SUNTEXT REVIEWS

SunText Review of Medical & Clinical Research
ISSN: 2766-4813

Open Access
Research Article
Volume 4:3

Mater Code in One Hundred Patients at Gynecology & Obstetric Department Of General Hospital Playa Del Carmen, Q. Roo. México

Rodriguez ALV[1,*], Nunez RCC[2], Fuentes JYH[3], Rodriguez CB[4] and Arredondo GP[5]

[1]*Gynecology & Obstetric Department, General Hospital Playa del Carmen, Mexico*
[2]*Gynecology & Obstetric Department, General Hospital Playa del Carmen, Mexico*
[3]*Health Public Master, General Hospital Playa del Carmen, Mexico*
[4]*Nurse Gyn-Obs, General Hospital Playa del Carmen, Mexico*
[5]*General Surgeon, General Hospital Playa del Carmen, Mexico*

[*]**Corresponding author:** Rodriguez ALV, Gynecology & Obstetric Department, General Hospital Playa del Carmen, Constituyentes Av. and 125 Street, Ejidal Suburb,Quintana Roo, México; E-mail: gpadronarredondo@hotmail.com

Received date: 17 July 2023; **Accepted date:** 24 July 2023; **Published date:** 31 July 2023

Citation: Rodriguez ALV, Nunez RCC, Fuentes JYH, Rodriguez CB, Arredondo GP (2023). Mater Code in One Hundred Patients at Gynecology & Obstetric Department Of General Hospital Playa Del Carmen, Q. Roo. México. SunText Rev Med Clin Res 4(3): 183.

DOI: https://doi.org/10.51737/2766-4813.2023.083

Abstract

Background: The Maternal health is considered in national and international policies as a women's right; additionally, it is essential for the survival of the newborn. Therefore, it is necessary to investigate the causes of maternal mortality related to biological complications during pregnancy, Childbirth, and postpartum. The objective of this work was to know the application of the Mater Code at the Playa del Carmen General Hospital during the year 2022 and its results.

Material and Method: Descriptive, observational, and retrospective study with central tendency and dispersion statistics.

Results: Activated one hundred mater codes during the study period; nine salpingectomies due for ruptured ectopic pregnancy, and one salpingo-ophorectomy, five cases of uterine atony with colocation of Bakry balloon, for cases with various ligatures; 67 cesarean section, and 10 hysterectomies. In the year studied no maternal mortality.

Discussion: The WHO recommends intermittent monitoring of FHR during labor in underdeveloped countries but does not endorse a particular tool. In health facilities in underdeveloped countries, the Pinard stethoscope is used to assess HRF in the intrapartum period instead of cardiotocography (the standard of care in high-resource countries) or portable Doppler devices. The findings indicate that there may be inequitable provision of OHDC at the local level. Optimizing maternal health in low-resource settings requires a concerted approach to simultaneously increase access to skilled delivery care and improve the quality of emergency and preventive maternal health care provided.

Conclusions: For the state of Quintana Roo, in the first week of December 2021, 18 deaths were registered, while for the same cut in 2022, only eight deaths this represents a decrease of 10 deaths (44%) in 2022 compared to 2021, as the General Directorate of Epidemiology (DGE) reported. Maternal mortality of 26.7 for 2022, with a considerable decrease in 2021, which was 64, means that we are below the national average of 30.4.

Keywords: *Mater code; Obstetric emergency; Obstetric interventions; Caesarean section; Abdominal hysterectomy*

Introduction

In the context of the Sustainable Development Goals (SDGs), countries have joined forces to accelerate the decline in maternal mortality by 2030. SDG-3 includes an ambitious target: "reduce the global maternal mortality ratio to fewer than 70 per 100,000 births," with no country having a maternal mortality ratio greater than twice the world average. The global maternal mortality ratio in 2020 was 223 per 100,000 live births; for this ratio to be less than 70 globally by 2030, it will be necessary to achieve an

