, Critical Medical-Technical Material in the Delivery Room**

Functions	Material
1 General examination material	1 Tensiometer 2 Medical stethoscope 3 Thermometer 4 Wall clock with timer 5 Clinical scale 6 Swabs 7 Adjustable stool 8 Tongue depressors 9 Reflex hammer
2 Sampling material especially venous	10 Tourniquet 11 Vials for sampling 12 Pressure gauge + bowl
3 Obstetrical examination material	13 Tape measure 14 Delivery table 15 Pinard stethoscope 16 Examination lamp 17 Gynecological / obstetrical examination kit (annex) 18 Bed pan 19 Screen 20 Drum 21 Fetal pulse detector 22 Box of gloves and / or two finger sterilized fingerstall 23 Washing basin + cannula 24 Kidney dish 25 Puncture kit (annex) 26 Dishes 27 Treatment table 28 Trash container 29 Plastic container for decontamination 30 Compresses 31 Cotton 32 Treatment cart 33 Urine exam identification tags 34 Portable echograph 35 Sterile water dispenser

**Table 11 List of Essential / Vital, Critical Medical-Technical Material  
in the Delivery Room (cont and end)**

Functions	Material
4 Delivery material	37 Container (for surgical fields compresses cotton etc ) 38 Delivery table 39 Delivery kit (see annex) 40 Episiotomy kit (see annex) 41 Suction kit (see annex) 42 Forceps kit (see annex) 43 Cardiographic device 44 Oxygen cylinder and oxygenation device (hand held humidifier tube glasses facial mask) 46 Counter weight (bag of sand)
5 Material to support delivery activities	47 File cabinet 48 Office table 49 File shelves 50 Ladder 51 Trash container 52 Newborn scale 53 Light source 54 Crib 55 Retention bed 56 Adjustable stool
6 Material for newborn resuscitation	57 Table + warming lamp 58 Chronometer 59 Oxygen cylinder and device 60 Apron and facial mask (newborn size) 61 Intubation kit 62 Aspirator 63 Newborn treatment cart 64 Transport Incubator 65 Identification tags 66 File cabinet 67 Immobilization splint

**Table 12 List of Essential / Vital, Critical Medical-Technical Material in the Surgical Center**

Functions	Material
1 - Anesthesia, resuscitation material	1 (See annex) pages 70 to 73 (*) not in original
2 Material for surgical intervention	2 Caesarian kit (see composition in annex) 3 Laparotomy kit (see composition in annex) 4 Hysterectomy kit (see composition in annex) 5 Curettage kit (see composition in annex) 6 Embryotomy kit (see composition in annex) 7 Craneotomy kit (see composition in annex) 8 Forceps kit (see annex) 9 Electric scalpel 10 Suction kit
3 Material for surgical intervention support	11 Splint 12 Mural clock with timer 13 Containers (for surgical fields compresses cotton) 14 Pressure gauge and bowl 15 Pinard stethoscope 16 Adjustable turning stool 17 Plastic aprons 18 File cabinets 19 Shelves 20 Surgical tables 21 Instrument tables / Silent butler 22 Surgical lamp 23 Newborn resuscitation table 24 Electric aspirator
4 Sterilization material	25 Poupinel sterilizer 26 Autoclave 27 Water sterilizer

The make-up of the kits can be found in Annex 2

**Table 12 List of Essential / Vital, Critical Medical-Technical Material  
in the Intensive Care Unit**

Functions	Material
1 Resuscitation material	1 Electric aspirators 2 Oxygen cylinder 3 Oxygen extractor 4 Tensiometer 5 Medical stethoscope 6 Hand held oxygen retainer 7 Oxygen tube 8 Facial masks for anesthesia 9 Self-inflatable balloons or ambu bags 10 Artificial respirator or ventilator 11 Oropharyngeal Guedel cannula 12 Laryngoscope and set of blades and replacement vials 13 Electric syringe 14 Thermometer 15 Pulse oxymeter and / or cardioscope
2 Support material for intensive care	16 Wall clock with timer 17 Containers (for surgical fields compresses cotton etc ) 18 Dressing kit 19 Pressure gauge and bowl 20 Trash container 21 File cabinet + shelves 22 Emergency cart 23 Standing lamp 24 Counter-weight (bag of sand)

#### **4 5 SPECIFICATIONS FOR LABORATORY / BLOOD BANK MATERIALS AND SUPPLIES REQUIRED FOR THE RHEOC**

The minimum material and supplies required for the laboratory in the RHEOC includes

- Material for blood grouping and RH
- Material for red and white numeration
- The hemoglobin counter
- Material to test three tubes in the case of massive hemorrhaging
- Quantities depending on the health facility volume of activities

Table 14 shows the laboratory / blood bank materials and supplies that are critical for the RHEOC

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**Table 14 List of material and supplies critical for the RHEOC LABORTORY / BLOOD BANK**

Functions	Reactive Material	Amount
1 Blood group (ABO and Rh)	1 Centrifuge 2 Opaline platelets 3 Rh factor measuring device 4 Double boiler 5 Vials 6 Pasteur pipettes 7 Transfer pipettes 8 Titration device 9 Hemolysis tubes 10 Compresses 11 10 ml glass tubes 12 Serum test anti ABO 13 Serum test anti D 14 Coombs serum	02 01 01 08 200 100 20 500 20 m 100 10ml x 4 10ml x 6 10ml x 2
2 Emergency blood exams	15 Hemoglobin counter 16 Hematocrit centrifuge 17 Heparin capillary tubes 18 Pipettes for red numeration 19 Pipettes for white numeration 20 Double Malassez cells 21 Newbauer cells 22 Tally hand counter with differential 23 Hand counter by numeration 24 Immersion oil 25 Drabkin 26 Marcano 27 Lazarus 28 Mav-Grunwald 29 Giemsa stain	01 01 500 10 10 04 04 01 02
3 Emergency biochemical exams	30 Spectrophotometer with accessories 31 Glycemia kit 32 Creatinemia kit 33 Azotemia kit 34 Kit for ionogram and device	1 1 kit 1 kit 1 kit 1 kit
4 Hemostasia	35 Calcium thromboplastin suspension 36 Plette liquid	

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**Table 14 List of material and supplies critical for the RHEOC laboratory / blood bank  
(cont)**

Functions	Reactive Material	Amount
5 Blood transfusion	37 Blood bags	500
	38 Transfusion devices	500
	39 Armchair for taking of blood	02
	40 Stripeuse	01
	41 Scelleuse	01
	42 Tensiometer	02
	43 Medical stethoscope	02
	44 Clinical scale	01
	45 Kline disks	01
	46 Micro titration stain for V base THPA	100
	47 Kline agitator	01
	48 1 ml Eppendorf tubes with sealing corks	
	49 TB Rh reagent	10ml x 4
	50 Rapid anti-HIV tests	200 tests
51 Rapid tests for Hbs Ag	200 tests	
52 TPHA reagent	200 tests	
53 Carbon RPR or VDRL	200 tests	
54 Blood scale		
6 Support material for a multi-disciplinary laboratory	55 Electric binocular microscope	02
	56 Eight speed electric centrifuge	
	57 Refrigerators + freezers	02
	58 Oven	
	59 Precision scale	
	60 Adjustable micro-pipettes (50 at 100 $\mu$ l) (100 at 1000 $\mu$ l)	
	61 5 ml and 10 ml glass pipettes	QSP (*?)
	62 Pipettes	
	63 Glass hemolysis tubes	
	64 10ml glass tubes	
	65 Metallic supports for hemolysis and 10 ml tubes	2 of each
	66 Graduated test tubes 100 500 100ml	2 of each
	67 Clamps for tubes	04
	68 Scissors	03 pairs
	69 25 l refrigerators	02
	70 Freezers / Refrigerators	12
71 Water distiller		
72 Latex examination gloves	QSP	
73 Utility gloves	QSP	
74 Eau de Javel	QSP	
75 Tourniquets	QSP	
76 Alcohol at 90 or distilled	QSP	
77 Cotton swabs	QSP	
78 Brushed cotton	QSP	
79 G 19 hypodermic needles	QSP	
80 Sample slides	QSP	

**Table 14 List of material and supplies critical for the RHEOC laboratory / blood bank  
(cont )**

Functions	Reactive Material	Amount
6 Support material for a multi-disciplinary laboratory (cont )	81 Sample covering slides	QSP
	82 Bowl for staining	
	83 Vaccination device	QSP
	84 Markers	
	85 100 ml and 500 ml pipettes	
	86 Labels	
	87 Trash containers	
	88 Trash liners	
	89 Timer	

## 5 STANDARDS FOR HUMAN RESOURCES

### 5.1 Specific Policy

A health facility at full capacity to provide RHEOC should dispose of competent human resources working in adequate numbers. This part of the document is about the competence of human resources. The number of human resources is covered in part five.

In a health facility at full capacity to provide RHEOC, each woman admitted for an obstetrical emergency should be managed by a multi-disciplinary team made up of physicians (gynecologist-obstetrician, surgeon, general practice physician with surgical competence, pediatrician, and anesthetist-resuscitator), midwives, nurse anesthetists, surgical assistant nurses, laboratory technicians, practical nurses, and ambulance personnel, to achieve the following functions in a complementary and synergistic manner:

- Patient reception
- Installation and immobilization of the patient
- Taking of general symptoms (quick questions)
- Taking of vital statistics
- Quick general clinical exam
- Emergency obstetrical/gynecological exam
- Taking of blood pressure and blood test
- Laboratory exam during emergency and assessment of the need for emergency echography and radiology
- Nursing during emergency
- Resuscitation
- Anesthesia
- Obstetrical treatment (delivery, manual and instrumental obstetrical exam, surgical intervention)
- Gynecological treatment (medical treatment and surgical intervention)

- Monitoring of the woman
- Examination, resuscitation and monitoring of the newborn

A list of gestures and techniques for treatment of the woman with an obstetrical emergency can be found in the annex (see Annex 1)

## **5.2 Make up of The RHEOC Team Members**

The RHEOC team includes at a minimum the following

- 1 Midwives
- 2 Anesthetists
- 3 Gynecologists - obstetricians
- 4 Pediatricians
- 5 Assistant nurses
- 6 Laboratory technicians
- 7 Pharmacists / pharmacy employee
- 8 Echography technician or radiologist
- 9 Instrument technician / Surgery assistant
- 10 Intensive care nurse
- 11 Ambulance technician

### 5.3 RHEOC TEAM MEMBER COMPETENCE IN HEALTH FACILITIES WITH FULL RHEOC CAPACITY

#### ■ Midwife

One or more qualified midwives exercising the responsibility of a gynecologist obstetrician and capable of

- 1 Receiving and accommodating an emergency obstetrical case
- 2 Quickly taking general information (quick interrogation)
- 3 Measuring vital signs
- 4 Assuring an emergency general, obstetrical, and gynecological examination
- 5 Preparing an initial vein for blood tests and perfusion
- 6 Placing a catheter a demeure in the vein using asepsis

Details of the other tasks depend on the level of the health facility

#### At the primary level

- Treating a case of anemia
- Taking the initial measures for risk pregnancies in an emergency situation before transfer
- Deciding on the transfer of an emergency case to a higher level and assure medication during the transfer
- Supervising labor with a parturiometer
- Administering intravenous antibiotics parturifacients and anticonvulsants
- Applying a suction device / aspirator
- Practicing an internal maneuver followed by the full extraction of a breech delivery
- Practicing
  - \* manual flushing
  - \* artificial delivery
  - \* uterine revision
  - \* curettage resulting from placenta retention

- Practicing and repairing an episiotomy
- Closing an incomplete perineal laceration
- Repairing a cervical and / or vaginal laceration
- Providing initial care to the newborn

**At the secondary level**

Other than the tasks at the primary level

- Performing a blood transfusion
- Resuscitating a newborn in vital distress

**At the tertiary level**

Other than the tasks at the first two levels

- Preparing a cesarian section or any other surgical intervention
- Supervising a cesarian section, GEU, peritonitis
- Preparing the application of forceps
- Preparing an embryotomy
- Monitoring all women with an obstetrical complication (hemorrhaging dynamic and mechanical obstructions infections, pre-eclampsia, eclampsia anemia, obstetrical shock and embolism anaphylactic shock )

N B A nurse with the above mentioned competencies can substitute a midwife

■ **Anesthetist**

Nurse and / or midwife acting or not under the responsibility of an anesthetist/resuscitation physician and capable of

- Receiving an emergency patient
- Mastering rapid access to a vein for blood sampling, perfusion / transfusion
- Controlling the respiratory tract for oxygenation and eventual ventilation
- Practicing the different current anesthetic techniques, or more specifically
  - carrying out a quick pre-anesthetic visit

- Preparing the patient
  - Performing the most pertinent technique in relation to the locale and pathology
  - Monitoring Vital signs during pre and post op
  - Reducing and correcting possible complications
  - Handling recovery and the immediate post-operative period (transfer and installation in the intensive care unit and passing recommendations on to personnel)
- Handling common resuscitation problems
- Cardiac arrest
  - State of shock
  - Respiratory distress
  - Convulsions
  - Coma
  - Hypertensive impulse
  - Thermic problems
  - Metabolic problems
- Using monitoring and intensive care materials
- Pulse oxymeter
  - Blood pressure monitor
  - Cardioscope
  - Artificial ventilator
  - Electric syringe pusher (self-pushing syringe)

■ **Gynecologist - obstetrician**

A gynecologist - obstetrician or any other physician who has the same competence as a midwife or nurse in the performance of the following interventions cesarian section laparotomy, hysterectomy, embryotomy curettage

■ **Pediatrician**

A pediatrician collaborating with the maternity ward for the resuscitation of the newborn in

the case of vital function failure

■ **Nurse's aides**

One or more nurse's aides capable of performing the following actions

- Receiving and installing a patient in case of an obstetrical emergency
- Rapidly taking general complaints
- Measuring vital signs
- Cleaning, decontaminating and sterilizing medical - technical material after each use
- Placing a catheter a demeure in a vein using asepsis
- Promptly assuring transport of samples and results between the maternity ward and the laboratory
- Installing the patient, preparing, and handing the following material to the midwife using asepsis
  - The application of suction
  - The material for internal maneuver
  - Manual flushing
  - Artificial childbirth
  - Uterine revision
  - Curettage upon placenta retention
  - Episiotomy repair
  - Repair of an incomplete perineal laceration
  - Repair of a cervical and / or vaginal laceration
- Providing initial care to the newborn
- Preparing a woman for intervention
- Assuring cleanliness
- Assuring the transport of patients from one place to another
- Assure inter-service communication

N B Other personnel can perform the same functions as nurse's aides and substitute them

in their tasks

■ **Laboratory technician**

- One or several laboratory technicians capable of placing an intravenous catheter performing the different laboratory exams required for obstetrical emergencies. They should be able to collect blood for transfusion, assure quality testing dependability and conservation

N B A nurse trained in performing laboratory exams can substitute the laboratory technician

■ **Pharmacist / pharmacy employee**

- A pharmacist or a person with higher education, capable of receiving clients read prescriptions and fill medications in a timely manner. S/he should know how to maintain drugs

■ **Echography technician / Radiologist**

- The echography technician is the gynecologist, radiologist, physician or midwife trained in handling the echograph interpret the results, and make a diagnosis
- A radiology technician or a radiologist capable of performing emergency exams in radiology and interpret them

■ **Instrument technician / Surgeon's aide**

- A trained nurse or a midwife with the following qualifications
- Preparation of the surgical center (room, instruments, intervention support elements )
- Receiving the patient, place her and help the surgeon during the surgical intervention
- Knowing to help transport the patient
- Supervising the post-operative patient
- Knowing how to prevent infections in the surgical center
- Ability to supervise the sterilization of material

