

**Table S8.** Hematoma and bleeding time as an outcome of the cannulation technique in arteriovenous fistulas in RCT studies

First author	Study design	Average age (years)	Sample size		Outcome		P Value	Notes
			Experimental group	Control group	Experimental group	Control group		
Hematoma (n = events)								
Struthers J. et al. (2010) [26]	RCT	BH = 61 TRL = 60	28	28	19	27	--	N/A
MacRae J. et al. (2012) [13]	RCT	BH = 70.3 SN = 66.7	70	70	295/1000 HD sessions	436/1000 HD sessions	= 0.003	Hematoma was categorized based on size
Bleeding time after needle removal, (min)								
Struthers J. et al. (2010) [26]	RCT	BH = 61 TRL = 60	28	28	Mean 300 ± 26 seconds	Mean 400 ± 31 seconds	SSE	Bleeding time after needle removal
MacRae J. et al. (2012) [13]	RCT	BH=70.3 SN = 66.7	70	70	Any bleeding 97.2/1000 HD Sessions	Any bleeding 97.6/1000 HD Sessions	= 0.40	no bleeding <5 minutes, 5 –10 minutes, or > 10 minutes bleeding post-HD
Vaux E. et al. (2013) [27]	RCT	BH = 62 UP = 64	58	69	median 7.9 IQR (6.3 – 10.4)	median 9.1 IQR (6.9 -11.3)	= 0.30	Bleeding times in minutes
Abbreviations: RCT: randomized clinical trial; BH: Buttonhole; TRL: traditional RL; UP: usual practice; SN: standard needling; RL: rope-ladder; HD: hemodialysis; IQR: interquartile range								