State Of Kuwait

Ministry Of Health

Title: The Ministry Of Health Standardized Code Blue Policy in Secondary and Tertiary Healthcare Facilities	
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Approved by: MOH Committee On Hospital Clinical Services and Policies	
Approved by: Director of Technical Affairs	
Approved by: Assistant Undersecretary Of Technical Affairs	
Notes:	

د. نوفه الشمري
مدير الإدارة الفنية
وزارة الصحة

د. عبدالرحمن المطيري
وكيل وزارة الصحة المساعد للشئون الفنية

1.0 Purpose

1.1 This policy is intended to provide all hospital staff with a specific guide, a unified set of instructions, and expected standards on how to initiate and provide code blue in accordance with the MOH policy A-LD-001, ensuring prompt and skilled cardiovascular and cerebral resuscitation for any cardiopulmonary arrest cases in healthcare facilities of the Ministry of Health in Kuwait.

2.0 Policy statement:

2.1 Cardiac arrest is the ultimate process toward the end of life. Early management and response to a cardiac arrest in a patient by a dedicated team of healthcare providers can ensure a good outcome. Throughout MOH healthcare facilities, the Code Blue team is the dedicated team designated and tasked with the prompt response to all cardiac arrest events and management according to ACLS guidelines.

2.2 The composition of code blue teams may vary between healthcare facilities and within a facility based on the respective facility's color code committee team designations, the facility's manpower, resources, and competencies.

2.3 In accordance with articles 4 and 6.6 of the MOH color code policy, the color code committee of each healthcare facility is to review and update the facility code blue manpower and role designations based on the above.

3.0 Sites to which the policy applies:

3.1 Hospital Wards.

3.2 Specialized Emergency Settings (e.g., OBGYN Emergency Room, Orthopedic designated health care facilities, or wards).

3.3 Ambulatory care settings (including outpatient, endoscopy/ bronchoscopy, and in-hospital dialysis centers).

3.4 Supportive clinical services (e.g., radiology, laboratory, physiotherapy).

3.5 Hospital premises near the emergency room, wards, clinics, and supportive clinical services (e.g., waiting areas, hospital hallways).

4.0 Sites to which the policy does *not* apply:

4.1 Critical care units (ICUs, CCU, PICU, NICU & Cath lab).

4.2 Adult Emergency Department.

4.3 Pediatric Emergency Room.

4.4 General and specialized Pediatric wards.

4.5 Main operation theatre and recovery room.

**Support for code or resuscitation in such settings is acquired on an emergency consult basis in accordonce with MOH medical consultation policy A-ADM-001.*

5.0 Definitions:

5.1 **Code Blue:** An emergency announced in a hospital or institution where a patient is in cardiopulmonary arrest requires a team of providers (called **Code Blue team**) to rush to the specific location and begin immediate resuscitation efforts.

5.2 **BLS:** Basic Life Support.

5.3 **ACLS:** Advanced Cardiac Life Support.

5.4 **AHA:** American Heart Association.

5.5 **ICU**: Intensive Care Unit.

5.6 **CCU**: Cardiac Care Unit.

5.7 **MRP**: Most Responsible Physician.

5.8 **ROSC**: Return of Spontaneous Circulation.

5.9 **PRO:** Public Relations Officer.

5.10 **Crash Cart**: The crash cart is a commonly used term for a self-contained mobile unit that contains virtually all the materials, medications, and devices necessary to perform a code blue.

5.11 **Defibrillator**: Defibrillators are devices that apply an electric charge or current to the heart to restore a normal heartbeat.

5.12 **CMO**: chief medical officer.

5.13 **First Responder**: the first person in contact with the patient to detect the cardiac arrest.

5.14 **Cardiac Arrest**: Cardiac arrest is the abrupt loss of heart function in a person who may or may not have been diagnosed with heart disease. It can come on suddenly or in the wake of other symptoms. Cardiac arrest is often fatal if appropriate steps aren't taken immediately.

5.15 **Cardiopulmonary arrest** is the cessation of adequate heart function and respiration, which, if not reversed, may result in death.

5.16 **High-Quality CPR: High-quality CPR performance metrics include chest compression fraction >80%, compression rate of 100-120/min, compression depth of at least 50 mm (2 inches) in adults,** and at least 1/3 the AP dimension of the chest in infants and children with no excessive ventilation.

5.17 **HCF**: health care facility.

6.0 Equipment/Forms required:

6.1 Adult Code Blue Flow Sheet Form.

6.2 Post-Cardiac Arrest Debriefing Checklist.

6.3 Crash Cart equipment, medications, and Sheet Form: (*For readiness and organization, refer to Crash Cart Policy).*

6.4 Cardiac Monitor.

6.5 A mode of communication and announcement of the code activation/deactivation set and approved by the code blue committee, CMO, and hospital administration (e.g., microphone with working and audible overhead system, paging system, etc.).

7.0 Procedure:

7.1 Initiation of a Code Blue:

7.1.1 The first responder who finds a patient in an apparent cardiopulmonary arrest may initiate high-quality CPR. If the first responder is a healthcare provider, he/she should initiate BLS and/or ACLS and act in accordance with MOH policy A-LD—001 articles 3 and 4 of the code blue section, as follows;

7.1.1.1 Once a patient is declared to be in cardiac arrest, If the first responder is alone, he/she needs to call for help and declare a code blue via the agreed and designated public announcement system and return to the patient (the code blue announcement must include ward number/room number/bed number) and to be repeated three times every 1 minute, for three times).

7.1.1.2 If the responder is not alone, he/she will start BLS, and the helper shall call for help and declare a code blue via the agreed-upon and designated public announcement system, as above in article 7.1.1.1.