■ **Intensive care nurse**

A trained nurse with the following qualifications

- Receiving, installing and immobilizing any patient coming from the surgical center
- Mastering rapid access to a vein for sampling, perfusion / transfusion
- Controlling the respiratory tract for oxygenation and ventilation
- Supervising the post-operative recovery of a patient and specifically following the orders of the anesthetist - resuscitation technician and the gynecologist - obstetrician
  - Retaking vital signs at regular intervals, registering them and analyzing them regularly
  - Transmit any vital sign abnormality to the physician
  - Aspirate the secretions from any patient
- Handle common resuscitation problems under the supervision of the anesthetist - resuscitation technician

■ **Ambulance driver**

- A driver with a driver's licence who can read and write trained in receiving patients and transporting them in an emergency He should be capable of properly maintaining the ambulance and be familiar with the location where he works

## ANNEXES

### **Annex 1 FUNCTIONAL CLASSIFICATION OF MEDICAL - TECHNICAL MATERIAL REQUIRED FOR THE RHEOC**

- 1 General examination material
- 2 Gynecological / obstetrical examination material
- 3 Material for blood sampling and intravenous approach
- 4 Resuscitation material
- 5 Delivery kit
- 6 Intervention preparation material
- 7 Anesthesia material
- 8 Surgical intervention material
  - Cesarean section kit
  - Laparotomy kit
  - Hysterectomy kit
  - Episiotomy kit
  - Curettage kit
  - Forceps kit
  - Craniotomy / embriotomy kit
  - Suction kit
- 9 Material to support surgical interventions
- 10 Sterilization material
- 11 Laboratory material
- 12 Radiology and achography material (portable equipment if possible)
- 13 Material for trans-abdominal / Douglas puncture

## **Annex 2 DETAIL OF KITS AND OTHERS**

### **General examination kit**

- 1 Stainless steel box
- 2 Tensiometer
- 3 Medical stethoscope
- 4 Thermometer
- 5 Tongue depressor
- 6 Reflex hammer

### **Gynecological / obstetrical examination kit**

- 1 Stainless steel box
- 2 Speculae (Cusco + Colin) 2 to 10
- 3 Dressing forceps
- 4 Pozzi forceps
- 5 Museux forceps
- 6 Hemostatic forceps
- 7 Metallic vesical sound
- 8 Straight scissors
- 9 Hysterometer
- 10 Kocher forceps
- 11 Vaginal valves (Doyen) at least 2
- 12 False teeth forceps
- 13 Dissecting forceps 200 mm with and without teeth

### **Trans-abdominal / Douglas puncture kit**

- 1 Stainless steel box
- 2 10 cc and 20 cc glass syringes
- 3 Trocart
- 4 Collins speculae

- 5 Dressing forceps
- 6 Pozzi forceps

#### **Delivery kit**

- 1 Stainless steel box (1)
- 2 Kocher forceps (2)
- 3 Two pairs of scissors
- 4 Metallic vesical sound (1)
- 5 Rupture forceps (1)

#### **Episiotomy kit**

- 1 Stainless steel box (1)
- 2 Lister scissors (1)
- 3 Needle-carrying forceps (1)
- 4 Dissecting forceps with and without teeth
- 5 Straight scissors (1)
- 6 Dressing forceps

#### **Cesarian section kit**

- 1 Stainless steel box (1)
- 2 Scalpel handle (1)
- 3 16 cm straight Mayo scissors (1)
- 4 17 cm curved Mayo scissors (1)
- 5 14 cm dented dissecting forceps (1)
- 6 14 cm indented dissecting forceps (1)
- 7 Kocher forceps (6)
- 8 Needle-carrying forceps (2)
- 9 Heart shaped forceps (2)
- 10 Dressing forceps (1)

- 11 Pean forceps (2)
- 12 Hemostatic forceps (6)
- 13 Kelly forceps (6)
- 14 Farabeuf separator (2)
- 15 Gosset separator (1)
- 16 Hartmann separator (2)
- 17 Aspiration cannula (1)
- 18 Aspiration tube (1)
- 19 Jean-Louis Faure forceps
- 20 Metzenbau scissors (1)

#### **Laparotomy kit**

- 1 Stainless steel box (1)
- 2 Scalpel handles (2) no 3 and 4
- 3 16 cm straight Mayo scissors (1)
- 4 17 cm Mayo scissors (1)
- 5 14 cm dissecting forceps with teeth (1)
- 6 14 cm dissecting forceps without teeth (1)
- 7 Kocher forceps (6)
- 8 Needle-carrying forceps (2)
- 9 Heart shaped forceps (2)
- 10 Dressing forceps (1)
- 11 Pean forceps (3)
- 12 Hemostatic forceps (6)
- 13 Kelly forceps (6)
- 14 Farabeuf separator (2)
- 15 Gossett separator (1)
- 16 Hartmann separator (2)
- 17 Aspiration cannula (1)

- 18 Aspiration tube (1)
- 19 Chaput forceps (2)
- 20 Hysterolabe (1)
- 21 Metzenbau scissors (1)
- 22 Babcock forceps (2)

#### **Curettage kit**

- 1 Stainless steel box (1)
- 2 Hysterograph (1)
- 3 Collin speculum
- 4 Pozzi forceps
- 5 False teeth forceps
- 6 Dressing forceps
- 7 Sims curette (1)
- 8 Simon curette (1)
- 9 Heggar sounds (different calibers)
- 10 Weight valves (1)
- 11 Vaginal valves (Doyen) (2)

#### **Hysterectomy kit**

- 1 Stainless steel box
- 2 Dressing forceps
- 3 Field forceps (4)
- 4 14 cm dissecting forceps with teeth
- 5 14 cm dissecting forceps without teeth
- 6 Kocher forceps (6)
- 7 Needle carrying forceps (2)
- 8 Scalpel handle (1)
- 9 Aspiration cannula (1)

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- 10 Aspiration tube (1)
- 11 16 cm straight Mayo scissors (1)
- 12 17 cm curved mayo scissors (1)
- 13 Gosset GM divider (1)
- 14 Hartmann divider (2)
- 15 Farabeuf divider (2)
- 16 Pean forceps (2)
- 17 Hemostatic forceps (6)
- 18 J L Faure forceps (6)
- 19 Museux forceps (2)
- 20 Moore heart shaped forceps (2)
- 21 Hysterolabe
- 22 26 cm Metzenbau scissors (1)
- 23 Bengolea (4)

#### **Embryotomy kit**

- 1 Stainless steel box (1)
- 2 Dressing forceps (1)
- 3 Blot perforator (1)
- 4 Braum cranioclast (1)
- 5 Tarnier basiotribe (1)
- 6 Dubois 275 mm straight detruncation scissors (1)
- 7 Dubois curved detruncation scissors (1)
- 8 Decapitation hook (1)
- 9 Museux forceps (2)
- 10 Doyen vaginal valves (2)

#### **Anesthesia material**

- 1 Oxygen bottle (consignation)

- 2 Nitrogen protoxide bottle (consignation)
- 3 Oxygen extractor or concentrator
- 4 Anesthesia bottles (2 liters 3 liters, 4 liters)
- 5 Hand held Nitrogen protoxide dispenser
- 6 Hand held oxygen dispenser
- 7 Nitrogen protoxide feeding tube
- 8 Oxygen feeding tube
- 9 Facial masks for anesthesia (sizes 2 3, and 4)
- 10 Anesthesia valves
- 11 Device to hold the mask
- 12 Intubation or sound guide gauge
- 13 Anesthesia tables with mixer and halogen container
- 14 Artificial ventilator
- 15 Electric aspirator
- 16 Laryngoscopes with complete set of blades
- 17 Medical tensiometer and stethoscope with adapted arm
- 18 Magill intubation forceps
- 19 Plastic 15 mm endotracheal sound connection
- 20 Anti-static rubber intubation sound outlets
- 21 Pocket light
- 22 Wall clock
- 23 Pulse oxygraph and / or cardioscope

**Peridural and rachianesthesia kit**

- 1 Dressing and napkin forceps
- 2 Dressing tray with lid
- 3 Instrument box with lid
- 4 Kidney dish
- 5 Cup

- 6 Catheter connectors
- 7 Trash containers (for soiled linens compresses, cotton)

### **Material for sampling and intravenous approach**

Tourniquet  
Catheter  
Disposable syringes  
Test tubes  
Labels  
Perfusion devices  
Solutions  
Tape  
Cotton  
Alcohol / Iodized alcohol

### **Resuscitation material**

- Wall clock with timer
- Oxygen flask manual dispenser tube and rack
- Self-inflatable container valve mask
- O<sub>2</sub> mask
- O<sub>2</sub> nasal sound
- Tracheal sounds with functional receptacle (sizes 5 to 8)
- Guedel cannulae (sizes 3 4 and 5)
- Respirator or ventilator
- Electric aspirator or peddle vacuum or wall fixed aspirator
- Intubation handle
- Functional laryngoscope (with replacement bulbs)
- Magill forceps

- Aspiration sounds
- Nos 16 to 24 transportable gastric sounds
- Number 16 vesical sounds
- Central tract catheters
- Electrical syringes
- Labels
- Pocket light with bulbs and replacement batteries
- Medical tensiometer and stethoscope
- Kit for intravenous injections
- Monitoring chart
- Blood pressure and pulse monitor
- Pulse oxygraph and / or cardioscope

### **Forceps kit**

#### **A Tarnier forceps**

- 1 Stainless steel box (1)
- 2 Tarnier forceps (1)
- 3 Straight mayo scissors (1)
- 4 Dissection forceps without teeth (1)
- 5 Dissection forceps with teeth (1)
- 6 Doyen valve (2)
- 7 Doyen needle carrying forceps (1)
- 8 Heart shaped forceps (2)
- 9 Dressing forceps (1)

#### **B Pajot forceps**

- 1 Stainless steel box (1)
- 2 Pajot forceps (1)

- 3 Straight mayo scissors (1)
- 4 Dissection forceps without teeth (1)
- 5 Dissection forceps with teeth (1)
- 6 Doyen valve (2)
- 7 Doyen needle carrying forceps (1)
- 8 Heart shaped forceps (2)
- 9 Dressing forceps (1)

**Suction kit**

- 1 Stainless steel box
- 2 Set of three (3) different size recipients
- 3 Rubber connector

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Annex 3

**Table 15 List of drugs specific to resuscitation of the newborn in the delivery room and intensive care**

Drug categories	Drugs (Designation - DCI) and means of administration	Dosages and Presentation
Drugs specific to resuscitation of the newborn in the delivery room and intensive care	1 Pythomenadione inj (Vit K1) - Bicarbonate serum at 42% - Glucose serum at 10% - Glucose serum at 30%  2 Calcium gluconate 10% - Antibiotics Ampicillin inj Amoxicillin inj Netromicin inj Gentamycin inj - Hydrocortizone inj  3 Eye drops  4 Glucagon inj - Oxygen	10 mg/ml amp 1ml amp 10ml and 50ml amp 10ml and 50ml   amp 5ml and 10ml  0.5g 1g 2g vial 0.5g 1g 2g vial 25 50 150mg amp 20 40 80 160mg amp 100 500mg 1g vial    1mg vial

**Annex 4 APPROACHES / TECHNIQUES FOR THE SURVIVAL OF WOMEN PRESENTING  
WITH AN OBSTETRICAL EMERGENCY**

- 1 Initial peripheral intravenous approach with catheter no 18 gauge or 20 gauge
- 2 Main artery
- 3 Perfusion with cristalloids / macromolecules/ bicarbonate serum
- 4 Blood group and Rh grouping
- 5 Isogroup iso-Rh blood transfusion
- 6 Atropine Adrenalin, Furosemide Corticoid anticonvulsant injection
- 7 External heart massage
- 8 Manual ventilation
- 9 Mechanical ventilation
- 10 Application of catheter a demeure
- 11 Application of Guedel cannula
- 12 Secretion aspiration
- 13 Oxygen therapy 3 at 6l/mn
- 14 Oral or nasotracheal intubation
- 15 Application of gastric sound
- 16 Uterotonic perfusion
- 17 Anticonvulsant perfusion
- 18 Artificial delivery
- 19 Treatment / Curettage
- 20 Uterine revision
- 21 Manual / electrical aspiration
- 22 Application of forceps / suction
- 23 Cesarian section
- 24 Laparotomy (GEU uterine rupture peritonitis)
- 25 Monitoring of vital signs
- 26 Antibiotic perfusion

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**POLICY AND STANDARDS FOR REFERRAL HOSPITAL  
EMERGENCY OBSTETRICAL CARE  
IN THE REPUBLIC OF BENIN**

**VOLUME 3: PRINCIPLES OF ORGANIZATION AND  
OPERATIONS IN SERVICES AND SECTORS INVOLVED IN  
REFERRAL HOSPITAL EMERGENCY OBSTETRICAL CARE**

(NOT TO BE CITED)

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## SIGNS AND ABBREVIATIONS

WHO	World Health Organization
RHEOC	Referral Hospital Emergency Obstetrical Care
MPREPE	“Ministere du Plan, de la Restructuration Economique et de la promotion de l’Emploi”(Ministry of Planning, Economic Restructuring and Employment Promotion)
MSPSCF	“Ministere de la Sante, de la Protection Sociale et de la Condition Feminine (Ministry of Health, Social Protection, and the Feminine Condition)
MSP	“Ministere de la Sante Publique” (Ministry of Public Health)
OMS	“Organisation Mondiale de la Sante” (WHO)
INSAE	“Institut National de la Statistique et de l’Analyse Economique” (National Institute of Statistics and Economic Analysis)
SSDRO	“Service des Statistiques de la Documentation et de la Recherche Operationelle (Statistics, Documentation, and Operational Research Service)
MS	Ministere de la Sante” (Ministry of Health)
DSF	“Direction de la Sante Familiale” (Agency for Family Health)
PBA/SSP	“Projet Benino-Allemand des Soins de Sante Primaires” (Benin-German Primary Health Care Project)
UNICEF	United Nations Children’s Fund
IR	“Infirmier de reanimation” (Resuscitation nurse)
IAC	“Infirmier aide-chirurgien” (Surgery assistant nurse)
Am	“Ambulancier” (Ambulance Driver)
SF	“Sage-femme” (Midwife)
ANES	Anesthetist
GYN	Gynecologist
MAR	“Medecin anesthesiste - reanimateur”(Anesthetist - resuscitation physician)
PED	Pediatrician
TECH	Laboratory technician
RAD/EC	Radiologist - echography technician

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THE MATERI MOTTO

OUR MOTTO:

TO NO LONGER FACE DEATH  
WHILE GIVING NEW LIFE

This is what Josee GBEDAGBA, midwife at Mater  
inscribed on the delivery room door of her maternity ward

# 1 CONCEPT DEFINITION

## 1 Policy

Concerted way of carrying out a task [1]

Official statement on the way to conduct, manage a situation

## 2 Norms of care

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## 3 Standards of care

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## 4 Explanation of the definition of obstetrical care

### 4 1 Obstetrical care

Prenatal care, per and postpartum and early neonatal care

### 4 2 Essential obstetrical care

Essential care relative to the management of complications linked to pregnancy and delivery and specific neonatal care This term includes - however not exclusively - emergency obstetrical care including the elements of care that are most needed to manage unexpected complications such as eclampsia, placenta retention, postpartum hemorrhaging etc [5]

The total scope of essential obstetrical care can be found in Annex 1

### 4 3 Emergency obstetrical care

Care directed at managing unexpected complications, such as eclampsia placenta retention, postpartum hemorrhaging etc [5]

### 4 4 Basic maternal care

Management of normal pregnancies and deliveries This includes the care delivery under proper hygienic and safety conditions, and postpartum care, specifically during the first days after delivery [5]

5 Emergency obstetrical care at the primary secondary, and tertiary levels as used in this document

Care reserved for pregnant women with pregnancy-puerperal pathologies

– Primary level emergency obstetrical care that include

The administration of intravenous antibiotics, the administration of intravenous parturifacients, the administration of intravenous anti-convulsants artificial childbirth uterine revision, digital treatment, curettage, manual or electric uterine aspiration and the application of suction,

– Secondary level emergency obstetrical care, including all the care of the primary level as well as blood transfusions,

– Tertiary level emergency obstetrical care including the care of the first two levels as well as delivery by forceps and obstetric surgery (specifically cesarian sections )

6 Health facilities providing primary level emergency obstetrical care These are health facilities that provide the primary level emergency obstetrical care mentioned herein

7 Health facilities providing secondary level emergency obstetrical care These are health facilities that provide the secondary level emergency obstetrical care mentioned herein

8 Health facilities providing tertiary level emergency obstetrical care These are health facilities that provide the tertiary level emergency obstetrical care mentioned herein or delivery of emergency obstetrical care by the referral hospital

9 Referral hospital

Public or private facility where tertiary level emergency obstetrical care is provided as well as medical and pediatric emergency care

## 2 - CLASSIFICATION OF HEALTH FACILITIES OFFERING EMERGENCY OBSTETRICAL CARE IN BENIN

**Table 1**

1	Primary level EOC health facilities
	- Community health facilities filling the EOC requirements for the primary level
	- Sub prefecture or urban area health center without a surgical center and not offering blood transfusion that fulfills primary level EOC requirements
	- Private for-profit health establishments or not fulfilling primary level EOC requirements
2	Secondary level EOC facilities
	- Sub prefecture or Urban Area / Area hospital health centers with operational surgical centers and fulfilling the EOC secondary level conditions
	- Private for-profit health establishments or not fulfilling secondary level EOC requirements
3	Tertiary level EOC health facilities or Referral Hospitals
	- Departmental hospital centers
	- Sub prefecture or urban area health center without a surgical center and not offering blood transfusion that fulfills tertiary level EOC requirements
	- Private for-profit health establishments or not fulfilling tertiary level EOC requirements

This document only concerns referral hospitals, or health facilities offering tertiary level EOC. The first two levels will be the object of another report.

