

# Double sequential external defibrillation for refractory ventricular fibrillation cardiac arrest: A systematic review



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## Introduction

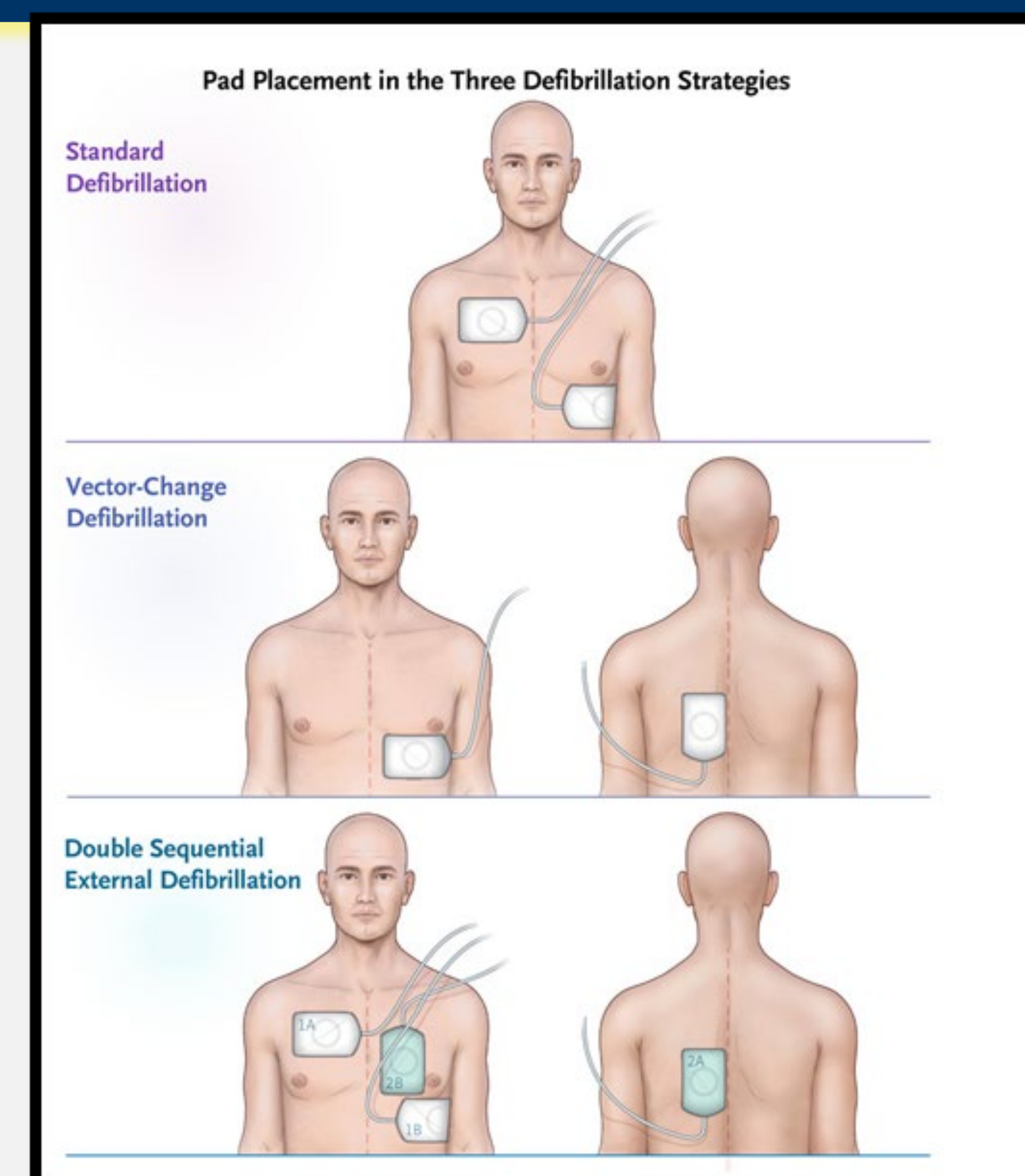
Refractory ventricular fibrillation (RVF) is estimated to be seen in around 10-25% of cardiac arrest cases. It is described as ventricular fibrillation that does not convert with three or more single defibrillation attempts. Recent literature suggests that double sequential external defibrillation (DSED), where two electrical currents are delivered to the patient in quick succession from two defibrillator devices, may provide an effective therapy for RVF. This systematic review aims to identify the literature surrounding the use of DSED in RVF and assess whether this intervention improves survival outcomes [1,2].

## Methods

The database PubMed was searched for term Double sequential external defibrillation. We included studies that were either randomized control trials or observational studies.

## Results

The search yielded 24 records, of which 2 observational studies and 2 Randomized Control Trial was selected to be included. Three studies showed favorable outcomes, on the other hand, one study mentioned no difference between DSED and standard resuscitation protocols.



This illustration is taken from NEJM. [1]

Article	Publication year	Type of study	Population	Conclusion
Cheskes S [1]	2022 Nov	RCT	T: 405 SD: 136 VCD: 144 DSED: 125	Among patients with refractory ventricular fibrillation, survival to hospital discharge occurred more frequently among those who received DSED or VC defibrillation than among those who received standard defibrillation.
Cheskes S [2]	Feb 2020	RCT	T: 152  93.1% of cases received a VC or DSED shock prior to the sixth defibrillation attempt	Rates of VFT and ROSC were higher in the VC and DSED than standard defibrillation.
Cheskes S [3]	2019 Jun	Observational	T: 252 SD: 201 DSED: 51	Earlier DSED may be associated with improved rates of VF termination and ROSC compared to standard defibrillation for refractory VF.
Beck LR [4]	2019 Sep-Oct;	Observational	T: 310 SD: 239 DSED: 71	DSD may not be beneficial in refractory VF/VT OHCA

Table 1: Discuss results of studies. SD: Standard defibrillation; DSED: Double sequential external defibrillation; VF: Ventricular fibrillation; T: total; VFT: VF termination; ROSC: return of spontaneous circulation; VCD/VC vector change defibrillation.

## Conclusion

DSED is exciting and innovative strategy that can improve survival for patients presenting with refractory VF. However, effectiveness of DSED remains unclear. Further clinical trials and prospective studies are needed to further investigate the role of DSED in RVF

## References

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