

Supplementary material

Manuscript title: Knowledge and skills in cardiopulmonary resuscitation and effect of simulation training on it among healthcare workers in a tertiary care centre in India

Appendix A: Questionnaire to assess knowledge

1. What should you initially do if you find unresponsive victim?
 1. Call for help
 2. Scene should be safe
 3. Perform chest compression
 4. Give 2 rescue breath
2. Who needs CPR?
 1. A person who is unresponsive with no pulse & no breathing
 2. A person who is unresponsive with normal breathing
 3. A person who is having pulse with trouble breathing
 4. A person with chest pain
3. What is the ratio of chest compression & breath when providing CPR to an adult?
 1. 10 compressions to 2 breaths
 2. 15 compressions to 2 breaths
 3. 30 compressions to 2 breaths
 4. 100 compressions to 2 breaths
4. If you find an unresponsive victim without a pulse and you do not have a mask. What will be your next action in this situation?
 1. Call 102/108
 2. Wait until EMS arrives
 3. Begin CPR and perform mouth-to-mouth
 4. Only perform mouth-to-mouth rescuer breath.
5. How much time you should require to check a pulse?
 1. 10 second
 2. 20 second
 3. 30 second
 4. 10 minute
6. What is the rate of chest compressions for an adult in one minute?
 1. A rate of 60 to 80 compressions
 2. A rate of 80 to 100 compressions
 3. A rate of 120 to 140 compressions

4. A rate of 100 to 120 compressions
7. If you suspect an unresponsive victim has head or neck trauma. In this condition, which is the preferred method for opening the airway?
1. Head tilt- chin lift
 2. Jaw thrust
 3. Head tilt-neck lift
 4. Avoid opening the airway
8. When would you again check the pulse of an unresponsive victim?
1. Every five cycle of CPR
 2. Every cycle of CPR
 3. Every two cycle of CPR
 4. Every three cycle of CPR
9. What is the depth of chest compression in Adult unresponsive victim?
1. 2 – 2.4 Inch
 2. 1 –1.5 Inch
 3. 3 – 3.5 Inch
 4. 4- 5 Inch
10. What is the preferred site of pulse check of an unresponsive victim?
1. Carotid artery
 2. Brachial artery
 3. Radial artery
 4. Femoral artery
11. How often should rescuers switch roles when performing two-rescuer CPR?
1. After every cycle of CPR
 2. After every two cycles of CPR
 3. After every five cycles of CPR
 4. After every 10 cycles of CPR
12. Why is it important to maintain adequate rate & depth of chest compression during CPR?
1. To create air flow & oxygenation into the lungs
 2. To create blood flow during compression
 3. To stimulate spontaneous respiration
 4. To save the time
13. The new guidelines for CPR recommended BLS sequences of steps are:
1. Chest compressions, Airway, Breathing
 2. Airway, Breathing, Check pulse
 3. Airway, Breathing, Chest compressions
 4. None of the above

14. Where should you place your hands to give chest compression in an unresponsive victim?

1. Upper half of the sternum
2. Lower half of the sternum
3. Middle of the sternum
4. Upper portion of the abdomen

15. The proper steps for operating an AED are:

1. Power on the AED, attach electrode pads, shock the individual, and analyze the rhythm
2. Power on the AED, attach electrode pads, analyze the rhythm, clear the individual, and deliver shock
3. Attach electrode pads, check pulse, shock individual, and analyze rhythm
4. Check pulse, attach electrode pads, analyze rhythm, shock patient

16. In an adult an advanced airway is placed during two-rescuer CPR, how often should the breaths be administered?

1. Every 3 second (30 breaths per minute)
2. Every 4 second (15 breaths per minute)
3. Every 6 second (10 breaths per minute)
4. Every 10 second (6 breaths per minute)

17. Which of the following comes under BLS survey?

1. Rapid defibrillation
2. Advanced airway
3. Early drug administration
4. Post cardiac arrest care

18. Which of the following helps to improve the quality of chest compression in an unresponsive victim?

1. Observe ECG rhythm on the monitor
2. Give compression at the rate of 140 compression per minute
3. Switch role after every 2 minute or every 5 cycles
4. Do not allow the chest to recoil fully