7.1.1.3 Upon hearing a code blue, a dedicated trained code blue team assigned by the hospital departments (e.g., ICU/anesthesia, CCU, internal medicine, ward staff, etc.) shall attend the code blue and start resuscitation according to BLS/ACLS guidelines/algorithms.

7.1.1.4 A designated in-charge physician shall take the role of Code Blue team leader and guide the code according to ACLS standard protocols.

7.1.2 In case of simultaneous code blue, the operator will announce code blue (2) / ward number/room number/bed number) and to be repeated three times/every 1 minute.

7.1.3 In case of cancellation of code blue, the designated public announcement system or personnel must announce the following (Code Blue 1 or Code Blue 2 Cancelled with the respective ward number /room number /bed number).

7.1.4 In case of any technical issues rendering the agreed-upon and designated public announcement system nonfunctional or unavailable, a designated ward operator (e.g., nurse, junior physician, or clerk) will use the phone to contact each code blue team member separately.

7.1.5 Response and initiation of code blue activities by the team shall start within 5 minutes of the announcement as a STAT in accordance with the MOH medical consultation policy A-ADM-001.

7.2 Procedures During a Code Blue:

7.2.1 The code blue Team members must adhere to Advanced Cardiac Life Support (ACLS) Guidelines (AHA and Algorithm).

7.2.2 All code blue team members must have BLS/ACLS certification except the PRO, who should be trained on first aid procedures.

7.3 Code Blue Team members with assigned roles and responsibilities:

7.3.1 In accordance with articles 4 and 6.6 of the MOH color code policy, the color code committee of each healthcare facility should review and update the facility code blue manpower and role designations based on the facility's manpower, resources, and competencies.

7.3.2 The respective healthcare facilities and their governing color code committees should ensure the manpower involved and designated in their respective code blue policy are trained and certified in accordance with this policy set forth

7.3.3 The respective healthcare facilities and their governing color code committees should ensure the designated code blue team implements the code blue in accordance with the AHA, BLS, and ACLS guidelines.

7.3.4 Code blue team designation in secondary healthcare facilities.

7.3.4.1 Code blue team members may differ between Healthcare Facilities (HCF) depending on the available manpower, specialties, and facility logistics.

7.3.4.2 In secondary and tertiary healthcare facilities with on-site departments of internal medicine and/or anesthesia and ICU, the code blue Team Leader designation will be given to the physician with the most expertise in resuscitation (depending on the HCF manpower specialties, competencies, and/or code committee designation).

7.3.4.3 The following order for seniority is to be implemented (as available within the HCF by the color code committee):

7.3.4.3.1 Medical registrar or above rank.

7.3.4.3.2 CCU registrar or above rank (if available or designated by facility policy)

7.3.4.3.3 Anesthesiology/ICU registrar or above rank.

7.3.4.3.4 Code blue designated Assistant Registrar.

7.3.4.3.5 Treating/on call team registrar or above the rank.

7.3.4.3.6 Treating/on call team assistant registrar or above the rank.

7.3.4.3.7 Code blue CCU/ICU nurse (if available or designated by facility policy)

7.3.4.3.8 Ward team leader nurse.

7.3.4.4 **Team leader** is responsible for:

7.3.4.4.1 Conducting the code blue and assigning roles to team members according to the ACLS standardized protocols, ensuring the rotation of chest compression among team members according to the situation.

7.3.4.4.2 Initiating, delegating, evaluating, and/or terminating all interventions and management during the code blue.

7.3.4.4.3 Ensuring optimal documentation of the required code blue related forms is completed (e.g., Code Blue Flow Sheet and Post-Cardiac Debriefing Checklist).

7.3.4.4.4 Delegating and supervising cardiac monitor and defibrillation if no cardiologist is available as part of the code blue team

7.3.4.4.5 Assigning a team leader for the second code blue when necessary.

7.3.4.5 **Cardiologist (if available)** is responsible for:

7.3.4.5.1 Applying, Initiating, and supervising the defibrillator, cardiac monitoring, and any resuscitative cardiology-related interventions (e.g., transcutaneous and transvenous pacing).

7.3.4.5.2 Assisting in delegated duties set by the team leader regarding resuscitation.

7.3.4.5.3 Assigning other cardiologists for any simultaneous code blue should it occur.

7.3.4.5.4 Documentation in the designated Code Blue Form.

7.3.4.6 **The Anesthesiologist / Intensivist (registrar or above rank)** is responsible for the following:

7.3.4.6.1 Airway management of the respective patient.

7.3.4.6.2 Assisting in delegated duties set by the team leader regarding resuscitation.

7.3.4.6.3 Documentation in the designated part in the Code Blue form.

7.3.4.7 **Code Blue designated Assistant Registrar:** is responsible for:

7.3.4.7.1 Assisting in delegated duties set by the team leader.

7.3.4.7.2 Assisting in chest compressions.

7.3.4.8 **Treating specialty /On-Call unit** designated or delegated are responsible for;

7.3.4.8.1 Attending the code with the code blue team.

7.3.4.8.2 Assisting in delegated duties set by the team leader regarding resuscitation.

7.3.4.8.3 Follow up with the patient after the event if ROSC is achieved.

7.3.4.8.4 Issuing the death certificate if ROSC is not achieved.

7.3.4.8.5 During official daytime working hours, the death certificate is to be completed/issued by the treating specialty/unit in accordance with the MOH regulations and standards.

7.3.4.8.6 During on calls, the death certificate is to be completed/issued by the on call specialty/unit in accordance with the MOH regulations and standards.

7.3.4.8.7 Disclosure of the patient-related information (treatment plan or death) to the patient's next of kin or legal guardian.

7.3.4.9 **Two staff nurses from the event area** will be responsible for the following:

7.3.4.9.1 Initiation of high-quality CPR and declaring code blue through the designated public announcement system (Refer to 1.0).