annual reduction of 11.6%, a percentage rarely achieved at the national level. However, scientific and medical knowledge exists to prevent most maternal deaths. Ten years from the deadline for the SDGs, now is the time to intensify coordinated efforts and to mobilize and reinvigorate commitments at the global, regional, national, and community levels to end preventable maternal mortality. For the Pan American Health Organization (PAHO), maternal mortality represents a severe public health problem. In 80% of cases, the causes are preventable, which is why the Millennium Development Goals report establishes universal access to reproductive healthcare, including family planning, as the starting point for maternal health [1]. The Mater Code activates an Immediate Response Team (ERIO) alert mechanism, conceived as a hospital strategy for multidisciplinary care of obstetric emergencies (Hemorrhage, arterial hypertension, and sepsis). Exist a multidisciplinary team of health professionals whose function is optimize the care system and hospital resources (obstetrician-gynecologist, nurse, intensive care physician, internist, pediatrician, anesthesiologist, inhalation therapist, social worker, laboratory and ultrasound, trained in obstetric emergencies [2]. Maternal death continues to be a severe problem in most countries with poor women, who contribute significantly to the 830 deaths estimated daily worldwide. Latin America is one of the regions that, together with Sub-Saharan Africa and Asia, represent a critical region for MM; only in this continent, in 2015, there were 60 maternal deaths for every one hundred thousand births, which translated into a reduction of only 52% for the period 1990-2015. In Mexico, the reduction of maternal death for the period 1990-2013 was 27%, almost half of what fell in all of Latin America, positioning it in tenth place among the countries of this continent and below the average achieved by the same. In Mexico, as in most of the world, maternal deaths are associated with hypertensive disorders of pregnancy, Hemorrhage (due to prolonged or obstructed labor, uterine rupture, ectopic pregnancy), abortions, and sepsis. The relevance of timely identification by women, the search for transfer, and timely treatment become relevant when it has been documented that the average time for death to occur after the triggering of an obstetric emergency is two hours in this case, Hemorrhage, two days for eclampsia and obstructed labor, and up to six days for an infectious process [3].

Material and Method

A descriptive study was carried out on applying the Mater Code at the Playa del Carmen General Hospital in 2022 in 100 patients who required its implementation; descriptive statistics with measures of central tendency and dispersion for analysis.

Results

In this study we analyzed one hundred cases of obstetric emergencies with activation of the Mater Code. Nine salpingectomies due for ruptured ectopic pregnancy, and one salpingo-ophorectomy. In this study, there were no maternal deaths (Table 1) (Figure 1).

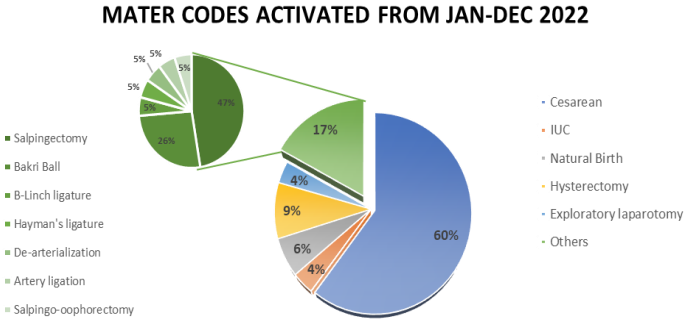

Figure 1: *One hundred Mater Codes activated and procedures.*

Discussion

For pregnant women laboring at home, especially if they are nulliparous, it can be challenging to determine the right time to go to the hospital. Are often admitted women who present to the hospital in early labor while still in the latent phase? Postponing admission until the onset of the active phase of labor is a suggested approach to reduce obstetric interventions in women in spontaneous labor at term, with the fetus in cephalic presentation. This decision should be individualized based on maternal and fetal risks. However, the WHO recommends delaying admission to the delivery room until the first stage or active phase is present only in research settings [4]. Abnormal fetal heart rate (FHR) in the intrapartum period may indicate a hypoxic state in a fetus as a result of placental blood flow interruption, and because abnormal FHR is a potential predictor of newborn asphyxia, monitoring of it is essential for quality intrapartum care. Conversely, poor intrapartum FHR monitoring contributes to intrapartum fetal deaths. Improvements in intrapartum monitoring have had proven results. The WHO recommends intermittent monitoring of FHR during labor in underdeveloped countries but does not endorse a particular tool. In health facilities in countries with social inequality, the Pinard stethoscope is widely used to assess FHR in the intrapartum period instead of cardiotocography (the standard of care in high-resource countries) or portable Doppler devices [5, 6]. Many high-risk pregnancy conditions go undetected until delivery in low-income women. In Uganda, they developed a training protocol in rural point-of-care ultrasound to detect fetal distress or death, malpresentation, multiple gestation, placenta previa, oligohydramnios, and preterm labor. This mixed methods study assessed the 2-week training curriculum and trainees' ability to perform standard scanning and interpretation of ultrasound

images. Surveys to assess the confidence of health personnel are applied before training, immediately after, and at a 3-month follow-up. After the lecture and practical demonstrations, each student performed 25 supervised scans and was required to pass an observed structured clinical examination. Of 25 participants, 22 passed the OSCE on the first attempt (mean score 89%). Image quality improved over time; the final error rate at week 8 was less than 5%, with an overall kappa of 0.8–1 for all measures between the two reviewers.