## 3 SUB-CLASSIFICATION OF HEALTH FACILITIES OFFERING TERTIARY LEVEL EOC

**Table 2**

1	Referral Hospital with Low Intensity of Activities (RH/LIA) Referral Hospital with less than 1000 deliveries per year
2	Referral Hospital with Medium Intensity of Activities (RH/MIA) Referral Hospital with between 1000 and 2000 deliveries per year
3	Referral Hospital with High Intensity of Activities (RH/HIA) Referral Hospital with over 2000 deliveries per year

#### **4 SPECIFICATION FOR SERVICES AND SECTORS INVOLVED IN THE RHEOC**

Resources required by the RHEOC generally include infrastructure services, and the following sectors

- Administrative services
- Maternity ward and intensive care sector for the newborn
- Surgical center
- Intensive care unit
- Laboratory / blood bank
- Echography / Radiology
- Dispensing pharmacy
- Ambulance service

Each service and sector contributes obstetrical emergency management through its personnel, infrastructure drugs, medical supplies, and medical - technical equipment

#### **5 SPECIFICATION OF THE ORGANIZATIONAL AND OPERATIONAL PRINCIPLES OF SECTORS OR SERVICES INVOLVED IN THE RHEOC**

##### **5.1 Preliminary conditions**

The central level authorities should take the measures to decide on policy and give precise instructions to those in charge of referral hospitals

##### **5.2 Administrative service**

Referral hospital management should implement all actions for the immediate treatment of obstetrical emergencies as of their arrival

It should provide easy access to the services of the team on watch by providing the following

- a vehicle for transportation or, if not available, transportation reimbursement
- operational and comfortable peripheral lodging

Drugs and supplies, as well as medical - technical equipment will be selected in agreement with the users and in accordance with service standards

The administration should rediscover the quality of services This results in the need for the establishment of a quality committee that should assure that all services at all levels respect service standards

It will allow RHEOC teams to have easy access to vital drugs and supplies required for care and will define a cost recovery system for drugs and supplies used during emergencies Instructional experiences are under way in the country (CHD Oueme, CSSP of Ketou, and religious facilities )

### **5 3 Maternity**

All health facilities should have means to allow for strict aspsis in terms of hand washing clothing and delivery of care

Patient consultation and delivery records should be on hand in the reception area, in sufficient quantities 24 hours a day, during the entire year, thus permitting follow-up until the patient leaves the health facility

The gynecological, blood sampling, intravenous approach, and resuscitation material should be prepared in advance and be available 24 hours, the entire year and ready for use

The planning for watches should be handled strategically, so that at least one midwife or qualified person is present during obstetrical emergencies

The delivery room should be ready for manual and instrumental interventions since the admission of each case

In accordance to the work volume we should emphasize four sections in the maternity ward

- reception area
- dilation room
- obstructed labor room
- delivery room with an area where personnel can change and an intensive care sector for the newborn

The maternity ward should have its own pharmacy, managed by the senior midwife according to the double-stock principle. Strategic sectors, such as the delivery room should be supplied according to the intensity of activities. The person in charge of the maternity ward pharmacy should collaborate efficiently with those in charge of the hospital pharmacy sector for coordination in ordering maternity ward pharmacy supplies to avoid sudden stock outages of vital products

#### **5.4 Surgical center**

At least one operation room should always be available and ready to receive obstetrical emergencies that require intervention

Material for anesthesia, resuscitation, preparation of the patient and for surgical intervention should always be prepared in advance and be ready for use 24 hours of the day, the entire year. Planning of the watch must be conceived strategically, so that there is always a gynecologist - obstetrician or a physician trained for intervention, an anesthetist - resuscitation technician, surgery assistant, pediatrician if possible and a nurses' aide available 24 hours the entire year sleeping in the health facility or brought in immediately

### **5 5 Intensive care unit**

The intensive care unit should be appropriate and ready to receive obstetrical emergencies

The resuscitation material must be functional and ready for use 24 hours a day during the entire year

The resuscitation team must be available 24 hours a day, all year, promptly taking charge of obstetrical emergencies

### **5 6 Laboratory / blood bank**

The laboratory must be sufficiently organized and prepared to perform essential tests in an emergency, or be oriented toward priority problems affecting maternal deaths (hemorrhage anemia, infection, eclampsia) blood group and Rh, hematocrit count hemoglobin count white cells, blood ionogram and creatinemia. It should be able to communicate the different test results promptly. As a result, it must be open 24 hours a day for the entire year

The laboratory team must be available for tests related to emergency obstetrical care 24 hours the entire year

The blood bank must permanently have material and supplies required for blood sampling in an emergency

The blood pouches for all blood types must be available and ready to be placed at the disposal of patients in emergency cases. The maternity ward must assure this availability every morning

The blood bank team must be available 24 hours a day, the entire year, to promptly take charge of obstetrical emergency exams

## **5 7 Echography - radiology**

The echography and radiology room must be appropriate and equipped to perform echograms and X-rays in an emergency

The echograph and radiology equipment must always be operational and available to perform complementary exams for diagnosis of obstetrical emergencies

The team must be available 24 hours a day the entire year

## **5 8 Hospital pharmacy sector**

- 5 8 1 The dispensing pharmacy must be managed on the basis of the double stock system  
It must be open 24 hours a day, the entire year, with essential / vital drugs and supplies quickly accessible to patients

The pharmacy team should be pleasant and available 24 hours the entire year, for the supply and delivery of drugs and other material (frequent visits ) It should be in constant communication with the maternity ward The administration should monitor proper management, avoid waste fight against the evasion of drugs and material as well as unauthorized supply and sales

### **5 8 2 The warehouse**

The warehouse must plan for the selection, purchase, and supply of strategical sectors, including the dispensing pharmacy, in terms of drugs and other material It must be managed under the double stock system

## **5.9 The ambulance service**

The referral hospital or the location should have an ambulance or any other operational means of evacuation and in good state, 24 hours, the entire year

The ambulance must be permanently maintained

The ambulance will be used to transport patients from the outskirts to the referral hospital or from the hospital to more specialized centers, in case of need

The ambulance team consisting of at least one driver and a trained escort must be available 24 hours a day, the entire year

## **6 Proposal for critical human resource watch planning**

The watch is the most disseminated organizational strategy to handle obstetrical emergencies. The accomplishment of the directing principle for the presence or the quick availability of critical human resources upon arrival of an emergency case, imposes a strategical organization of the watches. In accordance with the hospital's intensity of activities and the number of existing critical human resources, we could choose from the following

- An ideal planning system (IP) when there are sufficient resources,
- a system of optimum planning (OP) to improve the use of existing resources

The following table shows the different planning scenarios according the intensity of hospital activities

**Table 3 Scenarios for the Planning of Watches According to Hospital Type**

Critical Resources	Hospital with Low Intensity of Activities (Annual deliveries <1000)		Hospital with Medium Intensity of Activities (Annual deliveries between 1000 - 2000)		Hospital with High Intensity of Activities (Annual deliveries > 2000)	
	Ideal planning	Optimal planning	Ideal planning	Optimal planning	Ideal planning	Optimal planning
1 Midwife	1 mw /24h watch 72 hrs rest	1 mw /24h watch 48 hrs rest	2 teams of 2 mw / 24 hrs 48h rest after night watch	3 teams of 1 mw / 24 hrs 48h rest after night watch	3 teams of 2 mw / 24 hrs 48h rest after night watch	2 teams of 2 mw / 24 hrs 48h rest after night watch
2 Nurse Anesthetist	1 anes/24h 48 h rest	1 anes/24h 24 h rest	1 anes/24h 72 h rest	1 anes/24h 48 h rest	3 teams of 1 anes/24h 48 h rest	1 anes/24h 72 h rest
3 Gyn-obs or Physician with surgical comp	1 gyn/24h 48h rest	1 gyn/24h 24h rest	1 gyn/24h 72h rest	1 gyn/24h 48h rest	1 gyn/24h 72h rest	1 gyn/24h 48h rest
4 Anesthetist resuscitation physician			1 arp / 24h 72h rest	1 arp / 24h 48h rest	1 arp / 24h 72h rest	1 arp / 24h 48h rest
5 Pediatrician			1 ped / 24h 72h rest	1 ped / 24h 48h rest	1 ped / 24h 72h rest	1 ped / 24h 48h rest
6 Nurses aide	1 NA / 24h 48h rest	1 NA / 24h 24h rest	1 NA / 24h 72h rest	1 NA / 24h 48h rest	1 NA / 24h 72h rest	1 NA / 24h 48h rest
7 Laboratory technician	1 tech / 24h 48h rest	1 tech / 24h 24h rest	1 tech / 24h 72h rest	1 tech / 24h 48h rest	1 tech / 24h 72h rest	1 tech / 24h 48h rest
8 Pharmacy Employee	1 pe / 24h 48h rest	1 pe / 24h 24h rest	1 pe / 24h 72h rest	1 pe / 24h 48h rest	2 teams of 1 pe / 24h 72h rest	1 pe / 24h 48h rest
9 Radiologist / echography technician	1 rad / ec/ 24h 48h rest	1 rad / ec/ 24h 24h rest	1 rad / ec/ 24h 72h rest	1 rad / ec/ 24h 48h rest	1 rad / ec/ 24h 72h rest	1 rad / ec/ 24h 48h rest
10 Resuscitation nurse	1 Rn / 24h 48h rest	1 Rn / 24h 24h rest	1 Rn / 24h 72h rest	1 Rn / 24h 48h rest	1 Rn / 24h 72h rest	1 Rn / 24h 48h rest
11 Surgical Assistant Nurse (SAN)	1 SAN / 24h 48h rest	1 SAN / 24h 24h rest	1 SAN / 24h 72h rest	1 SAN / 24h 48h rest	1 SAN / 24h 72h rest	1 SAN / 24h 48h rest
12 Ambulance personnel	1 Ap / 24h 24h rest	1 Ap / 24h 24h rest	1 Ap / 24h 48h rest	1 Ap / 24h 48h rest	1 Ap / 24h 48h rest	1 Ap / 24h 48h rest

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## **7 ESTIMATE OF THE NUMBER OF EACH TYPE OF CRITICAL HUMAN RESOURCES REQUIRED FOR THE RHEOC**

The estimate for the number of each type of critical human resources required for the RHEOC in a referral hospital has considered the following resulting from a review of referral hospitals

- 1 The watch constitutes the most disseminated organizational strategy in managing obstetrical emergencies
- 2 The intensity of activities varies among the facilities
- 3 The watch planning system varies according to the hospitals and the type of agent within the same hospital
- 4 Certain human resources are harder to find than others

On the base of these scenarios we can deduct the estimate of the number of human resources as indicated in the following table

**Table 4 Determination of the Ideal and Optimal Number of Personnel on a Watch**

Critical Resources	Hospital with Low Intensity of Activities (Annual deliveries <1000)		Hospital with Medium Intensity of Activities (Annual deliveries between 1000 - 2000)		Hospital with High Intensity of Activities (Annual deliveries ≥ 2000)	
	Ideal planning	Optimal planning	Ideal planning	Optimal planning	Ideal planning	Optimal planning
1 Midwife	4	3	8	5	10	8
2 Nurse Anesthetist	3	2	4	3	5	4
3 Gyn obs or Physician with surgical comp	3	2	4	3	4	3
4 Anesthetist resuscitation physician			4	3	4	3
5 Pediatrician			4	3	4	3
6 Nurses aide	3	2	4	3	4	3
7 Laboratory technician	3	2	4	3	4	3
8 Pharmacy Employee	3	2	4	3	4	4
9 Radiologist / echography technician	3	2	4	3	4	3
10 Resuscitation nurse	3	2	4	3	4	3
11 Surgical Assistant Nurse (SAN)	3	2	4	3	4	3
12 Ambulance personnel	2	2	3	3	3	3

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## **NUMBER OF MIDWIVES IN THE DELIVERY ROOM AND TYPE OF TEAMS**

### **Hospital with low intensity of activities < 1000 deliveries / year**

Ideal planning = 4 midwives

Or 1 midwife on 24h watch and 72h rest

Optimal planning = 3 midwives

Or 1 midwife on 24h watch and 48h rest

### **Hospital with medium intensity of activities = 1000 - 2000 deliveries / year**

Ideal planning = 8 midwives

Or 4 teams of 2 midwives, each on 12h watch and 48h rest after 12h of night watch

Optimal planning = 5 midwives

Or 1 midwife on every 8h and 48h rest after night watch

### **Hospital with high intensity of activities > 2000 deliveries / year**

Ideal planning = 10 midwives

Or 2 midwives every 8h and 48h rest after night watch

Optimal planning = 8 midwives

Or 2 midwives every 12h with 48 rest after night watch

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UNICEF	United Nations Children’s Fund
IEC	Information Education, Communication
T°	Temperature
OMR	Obstetrical Mortality Rate
CRL	Cephalo-raquidian liquid
HB	Heart Beat
TPHA	Treponema Pallidum Hemagglutinating Antibody
CBUE	Cyto-bacteriological Urine Exam
TD	Thick Drops
EP	Ectopic Pregnancy
Rh BG	Rh Blood Group
BP	Blood Pressure
IM	Intramuscular
IV	Intravenous
BFN	Blood Formula Numeration

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Table 2      Monitoring plan

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Care reserved for pregnant women with pregnancy-puerperal pathologies

