1

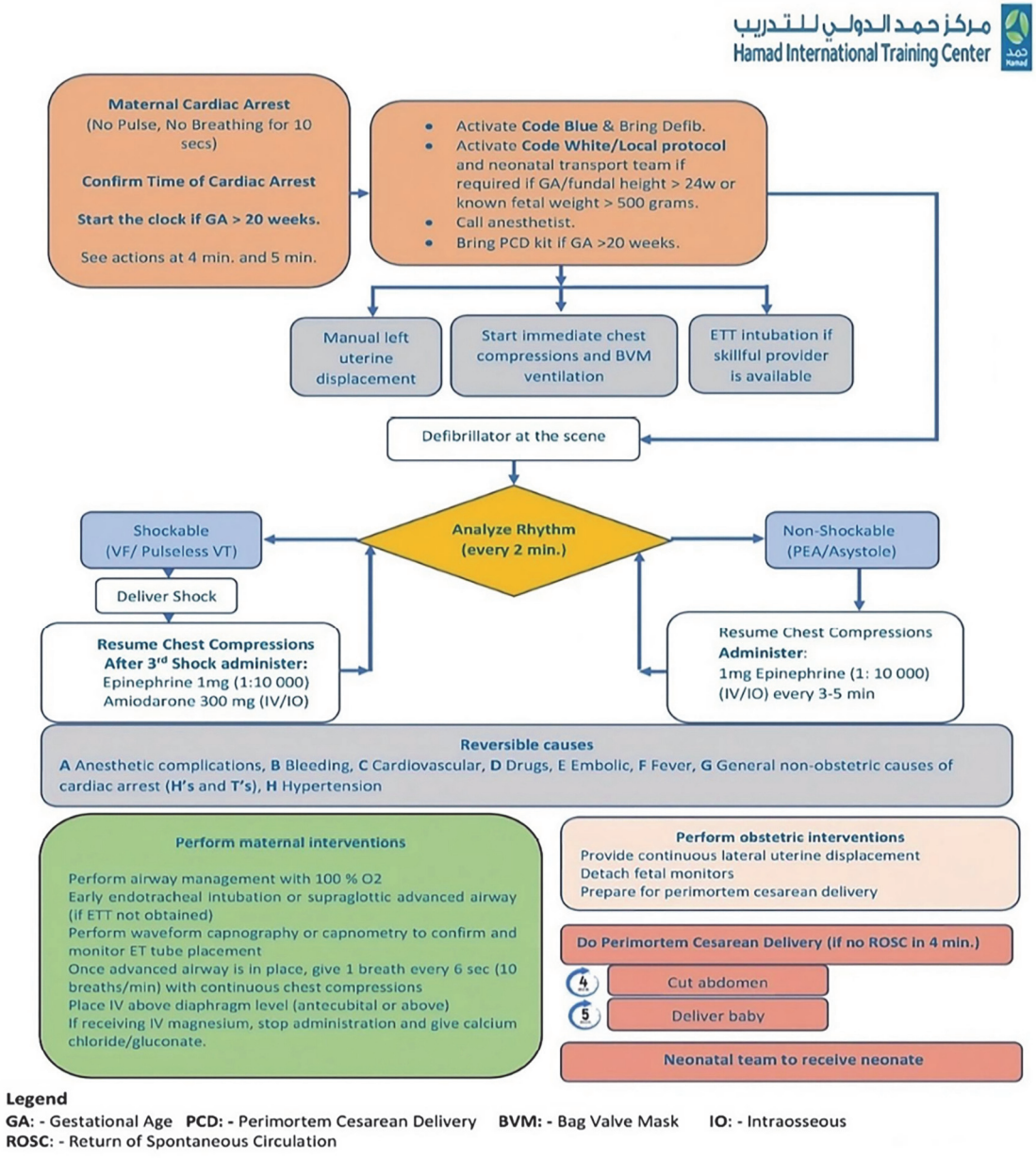
ENHANCING PREPAREDNESS AND COMPETENCE OF FRONT-LINE HEALTHCARE PROVIDERS TO MANAGE MATERNAL CARDIAC ARREST: A QUANTITATIVE OBSERVATIONAL STUDY

[1]Mohamed Elsayed Saad Aboudonya*, [1]John Tobin, [1]Vera Laura Peter, [1]Aneesa Mahadiva, [1]Emad Ali Hamad Almomani, [2]Edin Karic, [2]Lolwa Mohammed Alansari, [3]Safaa Rabea Osman, [2]Amira Klai, [2]Almunzer Zakaria. *[1]Hamad International Training Canter, Hamad Medical Corporation, Doha, Qatar; [2]Al Wakra Hospital, Hamad Medical Corporation, Al Wakra, Qatar; [3]Faculty of Nursing, Assuit University, Assiut, Egypt*

10.1136/bmjoq-2025-IHI.1

Background Maternal Cardio-Pulmonary Resuscitation (CPR) stands as a pivotal emergency multidisciplinary measure for resuscitating pregnant women facing cardiac or respiratory arrest.[1] Effective and timely multidisciplinary maternal resuscitation can decrease maternal fatalities and improve outcomes for both mothers and newborns.[2] Hamad International Training Centre not only provides official resuscitation courses, like Advanced Life Support Obstetrics and Neonatal Resuscitation Program, but also ensures the preparedness of frontline care providers in dealing with cardiac arrest events within Hamad Medical Corporation facilities through routine simulated drills and monitoring of relevant Key Performance Indicators (KPIs). This study aims to evaluate the impact of a multidisciplinary maternal resuscitation training program and the implementation of a maternal resuscitation algorithm pathway (figure 1) on seven essential KPIs: 1) time to confirm cardiac arrest, 2) code blue and/or code white activation time, 3) time to attempt the first chest compression, 4) defibrillator arrival time, 5) time to first defibrillation shock, code blue/code white arrival time, and 6) time to perform perimortem cesarean delivery.