Table 1: *Variables considered in the study.*

Variable	Mean	SD	IC 95%	Cases	%
Age	27	7	(25,63 - 28,37)	100	100
Gestation weeks	32	11.2	(10,05 - 53,95)		
Preeclampsia				65	65
Eclampsia				3	3
Hellp Syndrome				3	3
Hemorrhage				31	31
Sepsis				2	2
Hypovolemic Shock				26	26
Intensive care unit				94	94
Deliveries				11	11
Caesarean section				67	67
Transabdominal Hysterectomy				10	10
Instrumental curettage				4	4

This study demonstrates that healthcare personnel with no prior ultrasound experience can detect high-risk conditions during labor with a high rate of quality and accuracy [7, 8]. In the last decade, acute obstetric care (AOA) has become centralized in many high-income countries. In their qualitative study, van den Berg LMM et al. (8) explored how stakeholders perceived and experienced the organization of maternity care in the Netherlands, where AOA was centralized. They intentionally selected a heterogeneous group of fifteen maternity care stakeholders, including female patients, for semi-structured interviews. Three main themes were identified: 1) Lack of participation. 2) The process of making adaptations in the organization of maternity care. 3) Maintain the quality of care. Stakeholders in this study were motivated to maintain a high quality of maternity care and therefore made accommodations at various organizational levels. However, they felt they needed more participation during the planning of AOA centralization and stressed the importance of a collaborative process when making adaptations after AOA centralization. Finally, regions with AOA centralization plans should invest time and money in change management, encourage early involvement of all maternity care stakeholders, and recognize AOA centralization as an emotional, professional life event associated with a feeling of insecurity [9]. Maternal mortality has been the primary way of determining the outcome of maternal and obstetric care. Nevertheless, maternal morbidities occur more frequently than maternal deaths; therefore, maternal near miss has been suggested as a helpful indicator for evaluating and improving maternal health services [10]. Conducted a study to explore women's experiences close to maternal death and survived and their perception of the quality of care received. This study used a qualitative phenomenological approach with an in-depth interview method in two tertiary-level hospitals. All women admitted to delivery rooms, OB/GYN wards, and intensive care units in 2014 were examined for any vital organ dysfunction or failure based on the WHO Criteria for a near miss-maternal accident. Thirty women who had experienced maternal near misses between the ages of 22 and 45 were included in the analysis. Almost all (93%) had secondary and upper secondary education, and 63% were employed. Women's perceptions of the quality of their care were influenced by competence and promptness in care delivery, interpersonal communication, information sharing, and quality of resources. Costs, self-attitude, and personal beliefs influenced the predisposition to seek medical care. The self-assessment of the maternal event, their perception of the quality of care, their predisposition to seek medical care, and the social support received were the four major themes that emerged from the experiences and perceptions of women with a near-miss. Women with near misses viewed their experiences as frightening and experienced other negative emotions, such as a sense of impending doom. Factors influencing women's perceptions of quality of care should concern those seeking to improve hospital services. Adding a maternal near-miss review program provides insight into factors related to caregiving or willingness to seek care; if addressed, it can improve future medical care and patient outcomes. Interventions aimed at reducing maternal mortality are increasingly complex. Understanding how complex interventions are delivered, to whom, and how they work is critical to ensuring their rapid scale-

