Access attempts using IO are as fast as PIV attempts but are more than twice as likely to be successful” Chreiman et al (2017).

Abstract:

BACKGROUND: Quick and successful vascular access in injured patients arriving in extremis is crucial to enable early resuscitation and rapid OR transport for definitive repair. We hypothesized that intraosseous (IO) access would be faster and have higher success rates than peripheral IVs (PIVs) or central venous catheters (CVCs).

METHODS: High-definition video recordings of resuscitations for all patients undergoing Emergency Department Thoracotomy (EDT) from 4/2016-7/2017 were reviewed as part of a quality improvement initiative. Demographics, mechanism of injury, access type, access location, start and stop time, and success of each vascular access attempt were recorded. Times to completion for access types (PIV, IO, CVC) were compared using Kruskal-Wallis test adjusted for multiple comparisons while categorical outcomes such as success rates by access type were compared using chi-squared test or Fisher’s exact test.

RESULTS: Study patients had a median age of 30 (IQR 25-38), were 92% male, 92% African
American, and 93% sustained penetrating trauma. A total of 145 access attempts in 38 patients occurred (median 3.8 (SD 1.4) attempts per patient). There was no difference between duration of PIV and IO attempts (0.63 IQR 0.35-0.96 vs. 0.39 IQR 0.13-0.65 minutes, adjusted p = 0.03), but both PIV and IO were faster than CVC attempts (3.2 IQR 1.72 – 5.23 minutes, adjusted p<0.001 for both comparisons). Intraosseous lines had higher success rates than PIVs or CVCs (95% vs. 42% vs. 46%, p<0.001).

CONCLUSIONS: Access attempts using IO are as fast as PIV attempts but are more than twice as likely to be successful. Attempts at CVC access in patients in extremis have high rates of failure and take a median of over 3 minutes. While IO access may not completely supplant PIVs and CVCs, IO access should be considered as a first line therapy for trauma patients in extremis.

STUDY TYPE: Prospective cohort study.

LEVEL OF EVIDENCE: Three.

Reference:


Thank you to our partners for supporting IVTEAM