

Maternal indicators to monitor hospitals in the Rede Cegonha: a proposal

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Abstract *The Rede Cegonha strategy was launched in 2011 by the federal government to improve pregnancy, delivery, postpartum care, and child development in the first two years of life, reduce maternal and child mortality, and expand women's sexual and reproductive rights. We propose seven new maternal indicators to improve obstetric care evaluation in the next assessment cycle. The new indicators are the use of Robson's classification to monitor cesarean rates, use of magnesium sulfate in cases of preeclampsia/eclampsia, pregnant women's use of calcium supplements, blood transfusions and hysterectomy in delivery/puerperium, management of puerperal sepsis, IUD insertions in the postpartum/post-abortion period, and obstetricians' continuing education. These indicators are based on robust scientific evidence and can reduce unnecessary cesarean sections, prevent maternal deaths and future unplanned pregnancies.*

Key words *Maternal and child health services maternities, Health assessment*

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Introduction

The Rede Cegonha strategy was launched in 2011 by the federal government to improve pregnancy, childbirth, and postpartum care and promote the child's healthy development in the first two years of life. It mainly aimed to reduce maternal and child mortality and expand women's sexual and reproductive rights¹. Rede Cegonha developed activities to train and qualify obstetric nurses, strategic professionals to change Brazilian obstetric and neonatal care^{2,3}, and encouraged maternity hospitals to create Normal Childbirth Centers to humanize birth and offer pregnant women a private environment centered on women and the family⁴.

The first evaluation cycle of Rede Cegonha was performed in 2014-2015 in tripartite fashion with federal, state, and municipal managers. This first monitoring evaluated the maternity hospitals' adherence to the agreed indicators: reception and risk classification, the pregnant women's right to choose a companion, skin-to-skin contact of the puerperae and the newborn, and the occupancy rate of the high-risk reference obstetric beds. This instrument allowed evaluating and comparing the use of good care practices among maternity hospitals. This evaluation's wide dissemination mobilized and encouraged maternity hospitals' heads to promote necessary changes in their services.

The second evaluation cycle of Rede Cegonha occurred in 2016-2017 and was supported by the Oswaldo Cruz Foundation (Fiocruz) and the Federal University of Maranhão (UFMA)⁵. The five guidelines monitored in the participating maternity hospitals were reception in obstetrics and risk classification; good practices in labor, delivery, and postpartum care; care monitoring and maternal and neonatal mortality surveillance; participative management; and maternity hospital environment (Table 1).

In our view, the Rede Cegonha evaluation process contributed to the promotion of the necessary changes since managers were asked for an action plan based on the deficiencies found. Monitoring was critical, as municipal management does not have detailed assessment tools for maternal and child health in maternity hospitals. The proposed new indicators aim to intervene in the leading causes of maternal mortality and are described below.

1. Using Robson's Classification to monitor cesarean rates

Guideline 2 of the second monitoring cycle assessed the hospital's cesarean section rates in

general, of high-risk pregnant women, primiparous women by age group, the main indications for cesarean sections, and the proportion of cesarean sections in women with previous cesarean section. We propose to use Robson's classification for the next monitoring cycle. Robson's classification (also known as the 10-group classification) has been recommended by the WHO since 2015 as a global standard instrument to assess, monitor, and compare cesarean rates over time in one and between different hospitals⁶. It has been widely used in several countries⁷, but is barely employed in Brazil. Those responsible for the services often justify their high rates of cesarean sections because maternity hospitals are a reference in high-risk pregnancies. The use of Robson's classification excludes this narrative, as it allows comparing cesarean rates in groups of similar pregnant women, such as, for example, with a single, term, cephalic fetus, with gestational age less than 37 weeks (Robson's 10-group). The use of classification by Brazilian maternity hospitals will allow a more objective analysis of their cesarean rates, especially in groups 1 to 5 (pregnant women with a single, cephalic, term fetus), representing 70-80% of the obstetric population in most hospitals. The data analysis from each maternity hospital will allow managers to identify the need to improve or update their care protocols in groups with above-average cesarean rates⁸.

