

TISSUE ADHESIVE FOR VASCULAR ACCESS DEVICES: who, what, where and when

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This article presents the results of a review into clinical trials which looked at the effectiveness of tissue adhesives (TA).

VASCULAR access devices (VADs) are required by most patients, however too many devices fail before therapy is complete.

Effective dressing and securement techniques reduce device failure by:

1. preventing site contamination
2. reducing micro-motion and pistoning within the vessel
3. maintaining the VAD within the vein
4. minimising skin irritation.

Tissue adhesives (TA) could potentially fulfil these requirements due to their purported ability to 'seal' the insertion site, to prevent ooze and entry of micro-organisms, bacteriostatic properties and high tensile strength.

This review aims to summarise the existing evidence to inform clinical practice.

Only eight randomised controlled trials (RCT) evaluating the effectiveness of TA as an adjunct to other dressing and securement methods to prevent device failure were identified (please refer to table).

Review summary:

- For peripheral VADs in adults, TA appears to be useful but there were a small number of skin irritations related to TA use in all trials.
 - TA appears to reduce failure in CVADs in adults and children when used as an adjunct to suturing.
 - No infections were noted across any trials
- Take home messages:
- The evidence base is still relatively small, and large RCTs are lacking for both peripheral and central VADs.
 - The complexities of TA use and skin complications imply that where facilities are considering trialling TA they should implement a tailored plan that incorporates a trans-disciplinary approach to education and practice. ■

References

- Corley, A., et al. *Br J Nurs*, 2017. 26(19): p. S4-S17.
 Marsh, N., et al. *J Vasc Access*, 2015. 16(3): p. 237-44.
 Bugden, S., et al., *Ann Emerg Med*, 2016. 68(2): p. 196-201.
 Edwards, M., et al. *Crit Care Resusc*, 2014. 16(3): p. 175-83.
 Reynolds, H., et al. *Aust Crit Care*, 2015. 28(3): p. 140-8.
 Rickard, C.M., et al. *Journal of Critical Care*, 2016. 36: p. 35-42.
 Chan, R., et al. *Trials*, 2017. 18:458
 Kleidon, T.M., et al., *Journal of Vascular and Interventional Radiology*, 2017. 28(11): p. 1548-1556, e1.
 Ullman, A.J., et al. *BMC Cancer*, 2017.

STUDY/SETTING	FAILURE RATE
PIVC	
Marsh et al 85 Adults; general wards	TA - 14% (3/21) SPU - 38% (8/21) BPU - 25% (5/20) SSD - 22% (5/23)
Bugden et al 360 Adults; emergency department	TA + BPU - 31/176 BPU - 52/184 95% CI -18% to -2%; p=0.02
Peripheral arterial catheter	
Edwards et al 224 Adults; intensive care	TA + SPU - 11% (6/56) SPU - 21% (10/47) BPU + SPU - 5% (2/43) SSD + SPU - 16% (8/49)
Reynolds et al 123 Adults; intensive care	TA + SPU - 6.3% (2/32) BPU - 13.3% (4/30) SPU - 20% (6/30) SSD + SPU - 16.1% (5/31)
CVADs	
Rickard et al 221 Adults; non-tunnelled jugular lines; intensive care	TA + BPU no suture - 17% (4/23) TA + BPU + suture - 0% (0/30) BPU + suture - 4% (2/55) AD + Suture - 2% (1/56) SSD + SPU - 7% (4/55)
Chan et al 121 Adults; PICC; medicals, surgical and oncology	TA + SPU - 9% (3/35) SSD+ SPU + CHG patch - 10% (4/39) AD + CHG patch - 20% (1/5, arm stopped prematurely) ISD + CHG patch - 7% (3/42)
Kleidon et al 95 paediatric; PICC; medical-surgical	TA + BPU + suture - 3% (1/32) SSD + BPU - 6% (2/32) ISD - 6% (2/31)
Ullman et al 48 paediatric; tunnelled cuffed CVAD; oncology and medical	TA + BPU + suture - 0% (0/12) SSD + BPU + suture - 8% (1/13) ISD + suture - 17% (2/12) BPU + suture - 0% (0/11)
AD, absorbent dressing; BPU, bordered polyurethane dressing; CHG, chlorhexidine gluconate; ISD, integrated securement dressing; PICC, peripherally inserted central catheter; SPU, standard polyurethane dressing; SSD, sutureless securement device	



REFLECTIVE QUESTIONS

1. How would TA fit into your current dressing and securement practice?
2. What factors would you consider before using TA, particularly as skin complications have been noted?
3. Is there sufficient evidence to support TA use for VADs in your clinical area?

Don't forget to make note of your reflections for your record of CPD at www.qnmu.org.au/cpd