19. What is the recommended dose of energy for shock with biphasic defibrillator for a patient with Atrial Fibrillation?

1. 50-80 J
2. 80-100 J
3. 120-200 J
4. 200-250 J

20. What is the sign of effective CPR?

1. Urine output more than 30 ml/hour
2. Patient temperature more than 32°C (89.6°F)
3. PETCO₂ level more than 10 mm Hg
4. None of the above

21. Which of the route is the best for epinephrine drug administration during cardiac arrest?

1. Central intravenous
2. Peripheral intravenous
3. Endotracheal
4. Intraosseous

22. Which of the following is contraindicated for nitroglycerine administration while managing acute coronary syndrome?

1. Pulse rate more than 90/ min.
2. Systolic blood pressure more than 100 mm Hg
3. Right ventricular infarction & dysfunction
4. Phosphodiesterase inhibitor use more than 72 hours ago

23. How will you manage hypotension immediately after Return of Spontaneous Circulation (ROSC)?

1. Give Atropine Drug bolus
2. Give I V fluids bolus
3. Give Adenosine drug
4. No intervention needed

24. What is the recommended treatment in a patient with asystole?

1. Place transcutaneous pacing
2. Give epinephrine drug
3. Give 2 rescue breath
4. Give 200 J of defibrillation shock

25. What will you do immediately after defibrillation shock?

1. Check the pulse
2. Begin chest compression
3. Wait for 20 second
4. Open the airway of patient

26. In which condition rescuer should stop CPR or withhold resuscitation?

1. Scene is not safe
2. Unwitnessed arrest
3. Patient age is more than 80 year
4. After 5 minute of CPR

27. Which of the following is the recommended dose of injAmiodarone in a patient with Ventricular Fibrillation?

1. 200 mg
2. 300 mg
3. 400 mg
4. 600 mg

28. How will you select an appropriately sized oropharyngeal airway (OPA)?

1. Size of thumb of patient
2. Measure from earlobe to nose
3. Measure from the corner of mouth to the angle of the mandible
4. Estimated by patient weight /10

29. If you see an organized, non-shock able rhythm on ECG monitor after 5 cycles of CPR. What is the next step?

1. Obtain blood samples
2. Administer 1mg of epinephrine intravenously
3. Palpate a carotid pulse
4. Give 20 ml of Normal Saline

30. When do you require synchronized cardioversion?

1. Sinus tachycardia
2. Sinus rhythm
3. Unstable supraventricular tachycardia
4. Atrial fibrillation

31. What is the recommended target temperature range for achieving therapeutic hypothermia after cardiac arrest?

1. 25 to 30 degree Celsius
2. 28 to 32 degree Celsius
3. 32 to 36 degree Celsius
4. 35 to 39 degree Celsius

32. Which of the following things are not included in team dynamics concept during resuscitation in emergency?

1. Clear message
2. Closed loop communication
3. Do not share the knowledge among team members
4. Clear roles & responsibilities

33. What will be your next action if post-operative patient reports chest pain in the CCU?

1. Obtain blood for arterial blood gas
2. Administer IV fluids
3. Obtain a 12 lead ECG & administer aspirin if not contraindicated
4. Give analgesic & check saturation

34. Which of the following condition describes pulseless electrical activity?

1. Flat line on monitor without pulse
2. Ventricular fibrillation with a pulse
3. Sinus rhythm without a pulse
4. Ventricular tachycardia with a pulse

35. When do you recommend the use of cricoid pressure to prevent aspiration during cardiac arrest?

1. Recommended when patient is vomiting
2. Recommended only for supraglottic airway insertion
3. Not recommended routinely
4. Recommended after every cycle of CPR

