Supplemental file 1

Defibrillator knowledge and attitude

Knowledge and Attitude towards Managing Cases of Cardiac Arrest.

*Required

| code * | | |
|---------------------------|---------------------------|--|
| | | |
| gender Mark only one o | oval | |
| | | |
| | | |
| | | |
| Are you BLS ti | ained? | |
| Mark only one of | oval. | |
| yes | | |
| no | | |
| If yes, when? | | |
| Are you ACLS | trained? | |
| Mark only one o | oval. | |
| yes | | |
| no | | |
| If yes, when? | | |
| Any other trair | ning to use defibrillator | |

| \bigcirc | Yes |
|------------|-----|
| \bigcirc | No |

Mark only one oval.

| \bigcirc | Yes |
|------------|-----|
| \bigcirc | No |

10. If yes, how many occasions in last 1 year?

Mark only one oval.

| \bigcirc | none |
|------------|------------|
| \bigcirc | once |
| \bigcirc | 1-5 times |
| \bigcirc | 5-10 times |
| \bigcirc | >10 times |

11. If yes, when was the last time you were involved?

12. Have you ever used a defibrillator in a patient?

Mark only one oval.

| \subset | \supset | Yes |
|-----------|-----------|-----|
| \subset | \supset | No |

13. If yes how many in last 1 year?

Mark only one oval.

| none |
|------|
| once |

1-5 times

- 5-10 times
- >10 times
- 14. If yes, when was the last time you used it?

| 15. | If No, have you ever | witnessed anyone | using it in a | patient? |
|-----|----------------------|------------------|---------------|----------|
| | Mark only one oval. | | | |

| \subset | \supset | Yes |
|-----------|-----------|-----|
| (| \supset | No |

Awareness and attitude

16. Do you know where the defibrillator is located in emergency department?

Mark only one oval.

| \bigcirc |) | yes |
|------------|-----------|-----|
| \square | \supset | no |

17. What is the type of defibrillator?

Mark only one oval.



- biphasic
-) don't know
- 18. Using the scale of 1-5, 1 being the least and 5 being the most, what is your confidence level in performing resuscitation in a cardiac arrest victim?

Mark only one oval.



19. Using the scale of 1-5, 1 being the least and 5 being the most, what is your confidence level in using defibrillator?

Mark only one oval.



20. If a defibrillator is available, would you use it on your patient

Mark only one oval.

| \subset | \sum | Yes |
|-----------|---------|-----|
| \subset | $\Big)$ | No |

21. If no, reason

Tick all that apply.

| insufficient knowledge |
|-------------------------|
| fear of harm to patient |
| fear of self-harm |
| Other: |

22. Besides CPR, which intervention do you think is the most important in saving lives?

Mark only one oval.

intubation

- resuscitation drugs
- defibrillation
- 🔵 don't know

23. Do you agree that all departments should be equipped with a defibrillator? *Mark only one oval.*

| | \supset | Yes |
|---|-----------|-----|
| _ | \supset | No |

Knowledge and Practice

- 24. **1.** How long should it take to check for breathing and pulse during the BLS survey? *Mark only one oval.*
 - 1-5 seconds
 - 5-10 seconds
 -) 10-15 seconds
 -) 15-20 seconds
 - Don"t know

Scenario for questions 2-6.

You are part of a rescue team performing chest compressions for an adult victim in ward. Your colleague is performing bag-mask ventilation.

25. 2. Where would you place your hand for chest compression?

Mark only one oval.

- Center of the chest between two nipples.
- Left side of chest just above apex beat
- Left side of chest at the level of nipples.
- Left fifth intercostal space at the level of left nipple
- Don"t know

26. 3. What is recommended rate of chest compression for adult victim?

Mark only one oval.

- 100-130 compressions per min
- 100-120 compressions per min
 -) 60-100 compressions per min
 -) 100 compressions per min
 -) don"t know

27. 4. What is recommended depth of chest compression in adult victim?

Mark only one oval.

As hard as you can Approximately 5 cm 4-5 cm 5-6cm Don"t know

28. 5. What is the recommended ratio of compressions to breathing while commencing CPR in adult victim (two rescuers)?

Mark only one oval.