7.3.4.9.2 Prepare the area surrounding the patient for the team activities by ensuring the patient's accessibility from all sides, keeping the crash cart and equipment ready and accessible near the patient, and ensuring that the monitor is attached to the patient before the arrival of all team members.

7.3.4.9.3 Participating in the chest compression with the **Code Blue designated Assistant Registrar**.

7.3.4.9.4 Inserting IV lines, preparing and administering all medications as prescribed, and assisting the physician in inserting central lines/endotracheal tubes during their procedures (by preparation, etc.)

7.3.4.9.5 Unless performed by the designated ICU/CCU nurse, requesting, assessing, and ensuring the function of the mechanical ventilator once requested by the code blue team.

7.3.4.9.6 In the absence of a designated CCU/ICU code blue nurse, it is the responsibility of the two staff nurses to Record all the events and interventions related to the code blue in the Code Blue forms and to complete the Post-Cardiac Arrest Debriefing Checklist immediately after the event and conclusion of the code (along with the team leader).

7.3.4.10 **Code blue CCU/ICU nurse: Is responsible for (depending on availability and designation by the HCF code committee)**

7.3.4.10.1 Inserting IV lines/s, preparing and administering all medications as prescribed, and assisting the physician in inserting central lines/endotracheal tubes during their procedures (by preparation, etc.)

7.3.4.10.2 Requesting, assessing, and ensuring mechanical ventilator function and availability once requested by the code blue team.

7.3.4.10.3 Recording all events and interventions related to the code blue in the Code Blue form.

7.3.4.10.4 Completion of the Post-Cardiac Arrest Debriefing Checklist immediately after the event and conclusion of the code (along with the team leader).

7.3.4.10.5 **Public Relation Officer (PRO):** is responsible for:

7.3.4.10.5.1 Attending the code blue site in a timely manner in accordance with the stat activation.

7.3.4.10.5.2 Ensuring and maintaining the patient's privacy during the code blue event.

7.3.4.10.5.3 Guarding the team members and their perimeter from any interference (violence or otherwise verbal or physical) throughout the event.

7.4 **Disposition of the patient after a Code Blue:**

7.4.1 **Inpatients:**

7.4.1.1 **If ROSC is achieved:**

7.4.1.1.1 The treating or on call team will evaluate the patient before consulting the ICU or CCU for admission according to the facility's ICU/CCU admission criteria.

7.4.1.1.2 If the patient is agreed to be transferred to the ICU/CCU, the designated ward team leader nurse should coordinate the transfer of the patient according to the MOH transfer policy A-ADM-005.

7.4.1.2 **if ROSC is not achieved**

7.4.1.2.1 If ROSC is not achieved in a ward, the treating/on call physician is to inform the next of kin and complete the death certificate, after which the body will be shifted to the facility morgue as per hospital policy.

7.4.2 Other premises **In cases of cardiac arrest in hospital premises other than inpatient care areas** (e.g., OPDs, Hallways, waiting areas).

7.4.2.1 **If ROSC achieved:**

7.4.2.1.1 The code blue team stabilizes the patient and ensures prompt transfer to the ER. There, care is handed over to the ER physician, who will take the lead for further management according to their protocol.

7.4.2.1.2 The code blue team leader must complete the Code Blue forms and document the event (on the HIS, if available).

7.4.2.1.3 The emergency department physician will manage the case according to their practice in emergency service.

7.4.2.2 **If ROSC is not achieved**

7.4.2.2.1 If ROSC is not achieved on hospital premises other than inpatient care areas, the code blue team leader will transfer and hand over the case to the ER physician, who will inform the next of kin and complete the death certificate. After that, the body will be shifted to the facility morgue as per hospital protocols with a referral to forensic medicine, and a police report will be issued accordingly.

7.4.2.3 For inpatients who sustain cardiac arrest in hospital premises other than their respective wards (e.g., radiology, endoscopy, cafeteria, etc.), the patient is to be transferred to his/her respective ward after stabilization or conclusion of the code (ROSC not achieved) unless agreed upon otherwise by the ICU/CCU (if ROSC achieved).

7.5 **Record of Code Blue:**

7.5.1 The Code Blue Forms:

7.5.2 The events pertaining to a code blue are to be documented and signed in a form approved and provided by the respective HCF code committee or MOH (e.g., the timing of code, ROSC or conclusion, lab results, interventions, etc.).

7.5.3 The events of the code blue shall be recorded on the Code Blue form by the designated nurse (e.g., ward staff nurse, CCU, or ICU) during the event for each case.

7.5.3.1 The team leader will review and sign the form immediately after the event. The CCU/ICU code blue team members will sign the relevant information.

7.5.3.2 The ward and Crash Cart should be stocked with copies of the relevant approved Code Blue forms.

7.5.3.3 Documentation of the events is to be completed on two copies of the form. One copy is to be saved in the patient's file, and a duplicate copy will be kept in a specific file in the CCU.

7.5.4 Post-Cardiac Arrest Debriefing Checklist:

7.5.4.1 The Post-Cardiac Arrest Debrief Checklist is used to promote individual and team self-reflection after a resuscitation. The goal is to improve performance on the next resuscitation and, hopefully, patient outcomes. Any of the team members can lead the checklist and should include all participating members of the resuscitation. The purpose of the checklist is to improve technical performance. <u>It is not a tool for debriefing Critical Incident Stress situations or conflict resolution</u>.

7.5.4.2 Code committees in MOH healthcare facilities should aim to develop and implement a Post Cardiac Arrest Debriefing Checklist (if not provided by the MOH).

7.5.4.3 If implemented within a healthcare facility, the designated nurse and the team leader for each arrest case must complete the Post Cardiac Arrest Debriefing Checklist immediately after the event.

7.5.4.4 The completed checklist is to be attached to the completed Code Blue forms and kept in the same specified folder in CCU, specifying the authorized accessibility for the unit's head nurse.