Appendix B: Checklist to assess skills

1.	Scene safety	Yes	No
a.	Check for scene is safe or not		
b.	Use of universal precaution		
2.	Check for Responsiveness		
a.	Tap on shoulder & asked are you ok?		
b.	Shouts for local help / call for ambulance		
c.	Simultaneously carotid pulse & breathing check for 5-10 second		
3.	High quality chest compressions		
a.	Hand placement on Lower half of sternum		
b.	Placed second hand over first hand & grasped the first hand		
c.	30 compressions in 15-18 seconds at the rate of 100-120/ min.		
d.	Depth of chest compression 2 inches (5 cm) - 2.4 inches (6 cm)		
e.	Complete chest recoil between compression		
f.	Interruptions in compressions < 10 second		
4.	Breath/ventilation		
a.	Opens airway by a head tilt-chin lift or jaw thrust maneuver		
b.	Use of pocket mask /bag and mask		
c.	Give 2 breath, each breath over 1 second		
d.	Produce visible chest rise		
e.	Resume chest compression after 2 breath		
f.	Compressions breath ratio 30:2		
5.	AED/defibrillator		
a.	Timely Use of AED/manual defibrillator		
b.	Powers on AED/manual defibrillator		
c.	Correctly attaches pads/paddles		
d.	Clears rescuers from victim to analyze rhythm		
e.	Shock by pressing a flashing light button/shock button		
f.	Resume chest compressions immediately after shock delivery		

6.	Team Leader		
a.	Ensure High-quality CPR all times		
b.	Assigns team member roles		
c.	Ensures that team members perform well		
7.	Tachycardia Management		
a.	Started oxygen, monitoring, IV medication if required		
b.	ECG monitor leads placement		
c.	Identified unstable tachycardia		
d.	Identified symptoms of tachycardia		
e.	Synchronized cardio version done		
8.	Bradycardia Management		
a.	Identified symptomatic bradycardia		
b.	Atropine correct dose given		
9.	VF Management		
a.	Identified VF		
b.	Clears before analyze and shock		
c.	Immediately switched to CPR after shock		
d.	Adequate airway management		
e.	Adequate cycles of drug-rhythm check/shock -CPR		
f.	Appropriate drugs and doses		
10.	PEA Management		
a.	Identified PEA		
b.	Discussed potential reversible causes of PEA (H's and T's)		
c.	Appropriate drug(s) and doses		
d.	Resumes CPR after rhythm checks		
11.	Post-Cardiac Arrest Care		
a.	Identifies ROSC		
b.	BP measured and 12-Lead ECG are performed , O2 saturation monitoring, discusses need for endotracheal intubation and waveform capnography, and orders laboratory tests		
c.	Considers Targeted Temperature Management(TTM)		
12.	Airway		
a.	Put Oro-pharyngeal/Naso-pharyngeal airway		
b.	Oxygen given if available		
c.	Effective bag-mask ventilation		
d.	Ventilation rate (Each breath every 5-6 seconds)		
e.	Ventilation speed (Each breath over 1 second)		
f.	Gives proper ventilation volume (Half a bag)		

Appendix C: Schedule of the workshop

S. No.	Topic	Time
Session 1	INTRODUCTION Welcome Introduction of team and participants Learning objectives Consent form Pre-training knowledge and skill testing of participants	60 minutes
Session 2 Skill station 1	Adult Chain of survival Scene safety and assessment Adult compressions Skill station for chest compressions	Session: 15 minutes Skill station: 20 minutes
Session 3 Skill station 2	Airway and breathing One-rescuer adult rescuer Skill station for single rescuer	Session: 10 minutes Skill station: 20 minutes
Session 4 Skill station 3	Two-rescuer scenario Skill station for two rescuer	Session: 10 minutes Skill station: 20 minutes
Session 5	Use of AED and Demonstration	Session: 10 minutes
Session 6 Skill station 4	Basic and advanced airway Defibrillation Skill station for Airway management	Session: 20 minutes Skill station: 20 minutes
Session 7	ACS	Session: 15 minutes
LUNCH (45 minutes)		
Session 8	Common ECG (VT/VF/PEA/Asystole/Heart block)	Session: 15 minutes
Session 9	Stroke	Session: 15 minutes
Session 10	VF/Pulseless VT PEA/Asystole	Session: 20 minutes
Session 11	Tachyarrhythmias: Stable/unstable	Session: 15 minutes
Session 12	Bradyarrhythmias: Stable/unstable	Session: 15 minutes
Skill station 5	Mega code Skill stations for tachyarrhythmias and bradyarrhythmias, VF/VT/Asystole/PEA	Skill station: 40 minutes
Session 13	ROSC, Target temperature management and post cardiac arrest care	Session 10 minutes
Feedback and closure		