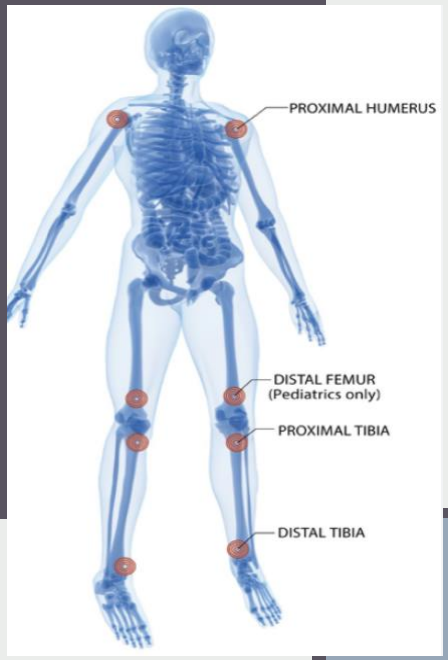
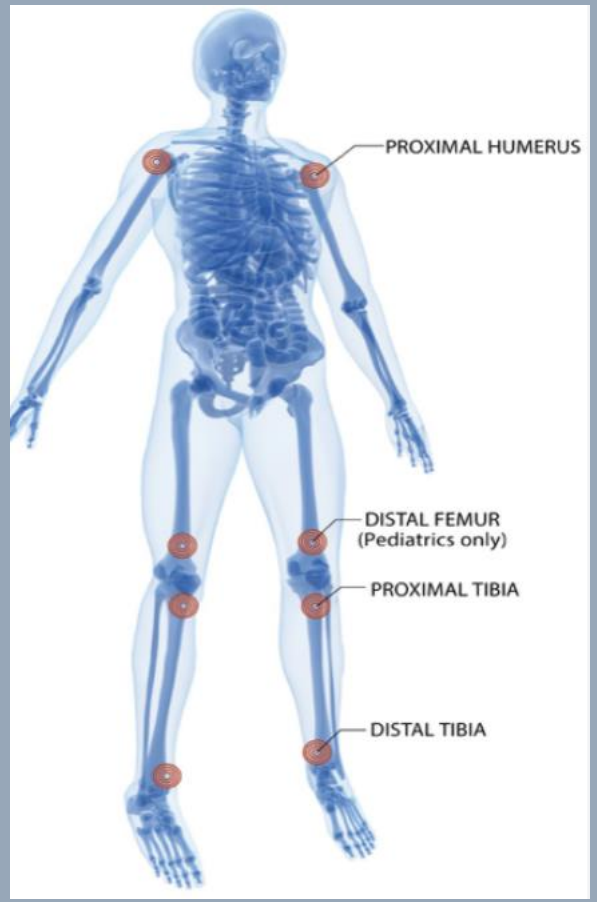
HUMERAL VS TIBIAL IO IN CARDIAC ARREST



QUESTION: DOES THE ROUTE OF ADMINISTRATION OF EPINEPHRINE MAKE ANY DIFFERENCE IN OUTCOMES

Background

- Route
- Timing
- Medication



Circulation

ORIGINAL RESEARCH ARTICLE

Time to Epinephrine Administration and Survival From Nonshockable Out-of-Hospital Cardiac Arrest Among Children and Adults

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Circulation. 2018;137:2032–2040. DOI: 10.1161/CIRCULATIONAHA.117.033067