5:1 15:2 30:1 30:2 Don"t know

- 29. 6. To minimize interruption in compression during CPR which of the following should be done *Mark only one oval.*
 - Perform pulse check only after shock
 - b. Perform pulse check without stopping chest compression.
 - C. Continue chest compression when your friend performs bag and mask ventilation
 - d. Continue chest compression while AED is charging
 - 🔵 e. Don"t know

7. Your department is equipped with biphasic defibrillator. Mark the location of the paddles in the picture with symbol.

paddles



| 30. | paddles | |
|-----|---------|--|
| | | |

Mark only one oval.

| \bigcirc | correct |
|------------|-----------|
| \bigcirc | incorrect |

8. An adult patient is unresponsive, not breathing normally, has no carotid pulse. You start chest compression and positive pressure ventilation and attach the ECG monitor which shows the following.



31. What would be the best recommended initial action?

Mark only one oval.

- Defibrillate.
- Cardiovert.
- Shock and Adrenaline not required
- Give Adrenaline 1mg IV bolus.
- Don't know

9. An adult patient is unresponsive, not breathing normally, has no carotid pulse. You start chest compression and positive pressure ventilation and attach the ECG monitor which shows the following.

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32. What would be the best recommended initial action?

Mark only one oval.

| Defibrillate. |
|-----------------------------------|
| Cardiovert |
| Shock and Adrenaline not required |
| Give Adrenaline 1mg IV bolus. |
| Don't know |
| |

10. An adult patient is unresponsive, not breathing normally, has no carotid pulse. You start chest compression and positive pressure ventilation and attach the ECG monitor which shows the following.



33. What would be the best recommended initial action?

Mark only one oval.

| | Defibrillete |
|---|--------------|
|) | Denormale |
| | Donormato |

| Cardiovert |
|------------|
| |

- Shock and Adrenaline not required.
- d. Give Adrenaline 1mg IV bolus.
- 🔵 e. Don't know

34. 11. What is the recommended next step after a defibrillation attempt?

Mark only one oval.

- Check the rhythm in the monitor
- Determine whether carotid pulse is present
- Resume CPR, starting with chest compressions
- Give rescue breaths
- Don"t know

35. 12. What is a safe and effective practice during defibrillation?

Mark only one oval.

- Stop chest compression as you charge the defibrillator
- Be sure oxygen is not blowing over the patient's chest during the shock
- Commandingly announce "all clear" before and after you deliver the shock
- Assess for the presence of a pulse immediately after the shock
- 🔵 don't know

36. 13. How often should Adrenaline repeated during resuscitation?

Mark only one oval.

- Every 2 minutes
- Every 3-5 minutes
- After each shock
- Before each shock
- Don"t know.
- 37. 14. What is the recommended first intravenous dose of Amiodarone for a patient with refractory ventricular fibrillation?

Mark only one oval.

| \bigcirc | 150mg |
|------------|--------|
| \bigcirc | 200mg |
| \bigcirc | 250 mg |
| \bigcirc | 300ma |

- Don't know
- 38. **15. To properly ventilate a patient with pulse, how often do you squeeze the bag?** *Mark only one oval.*
 - Once every 3-5 seconds
 - Once every 5-6 seconds
 - Once every 10 seconds
 - Once every 12 seconds
 - Don"t know



Supplemental file 2 Skill test for cardiac arrest

Give the introduction to the simulation to all participants:

"This simulation is in a realistic emergency situation, so you should do whatever you need to do to save the victim's life. Once the scenario starts, you cannot ask questions of the instructor. If you forget to do something, just try to correct yourself and carry on. Continue to do what you would actually do in an emergency until the instructor tells you to stop. Use the equipment and drugs available in the setting required for the victim.

This simulation is only for learning purpose and details during the simulation will not be discussed outside and your identity will be anonymous. However, the summative findings and achievements may be used for academic purposes and publications.

Do you have any questions before we start?"

1. Simulation No

2. Name of intern

3. Date

Example: 15 December 2012

4. Time to chest compression

Example: 8.30 a.m.

5. Time to defibrillation

Example: 8.30 a.m.