– Primary level emergency obstetrical care that include

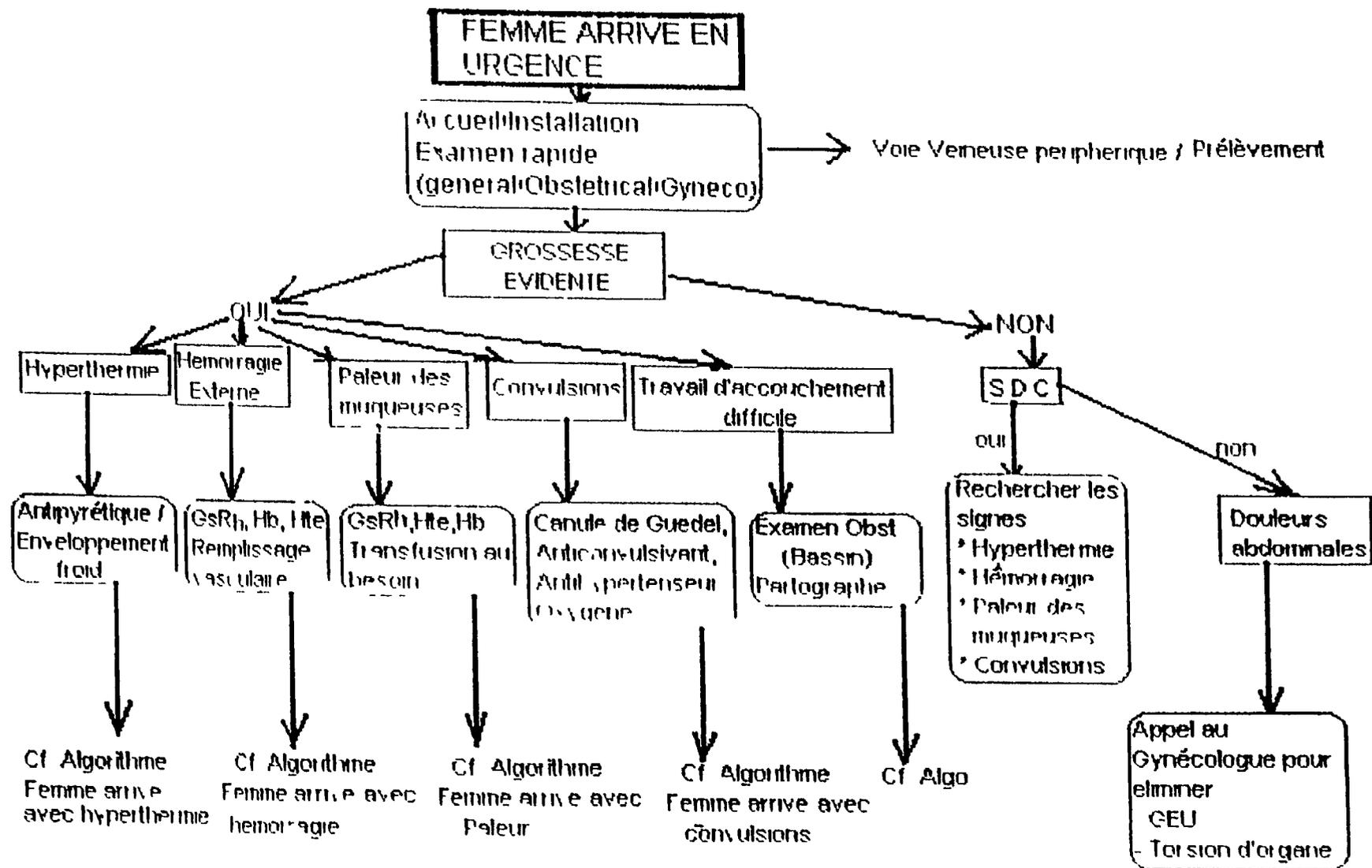
The administration of intravenous antibiotics, the administration of intravenous

parturifacients, the administration of intravenous anti-convulsants, artificial childbirth uterine revision, digital treatment, curettage, manual or electric uterine aspiration and the application of suction,

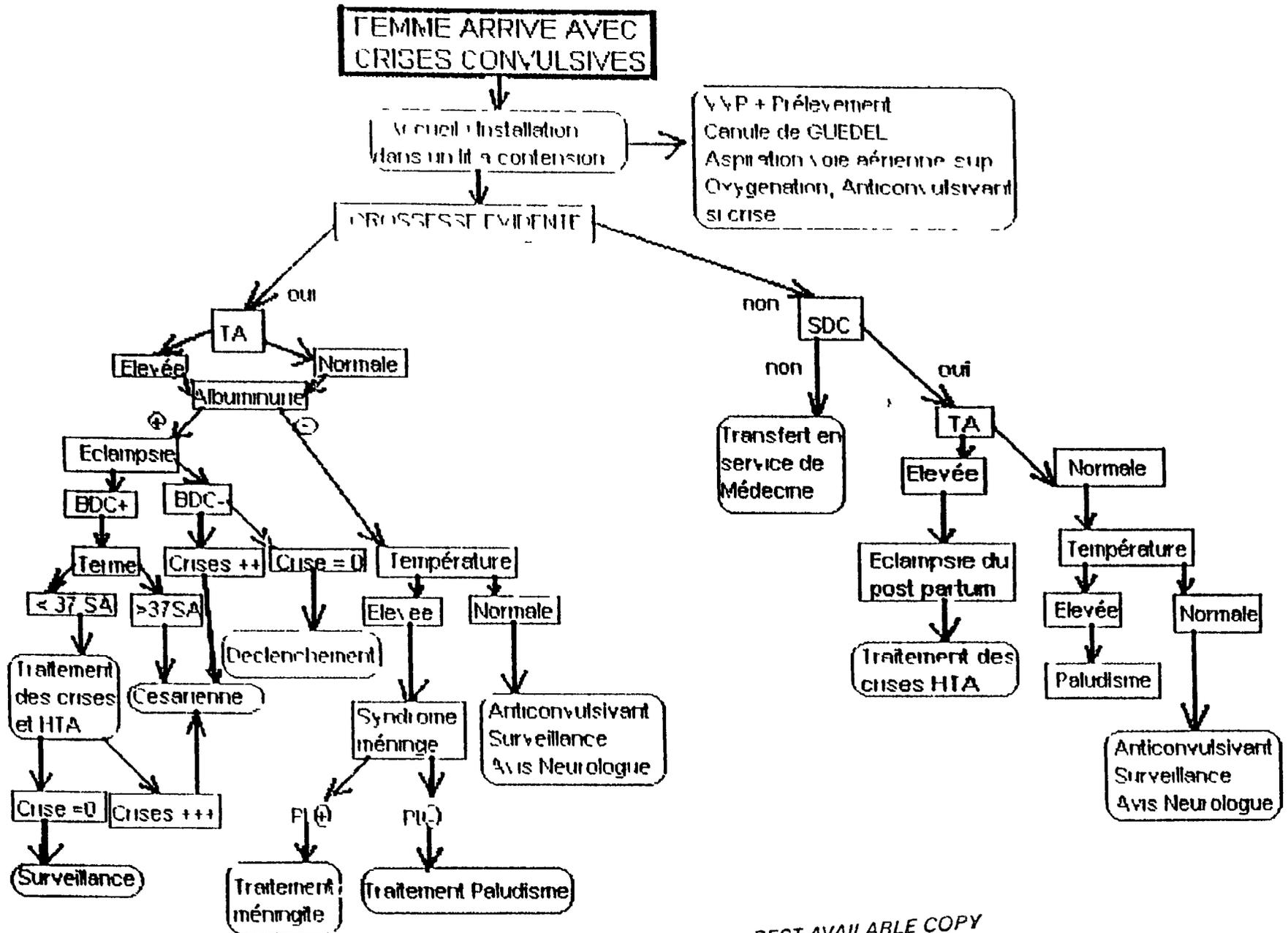
- Secondary level emergency obstetrical care, including all the care of the primary level as well as blood transfusions,
  - Tertiary level emergency obstetrical care including the care of the first two levels as well as delivery by forceps and obstetric surgery (specifically cesarian sections )
- 6 Health facilities providing primary level emergency obstetrical care These are health facilities that provide the primary level emergency obstetrical care mentioned herein
  - 7 Health facilities providing secondary level emergency obstetrical care These are health facilities that provide the secondary level emergency obstetrical care mentioned herein
  - 8 Health facilities providing tertiary level emergency obstetrical care These are health facilities that provide the tertiary level emergency obstetrical care mentioned herein or delivery of emergency obstetrical care by the referral hospital
  - 9 Referral hospital  
Public or private facility where tertiary level emergency obstetrical care is provided as well as medical and pediatric emergency care

## 2. ALGORITHMES DECISIONNELS

### 2.1 FEMME ARRIVE EN URGENCE

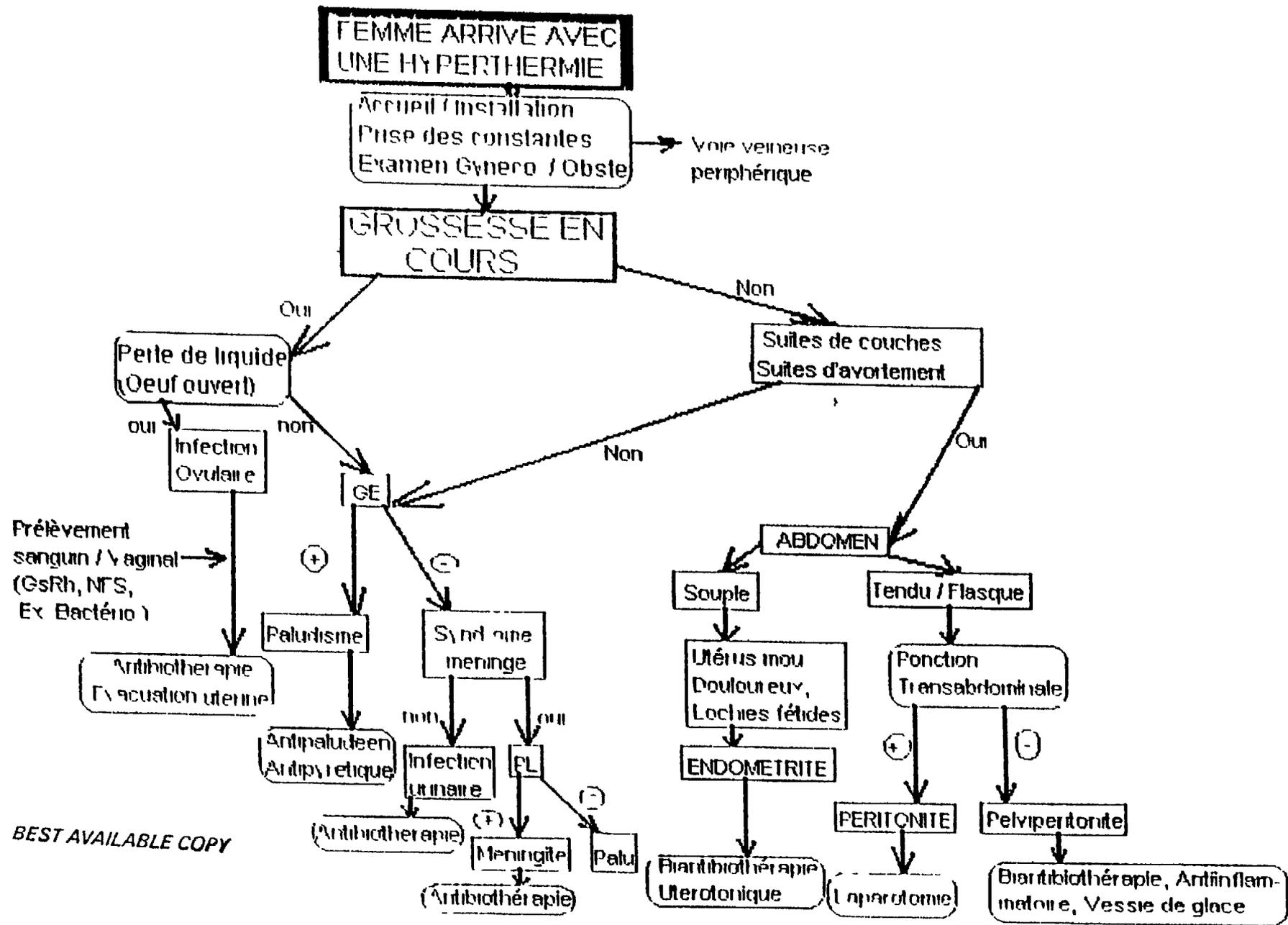


2 2 FEMME ARRIVE AVEC CRISES CONVULSIVES



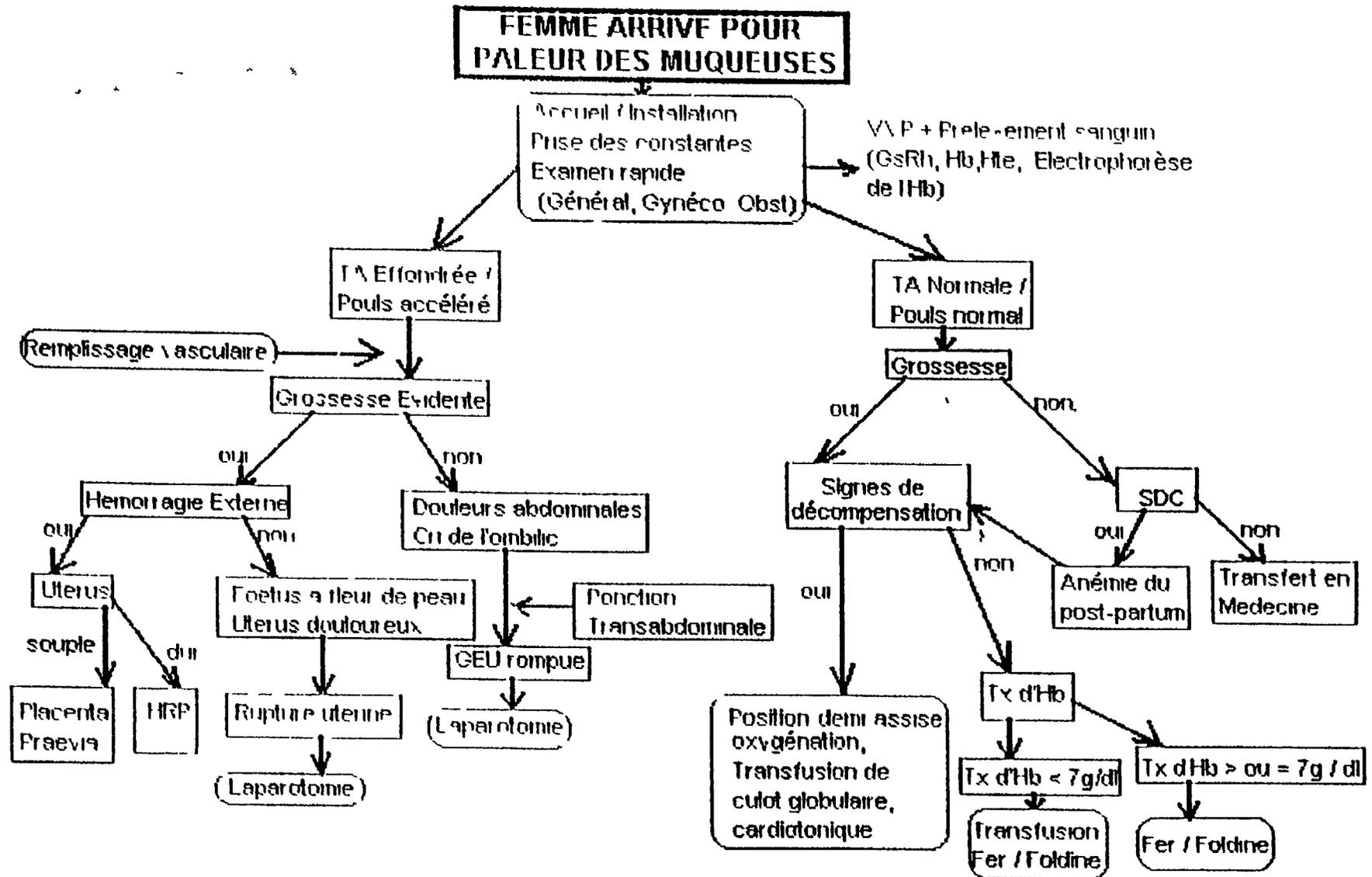
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### 2.3 FEMME ARRIVE AVEC UNE HYPERTHERMIE