2. Use of magnesium sulfate in women with severe preeclampsia or eclampsia

In the maternal and neonatal mortality surveillance guideline, both monitoring maternal death⁹ near-miss cases (women who almost died but survived a severe complication, which occurred during pregnancy, childbirth, or up to 42 days after the termination of pregnancy) is required¹⁰, since near-death cases are more frequent situations than death. The analysis of these cases allows correcting inadequate care and preventing future maternal deaths. Reducing maternal mortality is one of the primary objectives of Rede Cegonha. Therefore, it is essential to evaluate the implementation of evidence-based protocols in the care of pregnant women with hypertensive syndromes, the leading cause of maternal death in Brazil⁹. We propose to add the use of magnesium sulfate in pregnant women with severe preeclampsia and eclampsia as a new indicator. While scientific evidence shows that the use of magnesium sulfate reduces maternal mortality in severe preeclampsia and eclampsia cases¹¹, the use of this medication is resisted¹². Questions related

Table 1. Distribution of points by assessment guideline in the various maternity hospital segments and analysis types.

Manager	Worker	Puerperae	Medical Record Analysis	Observation Roadmap	Document Analysis	Total	Total
Guideline 1*	4.10	5.50	7.4	0.00	1.50	0.00	18.50
Guideline 2*	5.05	8.40	15.85	9.80	2.40	0.00	41.50
Guideline 3*	2.35	2.45	0.00	0.00	0.00	5.20	10.00
Guideline 4*	3.90	4.60	1.50	0.00	0.00	0.00	10.00
Guideline 5*	0.00	0.00	0.00	0.00	20.00	0.00	20.00
Total	15.40	20.95	24.75	9.80	23.90	5.20	100.0

Source: Evaluation of Good Practices in Delivery and Childbirth Care in Maternity Hospitals of the Cegonha Network. Evaluative Matrix: MS – FIOCRUZ – UFMA.

*Guideline 1: Reception in obstetrics: Reception and Risk Classification (RC) in the Maternity. *Guideline 2: Good labor, delivery, and postpartum care practices. *Guideline 3: Care monitoring and maternal and neonatal mortality surveillance. *Guideline 4: Participatory and shared management. *Guideline 5: Maternity and neonatal unit environment.

to this indicator could include the percentage of magnesium sulfate use in pregnant women with severe preeclampsia or eclampsia, the time of use after diagnosis, and the adequacy of the dose and duration of medication use. Maternity managers should monitor professionals' adherence to the protocol to avoid preventable maternal deaths⁹.

3. Use of calcium supplements during prenatal care

High-quality evidence¹³ indicates that calcium supplementation during pregnancy can significantly reduce the risk of developing preeclampsia in pregnant women's general population. It is even more effective in high-risk pregnant women and populations with low dietary calcium intake. As of 2014, the World Health Organization (WHO) has recommended the use of calcium supplements during pregnancy (1.5-2.0 g/day from the 20th week) for all pregnant women in the population with low calcium diets (< less than 900 mg of elemental calcium per day)¹⁴. According to the results of the last national population survey, the typical diet consumed by adult Brazilian women (19-59 years old) contains an average of 546.4 mg/day of elemental calcium, and 90.7% of these women do not consume the minimum recommended amount for their age group¹⁵. Brazilian women have undoubtedly a low calcium diet and fit the WHO recommendation. The questions that could be asked for this indicator would be whether the pregnant woman received a prescription for calcium supplements during prenatal care and at what gestational age and dose.

4. Blood transfusion and hysterectomies in delivery and postpartum

Indicators monitoring the routine prophylactic use of oxytocin in the immediate postpartum period, the number of cases of blood transfusion and hysterectomies in the maternity hospitals are required in hemorrhagic syndromes. These data are essential for implementing the hemorrhagic syndromes protocol^{16,17}. We propose that the percentage of women receiving blood transfusions during labor and postpartum is monitored, offering the maternity manager assistance to improve the internal protocol and obtain a comparison parameter between other maternity hospitals. Using this indicator in near-death cases from hemorrhage is crucial, as they are frequent events, which can improve service deficiencies and avoid outcomes such as maternal death from hemorrhage⁹.

