

# Crosstown Clinic: Zoll Plus Automatic External Defibrillator (AED)

## Site Applicability

Providence Crosstown Clinic

## Practice Level

- Nurses (RN, RPN, LPN)

## Need to Know

1. All nursing staff must have certification in CPR (Level C or Health Care Provider [HCP]) on hire.
2. In a life-threatening event, emergency medical services (EMS) must be notified by dialing 911.
3. Early defibrillation is critical to survival from sudden cardiac arrest for the following reasons:
  - The most frequent initial rhythm in witnessed sudden cardiac arrest is ventricular fibrillation
  - The treatment for ventricular fibrillation is electrical defibrillation
  - The probability of successful defibrillation diminishes rapidly over time and
  - Ventricular fibrillation tends to deteriorate to asystole within a few minutes
4. Survival of ventricular fibrillation is highest with implementation of immediate CPR, and defibrillation within 3 to 5 minutes.
5. Interrupt chest compressions as infrequently as possible and for no longer than 10 seconds, except for specific interventions (e.g. use of a defibrillator).
6. The CPR monitoring function of the Zoll AED Plus provides a metronome designed to encourage rescuers to perform chest compressions at a rate of 100 to 120 compressions per minute. Continue until AED arrived.
7. The Zoll AED Plus has voice and visual prompts to encourage a compression depth of at 5 to 6 cm. The Zoll AED Plus can analyze the heart rhythm and inform the rescuer if the rhythm is shockable (ventricular fibrillation or shockable ventricular tachycardia) or non-shockable.
8. The Zoll AED Plus can deliver defibrillation treatment to victims of cardiac arrest who exhibit a shockable ECG rhythm.
9. Use the Zoll AED Plus when a suspected cardiac arrest victim has an apparent lack of circulation indicated by:
  - Unconsciousness, and
  - No breathing or absence of normal breathing (e.g. only gasping), and

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- Absence of a pulse or signs of circulation (take no longer than 10 seconds to assess for a pulse)
10. Do **NOT** use the Zoll AED Plus when the patient is:
    - Conscious, or
    - Breathing, or
    - Has a detectable pulse or other signs of circulation
  11. Do **NOT** use the Zoll AED Plus near or within puddles of water.
  12. If wet, dry the patient's chest before attaching electrodes. If the patient has excessive chest hair, quickly shave the area prior to applying the electrodes to ensure proper adhesion.
  13. Always stand clear of the patient when delivering shocks. Defibrillation energy delivered to the patient may be conducted through the patient's body and cause a lethal shock to those touching the patient.
  14. Keep the patient as motionless as possible during ECG analysis.
  15. Do not use the AED near flammable agents (e.g. oxygen-rich environments).
  16. The lid cover may be used as a passive airway support system (PASS) if indicated on the underside of the lid. Do **NOT** use the PASS if there is a suspected head or neck injury.
  17. Do not place the electrodes directly over a patient's implanted pacemaker. Pacemaker stimuli may degrade the accuracy of ECG rhythm analyses or the pacemaker may be damaged by defibrillator discharges.
  18. The AED must **NOT** be used for a second event until the internal batteries have been replaced.
  19. The internal batteries of the AED must be replaced by a qualified biomedical engineering technologist after each use or when the AED (when off) emits an audible beep every minute indicating low battery level. The AED may be delivered to the onsite biomedical technician or to the St. Paul's Hospital (SPH) biomedical engineering department for service.
  20. The AED machine must be visually inspected daily to ensure that a green check mark (✓) appears in the lower left-hand corner of the display screen. The ✓ indicates the machine is in good functioning order. The Zoll AED Plus does periodic self-tests. To perform a manual self-test hold the on/off button down for 5 seconds.
  21. If a red X is displayed in the lower left-hand corner of the display screen, do **NOT** use the AED machine. Send it to the biomedical engineering department for repair.
  22. Check the expiry date of the CPR-D-pad; if less than 60 days from expiring notify the biomedical engineering department. This should be performed with the daily inspection described in step 21.
  23. After each use clean and disinfect the AED using 90% isopropyl alcohol, or soap and water, or chlorine bleach and water mixture (30 mL/1 litre).

## Equipment and Supplies

### Zoll Plus AED

## Procedure

1. Place the patient in a supine position and assess the patient's level of consciousness and respiratory status
2. Ask someone to activate EMS by dialing 911 and obtain the AED.
3. Initiate CPR.
4. Turn on the AED and attach the electrodes (Zoll CPR-D-padz).
5. Follow the AED prompts and continue CPR until EMS arrive and assumes control of the event.
6. At the conclusion of the event, send the AED to the onsite biomedical technician or to the SPH biomedical engineering department for replacement of the internal batteries.

## Documentation

1. Document the event in the interdisciplinary progress notes including the time that the patient was found unresponsive, events leading up to the arrest, time CPR was initiated, time 911 call placed, number of shocks, time of EMS team arrival, names of the staff involved, and the actions/procedures performed by the staff.
2. Document the outcome of the incident and the name of the Most Responsible Provider who was notified of the event.

## Patient and Family Education

Provide for emotional support and debriefing of the incident should be accomplished as soon as possible.

## References

1. Olasveengen, T.M., Mancinic, M.E., Perkins, M.B. et al. (2020) American Heart Association. Adult Basic Life Support: 2020 International Consensus on Cardiopulmonary Resuscitation and Emergency Cardiovascular Care Science with Treatment Recommendations. *Circulation*. Vol 142 16 S1 ppS41-S91. <https://doi.org/10.1161/CIR.0000000000000892>
2. Panchal, A.R., Bartos, J.A., Cabanas, J.G., Donnino, M.W. et al. (2020) Part 3: Adult Basic and Advanced Life Support: 2020 American Heart Association Guidelines for Cardiopulmonary Resuscitation and Emergency Cardiovascular Care *Circulation*. 142(suppl 2):S366–S468. DOI: [10.1161/CIR.0000000000000916](https://doi.org/10.1161/CIR.0000000000000916)
3. Rea, T., Eisenberg, M. (Authors) Page, R. Downey, B. (Editor) (May 2019) UpToDate Literature Review: Automated External Defibrillators. Wolters Kluwer Health. Retrieved on March 18 2021 from <http://www.uptodate.com>
4. Zoll Medical Corporation. (2016). *AED Plus Administrator's Guide*. Retrieved from <http://www.zoll.com/medical-products/product-manuals/>

### Persons and Groups Consulted

Crosstown Clinic Staff

Crosstown Clinic Coordinator

### Developed By

Patient Care Manager, Crosstown Clinic

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