

# Double Sequential Defibrillation

**Aliases:** Dual sequential defibrillation

Note: Double sequential defibrillation is considered an "off-label" intervention that is supported by scientific evidence, including a large randomized controlled trial which reported improved outcomes with this technique compared to standard defibrillation and was not found to be damaging to defibrillators.<sup>1</sup> While not currently indicated in the manufacturers' instructions for use for defibrillators, it is not known to be specifically prohibited in the instructions for use.

Scope: *Paramedic/Critical Care Paramedic/RN*

## I. Indications

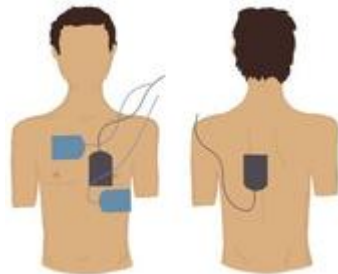
1. Consider for refractory ventricular fibrillation or pulseless ventricular tachycardia where  $\geq 3$  defibrillations have been delivered (including AED) **AND**
2. Availability of second defibrillator (may include 1 semi-automatic AED) **\*\*Do not delay defibrillation while awaiting second defibrillator\*\***

## II. Contraindications

1. Rhythm other than refractory ventricular fibrillation/pulseless ventricular tachycardia
2. Three (3) or more defibrillations not delivered.
3. Unable to place 4 defibrillation pads on patient without overlap of pads.

## III. Procedure

1. Ensure ongoing high-quality CPR that is interrupted only when absolutely necessary (and for  $\leq 10$  seconds) and anti-arrhythmic medication is administered per Cardiac Arrest protocol.
2. Prepare sites for second pad set attachment and apply defibrillation pads as per the VF/VT protocol.



- A.
    - i. Defibrillator 1: Pads in anterior/posterior (AP) position, with anterior pad just to patient's left of sternum (brown pads in diagram)
    - ii. Defibrillator #2: Pads in anterior/lateral (AL) position, with anterior pad to patient's right of sternum and lateral pad at the patient's left anterior axillary line (blue pads in diagram)
  - B. Consideration for pad placement – Assure optimal contact.
    - i. Shave excessive chest/back hair, as needed.
    - ii. Assure pads are firmly in place.
    - iii. Ensure pads are not in contact with one another.
    - iv. For patients with implanted pacers/defibrillators, avoid placing paddles or pads directly above device.
3. Set the appropriate energy level and assure controls for both defibrillators are accessible to **single EMS Practitioner performing defibrillation**.
  4. Charge the defibrillators to the selected energy level;
    - A. Continue chest compressions while the defibrillator is charging (may be limited if AED).
    - B. If second defibrillator is an AED, allow the AED to analyze rhythm and charge while manual defibrillator charging, continuing chest compressions, as AED device permits.
  5. When both defibrillators have reached selected energy setting:

- A. Assure that no one is touching the patient.
  - B. Defibrillate patient with **single EMS Practitioner depressing the "shock" button in rapid sequence with short delay (<1 second) between shocks**. If AED used, AED shock should be delivered first)
  - C. Immediately resume chest compressions.
  - D. Repeat defibrillations at 2-minute intervals if the patient remains in a shockable rhythm per protocol.
  - E. Continue to treat the patient according to the appropriate protocol.
- IV. **Documentation**
- 1. Document as 2 defibrillations within the procedures (same time)
  - 2. The words 'double sequential' or 'dual sequential' must be included in the narrative.
- V. **QI/QA Process**
- 1. A 100% of the calls utilizing this protocol will be reviewed by the Quality Committee and Medical Director.

#### References

<sup>1</sup> Cheskes S, Verbeek PR, Drennan IR, McLeod SL, Turner L, Pinto R, Feldman M, Davis M, Vaillancourt C, Morrison LJ, Dorian P, Scales DC. Defibrillation Strategies for Refractory Ventricular Fibrillation. N Engl J Med. 2022 Nov 24;387(21):1947-1956. doi: 10.1056/NEJMoa2207304. Epub 2022 Nov 6. PMID: 36342151.