6. Initial assessment

Mark only one oval per row.

| | 1(Not done) | 2(poor) | 3(satisfactory) | 4(good) | 5(best) | NA(not applicable) |
|---|----------------|------------|-----------------|------------|------------|-----------------------|
| ASSESSES: Checks for response | \bigcirc | \bigcirc | \bigcirc | \bigcirc | \bigcirc | \bigcirc |
| ACTIVATES emergency response system | \bigcirc | \bigcirc | \bigcirc | \bigcirc | \bigcirc | \bigcirc |
| Checks breathing and pulse (5 -10 seconds) | \bigcirc | \bigcirc | \bigcirc | \bigcirc | \bigcirc | \bigcirc |
| | | | | | | |

7. High quality chest compression

Mark only one oval per row.

| | 1(Not done) | 2(poor) | 3(satisfactory) | 4(good) | 5(best) | NA(not applicable) |
|---|----------------|------------|-----------------|------------|------------|-----------------------|
| Correct compression - Hand placement | \bigcirc | \bigcirc | \bigcirc | \bigcirc | \bigcirc | \bigcirc |
| Adequate rate: 100- 120/minutes | \bigcirc | \bigcirc | \bigcirc | \bigcirc | \bigcirc | \bigcirc |
| Adequate depth: (5-6cm) | \bigcirc | \bigcirc | | \bigcirc | \bigcirc | \bigcirc |
| Allows complete chest recoil | \bigcirc | \bigcirc | \bigcirc | \bigcirc | \bigcirc | \bigcirc |
| Minimizes interruptions | \bigcirc | \bigcirc | \bigcirc | \bigcirc | \bigcirc | \bigcirc |

8. Breathing

Mark only one oval per row.

| 1(Not done) | 2(poor) | 3(satisfactory) | 4(good) | 5(best) | NA(not applicable) |
|----------------|----------------|--|--|---|---|
| \bigcirc | \bigcirc | \bigcirc | \bigcirc | \bigcirc | \bigcirc |
| \bigcirc | \bigcirc | \bigcirc | \bigcirc | \bigcirc | \bigcirc |
| \bigcirc | \bigcirc | \bigcirc | \bigcirc | \bigcirc | \bigcirc |
| \bigcirc | \bigcirc | \bigcirc | \bigcirc | \bigcirc | \bigcirc |
| | 1(Not done) | 1(Not done) 2(poor) Image: Constraint of the second sec | 1(Not done) 2(poor) 3(satisfactory) () () () () () () () () () () () () () () () () () () () () () () () () () () () () | 1(Not done) 2(poor) 3(satisfactory) 4(good) () () () () () () () () () () () () () () () () () () () () () () () () () () () () () () () () () () () | 1(Not done) 2(poor) 3(satisfactory) 4(good) 5(best) Image: Set s |

9. VF/VTp management

Mark only one oval per row.

| | 1(Not done) | 2(poor) | 3(satisfactory) | 4(good) | 5(best) | NA(not applicable) |
|--|----------------|------------|-----------------|------------|------------|-----------------------|
| Puts the patient in the monitor | \bigcirc | \bigcirc | \bigcirc | \bigcirc | \bigcirc | \bigcirc |
| Clears patient to analyze | \bigcirc | \bigcirc | | \bigcirc | \bigcirc | |
| Recognizes and verbalizes VF or pulseless VT | \bigcirc | \bigcirc | \bigcirc | \bigcirc | \bigcirc | \bigcirc |
| Selects appropriate joules and charges | \bigcirc | \bigcirc | \bigcirc | \bigcirc | \bigcirc | \bigcirc |
| Places pads correctly | \bigcirc | \bigcirc | | \bigcirc | \bigcirc | |
| Clears patient to shock/presses shock button | \bigcirc | \bigcirc | \bigcirc | \bigcirc | \bigcirc | \bigcirc |
| Resumes CPR immediately after shock | \bigcirc | \bigcirc | \bigcirc | \bigcirc | \bigcirc | \bigcirc |
| Appropriate cycles of actions (algorithm) | \bigcirc | \bigcirc | | \bigcirc | \bigcirc | \bigcirc |
| Switches role appropriately after 2 minutes | \bigcirc | \bigcirc | \bigcirc | \bigcirc | \bigcirc | \bigcirc |
| | | | | | | |

10. Asystole/ PEA management

Mark only one oval per row.