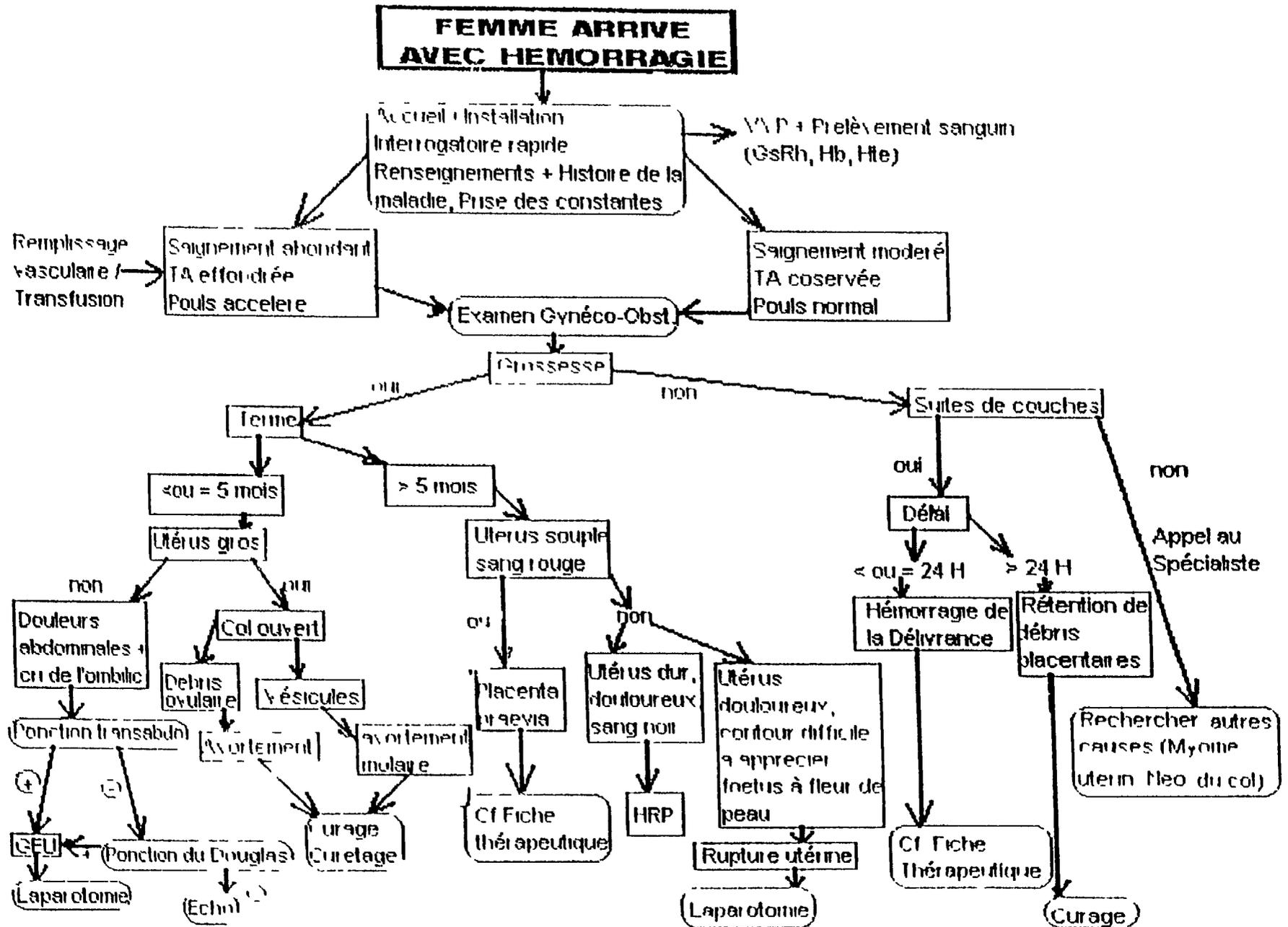


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## 2.4 FEMME ARRIVE AVEC PALEUR DES MUQUEUSES

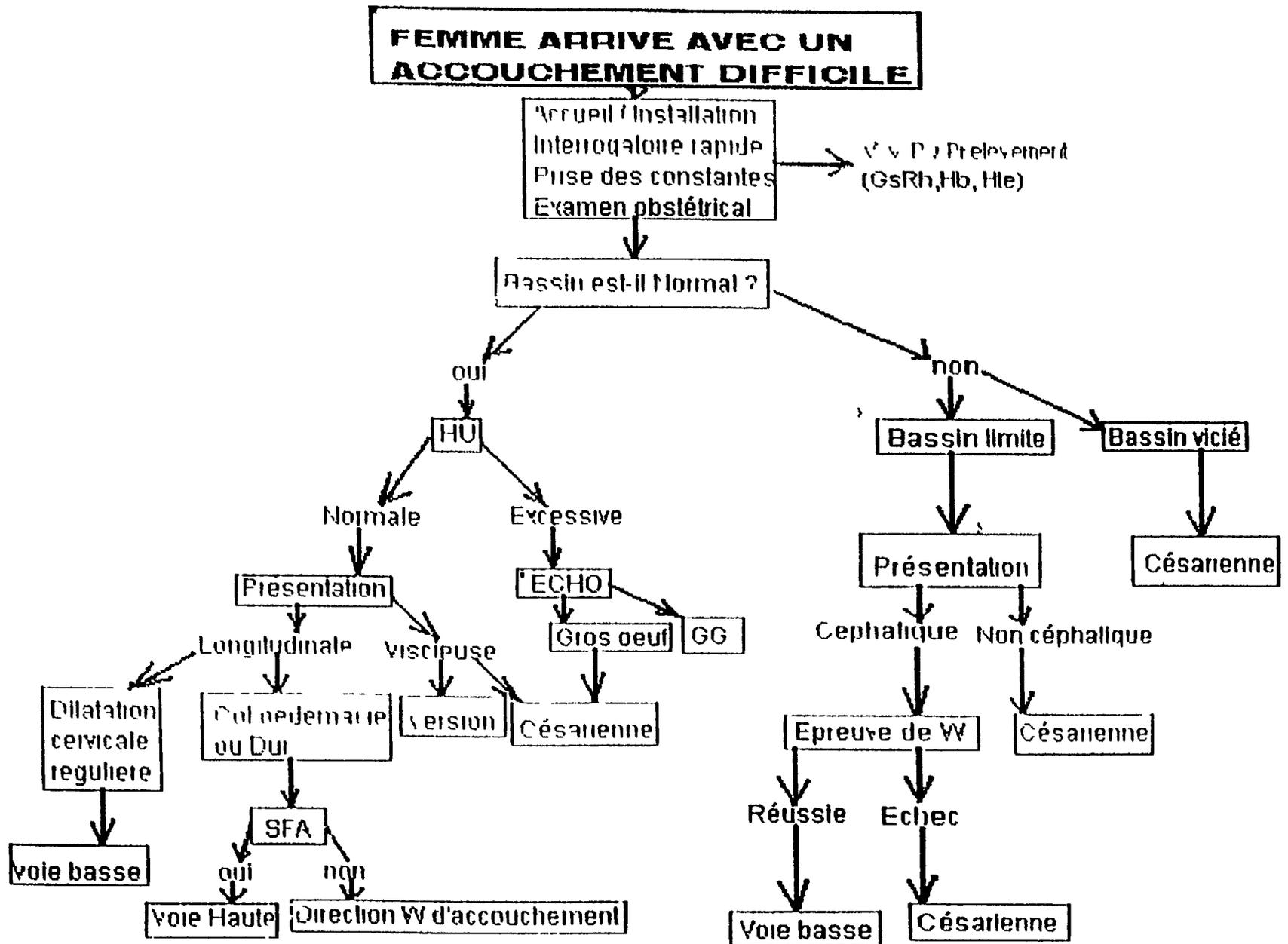


2 5 FEMME ARRIVE AVEC HEMORRAGIE



121

**2.6 FEMME ARRIVE AVEC UN ACCOUCHEMENT DIFFICILE**



172

### 3 THERAPEUTICAL CHARTS

#### 3 1 How to Manage Hemorrhaging During Delivery

##### ▣ DEFINITION

Delivery hemorrhaging is a loss of blood resulting from the placenta insertion area that takes place during delivery and during the 24 hours following an abnormal delivery as a consequence of loss of blood (over 500 ml) affecting the general state

##### ▣ OBJECTIVES

The management has four aims

- 1 Treatment of shock
- 2 Fighting hypovolemia
- 3 Stop the hemorrhage
- 4 Correct the effects on the general state (anemia, eventual functional kidney failure)

##### ▣ CONDUCT

##### ▣ Begin by

- 1 Placing a catheter in one or two peripheral veins
- 2 Blood testing through
  - GsRh
  - Hematocrit
  - Hemoglobin count
- 3 Trendelenburg positioning
- 4 Oxygenation at 3 - 6 l/mm
- 5 Vascular recuperation (or transfusion, if necessary)
  - With Dextran (1 to 2 500 cc vials)
  - Or Ringer Lactate or saline serum, 4 vials of 500 cc
- 6 Preparation of a monitoring sheet
- 7 Placement of a bedpan
- 8 Monitoring of the following vital signs
  - BP every 15 minutes
  - Pulse every 15 minutes

- Hourly diuresis
- Vaginal bleeding (estimate of blood volume)

▣ Two alternatives may be present

1 ▣ **Placenta in place**

A ▣ **Possible artificial delivery**

- 1 Artificial delivery followed by uterine revision
- 2 Uterotonic to have good uterine retraction
  - Syntocinon 5 UL in 500 cc glucose serum 5% in perfusion
  - or injectable Ergometrin 1 amp IM
  - Alternate with Ergometrin pills 1 pill 2 x/day from 3 to 5 days
- 3 Antibiotic therapy, for example Ampicillin 1 g x 3 to 4 days, IV the first day
  - followed by alternating orally 1 g x 2 days for 7 days

▣ **Hemorrhaging stops**

- Continue monitoring the following critical elements
  - BP every 30 minutes
  - Pulse every 30 minutes
  - Diuresis every 3 hours
  - Vaginal bleeding (estimate of blood volume)

▣ **Hemorrhaging persists**

- 1 Exam to detect traumatic cervical and vaginal lesions (cervical and vaginal lesions)
- 2 Repair of lesions observed (suture)

B ▣ **Artificial delivery impossible (Placenta accreta)**

- 1 Hemostatic hysterectomy
- 2 Antibiotic therapy, for example, with Ampicillin 1 g x 3 days, IV the first three days, then followed by oral administration 1 g x 2 days for 7 days
- 3 Continue monitoring the following critical elements
  - 1 BP every 15 minutes
  - 2 Pulse every 15 minutes

- 3 Hourly diuresis
- 4 Vaginal bleeding (estimate of blood volume)

2 ▣ **Placenta already delivered**

- Uterine revision

▣ **After the uterine revision, there may be two alternatives**

A ▣ **Hemorrhaging stops**

- 1 Uterotonic to have good uterine retraction
  - Syntocinon 5 UL in 500 cc glucose serum 5% in perfusion
  - or injectable Ergometrin 1amp IM
  - Alternate with Ergometrin pills 1 pill 2 x/day from 3 to 5 days
- 2 Antibiotic therapy, for example Ampicillin 1 g x 3 to 4 days, IV the first day
  - followed by alternating orally 1 g x 2 days for 7 days

B ▣ **Hemorrhaging persists**

1 ▣ **Uterine inertia**

- 1 Intravenous uterotonics - perfusion of 2 to 3 vials of Syntocinon 5 UL in 500 cc glucose serum at 5% If needed add Ergometrin
- 2 Uterine massage
- 3 Intramural parturificient injection (5 UI)
- 4 Antibiotic therapy, for example Ampicillin 1 g x 3 days, IV the first day followed by alternating orally 1 g x 2 days for 7 days

11 ▣ **In spite of good uterine retraction**

- Exam to detect traumatic genital lesions (cervical, vaginal, and perineal lesions)

▣ **If there are lesions**

- 1 Suture
- 2 Compensation of blood loss by transfusion
- 3 Antibiotic therapy, for example Ampicillin 1 g x 3 days, IV the first day followed by alternating orally 1 g x 2 days for 7 days
- 4 Continue monitoring the following critical elements

- BP every 15 minutes
- Pulse every 15 minutes
- Temperature
- Hourly diuresis
- Vaginal bleeding (estimate of blood volume)

**▣ Absence of lesions**

- 1 Fresh blood or frozen plasma transfusion
- 2 Intravenous uterotonics - perfusion of 2 to 3 vials of Syntocinon 5 UL in 500 cc glucose serum at 5% If needed, add Ergometrin inj 1 amp IM
- 3 Antibiotic therapy, for example Ampicillin 1 g x 3 days, IV the first day followed by alternating orally 1 g x 2 days for 7 days
- 4 2 kg counter weight (sandbag)

**▣ If the hemorrhaging persists in spite of treatment**

- 1 Hemostatic hysterectomy
- 2 Compensation of blood loss by fresh blood transfusion
- 3 Antibiotic therapy, for example, with Ampicillin 1 g x 3 days, IV the first three days, then followed by oral administration 1 g x 2 days for 7 days
- 4 Continue monitoring the following critical elements
  - BP every 15 minutes
  - Pulse every 15 minutes
  - Temperature twice a day
  - Hourly diuresis
  - Vaginal bleeding (estimate of blood volume)

## 3 2 MANAGEMENT OF A RETROPLACENTAL HEMATOMA

### ▣ DEFINITION

A RPH is a complication of kidney vascular syndrome by a premature displacement of a normally inserted placenta and coagulation problems

### ▣ OBJECTIVES

The management has three aims

- 1 Treatment of shock
- 2 Fight against hypocoemia
- 3 Evacuate the uterus
- 4 Correct eventual coagulation problems

### ▣ CONDUCT

#### ▣ Begin by

- 1 Placing a catheter in one or two peripheral veins
- 2 Blood testing through
  - GsRh, Hematocrit, Hemoglobin count
  - Rate of platelets, fibrinogen
  - Cephaline KAOLIN time QUICK time
- 3 Placement of a intravenous sound a demeure
- 4 Preparation of a monitoring sheet
- 5 Placement of a bedpan
- 6 Monitoring of the following vital signs
  - BP every 15 minutes
  - Pulse every 15 minutes
  - Hourly diuresis
  - Vaginal bleeding (estimate of blood volume)
  - Cervical dilation

▣ **Average and controllable hemorrhaging**

- Maximum BP > 8
- 100 < Pulse < 120

▣ **Two alternatives may occur**

1 ▣ **The fetus is alive** (most frequently the displacement is still partial it is the discreet hematoma)

A ▣ **Dilation is advanced (> 5cm)**

- 1 Artificial rupture of the water bag
- 2 Prepared wait
- 3 Normal delivery
- 4 Antibiotic therapy, for example, with Ampicillin 1 g x 3 days, IV the first three days, then followed by oral administration 1 g x 2 days for 7 days
- 5 Uterotonic parturifacient 5 UI IM during 3 to 5 days

B ▣ **Labor has not begun or dilation is not advanced (< 5cm)**

- 1 Correction of hypovolemia (Dextran Hemacel) while waiting for fresh blood
- 2 Correction of anemia by fresh blood transfusion
- 3 Cesarean section
- 4 Antibiotic therapy, for example, with Ampicillin 1 g x 3 days, IV the first three days, then followed by oral administration 1 g x 2 days for 7 days
- 5 Uterotonic parturifacient 5 UI IM during 3 to 5 days
- 6 Continue monitoring the following critical elements
  - BP every 15 minutes
  - Pulse every 15 minutes
  - Temperature
  - Hourly diuresis
  - Vaginal bleeding (estimate of blood volume)