5. Adequate management of puerperal sepsis

Sepsis is a significant cause of maternal morbidity and mortality globally and the third leading cause of maternal mortality in Brazil. Evidence has shown an association between adherence to bundles and improved survival in patients with sepsis and septic shock¹⁸. The central management of sepsis is the concept of being considered a medical emergency. As with acute myocardial infarction and stroke, early identification and appropriate immediate management in the early hours show better results. The guidelines state that these patients require urgent evaluation and treatment within the first hour, namely, "the golden hour"¹⁹. Using this in-

indicator allows evaluating the performance for the diagnosis and early therapy of the intervention package²⁰ and can improve near-death cases and puerperal infection-related maternal deaths.

6. Insertion of an IUD immediately after delivery or abortion

Unplanned and unwanted pregnancies are challenges to women and couples globally. Approximately 44% of global pregnancies are unplanned, and about 56% of unwanted pregnancies end in induced abortion²¹. In Brazil, the percentage of unplanned pregnancies follows developing countries' trend, remaining above the world average. Per the *Nascer no Brasil* ("Born in Brazil") survey²², more than 55% of Brazilian women who had children in 2011 and 2012 had not planned their pregnancy. Thus, reducing unplanned pregnancies is an essential factor in curbing maternal mortality²³.

The postpartum and post-abortion IUD's immediate insertion should be routinely offered as a safe and effective option for expanding access to contraception^{24,25}. Despite the higher expulsion rate of immediate insertion of the IUD in the postpartum period, the cost-benefit analysis data suggest the superiority of immediate placement in reducing unintended pregnancies, especially for women at greater risk of not attending the puerperal care visit.

Women face several barriers to access the IUD in health services^{26,27}. The period immediately after delivery or abortion is an opportunity to start contraception. The immediate insertion of the IUD in these periods has high acceptance rates, women are highly motivated to avoid a new pregnancy, the discomfort of standard insertion, and it is not necessary to run tests as they are certainly not pregnant. Therefore, the offer and insertion of copper IUDs in maternity hospitals immediately after delivery or abortion can be a

strategy to expand its use, as the Mexican experience²⁸.

The low prevalence of IUD use compared to other countries²⁹, the support of several scientific societies^{30,31}, and the Ministry of Health³² validate the inclusion of this new indicator. We propose the inclusion of this indicator in Guideline 2. The questions would be whether IUD was offered in the immediate postpartum or post-abortion period and the IUD insertion percentage among eligible women.

7. Continuing education of obstetricians in the leading causes of maternal death

Implementing good practices to reduce cesarean sections and the leading causes of maternal mortality involves refreshing professional knowledge in the maternity hospitals. Thus, I suggest that the evidence-based professional refresher courses be monitored³³.

An example of implementation in the reduction of mortality due to hemorrhage is the "Zero Maternal Death by Hemorrhage" strategy of the Pan American Health Organization (PAHO), in which theoretical and practical training is carried out through realistic simulation stations, providing updating and systematization of practical approaches in postpartum hemorrhage scenarios, which aims to qualify doctors and nurses who technically support the implementation of the strategy in Brazilian states.

Scientific entities such as the Brazilian Federation of Gynecology and Obstetrics Associations (FEBRASGO) can regularly conduct refresher courses in obstetric emergencies, in conjunction with state and municipal secretariats for maternity hospital professionals. Maternity managers can also monitor professionals' regular participation in courses to qualify services, reducing near-death and maternal death cases (Table 2).

Table 2. Proposal for new indicators to assess maternity hospitals.

	Interview with the Manager	Medical Record Analysis	Report analysis	Total
1. C-section rate by Robson group	1	3	10	14
2. Rate of magnesium sulfate use in preeclampsia/eclampsia	1	3	10	14
3. Rate of calcium carbonate use in pregnant women	1	3	10	14
4. Blood transfusion and hysterectomy rate in puerperae	1	3	10	14
5. Rate of adequate management of puerperal sepsis	1	3	10	14
6. Rate of IUD insertions in the postpartum and post-abortion	1	3	10	14
7. Rate of obstetricians' continuing education	2	0	14	16
Total	8	18	74	100

Conclusion

The regular cycles of monitoring and evaluating the actions recommended by Rede Cegonha are fundamental to improving the quality of care offered to Brazilian pregnant women³⁴⁻³⁵. We propose the addition of seven new indicators to be included in the next evaluation cycle. These indicators are based on robust scientific evidence and can reduce unnecessary cesarean sections and prevent maternal deaths and future unplanned pregnancies.

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