7.5.4.5 The purpose of filling out and keeping this checklist is for the steering committee to review and use as a source for identifying improvement opportunities and avoiding risks in future events.

7.5.4.6 When a code blue activation is deemed not indicated or canceled, the CCU staff nurse will document that in the Code Blue forms

7.5.4.7 **Second Code Blue:**

7.5.5 **When a** Second/simultaneous code blue is deemed necessary for another patient, it should be announced by the same steps as mentioned earlier.

7.5.6 **Composition of backup Code Blue team:**

7.5.6.1 Team leader: The first team leader will assign a team leader for the second code blue team.

7.5.6.2 The Anesthesiologist of the first team is responsible for assigning another Anesthesiologist to the second code blue team.

7.5.6.3 The Cardiologist of the first team is responsible for assigning another Cardiologist to the second code blue team.

7.5.6.4 Treating specialty /On-call unit is to designate a physician to the second code blue.

7.5.6.5 The PRO of the first team is responsible for assigning another PRO to the second code blue team.

7.5.6.6 A second staff nurse from CCU (if designated to the code blue team by the hospital code committee) will be dispatched as directed by the unit's charge nurse.

7.5.6.7 A second staff nurse from the ICU (if designated to the code blue team by the hospital code committee) will be dispatched as directed by the unit charge nurse.

7.5.6.8 Two staff nurses from the second code blue location/site will join the team accordingly within their wards.

7.5.7 The roles and responsibilities of the second code blue team are the same as those mentioned in article 7.3, with the same distribution of roles and responsibilities.

8.0 **Monitoring and Evaluation of Code Blue activities:** The effectiveness of the policy is monitored regularly on the following levels:

8.1 **Steering (Or Code) Committee:**

8.1.1 Responsible for planning and follow-up of implementation of improvement opportunities to the whole process of code blue.

8.1.2 The committee chairman is the Chief Medical Officer (CMO) or designee

8.1.3 The members of the steering committee include:

8.1.3.1 Chair of Medical Dept. Or designee.

8.1.3.2 chair of ED or designee.

8.1.3.3 Chair of ICU or designee.

8 1.3.4 Head of CCU/Cardiology or designee.

8.1.3.5 Head of Quality Council or designee.

8.1.3.6 Nursing Director.

8.1.3.7 CCU head nurse.

8.1.3.8 Staff Development Unit.

8.1.4 The frequency of committee meetings is twice yearly unless the members need to hold earlier, more urgent meetings.

8.2 **Reviewing Committee:**

8.2.1 Responsible for:

8.2.1.1 performing qualitative and quantitative reviews for code blue team activities and events according to ACLS guidelines.

8.2.1.2 Identify any improvement opportunities that could be implemented to improve the quality of care delivered care and code blue activities.

8.2.1.3 Qualitative review includes revising the filled Flow Sheet and Post-Cardiac Arrest Debriefing Checklist; other supportive documents, such as the patient's file and related incident reports, can also be reviewed. (Quality nurses will carry out onsite observation to identify areas for improvement).

8.2.1.4 The quantitative review includes the total number of code blue cases, the number of survived cases, the number of deaths, the number of canceled cases, and the number of not indicated cases.

8.2.1.5 Reviewing committee members includes:

8.2.1.5.1 Internal Medicine Physicians.

8.2.1.5.2 Head Nurse of CCU.

8.2.1.6 Frequency of meetings every 4 to 8 weeks.

8.2.1.7 Recommendations raised by the reviewing committee are classified as urgent and non-urgent according to the SAC scoring system used in risk management practices.

8.2.1.8 Urgent recommendations will be immediately forwarded to the steering committee chair for further investigation and review of recommendations

8.2.1.9 Non-urgent recommendations will be forwarded to the steering committee quarterly to be discussed in the committee.

9.0 Training:

9.1 **Training on BLS/ACLS:** All code blue team members must have valid BLS/ACLS certifications. The BLS & ACLS training center will regularly follow up on certification updates with and through the chairs of the respective units and departments.

9.2 **Training on the policy:**

9.2.1 Training of all healthcare workers through a comprehensive training program is to be ensured by the chairs of the respective involved departments with oversight of the steering committee.

9.2.2 Training of nursing staff through staff development unit (SDU).

9.3 Mock codes will be done to test the implementation of qualitative and quantitative measures needed for the success of code blue event circumstances.

9.4 All PRO will be trained on first aid measures on a regular basis

10.0 Code Blue in the healthcare facility clinical and supportive service areas:

10.1 **Physiotherapy Department:** If a patient sustains a cardiac arrest while receiving physiotherapy in the physiotherapy department, the first responder is the patient's physiotherapist, who should initiate high-quality CPR and call for help.

10.1.1 Help staff should activate code blue using the agreed-upon and designated public announcement system/process set by the HCF.

10.1.2 After the conclusion of code blue, the patient's disposition is to be in accordance with Article 7.4.

10.2 **Dialysis Unit:**

10.2.1 Cardiac arrests occurring within a dialysis unit are usually witnessed events occurring before, during, or after dialysis treatment sessions. Hence, the first responders are the dialysis team (i.e., physician and/or nurse), who will activate the code blue using the agreed and designated public announcement system/process set by the HCF in the manner set above.

10.2.2 The resuscitation should be initiated by the dialysis team (involving a physician and two staff nurses from the dialysis service) in accordance with the AHA/ACLS standards until the arrival of the code blue team.

10.2.3 The dialysis team should prepare and set up the crash cart near the coded patient's bedside.

10.2.4 A trained dialysis nurse should be assigned to operate the hemodialysis (HD) machine.

10.2.5 The hemodialysis machine should be stopped, and blood volume should be returned to the patient with a fluid bolus.

10.2.6 As long as the hemodialysis machine is not defibrillation-proof, it should be disconnected from the patient in accordance with International Electrotechnical Committee (IEC standards) standards.