2 ▣ **The Fetus is dead**

A ▣ **Beginning of labor**

- 1 Major antispasmodic Pethidine 100mg IM
- 2 Artificial rupture of the membranes
- 3 Parturifacient perfusio 5 U1 in 500 cc glucose serum at 5% at a potency of 8 drops, increased progressively until uterine contractions are full and regular
- 4 Correction of hypovolemia Dextran, Hemacel
- 5 Fresh blood transfusion
- 6 Monitoring the following critical elements
  - BP every 15 minutes
  - Pulse every 15 minutes
  - Hourly diuresis
  - Vaginal bleeding (estimate of blood volume)
  - Cervical dilation

B ▣ **Beginning of labor successful**

- 1 Normal delivery followed by
- 2 Thorough uterine revision
- 3 Antibiotic therapy for example, with Ampicillin 1 g x 3 days, IV the first three days then followed by oral administration 1 g x 2 days for 7 days
- 4 Uterotonic Syntocinon 5 U1 x 2 days IM for 3 to 5 days
- 5 Continue monitoring the following critical elements
  - 1 BP every 15 minutes
  - 2 Pulse every 15 minutes
  - 3 Hourly diuresis
  - 4 Vaginal bleeding (estimate of blood volume)

▣ **Two alternatives may occur**

1 ▣ **Increased hemorrhaging or hemorrhaging is contained**

- Continue monitoring the following critical elements
  - BP every 30 minutes
  - Pulse every 30 minutes

- a - Diuresis every three hours
- Vaginal bleeding (estimate of blood volume)

ii  **Uncontrollable hemorrhaging**

- 1 Hysterectomy
- 2 Antibiotic therapy, for example, with Ampicillin 1 g x 3 days IV the first three days then followed by oral administration 1 g x 2 days for 7 days
- 3 Continue monitoring the following critical elements
  - BP every 15 minutes
  - Pulse every 15 minutes
  - Temperature twice a day
  - Hourly diuresis
  - Vaginal bleeding (estimate of blood volume)

C  **Inducement unsuccessful**

- 1 Cesarean section
- 2 Antibiotic therapy, for example, with Ampicillin 1 g x 3 days, IV the first three days, then followed by oral administration 1 g x 2 days for 7 days
- 3 Uterotonics Syntocinon 5 UI 2 x/day IM for 3 to 5 days
- 4 Continue monitoring the following critical elements
  - 1 BP every 15 minutes
  - 2 Pulse every 15 minutes
  - 3 Hourly diuresis
  - 4 Vaginal bleeding (estimate of blood volume)

**Two alternatives may occur**

i  **Increased hemorrhaging or hemorrhaging is contained**

- Continue monitoring the following critical elements
  - BP every 30 minutes
  - Pulse every 30 minutes
  - Diuresis every 3 hours

11 **▣ Uncontrollable hemorrhaging**

- 1 Hysterectomy
- 2 Antibiotic therapy, for example, with Ampicillin 1 g x 3 days IV the first three days, then followed by oral administration 1 g x 2 days for 7 days
- 3 Continue monitoring the following critical elements
  - BP every 15 minutes
  - Pulse every 15 minutes
  - Hourly diuresis

**▣ Abundant and uncontrollable hemorrhaging**

- BP < 8 maximum
- Pulse beat not obtainable (>120) (\*sic)

- 1 Cesarean section
- 2 Antibiotic therapy, for example, with Ampicillin 1 g x 3 days, IV the first three days then followed by oral administration 1 g x 2 days for 7 days
- 3 Uterotonics Syntocinon 5 U1 2 x/day IM for 3 to 5 days

**▣ Two alternatives may occur**

**A ▣ Hemorrhaging stops**

- Continue monitoring the following critical elements
  - BP every 15 minutes
  - Pulse every 15 minutes
  - Hourly diuresis

**B ▣ Uncontrollable hemorrhaging**

- 1 Hysterectomy
- 2 Continue monitoring the following critical elements
  - BP every 15 minutes
  - Pulse every 15 minutes
  - Hourly diuresis

### 3 3 MANAGEMENT OF PLACENTA PREVIA

#### ▣ DEFINITION

The placenta previa is an abnormally low insertion of the placenta on the lower part of the uterus mainly manifested clinically by painless, repetitive hemorrhaging of red blood and of varying abundance

#### ▣ OBJECTIVES

##### A During pregnancy

- 1 Correct the effects of hemorrhaging on the state of the mother
- 2 Monitor the fetal heartbeat

##### B During delivery

- 1 Correct the effects of hemorrhaging on the state of the mother
- 2 Control hemorrhage
- 3 End delivery

#### ▣ CONDUCT

##### ▣ Begin by

- 1 Placing a catheter in one or two peripheral veins
- 2 Blood testing through
  - GsRh
  - Hematocrit
  - Hemoglobin count
- 3 Vascular recuperation (or transfusion, if necessary)
  - With Dextran (1 to 2 500 cc vials)
  - Or Ringer Lactate or saline serum, 4 vials of 500 cc
- 4 Blood transfusion if hemoglobin count is <7 g/dl
- 5 Preparation of a monitoring sheet
- 6 Placement of a bedpan
- 7 Monitoring of the following vital signs
  - BP every 15 minutes

- Pulse every 15 minutes
- Hourly diuresis
- Vaginal bleeding (estimate of blood volume)
- Fetal heartbeat
- Dilation of the cervix

▣ **Two alternatives can occur**

▣ **Massive hemorrhaging**

- 1 Cesarean to save the mother independently of the pregnancy term
- 2 Antibiotic therapy, for example, with Ampicillin 1 g x 3 days, IV the first three days then followed by oral administration 1 g x 2 days for 7 days
- 3 Uterotonics Syntocinon 5 UI 2 x/day IM for 3 to 5 days

▣ **Average or minimal hemorrhaging**

- Echography (for facilities with echographs) to assess placenta location and eventually the term of pregnancy if the last menstruation date is not known

▣ **Two alternatives may occur**

A ▣ **It is a recovering placenta**

▣ **Before 36 weeks of amenorrhea**

- 1 Hospitalization with absolute rest in bed
- 2 Betaminetics Salbutamol 6 vials in 500 cc glucose serum at 5%
- 3 Wait until 36 weeks of amenorrhea
- 4 Fer/Foldine 1 pill x 3/day
- 5 Blood transfusion if hemoglobin count is < 7g/dl
- 6 Cesarean section if the hemorrhaging persists

▣ **After 36 weeks of amenorrhea**

- 1 Cesarean if the fetus is alive
- 2 Simpson maneuver if the fetus is dead and cervical dilation is sufficient

- 3 Cesarean section if the maneuver is not successful
- 4 Antibiotic therapy, for example, with Ampicillin 1 g x 3 days IV the first three days, then followed by oral administration 1 g x 2 days for 7 days
- 5 Uterotonics Syntocinon 5 UI 2 x/day IM for 3 to 5 days

**B**  In the case of a marginal or lateral placenta (non-recovering)

**i**  **Before 36 weeks of amenorrhea**

- 1 Wait until 36 weeks of amenorrhea
- 2 Fer/Foldine 1 pill x 3/day
- 3 Blood transfusion if hemoglobin count is  $< 7\text{g/dl}$
- 4 Local antibiotic therapy 1 gynecological tablet x 2 per day as long as the bleeding persists
- 5 Cesarean section if the hemorrhaging persists

**ii**  **After 36 weeks of amenorrhea**

Non-cephalic presentation

- 1 Cesarean section
- 2 Antibiotic therapy, for example, with Ampicillin 1 g x 3 days, IV the first three days, then followed by oral administration 1 g x 2 days for 7 days
- 3 Uterotonics Syntocinon 5 UI 2 x/day IM for 3 to 5 days

Cephalic presentation

- 1 Wait for labor to begin
- 2 Perform a hemostatic rupture of the membranes
- 3 Monitoring of labor by a partogram
- 4 Fer/Foldine 1 tablet x 3/day
- 5 Blood transfusion if hemoglobin count is  $< 7\text{g/dl}$

**Two alternatives can occur**

**Normal evolution of labor**

- 1 Normal delivery
- 2 Antibiotic therapy by beta lactamins for a total of 8 days  
Ampicillin 1g 3 to 4 times a day IV or 1g x2/day  
intraosseous
- 3 Uterotonics Syntocinon 5 UI x 2/day IM for three days

▣ **If hemorrhaging persists**

- 1 Cesarean section
- 2 Antibiotic therapy based on beta lactamin for a total of 8 days For example Ampicillin 1 g x 3 to 4 x/day  
intraosseous
- 3 Uterotonics Syntocinon 5 UI 2 x/day IM for 3 days
- 4 Continue monitoring the following critical elements
  - BP every 15 minutes
  - Pulse every 15 minutes
  - Hourly diuresis
  - Temperature twice a day

### 3 4 MANAGEMENT OF ABORTION

#### ▣ DEFINITION

Abortion is the expulsion of the egg before the 180 day term (28 weeks of amenorrhea) with the appearance of uterine contractions, variable abundant hemorrhaging and transformation of the isthmus and cervix. It occurs in two phases - phase of threat of abortion, and the abortion phase itself.

#### ▣ OBJECTIVES

##### A Phase of threat of abortion

- 1 Compensation of blood loss
- 2 Stopping uterine contractions

##### B Abortion phase

- 1 Compensation for blood loss
- 2 Evacuation of the uterus
- 3 Infection prevention

#### ▣ CONDUCT

##### ▣ Phase of threat of abortion

##### ▣ Begins by

- 1 Placing a catheter in one or two peripheral veins
- 2 Blood testing through
  - BG Rh
  - Blood formula numeration
  - Perfusion of large molecules (Dextran 70 or Hemacel)
- 2 Hematocrit
- 3 Hemoglobin count

##### ▣ The following are two alternatives that can occur

##### A ▣ With embryo / fetus alive

**i ☐ Before 10 weeks of amenorrhea (before two months)**

- 1 Bed rest
- 2 Antispasmodic Visceralgine 2 amp in 500 cc glucose serum at 5%
- 3 Complete the para-clinical balance TD, CBUE, TPHA
- 4 Monitoring of critical elements
  - BP twice a day
  - Pulse twice a day
  - Blood loss (dressing)
  - Temperature twice daily
  - Eventual ovarian debris

**ii ☐ Between 10 and 19 weeks of amenorrhea (2 to 4 months)**

- 1 Bed rest
- 2 Antispasmodic Visceralgine 2 amp in 500 cc glucose serum at 5%
- 3 Complete the para-clinical balance TD, CBUE, TPHA
- 4 Progesterone 1g IM the first day, thereafter 500mg every 5 days for 1 month or Utrogestan, 1 capsule 2 to 3 times a day for 1 month
- 5 Local antibiotic therapy gynecological tablets (Tergynan, amphoclyline)
- 6 Monitoring of critical elements
  - BP twice a day
  - Pulse twice a day
  - Blood loss (dressing)
  - Temperature twice daily
  - Uterine height
  - Fetal heart beat

**iii ☐ After 19 weeks of amenorrhea (4 months)**

- 1 Bed rest
- 2 Uterorelaxant -  $\beta$ mimetics 10 amp Salbutamos 0.5mg in 500 cc glucose serum 5%
  - Diazepam (Valium) 10mg x 2 per day until the disappearance of uterine contractions and bleeding
- 3 Complete the para-clinical balance TD, CBUE, TPHA
- 4 Local antibiotic therapy gynecological tablets (Tergynan, amphoclyline)

7 Monitoring of critical elements

- BP twice a day
- Pulse twice a day
- Blood loss (dressing)
- Temperature twice daily
- Eventual ovulatory debris
- Uterine height
- Fetal heart beat

**B ▣ Interrupted pregnancy**

- 1 Progressive laminar dilation
- 2 Uterine aspiration or curettage
- 3 Uterotonics Ergometrin 1 to 2 tablets x 2 per day for 3 - 5 days
- 4 Antibiotic therapy
  - Cotrimoxazole 480mg 2 tablets x 2 per day for 8 days
  - Doxycylin 200 mg per day for 8 days
- 5 Monitoring of critical elements
  - BP twice a day
  - Pulse twice a day
  - Temperature twice a day

**2 ▣ Abortion**

**▣ Begins by**

- 1 Placing a catheter in one or two peripheral veins
- 2 Blood testing through
  - GsRh
  - Blood formula numeration
  - Hemoglobin count
- 3 Perfusion of large molecules (Dextran 70 or Hemacel)

**▣ Three alternatives can occur**

**1 ▣ Before 15 weeks of amenorrhea**

**A ▣ Open cervix**

- 1 Manual curettage
- 2 Uterotonics Ergometrin, 1 to 2 tablets x 2/day for 3-5 days
- 3 Antibiotic therapy Cotrimoxazole 480mg, 2 tablets x2/day for 8 days

**B ▣ Closed cervix**

- 1 Major analgesic Pethidine 100 mg, slow IV, associated with Diazepam (Valium) 10 mg, slow IV
- 2 Progressive laminar dilation
- 3 Uterine aspiration or curettage
- 4 Uterotonics Ergometrin, 1 to 2 tablets x 2/day for 3-5 days
- 5 Antibiotic therapy Cotrimoxazole 480mg, 2 tablets x2/day for 8 days  
Doxycycline 200mg per day for 8 days
- 6 Monitoring of critical elements
  - BP twice a day
  - Pulse twice a day
  - Temperature twice a day

**2 ▣ After 15 weeks of amenorrhea**

**A ▣ Open cervix**

- 1 Manual curettage
- 2 Uterotonics Ergometrin, 1 to 2 tablets x 2/day for 3-5 days
- 3 Antibiotic therapy Cotrimoxazole 480mg, 2 tablets x2/day for 8 days  
Doxycycline 200mg per day for 8 days

**B ▣ Closed cervix**

- 1 Antispasmodic HHB 2 amp, IV every 30 minutes (6 amp )
- 2 Parturifacient perfusion 5UI in 500 cc glucose serum at 5%

**▣ Two alternatives can occur**

**1 ▣ The cervix opens**

- 1 Manual curettage
- 2 Uterotonics Ergometrin, 1 to 2 tablets x 2/day for 3-5 days
- 3 Antibiotic therapy Cotrimoxazole 480mg, 2 tablets x2/day for 8 days  
Doxycycline 200mg per day for 8 days

## ii ☐ The cervix does not open

- 1 Major analgesic Pethidine 100 mg, slow IV associated with Diazepam (Valium) 10 mg, slow IV
- 2 Cervical dilation by bougie de Hegar
- 3 Uterine evacuation with appropriate forceps
- 4 Uterine revision
- 5 Uterotonics Ergometrin, 1 to 2 tablets x 2/day for 3-5 days
- 6 Antibiotic therapy Cotrimoxazole 480mg 2 tablets x2/day for 8 days, Doxycycline 200mg per day for 8 days
- 7 Monitoring of critical elements
  - BP twice a day
  - Pulse twice a day
  - Temperature twice a day
  - Vulvar discharge

## 3 ☐ Molar abortion

### ☐ To begin

- 1 Major analgesic Pethidine 100 mg, slow IV, associated with Diazepam (Valium) 10 mg slow IV
- 2 Cervical dilation by bougie de Hegar
- 3 Curettage / Aspiration under parturifacient perfusion (Syntocinon 5 UI in 500 cc glucose serum at 5%)
- 4 Sending the sample for anatomical / pathological testing
- 5 Antibiotic interosseous Cotrimoxazole 480 mg or Doxycycline 200 mg basis, per day for eight days

### ☐ Eight days after the first curettage

- 1 Perform a second curettage
- 2 Oestroprogestatives for 2 years (Microgynon / Eugynon 1 tablet/day)

## 3 Monitoring

### A Clinical monitoring

- 1 General state

- 2 Uterine involution
- 3 Disappearance of luteiohormonal cysts (signs of a good evolution)

**1 Biological monitoring**

- Dosage of  $\beta$  HCG 6 weeks after abortion  
Otherwise, perform an immunological pregnancy test, 6 weeks after the abortion