Unadjusted Survival by 2 Minute Intervals

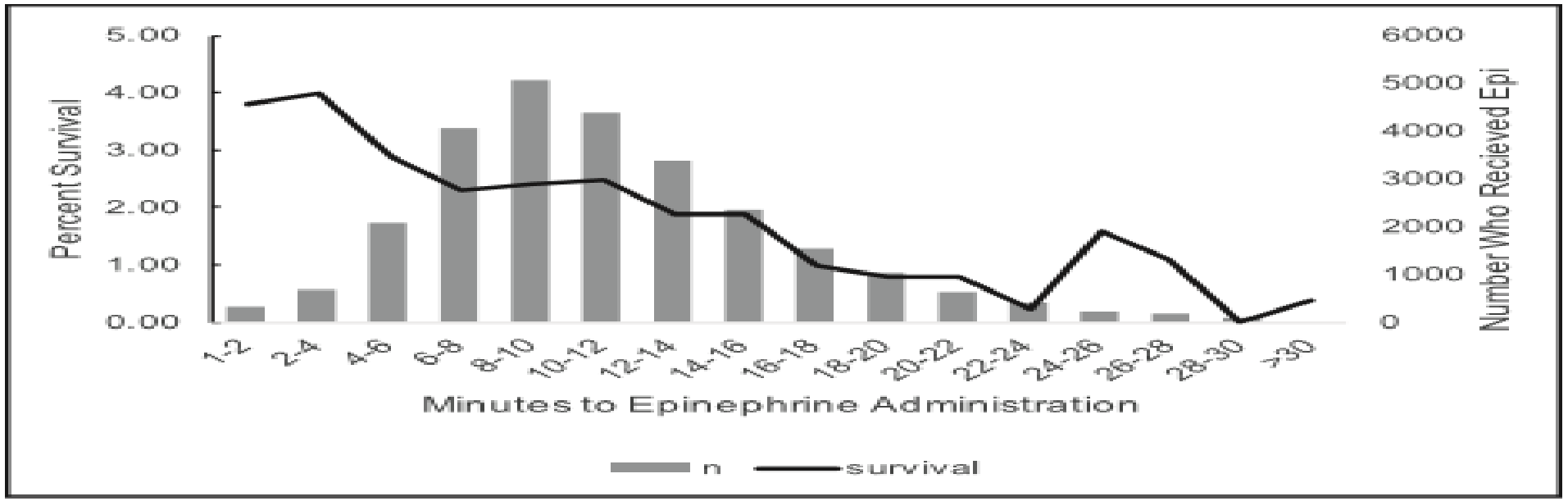
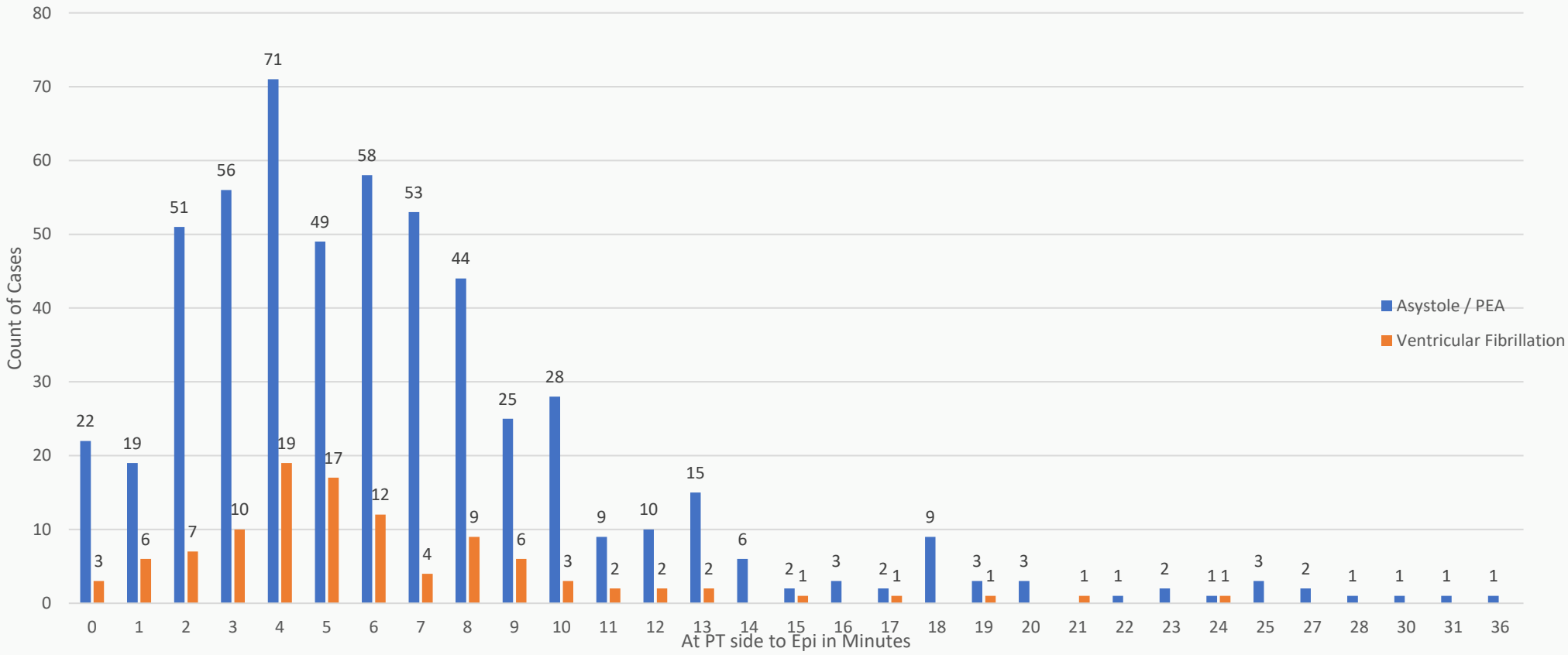