10.2.7 The dialysis access should be kept open to use the administration of the drugs during CPR.

10.2.8 Unless specified otherwise by the treating nephrology team, code blue team, or any consulted service (e.g., ICU or CCU), the patient's disposition is to be in accordance with Article 7.4.

10.3 **In the clinical supportive area/physician area (Laboratory, Pharmacy, Radiology, and nuclear medicine), the healthcare worker should activate Code Blue through the agreed-upon and designated public announcement system/process set by the HCF. The healthcare worker should initiate high-quality CPR until the Code Blue team arrives. After the conclusion of Code Blue, the patient's disposition** is to be in accordance with Article 7.4.

10.3.1 **A stocked crash cart should be allocated to the sites mentioned above accordingly.**

10.3.2 **MRI:** If a patient sustains a cardiac arrest while undergoing MRI in the radiology department, the first responder, the MRI technologist, is to activate the code blue through the agreed and designated public announcement system/process

set by the HCF and remove the patient from MRI Scan room using an MR compatible stretcher, relocate the patient to preparation area (located across from MRI scan room), initiate high-quality CPR and prepare the crash cart for use where the code blue team can attend to the patient.

10.3.3 **Nuclear Medicine (NM) Department (Handling cardiac arrest in radioactive patient):**

10.3.3.1 Management of medical emergencies remains unchanged in radioactive patients and follows all medical principles and emergencies. Precautions may differ depending on the indication, dose, and form the patient was exposed to.

10.3.3.2 **Diagnostic nuclear medicine procedure:**

10.3.3.2.1.1 General diagnostic NM studies:

10.3.3.2.1.1.1 If a patient sustains a cardiac arrest while undergoing any nuclear medicine study, the NM team will be notified to assess the patient and activate code blue through the agreed and designated public announcement. The respective HCF sets the system/process.

10.3.3.2.1.1.2 The NM team is responsible for ensuring the initiation of high-quality CPR until the arrival of the code blue team.

10.3.3.2.1.1.3 The NM department is to ensure the NM site is well equipped for patient resuscitation during a code (e.g., stocked crash cart availability, trained personnel, etc.).

10.3.3.2.1.1.4 Although the patient may still be radioactive, this shall not preclude appropriate clinical management of the case, including transfer to intensive care or the coronary care unit when deemed necessary.

10.3.3.2.1.1.5 Patients receiving diagnostic NM studies are managed as a standard medical emergency.

10.3.3.2.1.1.6 The NM team may later provide the treating MRP, code leader, or recipient site with any information or recommendations regarding nuclear medicine and the patient upon completing the code blue as deemed necessary.

10.3.3.2.1.1.7 Cardiac stress myocardial perfusion study:

10.3.3.2.1.1.7.1 If a patient sustains a cardiac arrest while undergoing any cardiac stress nuclear study, the supervising cardiologist or on-site team is to initiate resuscitation and activate code blue through the agreed and designated public announcement

system/process set by the respective HCF.

10.3.3.3 **Patients receiving radioactive therapy** with unsealed sources (I-131 not exceeding 29.9 MCI), as an outpatient, who sustain cardiac arrest as an outpatient should be provided with the same steps and standards set above in code blue with the strict adherence to the following instructions;

10.3.3.3.1 The code blue team is to be informed about the radioactive status of the patient.

10.3.3.3.2 The code blue team shall use disposable gowns and gloves when handling the patient.

10.3.3.3.3 The Nuclear radiation safety officer must be notified immediately to oversee, guide, and instruct all involved with the patient.

10.3.3.3.4 The nuclear radiation safety officer shall examine Items that have come into direct contact with the patient (e.g , airways, equipment, Masks, etc.) before disposal.

10.3.3.3.5 All body fluids (e.g., urine, gastric contents, etc.) shall be contained as far as possible by means of absorbent pads, and the pads shall be placed in a contaminated waste bag for examination and subsequent handling by a nuclear radiation safety officer.

10.3.3.3.6 In the intensive care unit (ICU) / coronary care unit (CCU) / operation theatre (OT), principles of radiation protection (justification, optimization, dose limit, time, distance, shielding) shall be applied at all times to reduce the exposure to all members of the public including non-radiation staff. The nuclear radiation safety officer shall supervise and advise the relevant staff in the ICU / CCU / OT on issues related to radiation safety.

10.3.3.3.7 All the details regarding radiation exposure from the radioactive patients to the personnel involved must be recorded.

10.3.3.3.8 Examination of staff involved in resuscitation or handling a radioactive patient: Staff who have been directly involved with the radioactive patient will need to be assessed for potential radiation exposure in accordance with MOH and radiation safety rules and standard procedures.

10.4 In case of Pediatric Cardiac Arrest Cases: Refer to the MOH Code Pink Policy A-LD-003.

10.5 In cases of cardiac arrest in pregnancy, healthcare facilities with OBGYN in-hospital services are to establish a code blue policy in accordance with the standards set in this policy and the AHA/ACLS/ALSO guidelines/algorithms (see attachment).

10.5.1 Healthcare facilities with ***no*** OBGYN in-hospital services are to establish a code blue policy in accordance with the standards set in this policy (that includes the organization of communication and intervention with the allocated out-of-hospital OBGYN services) and the AHA/ACLS/ALSO guidelines and algorithms (see attachment).

10.6 If a cardiac arrest is witnessed in hospital premises other than inpatient care settings, the first responder should activate the code blue through the agreed and designated public announcement system and initiate BLS until the code blue team arrives and assumes control of the resuscitation.

10.7 If a cardiac arrest is witnessed outside the hospital facility but within the hospital property (e.g., mosque, parking, and garden), the first responder should inform the hospital security or 112, whichever is closer. If the hospital security is notified, he should tell the local ambulance and ER accordingly to initiate a transfer of the patient to the ER department.