▣ **Two alternatives can occur**

▣ **Favorable evolution**

- $\beta$  HCG rate drops and becomes zero  
(Negative biological pregnancy test)
- Metrorrhagy stops
- Disappearance of luteiohormonal cysts

▣ **Unfavorable evolution**

- Eventual reappearance of metrorrhagy
- Appearance of new luteiohormonal cysts
- Persistence of  $\beta$  HCG in the blood  
(Biological pregnancy test positive)

- 1 Curettage for biopsy
- 2 Anatomical / pathological test of the sample
- 3 Uterotonics Ergometrin, 1 to 2 tablets x 2/day for 3-5 days
- 4 Antibiotic therapy Cotrimoxazole 480mg, 2 tablets x2/day for 8 days or Doxycycline 200mg per day for 8 days
- 5 Iron / Foline 1 tablet x 3 per day
- 6 Refer to an oncologist if choriocarcinoma

### 3 5 MANAGEMENT OF ECLAMPSIA

▣ Eclampsia is a convulsive state complicating a vascular-renal syndrome that occurs repeatedly followed by a comatose state of variable duration and depth and that heavily aggravates the fetal or maternal prognosis

▣ OBJECTIVES

- 1 Slow down the convulsive crises
- 2 Treat arterial hypertension
- 3 Evacuate the uterus
- 4 Avoid neurological complications of the disease

▣ CONDUCT

▣ Begin by

- 1 Installation and immobilization in a retention bed
  - 2 Install an 18 G catheter in a peripheral vein
  - 3 Injection of anti-convulsants if patient has convulsions
    - Either Diazepam 5 - 10 mg IV, renewable  
or 40 mg in 250ml glucose serum at 5% in perfusion
    - Or Magnesium sulfate
      - 4g in 20ml solution to 20% in slow IV
      - 20 g in 500 cc glucose serum at 5% in perfusion  
( 1 - 2 g / h or 25 - 50 ml solution / hour
- + Gardenal 40 mg 5 amp / day IM

▣ Followed by

- 1 Taking of vital signs, BP, pulse and respiratory frequency
- 2 Quick exam

▣ If BP  $\geq$  16/10 (avoid having BP  $<$  13/8) Hypertensive treatment

- Either Catapresan 0 15 mg 1 amp 3 to 4 x/day IM or 4 to 5 amp In perfusion in 250 ml glucose serum at 5% (feed 15 drops per minute, then accelerate if BP increases or reduce if BP

- diminishes )
- Or Nepressol 25mg 1 amp IM and / or dilute in 10 cc glucose serum at 5% in slow IV then perfusion of 4 to 6 amp /day (feed 15 drops per minute then accelerate if BP increases or reduce if BP diminishes )
  - Or Adellate 1 tablet 3 to 4 times a day broken, pressed (and placed under the tongue or sprayed into the nose) Avoid, if possible, before delivery

▣ **If comatose**

- 1 Place Guedel cannula
- 2 Aspiration of upper air tracts if blocked
- 3 Oxygenation 3 to 6 l/mm

▣ **This is followed by**

- 1 Blood testing for Rh BG, creatinemia, uricemia, and blood ionogram, BFN+, platelet count  
Kaolin cephalin time and fibrinogen
- 2 Placement of intravenous sound a demeure with urine pouches
- 3 Preparation of a monitoring sheet
- 4 Hydro-electrolytic resuscitation  
Perfusion of 2 to 2.5 l/day Crystalloids, including 1 l Ringer and 1.5 l glucose serum at 5%
- 5 Antibiotic therapy for coverage through mono-therapy based on Ampicillin or Amoxicillin 1 g 3 to 4 times / day IV
- 6 Anti-malarial treatment Quinine 600 mg 1 amp 2 times / day in perfusiom in 500 cc glucose serum at 10%
- 7 Anti-emetic Metoclopramide 1 amp IM if vomiting

▣ **The obstetrical treatment can finally begin**

▣ **Three alternatives can occur**

1 ▣ **During the pregnancy**

A ▣ **Before 37 weeks of amenorrhea**

1 ▣ **If crises are frequent**

- Cesarean section, independently of the term

**ii ☐ If crises are rare and pregnancy is not at term**

- Wait and be prepared

**iii ☐ If the fetus is alive and there are few or no crises**

- Monitoring

**iv ☐ If the fetus is dead and few or no crises**

- Start normal delivery

**☐ If successful**

- Uterine revision right away in case of doubt on uterine evacuation

**☐ If it fails**

- Cesarean section

**B ☐ After 37 weeks of amenorrhea**

- Systematic cesarian section

**2 ☐ During labor**

**A ☐ Beginning of labor**

- Cesarean section

**B ☐ If labor is advanced**

**☐ If the pelvis is normal**

- Normal delivery

**☐ If the pelvis is abnormal**

- Cesarean section

**C ▣ If the crises are frequent**

- Cesarean section

**3 ▣ During labor**

- Exam of the placenta

▣ If the placenta is incomplete

- Uterine revision to verify evacuation of uterus

▣ **Items that must be observed before, during, and after all of these tasks for monitoring and nursing**

- **Monitoring and record keeping**

- BP, pulse, respiratory rhythm and conscious state every 15 mn during the first hour every hour the first 24 hours, then every two hours until BP is normal
- Diuresis every hour (1 ml/kg/h)
- Crises, the first 24 h, then every 12 hours (Time of beginning and duration)
- The fetal HB are taken and registered every hour, if there are crises  
In the absence of crises they are recorded 2 times a day

- **Nursing for prolonged comas**

- Alternating lateral decubitus every 2 to 3 hours
- Saline serum at 9% eye wash three times a day
- Mouth wash with bicarbonate serum 2 times a day
- Warm permanganated water intimate wash 2 times a day

### 3 6 MANAGEMENT OF ACUTE MALARIA DURING PREGNANCY

#### ▣ DEFINITION

Malaria is a parasite disease characterized by a positive test to *Plasmodium falciparum* and is manifested clinically by one or several of the following signs

- Somnolence, confusion no being able to walk or sit
- Coma
- Convulsions
- Severe anemia
- Jaundice
- Respiratory distress
- Cardiovascular attack / state of shock
- Oliguria (diuresis < 4 ml / kg / 8 hours)
- Dark urine “Coca cola”

and can complicate the normal progression of pregnancy by

- a threat of abortion / threat of premature delivery
- a death in utero

#### ▣ OBJECTIVES

- 1 Correct clinical manifestations
- 2 Cure the parasitemia
- 3 Avoid pregnancy complications

#### ▣ CONDUCT

##### ▣ Begin by

- 1 Preparing one or two peripheral veins
- 2 Blood testing for
  - TD, blood smear, parasite density
  - Glycemia
  - Hemoglobin, hematocrit count
- 3 Preparation of a monitoring sheet
- 4 Monitoring will include

- BP
  - Temperature
  - State of consciousness
  - Diuresis
  - HB
  - Uterine contractions
- 5 Symptomatic treatment

▣ **In the presence of hypoglycemia**

- Glucose serum perfusion 30% 50 - 100 ml or glucose serum 10% 500 ml

▣ **In the presence of convulsions**

- Diazepam (Valium) 10 mg in slow IV Repeat as needed

▣ **In the presence of hyperthermia**

- Humid wrap
- Aspegic 1 g IM or Propacetamol 1g IM

▣ **In the presence of severe anemia (hemoglobin count < 7 g / dl)**

- Oxygenation
- Transfusion iso group iso Rh total blood 20 ml/kg

▣ **In the presence of coma**

- Free upper air tracts
- Oxygenation

▣ **This is followed by**

- A quinine perfusion 10 mg/kg every 8 hours or 30 mg/kg / 24 hours, alternated, if possible by quinine, interosseous, in the same amount Total duration of treatment 7 days
- A tocolytic treatment by
  - Salbutamol in perfusion, 6 amp Of 2 mg in 500 cc glucose serum at 5% Initial treatment 8 drops

- / min To increase progressively until the uterine contractions stop
- Or Salbutamol tablets, 12 mg / 24 hours, divided in 3 or 6 dosages, either 1 tablet 3 times / day for 4 mg tablets or 1 tablet 6 times / day for 2 mg tablets
  - Diazepam (Valium) 10 mg IM or 1 tablet at 5 mg 2 times / day to avoid palpitations (Salbutamol side effect)
  - Prescription of Iron / Folate of 1 tablet 3 times a day

**▣ This is completed by**

- 1 A blood test to control
  - parasite density
  - Hemoglobin, hematocrit count
- 2 An obstetrical echography (for health facilities with availability) to assess fetal vitality when the pregnancy term does not allow this assessment with a Pinard stethoscope or by fetal puls detector
- 3 Anti-malarial prophylaxis  
600 mg chloroquine per week

## ANNEXES

### Annex 1

#### MEDICAL MATERIAL - CESARIAN SECTION TYPE OR CESARIAN SECTION / LAPAROTOMY KIT

- 1 18 or 20 gauge catheter (1)
- 2 Perfuser (1)
- 3 Ringer lactate 500 cc (3 flasks)
- 4 Glucose serum 5% 500 cc (2 bottles)
- 5 Saline serum 9% 500 cc (2 bottles)
- 6 Disposable syringes 10 cc (4)
- 7 Intravenous sound no 16 (1)
- 8 Urine bags (1)
- 9 Atropine 1 mg (1 amp )
- 10 Valium 10 mg (1 amp )
- 11 Perforated tape (1 roll)
- 12 Rectified ether (1 flask)
- 13 Syntocinon (2 amp )

Eventually, depending on the case, this material could be completed by

- 14 Dextran (1 fl )
- 15 Lumbar puncture needle 25 G (1)
- 16 Marcaine 0.5% (1 fl)

**Annex 2**

**Table 1 MONITORING SHEET**

**HR Denomination**

First name and family name

Age

Admission diagnosis

Record number

**Monitoring intervals**

Date and time	T° (1)	TA (2)	Pulse (3)	Respiratory frequency (4)	Diuresis (5)	Conscious state (6)	Crises (7)	Fetal HB (8)	Bleeding (9)	(*)? HU (10)	Treatment (11)	Obs (12)

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Annex 3

TABLE 2 MONITORING PLAN

- 1 Monitoring elements (see monitoring sheet)
- 2 Monitoring intervals

The monitoring intervals will vary according to the monitoring elements and the state of the patient

Intervals in terms of emergencies	T°	BP Pulse respiratory frequency	Diuresis	Consciousness	Crisis	Bleeding	HB
1 Post-op	1 time / 6 hours per day then 2 times a day after 1 <sup>st</sup> day post op	Every 15 for the first hour Every hour during the following 4 hours and every 3 hours thereafter if there are no problems After the 1 <sup>st</sup> post-op monitor twice a day	Once an hour during the 1 <sup>st</sup> 24 hours then one time a day after 1 <sup>st</sup> day post op	1 hour		Once / hour during the 1 <sup>st</sup> 24 hours then once a day after 1 <sup>st</sup> day post-op	
2 Hemorrhage	Every 12 h	Every 15 30	1 hour	1 hour	-	30' 60'	60
3 Eclampsia	Every 12 h	Every 15 the 1 <sup>st</sup> hour Every hour for the 1 <sup>st</sup> 24 hours then every 2 hours until BP is normal	1 h the 1 <sup>st</sup> 24 hours then every 12 hours	15 30 60'	Time of onset Duration	1 hour	60
4 Infection	Every 12 h	Every 12 h	24 hours	12 hours	-	12 hours	
5 State of shock (Septic or hemorrhagic)	Every 12 h	Every 15 until 8 maximum or 30 until 10 maximum	1 hour until normalization of BP and pulse then every 24 h	30'-	-	15 30	-

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**POLICY AND STANDARDS FOR REFERRAL HOSPITAL  
EMERGENCY OBSTETRICAL CARE  
IN THE REPUBLIC OF BENIN**

**VOLUME 5: RHEOC STANDARDS OF PERFORMANCE AND  
DATA SUPPORT**

**(NOT TO BE CITED)**

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## SIGNS AND ABBREVIATIONS

WHO	World Health Organization
RHEOC	Referral Hospital Emergency Obstetrical Care
MPREPE	“Ministere du Plan, de la Restructuration Economique et de la promotion de l’Emploi”(Ministry of Planning, Economic Restructuring, and Employment Promotion)
MSPSCF	“Ministere de la Sante, de la Protection Sociale et de la Condition Feminine (Ministry of Health, Social Protection, and the Feminine Condition)
MSP	“Ministere de la Sante Publique” (Ministry of Public Health)
OMS	“Organisation Mondiale de la Sante” (WHO)
INSAE	“Institut National de la Statistique et de l’Analyse Economique” (National Institute of Statistics and Economic Analysis)
SSDRO	“Service des Statistiques, de la Documentation et de la Recherche Operationelle” (Statistics, Documentation, and Operational Research Service)
MS	Ministere de la Sante” (Ministry of Health)
DSF	“Direction de la Sante Familiale” (Agency for Family Health)
PBA/SSP	“Projet Benino-Allemand des Soins de Sante Primaires” (Benin-German Primary Health Care Project)
UNICEF	United Nations Children s Fund
OMR	Obstetrical Mortality Rate

## LIST OF TABLES

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THE MATERI MOTTO

OUR MOTTO:

TO NO LONGER FACE DEATH  
WHILE GIVING NEW LIFE

This is what Josee GBEDAGBA, midwife at Mater, inscribed on the delivery room door of her maternity ward

# 1 CONCEPT DEFINITION

## 1 Policy

Concerted way of carrying out a task [1]

Official statement on the way to conduct, manage a situation

## 2 Norms of care

Performance of care generally observed [2]

## 3 Standards of care

Performance of care considered professionally acceptable [2]

## 4 Explanation of the definition of obstetrical care

### 4 1 Obstetrical care

Prenatal care, per and postpartum and early neonatal care

### 4 2 Essential obstetrical care

Essential care relative to the management of complications linked to pregnancy and delivery and specific neonatal care This term includes - however not exclusively - emergency obstetrical care including the elements of care that are most needed to manage unexpected complications, such as eclampsia, placenta retention postpartum hemorrhaging etc [5]

The total scope of essential obstetrical care can be found in Annex 1

### 4 3 Emergency obstetrical care

Care directed at managing unexpected complications, such as eclampsia, placenta retention, postpartum hemorrhaging etc [5]

### 4 4 Basic maternal care

Management of normal pregnancies and deliveries This includes the care, delivery under proper hygienic and safety conditions, and postpartum care, specifically during the first days after delivery [5]

5 Emergency obstetrical care at the primary, secondary, and tertiary levels as used in this document

Care reserved for pregnant women with pregnancy-puerperal pathologies

– Primary level emergency obstetrical care that include

The administration of intravenous antibiotics, the administration of intravenous parturifacients, the administration of intravenous anti-convulsants, artificial childbirth uterine revision, digital treatment, curettage, manual or electric uterine aspiration and the application of suction,

– Secondary level emergency obstetrical care, including all the care of the primary level as well as blood transfusions,

– Tertiary level emergency obstetrical care including the care of the first two levels as well as delivery by forceps and obstetric surgery (specifically cesarian sections )

6 Health facilities providing primary level emergency obstetrical care These are health facilities that provide the primary level emergency obstetrical care mentioned herein

7 Health facilities providing secondary level emergency obstetrical care These are health facilities that provide the secondary level emergency obstetrical care mentioned herein

8 Health facilities providing tertiary level emergency obstetrical care These are health facilities that provide the tertiary level emergency obstetrical care mentioned herein or delivery of emergency obstetrical care by the referral hospital

9 Referral hospital

Public or private facility where tertiary level emergency obstetrical care is provided as well as medical and pediatric emergency care

