A clinical protocol outlines a series of actions that a RN may implement without a patient specific order providing:

- Patient meets inclusion criteria.
- RN meets educational requirements.

**INCLUSION CRITERIA**

- Safe patient environment including provider’s ability to ensure follow-up care

<table>
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<tr>
<th>Rhythm:</th>
<th>Patient Condition &amp; Treatment</th>
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<tr>
<td>Unstable Supraventricular Tachycardia (SVT)/ Unstable Ventricular Tachycardia (VT) with a palpable pulse</td>
<td>Hemodynamically unstable, i.e. hypotensive with loss of consciousness. Synchronized cardioversion may be performed by a certified RN in absence of a physician.</td>
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<tr>
<td><strong>Physician Discretion:</strong> Stable SVT* and Stable VT</td>
<td>Hemodynamically stable. Synchronized cardioversion may be performed at discretion of physician. Physician will prescribe appropriate joules to be used.</td>
</tr>
</tbody>
</table>

**NOTE:** SVTs include all narrow complex tachycardias including atrial fibrillation and atrial flutter.

**EXCLUSION CRITERIA**

- Advanced care plan indicating no cardioversion
- Unsafe patient environment to perform cardioversion
- Inability to ensure appropriate follow-up care (e.g. cardioversion on a nursing ward without code blue called and code blue team present).

**EDUCATION REQUIREMENTS**

- Review of learning package
- Simulated guided learning experience
- Completion of written quiz
- Perform hands-on return demonstration of skill

**ONGOING EDUCATION REQUIREMENTS**

- Annual review of clinical protocol including hands-on return demonstration
PURPOSE
- To prepare a patient for emergency synchronized cardioversion.
- To instruct registered nurses in safe performance of emergency synchronized cardioversion.
- To deliver a synchronized electrical shock through the myocardium during ventricular depolarization. In synchronized mode the "R" wave of the ventricular complex is detected, avoiding shock delivery during the relative and supernormal refractory periods. The synchronized shock is delivered to depolarize a critical mass of the cardiac cells to terminate unstable supraventricular or ventricular tachycardia.

EQUIPMENT
1. Resuscitation cart
2. Philips HeartStart MRx Monitor/Defibrillator in synchronized mode
3. Therapy cable
4. Multifunction electrode pads
5. 3 Lead ECG electrode cable
6. 3 electrode monitoring pads

PROCEDURE
1. Verify ECG rhythm.
2. Establish hemodynamic instability.
3. Call Code Blue.
4. Bring resuscitation cart to bedside.
5. Turn Therapy Knob to Monitor.
6. Prepare patient’s chest:
   6.1 Palpate right upper anterior chest area for presence of any implantable cardiac rhythm devices.

   NOTE: Do not place pads over monitor electrodes, cables, pacemaker wires and packs, dressing, implantable cardiac rhythm devices, or transdermal patches.

   6.2 Clean and dry skin; if excessive chest hair present, clip hair at electrode site.

NURSING ALERT:
- It is advisable to have ECG monitoring in place via 3 lead cable or with bedside monitors 5 lead cable. If pacing is required post-procedure, this ensures appropriate monitoring set-up is in place.

7. Open package and remove 3 electrode monitoring gel pads.
8. Apply electrode monitoring pads to patient’s chest in standard 3 lead placement.
9. Connect 3 lead electrode cables from MRX to electrode monitoring pads:
   - White: below right clavicle
   - Black: below left clavicle
   - Red: below left rib cage

   Or if bedside monitor present (ONLY if standard lead placement):
   - Connect ECG cable from bedside monitor to MRX ECG cable outlet.

10. Open package and remove multifunction electrode pads.

11. Remove multifunction electrode pads protective liner to expose conductive and adhesive area.

12. Apply multifunction electrode pads to patient’s skin separately by firmly pressing electrode from top to bottom in one smooth motion avoiding monitor electrodes, cables, pacemaker wires and packs, dressings, implantable cardiac rhythm devices and transdermal patches.