| | 1(Not done) | 2(poor) | 3(satisfactory) | 4(good) | 5(best) | NA(not applicable) |
|--|----------------|------------|-----------------|------------|------------|-----------------------|
| Puts the patient in the monitor | \bigcirc | \bigcirc | \bigcirc | \bigcirc | \bigcirc | \bigcirc |
| Clears patient to analyze | \bigcirc | \bigcirc | | \bigcirc | \bigcirc | |
| Recognizes Asystole/PEA | \bigcirc | \bigcirc | | \bigcirc | \bigcirc | |
| Immediately resumes CPR after rhythm check | \bigcirc | \bigcirc | | \bigcirc | \bigcirc | \bigcirc |
| Immediate administration of Adrenaline and repeats after 3-5 minutes | \bigcirc | \bigcirc | | \bigcirc | \bigcirc | \bigcirc |
| Verbalizes potential reversible causes (5H 5T) | \bigcirc | \bigcirc | | \bigcirc | \bigcirc | \bigcirc |
| Switches role appropriately after 2 minutes | \bigcirc | \bigcirc | \bigcirc | \bigcirc | \bigcirc | \bigcirc |
| | | | | | | |

11. ROSC

Mark only one oval per row.

| | 1(Not done) | 2(poor) | 3(satisfactory) | 4(good) | 5(best) | NA(not applicable) |
|--------------------|----------------|------------|-----------------|------------|------------|-----------------------|
| Identifies ROSC | | \bigcirc | \bigcirc | \bigcirc | \bigcirc | |
| Overall confidence | \bigcirc | \bigcirc | \bigcirc | \bigcirc | \bigcirc | \bigcirc |

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Supplemental file 3

Simulation feedback

This is anonymous feedback, you need not identify yourself. Your information will not be shared with anyone, only summary of the information, data and themes of the summary may be used in various academic forums and publications.

| 1. | Email add | Iress * | | | | | | |
|----|-------------------------------|-------------------------------|------------|------------|------------|------------|--------------------------------------|-----|
| 2. | Gender Mark only | one oval | , | | | | | |
| | | Une ovai | | | | | | |
| | Fe | male | | | | | | |
| | ◯ Ma | le | | | | | | |
| 3. | Have you Mark only | particip | ated in | any sim | ulation | before | other than in ER? | |
| |) Ye | s | | | | | | |
| | | - | | | | | | |
| | | | | | | | | |
| 4. | This simu Mark only | llation so | cenario | had spe | ecific le | arning c | objectives relevant to my profession | on. |
| | | 1 | 2 | 3 | 4 | 5 | | |
| | disagree | \bigcirc | \bigcirc | \bigcirc | \bigcirc | \bigcirc | agree | |
| 5. | This simu Mark only | l lation p one oval | rovided | a safe l | earning | ı enviroı | nment for learning. | |
| | | 1 | 2 | 3 | 4 | 5 | | |
| | disagree | \bigcirc | \bigcirc | \bigcirc | \bigcirc | \bigcirc | agree | |
| 6. | This simu Mark only | Ilation w one oval | ill decre | ease my | anxiety | y while r | managing such real cases in futur | e. |
| | | 1 | 2 | 3 | 4 | 5 | | |
| | disagree | \bigcirc | \bigcirc | \bigcirc | \bigcirc | \bigcirc | agree | |

7. The debriefing sessions after the simulation provided motivation for self-guided learning.

Mark only one oval.

| | 1 | 2 | 3 | 4 | 5 | |
|----------|------------|------------|------------|------------|------------|-------|
| disagree | \bigcirc | \bigcirc | \bigcirc | \bigcirc | \bigcirc | agree |

8. This simulation had the potential to identify errors within the clinical environment. *Mark only one oval.*



9. This type of simulation in the working place should be continued. *Mark only one oval.*

| | 1 | 2 | 3 | 4 | 5 | |
|----------|------------|------------|------------|------------|------------|-------|
| disagree | \bigcirc | \bigcirc | \bigcirc | \bigcirc | \bigcirc | agree |

Self reflection

Kindly rate your following skills before and after the simulation sessions.