## 2 RHEOC STANDARDS OF PERFORMANCE

### 2.1 Rheoc Delivery Capacity

Vital resources are those that can never be lacking for RHEOC delivery of care

■ **Table 1 List of vital resources**

1	Vital infrastructure
1	Existence of a functional surgical center
2	Existence of an intensive care unit
3	Intensive care sector for the newborn
2	Vital human resources
4	Existence of at least 3 midwives in the maternity ward watch system
5	Existence of at least one gynecologist - obstetrician and one surgeon or physician trained in surgical interventions
6	Existence of at least two anesthetists resuscitation technicians or personnel who acts as such
7	Existence of at least two instrument technicians or personnel who acts as such
8	Existence of at least two laboratory technicians
3	Vital material resources
9	Existence of at least two complete kits for cesarian sections in the surgical center
10	Existence of at least one curettage kit in the surgical center
11	Existence of at least one forceps kit in the surgical center
12	Existence of a set of suction material in the delivery room
4	Vital supplies
13	Existence of oxygen in the delivery room surgical center and intensive care unit
14	Existence of a stock of catheters in the delivery room intensive care unit and surgical center
15	Existence of a stock of perfusion devices in the delivery room surgical center and intensive care unit
16	Existence of blood bags in the laboratory / blood bank
17	Existence of a stock of gloves in the delivery room
5	Functional ambulance service

■ **Table 1 List of vital resources (continuation and end)**

6	Vital (essential) drugs
-	Uterotonic in the delivery room and dispensing pharmacy
1	Oxytocine inj
-	Intravenous solutions in the delivery room surgical center and dispensing pharmacy
2	Dextrose 5%
3	Ringer lactate
4	Saline serum 9 0/00
-	Macromolecules in the delivery room surgical center and dispensing pharmacy
5	Dextran perf
-	Anticonvulsants in the delivery room surgical center and dispensing pharmacy
6	Diazepam (Valium) inj 10 mg
-	Anti hypertensives in the delivery room surgical center and dispensing pharmacy
7	Clonidine (Catapressan) inj
-	Diuretics in the delivery room surgical center and dispensing pharmacy
8	Furosemide (Lasix) inj 40mg
-	Non-morphine analgesics and antipyretics in the delivery room surgical center and dispensing pharmacy
9	Propacetamol inj (Prodafalgan)
-	Antibiotics in the delivery room surgical center and dispensing pharmacy
14	Ampicillin inj
15	Gentamycin inj
16	Metronizadol (Flagyl) inj
-	Corticoids in the delivery room surgical center and dispensing pharmacy
13	Dexamethasone
-	Anesthetics in the surgical center
15	Atropine inj
16	Ketamine inj
17	Pethidine inj
18	Thiopental inj
19	Gallamine inj
20	Bupivacaine 0.5 % inj
21	Ephedrin inj
22	Halothane (Fluothane)
23	Adrenalin
-	Blood and blood products in the laboratory
23	Total blood

## 2.2 ASSESSMENT OF HEALTH FACILITY OPERATIONAL LEVEL

- **Health Facilities Effectively Delivering Primary Level Care**

These are health facilities who effectively delivered all primary level OEC over the last six months

- **Health Facilities Effectively Delivering Secondary Level Care**

These are health facilities who effectively delivered all secondary level OEC over the last six months

- **Health Facilities Effectively Delivering Tertiary Level Care**

These are health facilities who effectively delivered all tertiary level OEC over the last six months

## 2.3 FUNCTIONS ALLOWING FOR THE CLASSIFICATION OF EMERGENCY OBSTETRICAL CARE HEALTH FACILITIES IN BENIN

**Table 2 Functions Allowing for the Classification of Emergency Obstetrical Care Health Facilities in Benin**

<p>Primary level EOC</p> <ol style="list-style-type: none"> <li>1 Parenteral administration of antibiotics</li> <li>2 Parenteral administration of parturifacients</li> <li>3 Parenteral administration of anticonvulsants</li> <li>4 Manual curage</li> <li>5 Artificial delivery</li> <li>6 Uterine revision</li> <li>7 Curettage</li> <li>8 Electric or manual aspiration of debris</li> <li>9 Application of suction</li> </ol>
<p>Secondary level EOC</p> <ul style="list-style-type: none"> <li>- Primary level EOC</li> <li>10 Blood transfusion</li> </ul>
<p>Tertiary level EOC or RHEOC</p> <ul style="list-style-type: none"> <li>- Secondary level EOC</li> <li>12 Delivery by forceps</li> <li>13 Obstetrical surgery (cesarian section embryotomy)</li> </ul>
<p>A primary level EOC health facility provides the care in 1 - 9</p> <p>A secondary level EOC health facility provides the care in 1 - 10</p> <p>A tertiary level EOC health facility provides the care in 1 - 12</p>

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## 2 4 PROFILE OF OBSTETRICAL EMERGENCIES / COMPLICATIONS

■ **Table 3 Definition of Obstetrical Emergencies / Complications**

### A - Hemorrhages

#### a) Hemorrhages from pregnancy

- 1 Abortion
- 2 GEU
- 3 Hemorrhaging placenta previa
- 4 Retroplacental hematoma
- 5 Uterine rupture
- 6 molar pregnancy

#### b) Hemorrhage during delivery

##### ■ Hemorrhage from delivery

- 1 Placenta retention
- 2 Placenta accreta
- 3 Uterine inertia
- 4 Uterine inversion

##### ■ Other causes for hemorrhaging during delivery

- 5 Vulvo-perineal lesion
- 6 Vaginal lesion
- 7 Cervical lesion

#### c) Coagulopathies

### B Dynamic and mechanical obstructed labor

- 1 Retracted or abnormal pelvis
- 2 Abnormal presentations
  - Shoulder
  - Forehead
  - Obstructed face
- 3 Breech delivery
- 4 Retention of the 2<sup>nd</sup> twin
- 5 Ovum grandis and shoulder obstruction
- 6 Septum / vaginal diaphragm
- 7 Obstacle praevia
- 8 Exaggerated length of labor (over 18 h)
- 9 Pre rupture syndrome

**Table 3 Definition of Obstetrical Emergencies / Complications (continuation and end)**

C	Infections
a)	Ovular infection
b)	Puerperal infection / post abortum
1	Peritonitis
2	Septicemia
3	Septic shock
D	Pre-eclampsia, eclampsia
1	Pre-eclampsia
2	Eclampsia
E	Anemia caused by pregnancy
F	Obstetrical shock and embolism
1	Obstetrical shock
2	Amniotic embolism
G	Vital distress of the newborn

■ Profile indicators

- 1 Total annual number of each type of complication / obstetrical emergency treated at the referral hospital
- 2 Total annual number of each type of complication / obstetrical emergency treated in the referral hospital / expected births

## 2.5 OPERATIONAL DEFINITIONS FOR THE TERMS “OBSTRUCTED LABOR,” “ARTIFICIAL DELIVERY,” AND “GUIDED DELIVERY ”

### ■ Definition of Obstructed Labor

“Obstructed labor” is all labor burdened with difficulties, whether dynamic osseous or fetal independently of the outcome. The following situations are considered obstructed labor.

**Table 4 Definition of Obstructed Labor**

Dynamic and mechanical obstructed labor	
1	Retracted or abnormal pelvis
2	Abnormal presentations <ul style="list-style-type: none"><li>■ Shoulder</li><li>■ Forehead</li><li>■ Obstructed face</li></ul>
3	Breech delivery
4	Retention of the 2 <sup>nd</sup> twin
5	Ovum grandis and shoulder obstruction
6	Septum / vaginal diaphragm
7	Obstacle praevia
8	Exaggerated length of labor (over 18 h)
9	Pre-rupture syndrome

### ■ Definition of Guided Deliveries

A guided delivery is a delivery whose development has been modified by one of the following three interventions.

**Table 5 Definition of Guided Delivery**

1	Artificial rupture of the membranes
2	Use of antispasmodic drugs and / or parturifacients
3	Oxygenation

■ **Definition of Artificial Delivery**

Any delivery that ends up with an intervention is called artificial delivery. Artificial delivery includes the following:

**Table 6 Definition of Artificial Delivery**

1	Major instrumental interventions
	- Cesarean section
	- Forceps
	- Suction
	- Laparotomy as a result of uterine rupture
	- Embryotomy
	- Craniotomy
2	Major manual interventions
	- turning by internal maneuver
	- Great extraction of a breech delivery

■ **Indicators**

Number of artificial deliveries performed / Live births

## 2 6 RH/EOC AVAILABILITY

Total number of obstetrical complications / emergencies referred to other health facilities because of the absence or lack of one or several critical resources or vital drugs

*Acceptable level zero referrals*

## 2 7 TIMELINESS IN CASE MANAGEMENT

### 1 Delay in immediate management

Time delay after patient admission to accomplish the tasks listed below

- Receiving the patient
- Installation of the patient
- Quick exam (general, obstetrical, and gynecological)
- Peripheral vein preparation
- Blood testing

Maximum acceptable delay 20 minutes

**Indicator** Number of obstetrical emergencies effectively managed within the delay over the number of obstetrical emergencies received

### 2 Delay in the progressive case management (depending on the nature of the emergencies)

Examples of progressive treatment

- Cesarean section performed
- Laparotomy performed
- Delivery by forceps / suction performed
- Curettage performed

**Indicators**

- 1 Interval between the admission of the woman and the performance of the cesarian section  
Acceptable delay for health facilities in which the watches sleep in the hospital for certain critical human resources  
Maximum 1 hour,  
Acceptable delay for health facilities in which the watches sleep at home for certain critical human resources  
Maximum 2 hours
  
- 2 Interval between the decision for a cesarian section and the performance of the cesarian  
Acceptable delay for for health facilities in which the watches sleep in the hospital for certain critical human resources  
Maximum 20 minutes, with parallel performance of required preparation tasks  
Acceptable delay for health facilities in which the watches sleep at home for certain critical human resources  
Maximum 1 hour 30 minutes
  
- 3 Interval between the installation in the surgical center and the cesarian section,  
Acceptable delay independently of the health facility  
Maximum 15 minutes
  
- 4 Interval between intravenous approach and performance of cesarian section,  
Acceptable delay independently of the health facility  
Maximum 25 minutes

## **2 8 APPROPRIATENESS OF CASE MANAGEMENT**

- 1 Process indicators are being conceived,
- 2 Name of each obstetrical emergency appropriately managed over the number of complications received,

3 Obstetrical mortality rate (OMR )

**Indicator** Number of maternal deaths per 100 obstetrical complication cases admitted in the health facility (with the condition that the referral hospital and satellite structure constitute an operational unit in which the referral hospital supplies feedback and assures the supervision of satellite units )

**Maximum level acceptable OMR below or equal to 1%**

**2 9 INTENSITY OF ACTIVITIES**

- 1 Total annual number of deliveries,
- 2 Total annual number of cesarian sections

**2 10 DEGREE OF ACHIEVEMENT OF THE REFERRAL FUNCTION**

**Indicators**

- Percentage of obstetrical emergency / complications in relation to total deliveries

**Minimum acceptable level at least 50%**

- Percentage of obstetrical emergency / complications in relation to total expected births

**Minimum acceptable level at least 15% of live births**

### **3 DATA SUPPORT**

The assessment and improvement of RH/EOC performance requires the existence of information gathered from the support of routine data

#### **3 1 MINIMUM LIST OF DATA SUPPORT REQUIRED FOR THE RH/EOC**

- 1 Record of maternal mortality
- 2 Record of referrals received by the hospital
- 3 Admissions record
- 4 Delivery record
- 5 External consultation record
- 6 Prenatal consultation record
- 7 Summary report of maternity activities (C9)
- 8 Record of intervention protocols in the surgical center
- 9 Maternity activities report (C6)
- 10 Maternal chart (card)
- 11 Record of referrals performed by the hospital
- 12 Record of abortions
- 13 Monitoring sheet
- 14 Obstetrical dossier
- 15 Referral / back-referral chart
- 16 Newborn dossier
- 17 Liaison record

#### **3 2 DETAILED DESCRIPTION OF DATA SUPPORT CONTENT**

##### **1 Maternal mortality record**

This is a data support with all the information, conditions, and circumstances of the

patient's death

It should permit the collection of data based on

- The dossier number
- Name, family name + complete address
- Name, family name + parents
- Age
- Ethnic group - Occupation
- Date of admission
- Reason for admission
- Date and time of death
- Circumstances and conditions of the deceased
- Pregnancy term and termination mode

## **2 Record of referrals received by the referral hospital**

This is a data support that will allow the identification of the patient, her origination and the reason for referral. This record includes the following information

- The dossier number
- Name, family name + complete address
- Name, family name + parents
- Age
- Occupation
- Date and time of departure from the village / place of origination
- Date and time of arrival
- Reason for evacuation / referral
- Means of evacuation / referral + driver
- Health agent accompanying
- Originating health center
- Originating village / neighborhood



- Delivery summary Development - Termination means
- Delivery date and time
- Name of person in charge of delivery (midwife)
- Daily record including
  - Number of referral received
  - Number of deliveries (by sex)
  - Number of live births
  - Number of still born
  - Number of deaths as a result of decomposition of the fetus in utero
  - Number of cesarian sections
  - Number of uterine ruptures
  - Number of lesions (cervix, perinium, vagina)
  - Number of artificial deliveries / uterine revisions
  - Number by forceps
  - Number by suction
  - Other obstetrical interventions

**5 Reception room record (triage)**

- Number
- First name and family name
- Age
- Parity
- Place of origin
- Reason for admission
- Admission diagnosis
- Destination

Number of consultations

Number of arrivals at the service

## **6 Prenatal consultation record + identification of consultation months**

This is a data support to identify pregnant women. It should include the following information

- First name and family name + address of the pregnant woman
- Husband's first name and family name
- Consultation date and time
- Summary of the prenatal consultation
- Decisions
- Observations

## **7 Summary report of maternity activities (C9)**

### **8 Record of intervention protocols in the surgical center**

This data support is to collect information about obstetrical emergency surgical interventions. For each intervention it should contain

- Dossier number
- First name and family name + complete address of the patient
- Age of the patient
- Parent's first name and family name
- Type of intervention
- Date and time of intervention (time starting and ending)
- Intervention protocol
- Surgeon (First and last names)
- Anesthetist (First and last names)
- Daily record                      Number of GEU  
    Number of cesarian sections  
    Number of uterine ruptures

## **9 Maternity activities record (C6)**

**10 Maternal chart**

**11 Record of referrals made by the hospital**

**12 Abortion record**

- Dossier number + admission date
- First and last names
- Reason for admission
- Treatment
- Pregnancy term
- Type of abortion (spontaneous - induced - not identified)

**13 Monitoring sheet (See Annex to Volume 5)**

## ANNEXES

### Annex 1

#### **Immediate emergency care = care to stabilize the patient**

- Quick exam
- Intravenous approach
- Vascular reposition
- Blood transfusion
- Oxygenation, sometimes ventilation
- Administration of drugs

#### **Progressive emergency care**

- Curettage / aspiration / cureage
- Artificial delivery / uterine revision
- Cesarean section
- Laparotomy resulting from GEU, peritonitis, or uterine rupture
- Application of forceps / suction
- Obstetrical maneuvers
- Repair of cervical, vaginal, and perineal lesions

#### **Emergency laboratory tests**

- BG Rh
- Hemoglobin and hematocrit count
- White blood cell count
- Glycemia
- Blood ionogram
- Creatinemia

Annex 3

Table 8 MODEL REGISTRATION FORM FOR ADMISSIONS

N°	Woman s first and last names	Age	Parity	Date and time of admission	Referred from	By	Admissions diagnosis	Treatment	Observations (from the mother and child)

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**Annex 2**

**Table 7 Estimate of the Delay for Immediate Case Management  
(Average emergency)**

Management Tasks	Time
1 Ambulance or vehicle stops at the maternity ward	0 mn
2 Transport of the patient	2 mn
3 Reception and installation of the patient	3 mn
4 Intravenous approach	3 mn
5 Taking of general information and	
6 Vital signs + quick exam	10mn
7 Serum started	0 mn
TOTAL	Less than 20 mn

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