up. Other authors applied an intervention to classify vital signs in routine maternal care in eight countries with low and middle-income populations to reduce a composite result of morbidity and mortality. This intervention was a stepwise implementation effectiveness trial. In this study, they presented the results of evaluating mixed methods processes. The objective was to describe the implementation and the local context and to integrate the results to determine if differences in the effect of the intervention could be explained. The duration and content of the implementation, acceptance of the intervention, and its impact on clinical management were recorded. These were integrated with interviews and focus groups at three months and six to nine months after implementation. Measures were ranked and averaged across implementation domains to determine the effect on effectiveness to create a composite strength score and then correlated with the primary outcome. Overall, 61% (n = 2747) of health workers received training in the intervention (16 to 89%) with a mean of 11 days. The acceptance and acceptability of the intervention was good. All clusters demonstrated improved availability of vital signs equipment. There was an increase in the proportion of women who had their blood pressure measured in pregnancy after the intervention (79% vs. 98%; OR 1.30 (1.29–1.31)) and no significant change in referral rates (3.7% vs 4.4% OR 0.89; (0.39–2.05)). The availability of resources and referral systems were acceptable and effective and influenced health. This process evaluation has satisfactorily described the quantity and quality of implementation. Variations in implementation and setting did not explain differences in the effectiveness of the intervention on maternal mortality and morbidity [11-13]. In the UK, midwives are involved in discussions with the multidisciplinary team about whether they can provide obstetric high-dependency care in the delivery room or whether care should be escalated to the intensive care team [14]. conducted a study to explore the question: What factors influence midwives to provide obstetric care in the delivery room or request care outside the obstetric unit in hospitals far from tertiary referral centers? In district general hospitals, focus groups were organized with midwives in three obstetric units in England, with annual birth rates ranging from 1,500 to 5,000 per year. Used three scenarios in the form of handover video vignettes as triggers for the focus groups. 1) Physiologically unstable severe preeclampsia; 2) significant postpartum Hemorrhage requiring invasive monitoring; 3) recent admission of a woman with chest pain who receives facial oxygen and requires continuous electrocardiographic monitoring. Organized two focus groups in each obstetric unit with experienced midwives. Data were analyzed using a qualitative approach. Factors influencing midwives' decisions to escalate care included care setting, diagnosis, and fetal or neonatal factors—the overall care plan, including the need for EKG and invasive monitoring. Midwives from the smaller obstetric unit could not access the OHDC facilities. Midwives in the larger obstetric units provided OHDC but identified varying degrees of skill and sometimes used 'workarounds' to facilitate care delivery. Midwifery staffing levels, skill mix, and workload were also necessary. Some differences of opinion were evident between midwives working in the same obstetric units regarding whether OHDC could be provided and the support they would request to help them provide. The findings indicate that there may be inequitable provision of OHDC at the local level. Robust systems are required to promote safe and equitable OHDC care, including midwifery skills development and precise escalation guidelines to minimize alternative solutions. Midwives' training should include strategies to prevent skills loss. Optimizing maternal health in low-resource settings requires a concerted approach to simultaneously increase access to skilled delivery care and improve the quality of emergency and preventive maternal health care provided. Established evidence-based interventions, but poor quality limits health benefits despite increased access. Assessing quality and implementing quality improvement approaches at various health system levels is imperative to address health priorities. Maternal care quality improvement evaluations suggest improving standardized monitoring strategies and identifying optimal implementation strategies to translate findings into practice within different low-resource settings to increase adoption and sustainability [15].

Conclusions

In Mexico, the calculated maternal mortality ratio is 30.4 deaths for every 100,000 estimated births, representing a 37.8% decrease compared to the same epidemiological week of the previous year. The leading causes of death were: obstetric Hemorrhage (17.4%); Hypertensive disease, edema, and proteinuria in pregnancy, Childbirth, and the puerperium (17.2%); abortion (7.1%); Respiratory tract diseases (6.2%) and Complications in pregnancy, Childbirth, and the puerperium (6.2%). The entities with the most maternal deaths are Mexico State (68), Veracruz (44), Jalisco (43), Puebla (37), and Chiapas (35). Together they will add up to 40.4% of registered deaths by 2022.

For the state of Quintana Roo, México, in the first week of December 2021, 18 deaths were registered, while for the same cut in 2022, registered eight deaths and represents a decrease of 10 deaths (44%) in 2022 compared to 2021, as the General Directorate of Epidemiology (DGE) reported. Maternal mortality of 26.7 for 2022, with a considerable decrease in 2021, which was 64, means that we are below the national average of 30.4. Therefore, we can conclude that integrating the Mater Code as an alert mechanism for the care of pregnant women with an Obstetric Immediate Response Team is one of the strategies to reduce Maternal Mortality in the state, since within the analysis, we were

able to conclude that of the total mater codes activated, there were no maternal deaths, which is why it is essential to keep the (Obstetric Immediate Response Team (ERIO), teams active.