References:

1. **Code blue policy adult/ pediatric.** Saskatoon city hospital. Saskatoon health region. Accessed fromhttps://www.saskatoonhealthregion.ca/about/NursingManual/1012.pdf.
2. **Prince, C. R., Hines, E. J., Chyou, P. H., &Heegeman, D. J. (2014).** Finding the key to a better code: code team restructure to improve performance and outcomes. Clinical medicine & research, 12(1-2), 47–57. https://doi.org/10.3121/cmr.2014.1201.
3. **Chamberlain, G., Lobos, A. T., & Gupta, R. (2019).** Before the Code Turns Blue: An Analysis of Critical Actions Performed by Health Care Providers Prior to Code Team Arrival.

Attachments:

1. Adult Code Blue Flow Sheet.
2. Post-Cardiac Arrest Debriefing Checklist.
3. ACLS algorithm.
4. ACLS algorithm for cardiac arrest in pregnancy.

Date of event: / _____ / _____

ADULT CODE BLUE FLOW SHEET

Patient name: _____ Date of birth: _____ Gender: Male / Female

C.I.D: _____ File No.: _____ Location: _____

Admission diagnosis: _____

Code Activation Time: _____ Code End Time: _____

Was the event **Witnessed:** ☐ Yes ☐ No

At the arrival time of Code Blue Team:

1. Did the patient have a pulse? ☐ Yes ☐ No
2. Was the patient breathing normally? ☐ Yes ☐ No
3. Was the patient conscious? ☐ Yes ☐ No
4. Was the patient under cardiopulmonary monitoring? ☐ Yes ☐ No

Circulation

Was Chest Compression done: ☐ Yes ☐ No Starting time: _____ By: _____ AED Applied: ☐ Yes ☐ No

Time AED/Defibrillator Applied: _____ Pacemaker required: ☐ Yes ☐ No

IV/IO Site: _____ Gauge: _____ Time of IV/IO insertion: _____

Airway/Breathing:

Was the patient **already on**: ☐ ETT ☐ Tracheostomy Was the airway obstructed? ☐ Yes ☐ No

Time of first assisted ventilation if required: _____

Type of assisted ventilation required: ☐ Bag-Mask ventilation ☐ Intubation ☐ Non-invasive ventilation ☐ None Intubation

Time: _____ Number of attempts: _____ Tube Size: _____ By: _____ ETT

tube position confirmed: ☐ Yes ☐ No Confirmed using: _____

Time	CPR Cycle	Rhythm	Defibrillation (Joules)	Medication (Name/Dose)	Comments (Vital signs, response to interventions)

Members Present/ Time arrived: _____

_____

After high-quality resuscitation: ☐ ROSC achieved, Total time: _____ ☐ No ROSC achieved

Recorder Name & Signature: _____ Team Leader Printed Name: _____

Team Leader Signature: _____

Post ROSC Disposition: ICU ☐ Yes ☐ No If No, why .....Signature .....

CCU ☐ Yes ☐ No If No, why .....Signature .....

Others ..... Signature .....

POST Resuscitation DEBRIEF CHECKLIST

Patient Name: _____ Date of Birth: _____ CID No.: _____

File No.: _____ Location of the event: _____

Admission Diagnosis: _____

Date of Event: _____ Time of Activation: _____ Time of Code Blue team arrival: _____

SN	Items to be checked	Yes	No	N/A	Remark
	A. Environment				
1.	Was the **space in the scene** big enough to handle each member in his appropriate position?				
2.	Were all required **equipment/medications available**?				
3.	Were all **required equipment/medications placed in easy/nearby** access locations?				
4.	Did all the **equipment function** properly?				
	B. Teamwork				
5.	Was the **team leader** clearly identified to the members?				
6.	Did each member have a **clear designated** role?				
7.	Was the **assignment of members** done appropriately [Knowing each member's limitations]?				
	C. Communication				
8.	Was code blue **announced** clearly in the overhead?				
9.	Was the **initial assessment** completed?				
10.	Were ACLS/PALS guidelines followed in terms of **compressions rotation**?				
11.	Were the orders by the team leader clear?				
12.	Was the **treating team** available during the code?				
	E. Documentation				
13.	Was the **Code Blue Flow Sheet** documentation completed?				
	F. Ethics				
14.	Were efforts taken to maintain **the patient's privacy** during the code without affecting the quality of resuscitation?				