   **NOTE:** Multifunction electrode pad placement: place one pad on upper-right side of bare chest to right of sternum directly below clavicle. Place other pad below and to the left of nipple (i.e. left anterior chest), below breast tissue (if applicable).

   **Alternate pad placement may include:**
   - Anteroposterior
   - Anterior-left infrascapular
   - Anterior-right infrascapular
NURSING ALERT:

- Ensure electrode pad with picture of heart is applied over left anterior chest.
- **Do not let multifunction electrode pads touch each other.** Air pockets between patient skin and multifunction electrode pads may cause skin burns, therefore ensure pads completely adhere to skin. Do not use dried out or expired multifunction electrode pads.
- Single patient use only.
- See appendix A for duration of usage for the multifunction electrode pads.

**For Pediatric use:**

- Use pediatric multifunction electrode pads if pediatric weighs < less than 10 kg.
- Use adult multifunction electrode pads if patient weighs > greater than 10 kg. *Alternate anterior – posterior placement may be necessary in an infant. Particular, if only adult electrode pads are available.*

13. Apply gentle pressure over entire surface of gel and adhesive ring to assure adhesion.

14. Connect multifunction electrode pad connector to therapy cable, if not already pre-connected.

15. Press “Sync” button located beside Therapy Knob to activate Sync function.

**NURSING ALERT:**

- Ensure that “Sync” button is pressed **before** energy is selected.
16. Ensure R waves are correctly flagged by Sync marker (white dash).

   **NOTE:** If they are not correctly flagged select another lead by using ‘Lead Select’ button to select pads, Lead I, Lead II, or Lead III.

17. Select appropriate energy by rotating Therapy Knob to desired energy level.

   **NOTE:** Recommended joules for emergency cardioversion are:
   100 – 150 – 200 joules.

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**NURSING ALERT: Pediatric Patient**

- Joules recommended for synchronized emergency cardioversion are:
  - 1\textsuperscript{st} energy dose: 1 J/kg
  - 2\textsuperscript{nd} and subsequent energy doses: 2 J/kg

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**NURSING ALERT:**

- Using external defibrillation/cardioversion in an oxygen-rich environment can cause fires. If possible, remove all sources of supplemental O\textsubscript{2} (i.e. masks and nasal cannulas) from area around patient. It is acceptable to leave ventilator tubing (breathing circuit) connected to tracheal tube during shock delivery.
- All fluids in contact with patient should be considered an electrical conductor.

18. Press “Charge” button on front panel of defibrillator.

   **NOTE:** A continuous, low pitched charging tone sounds until desired energy level is reached.

19. Call “I’m clear”, “You’re clear”, “Oxygen clear” while defibrillator charges and visually verify all clear.

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**NURSING ALERT:**

- Cardioversion poses a risk for accidental injury to operator or bystander. Visually sweep all bystanders and ensure that everyone, including operator, is cleared from patient, patient bed, and equipment connected to patient.

20. Confirm that a shock is still indicated and that defibrillator has charged to desired energy level.

   **NOTE:** A continuous high-pitched charge sound is heard when desired energy level is achieved.
21. Press and hold “Shock” button until shock is delivered.

   **NOTE:** There may be a delay as defibrillator shocks with next detected R wave.

22. Reassess ECG rhythm and ensure patient pulse is present.

23. Repeat steps 11 – 16 and if necessary, increase recommended joules as indicated above each time.

24. Prepare for medication administration, if unsuccessful.

REFERENCES


Revised by: Lucia Parsons, CNE, CCU; Justin Rae, CNE, MICU; Michalene Ulmer, CNE, PH-ICU; Lindsay Dusselier, CNE, SICU
Date: November 2015

Revised by: Angela Payne, CNE, SICU; Danielle Pellerin, CNE, CCU
Date: January 2019

Endorsed by: Dr. A. Lavoie
Date: January 22, 2019

Approved by: Regina Qu’Appelle Health Region
Date: 6Feb19

Health Services
CODE: C.1

Approved: February 6, 2019
Clinical Protocol
### Technical specifications – ALS

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*approximately 30 outside package

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### Technical specifications – Other Pads

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