Funding

This research received no external funding.

Conflicts of Interest

The authors declare no conflict of interest.

References

1. Ruiz LAB, Agudelo-Suárez AA. Relationship of women in pregnancy, childbirth and postpartum (EPP) with health services according to social class. Rev Geren Polit Sal. 2019; 18: 1657-7027.
2. Alvarado BRM, Arroyo VM, Hernandez PC, Velez CM, Management of Obstetric Triage and Mater Code in the State of Mexico. Abril-Junio. 2012; 9: 61-71.
3. Rangel-Flores YY, Rincón-Zúñiga DT, Hernández-Ibarra LE. The lived experience of the obstetric emergency: a phenomenological study with Mexican women. Sao Paulo. 2022; 31.
4. Seravalli V, Strambi N, Castellana E, Salamina MA, Bettini C, Di Tommaso M. Hospital Admission in the Latent versus the Active Phase of Labor: Comparison of Perinatal Outcomes. Children. 2022; 9: 924.
5. Plotkin M, George J, Bundal F, Tibaijuka G, Njonge L, Lemwayi R, et al. Scale-Up of Doppler to Improve Intrapartum Fetal Heart Rate Monitoring in Tanzania: A Qualitative Assessment of National and Regional/District Level Implementation Factors. Int J Environ Res Public Health. 2020; 17: 1931.
6. Kamala BA, Ersdal HL, Dalen I, Abeid MS, Ngarina MM, Perlman JM, et al. Implementing a novel continuous fetal Doppler (Moyo) improves intrapartum fetal heart rate monitoring quality in a resource-limited tertiary hospital in Tanzania: An observational study. PLoS ONE. 2018; 13: e0205698.
7. Shah S, Santos N, Kisa R, Mike Maxwell O, Mulowooza J, Walker D, et al. Efficacy of an ultrasound training program for nurse midwives to assess high-risk conditions at labor triage in rural Uganda. PLoS ONE. 2020; 15: e0235269.
8. Goldenberg RL, Nathan RO, Swanson D, Saleem S, Mirza W, Esamai F, et al. Routine antenatal ultrasound in low-and middle-income countries: first look–a cluster randomized trial. BJOG: An Int J Obst Gynaecol. 2018; 125: 1591-1599.
9. van den Berg LMM, Maria Gordon BB, Kleefstra SM, Martijn L, van Dillen J, Verhoeven CJ, et al. Centralization of acute obstetric care in the Netherlands: a qualitative study to explore stakeholders' experiences with adaptations in the organization of care. BMC Health Serv Res. 2021; 21: 1233.
10. Norhayati MN, Nik Hazlina NH, Asrenee AR, Sulaiman Z. The experiences of women with maternal near miss and their perception of quality of care in Kelantan, Malaysia: a qualitative study. BMC Pregnancy Childbirth. 2017; 17: 189.
11. Maru S, Nirola I, Thapa A, Thapa P, Kunwar L, Wu W-J, et al. An integrated community health worker intervention in rural Nepal: a type 2 hybrid effectiveness - implementation study protocol. Implement Sci. 2018; 13: 53.
12. Nathan HL, Duhig K, Vousden N, Lawley E, Seed PT, Sandall J, et al. Evaluation of a novel device for managing high blood pressure and shock in pregnancy in low-resource settings: study protocol for a stepped-wedge cluster-randomized controlled trial (CRADLE-3). Trials. 2018; 19: 206.
13. Nathan HL, Vousden N, Lawley E, Sloan N, Tanna N, Hezelgrave NL, et al. Development and evaluation of a novel Vital Signs Alert device for use in pregnancy in low-resource settings. BMJ Innov. 2018; 4: 192-198.
14. James A, Cooper S, Stenhouse E, Endacott R. What factors influence midwives to provide obstetric high dependency care on the delivery suite or request care is escalated away from the obstetric unit? Findings of a focus group study. Pregnant Childbirth. 2019; 19: 331.
15. Ndicunguye VM, El Ayadi AM. Quality Improvement Models and Methods for Maternal Health in Lower-Resource Settings. Obstet Gynecol Clin North Am. 2022; 49: 823-839.