10. Your team work communication skills

Mark only one oval per row.

| | least (1) | 2 | 3 | 4 | Most (5) |
|-----------------------|------------|-----------|-------------|--------------|------------|
| Before the simulation | \bigcirc | \square | $) \subset$ | $)\bigcirc$ | \bigcirc |
| After the simulation | \bigcirc | |) | $) \bigcirc$ | \bigcirc |

11. Your technical skills on managing cardiac arrest

Mark only one oval per row.

| | least (1) | 2 | 2 | 3 4 | 1 | Most (5) |
|-----------------------|------------|-----------|-------------------|-------------------|-----------|------------|
| Before the simulation | \bigcirc | \square |)(| $\supset \subset$ | \supset | \bigcirc |
| After the simulation | \bigcirc | \square | $\supset \subset$ | $\supset \subset$ | \supset | \bigcirc |

12. Your technical skills on using defibrillator

Mark only one oval per row.

| | least (1) | 2 | 3 | 4 | Most (5) |
|-----------------------|------------|-----------|-------------------|--------------|----------|
| Before the simulation | \bigcirc | \square | $\supset \subset$ | $) \bigcirc$ | |
| After the simulation | \bigcirc | \square | $) \subset$ | $) \bigcirc$ | |

13. Your level of confidence for managing cardiac arrest.

Mark only one oval per row.

| | least (1) | 2 | 3 | 4 | Most (5) |
|-----------------------|------------|-----------|-------------|------------|------------|
| Before the simulation | \bigcirc | \square | $)\bigcirc$ | \bigcirc | \bigcirc |
| After the simulation | \bigcirc | \square | $)\bigcirc$ | \bigcirc | \bigcirc |

Open suggestions Please give your suggestions for future improvements and enjoyable learning.

14. What did you like most about the simulations?

15. What suggestions would you recommend for further improvement?

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Post simulation semi structured survey (faculty)

ANONYMITY, CONFIDENTIALITY AND DISSEMINATION

This is anonymous feedback, you need not identify yourself. Your information will not be shared with anyone, only summary of the information, data and themes of the summary may be used in various academic forums and publications.

| Please indicate how much you agree or disagree with each st | atement | below. | And e | elabor | ate | | | | |
|---|-------------|----------|---------|----------|-------|--|--|--|--|
| your perception on the topic. | olv disagi | ·ee | Strong | olv agr | ree 5 | | | | |
| 1. The in situ simulation is feasible in our setting. | 1 | 2 | 3 | 4 | 5 | | | | |
| Please elaborate your opinion in regards to feasibility of ISS in ED: | | | | | | | | | |
| | | | | | | | | | |
| 2. This simulation provided a safe learning environment for learning for the interns. | 1 | 2 | 3 | 4 | 5 | | | | |
| Please elaborate your opinion of safety for patients during ISS: | | | | | | | | | |
| 3. This simulation enhanced team working skills of the interns | 1 | 2 | 3 | 4 | 5 | | | | |
| Please elaborate how the ISS effects the team work skills of the | interns: | | | | | | | | |
| 4. This simulation enhanced technical skills of the interns on managing cardiac arrest. | 1 | 2 | 3 | 4 | 5 | | | | |
| Please elaborate: | | | | | | | | | |
| 5. This simulation increased level of confidence of the interns for managing cardiac arrest. | 1 | 2 | 3 | 4 | 5 | | | | |
| Please elaborate how the ISS has increased the confidence leve | l of interr | ns durir | ng resu | uscitati | on: | | | | |

| 6. This type of simulation in the working place more | 1 | 2 | 3 | 4 | 5 |
|---|------------|---------|--------|--------|---|
| realistic than in simulation center | | | | | |
| Diagon alaborate your aninian on the fidelity and realism of ICC | in FD in a | mnori | con to | | |
| Please elaborate your opinion on the nuelity and realism of iss i | | Inpan | son to | | |
| simulation in simulation lab: | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| 7. This type of simulation in the working place should be | 1 | 2 | 3 | 4 | 5 |
| continued. | | | | | |
| Please elaborate whether you think ISS curriculum should be co | ntinued f | or inte | rns in | future | |
| with reasons: | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |

How has the experience of these simulation sessions affected your capacity of running the simulation and debriefing to the participants?

What suggestions would you recommend for future improvement and dissemination of ISS?