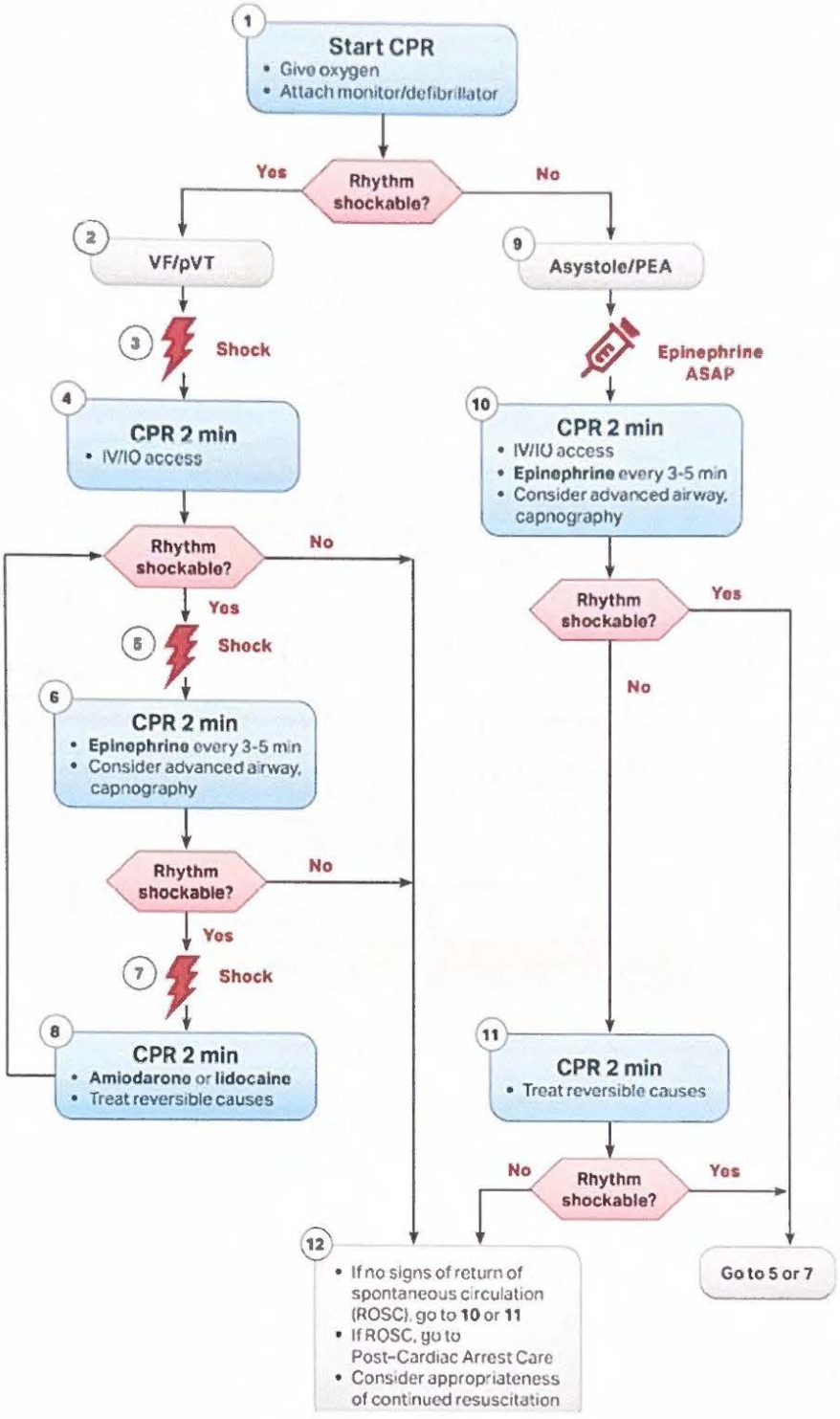
15. What went well? _____

16. What could be improved? _____

Completed by Team leader: ..... **Signature & stamp:** .....

Completed by CCU/PICU: ..... **Signature:** .....

3. ACLS Algorithm



CPR Quality

- Push hard (at least 2 inches [5 cm]) and fast (100-120/min) and allow complete chest recoil.
- Minimize interruptions in compressions.
- Avoid excessive ventilation.
- Change compressor every 2 minutes, or sooner if fatigued.
- If no advanced airway, 30:2 compression-ventilation ratio.
- Quantitative waveform capnography
  - If $PETCO_2$ is low or decreasing, reassess CPR quality.

Shock Energy for Defibrillation

- **Biphasic**: Manufacturer recommendation (eg, initial dose of 120-200 J); if unknown, use maximum available. Second and subsequent doses should be equivalent, and higher doses may be considered.
- **Monophasic**: 360 J

Drug Therapy

- **Epinephrine IV/IO dose:** 1 mg every 3-5 minutes
- **Amiodarone IV/IO dose:** First dose: 300 mg bolus. Second dose: 150 mg.
  or
  Lidocaine IV/IO dose: First dose: 1-1.5 mg/kg. Second dose: 0.5-0.75 mg/kg.

Advanced Airway

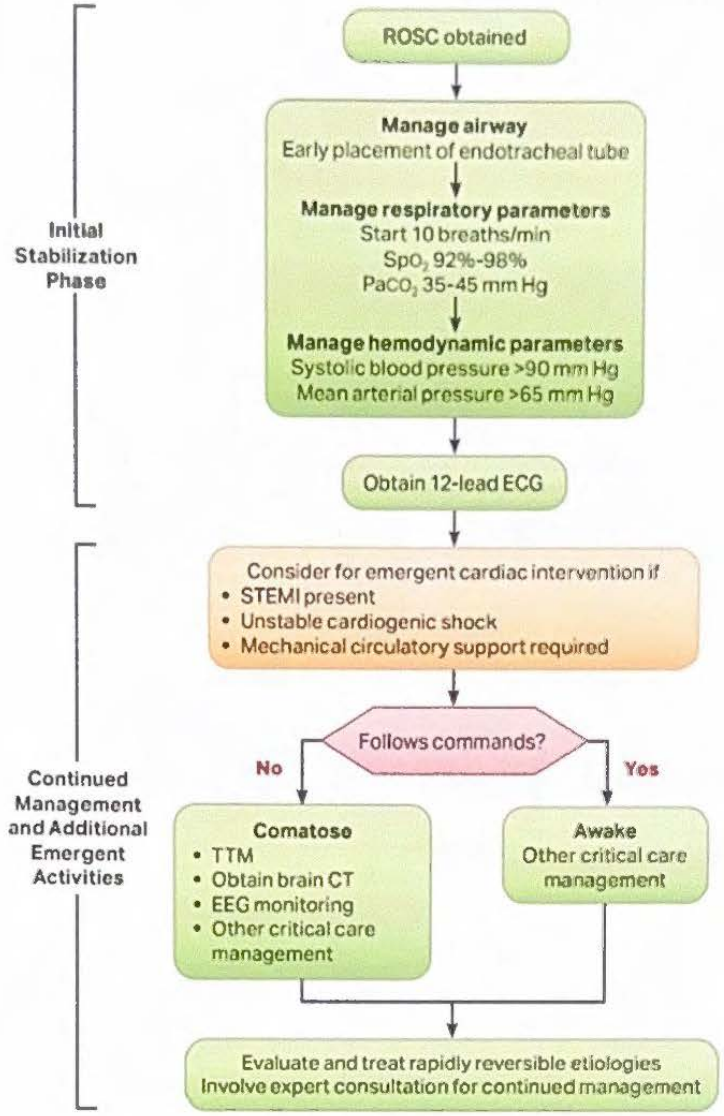
- Endotracheal intubation or supraglottic advanced airway
- Waveform capnography or capnometry to confirm and monitor ET tube placement
- Once advanced airway in place, give 1 breath every 6 seconds (10 breaths/min) with continuous chest compressions