Methods A pre-test/post-test design was employed to achieve the aim of the study. The sample included three frontline



Abstract 1 Figure 1 Maternal resuscitation algorithm pathway implemented by Hamad Medical Corporation, Doha, Qatar

Abstract 1 Table 1 Results of the control and experimental groups, both descriptive and inferential in relation to identified KPIs

KPIs	Groups	Mean Rank	Sum of Ranks	Mann-Whitney U	Wilcoxon W	P-Value
KPI 1	Pre-test group	20.50	615.00	150.000	615.000	<.001
Recognizing/Confirming Cardiac Arrest Time (30seconds)	Post-test group	40.50	1215.00			
KPI 2	Pre-test group	22.17	665.00	200.000	665.000	<.001
Code Blue and/or Code White Activation Time (1 Minute)	Post-test group	38.83	1165.00			
KPI 3	Pre-test group	32.17	965.00	400.000	865.000	.453
First Chest Compression Attempt Time (30 seconds)	Post-test group	28.83	865.00			
KPI 4	Pre-test group	25.50	765.00	300.000	765.000	.017
Time: Defibrillator Arrival Time (3 minutes)	Post-test group	35.50	1065.00			
KPI 5	Pre-test group	21.50	645.00	120.000	175.000	.334
Time to First Defibrillation Shock (1 minute)	Post-test group	17.50	175.00			
KPI 6	Pre-test group	31.17	935.00	430.000	895.000	.758
Code Blue/White Team Arrival Time (5 minutes)	Post-test group	29.83	895.00			
KPI 7	Pre-test group	15.50	465.00	.000	465.000	<.001
Time to perform Perimortem Cesarean Delivery (PCD) (5 minutes)	Post-test group	45.50	1365.00			

multidisciplinary maternal resuscitation teams (physicians, midwives, and nurses) who participated in both pre-test and post-test group are (N=30). The multidisciplinary resuscitation teams were observed during cardiac arrest simulated drills both before and after implementation of a multidisciplinary resuscitation simulation-based training program and the introduction of the maternal resuscitation algorithm pathway, focusing on the seven KPIs.

Results The analysis of descriptive and inferential data (table 1) revealed that four of seven KPIs (1, 2, 4, 7) showed significant improvement post-implementation of the program.

Conclusion The study concluded that the combination of multidisciplinary maternal resuscitation simulation-based training with formal resuscitation courses, alongside the introduction of a clearly defined maternal resuscitation algorithm, enhanced frontline staff preparedness in managing maternal cardiac arrest.

REFERENCES

1. Cobb B, Lipman S. Cardiac arrest: obstetric CPR/ACLS. *Clinical Obstetrics and Gynecology* 2017 Jun 1;**60**(2):425–30. doi: 10.1097/GRF.0000000000000273
2. Knapp C, Bhatia K. Maternal collapse in pregnancy. *British Journal of Hospital Medicine* 2022 Dec 2;**83**(12):1–2. DOI: 10.12968/hmed.2022.0259

Ethical Approval/IRB Statement The project obtained approval as a quality improvement initiative from the Director of Hamad International Training Center (HITC) and the Medical Education Department of Hamad Medical Corporation (HMC). Consequently, it was exempt from undergoing ethical review and obtaining Institutional Review Board approval.

Disclosures and Acknowledgments We extend our heartfelt gratitude to Mr. Abdulhakim Saif Al-Wegdi and Ms. Aseel Hatamleh for their steadfast dedication and commitment to upholding the rigor, quality, and pertinence of our study. Their combined expertise and insightful feedback have substantially strengthened the robustness of our research framework.

2 STOP THE NOISE! A QUANTITATIVE ANALYSIS OF HEART HOSPITAL EMERGENCY DEPARTMENT NOISE REDUCTION STRATEGIES FOR BETTER HEALTHCARE OUTCOMES

Ervin Medina*, Joash De Gracia, Abdallah Darwiche, Marissa Lirazan. *Emergency Department, Heart Hospital, Hamad Medical Corporation, Doha, Qatar*

10.1136/bmjoq-2025-IHI.2

Background Despite being a vital component of healthcare systems, the Emergency Department usually has noise levels over the guidelines suggested by the World Health Organization.[1] These noises cause potential harm and seriously jeopardize patient and worker safety and wellbeing.[2] It is also a contributing factor to stress in the healthcare industry, poor sleep patterns, and misunderstanding. Heart Hospital Emergency Department (HH ED) received complaints for loud noises over the previous years. Starting January 29, 2023, initial weekly average data revealed a noise level of 68 decibels, which is 36% higher than the WHO-recommended target noise level (figure 1). HH ED aimed to develop customized evidence-based noise reduction strategies that significantly decrease weekly average noise level in the Observation area from 68 decibels to 40 decibels by December 2023.

Methods This study used e-dosimeter to measure noise levels over the designated time.[3] The noise was measured in A-weighted decibels because it stimulates the way the human ear perceives sounds. Following the collection of decibels, the data was transformed into Excel format for analysis and outcomes were arranged in a methodical visual display of graphs and run charts.

Results During the studied time, noise levels exceeded World Health Organisation (WHO) recommendations. A loud symphony and a sports crowd can be compared to the peak noise levels of 124 dB during shift change and 98 dB during morning routine care, respectively (figure 2). Gaps were addressed by implementing different PDSA cycles and ramps as seen in figure 1.