Return of Spontaneous Circulation (ROSC)

- Pulse and blood pressure
- Abrupt sustained increase in $PETCO_2$ (typically ≥40 mm Hg)
- Spontaneous arterial pressure waves with intra-arterial monitoring

Reversible Causes

- **H**ypovolemia
- **H**ypoxia
- **H**ydrogen ion (acidosis)
- **H**ypo-/hyperkalemia
- **H**ypothermia
- **T**ension pneumothorax
- **T**amponade, cardiac
- **T**oxins
- **T**hrombosis, pulmonary
- **T**hrombosis, coronary



Initial Stabilization Phase

Resuscitation is ongoing during the post-ROSC phase, and many of these activities can occur concurrently. However, if prioritization is necessary, follow these steps:

- Airway management: Waveform capnography or capnometry to confirm and monitor endotracheal tube placement
- Manage respiratory parameters: Titrate FiO_2 for SpO_2 92%-98%; start at 10 breaths/min; titrate to $PaCO_2$ of 35-45 mm Hg
- Manage hemodynamic parameters: Administer crystalloid and/or vasopressor or inotrope for goal systolic blood pressure >90 mm Hg or mean arterial pressure >65 mm Hg

Continued Management and Additional Emergent Activities

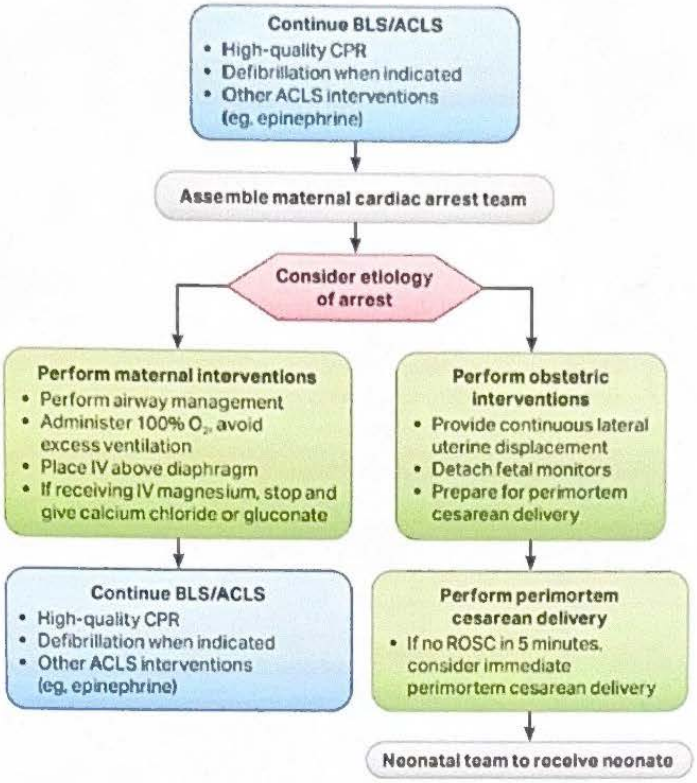
These evaluations should be done concurrently so that decisions on targeted temperature management (TTM) receive high priority as cardiac interventions.

- Emergent cardiac intervention: Early evaluation of 12-lead electrocardiogram (ECG); consider hemodynamics for decision on cardiac intervention
- TTM: If patient is not following commands, start TTM as soon as possible; begin at 32-36°C for 24 hours by using a cooling device with feedback loop
- Other critical care management
  - Continuously monitor core temperature (esophageal, rectal, bladder)
  - Maintain normoxia, normocapnia, euglycemia
  - Provide continuous or intermittent electroencephalogram (EEG) monitoring
  - Provide lung-protective ventilation

H's and T's

Hypovolemia
Hypoxia
Hydrogen ion (acidosis)
Hypokalemia/**h**yperkalemia
Hypothermia
Tension pneumothorax
Tamponade, cardiac
Toxins
Thrombosis, pulmonary
Thrombosis, coronary

4. ACLS Algorithm for cardiac arrest in pregnancy



Maternal Cardiac Arrest

- Team planning should be done in collaboration with the obstetric, neonatal, emergency, anesthesiology, intensive care, and cardiac arrest services.
- Priorities for pregnant women in cardiac arrest should include provision of high-quality CPR and relief of aortocaval compression with lateral uterine displacement.
- The goal of perimortem cesarean delivery is to improve maternal and fetal outcomes.
- Ideally, perform perimortem cesarean delivery in 5 minutes, depending on provider resources and skill sets.

Advanced Airway

- In pregnancy, a difficult airway is common. Use the most experienced provider.
- Provide endotracheal intubation or supraglottic advanced airway.
- Perform waveform capnography or capnometry to confirm and monitor ET tube placement.
- Once advanced airway is in place, give 1 breath every 6 seconds (10 breaths/min) with continuous chest compressions.

Potential Etiology of Maternal Cardiac Arrest

A Anesthetic complications
B Bleeding
C Cardiovascular
D Drugs
E Embolic
F Fever
G General nonobstetric causes of cardiac arrest (H's and T's)
H Hypertension