Figure 2. Unadjusted survival and number of patients that received epinephrine by 2-minute intervals.
Epi indicates epinephrine.

2022

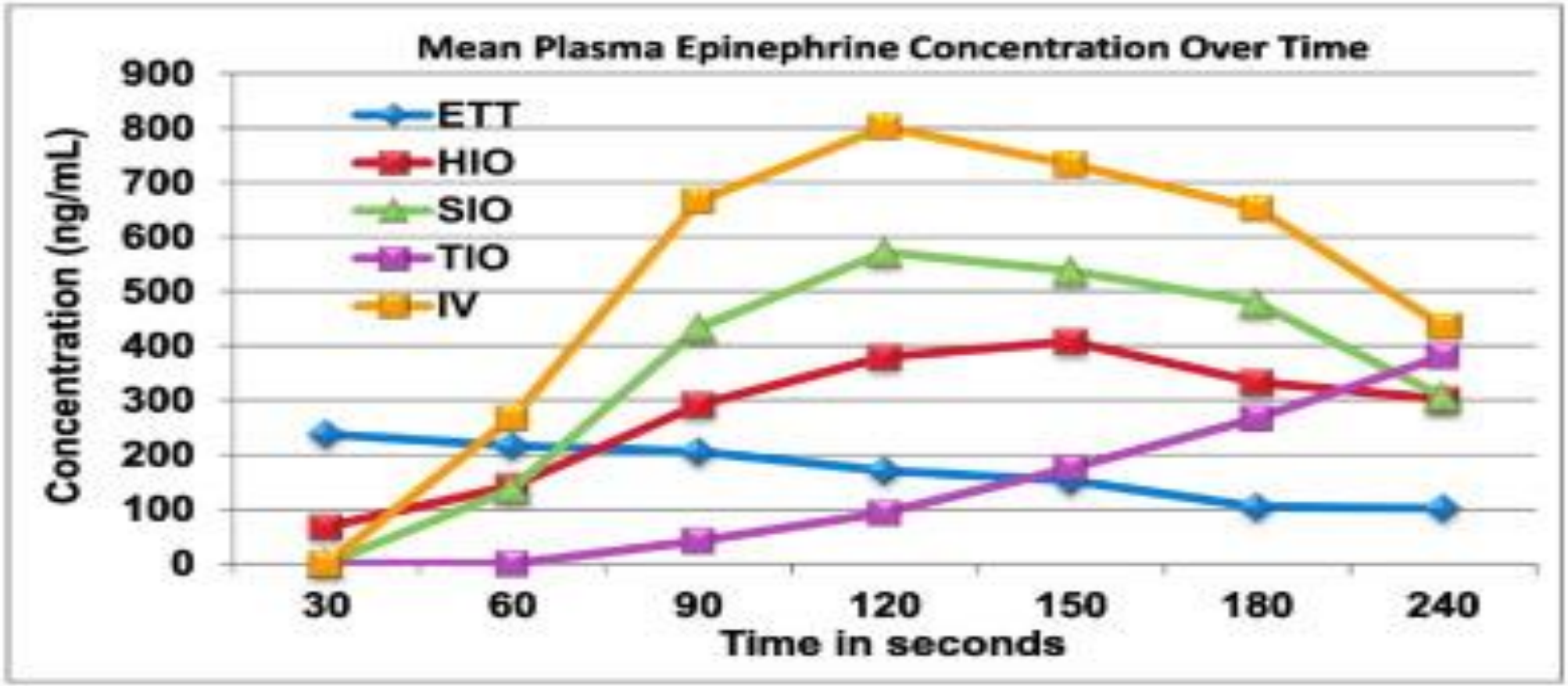
MCEMS Cardiac Arrest 2023
Time from Pt side to Epinephrine administration



Pharmacokinetic effects of endotracheal, intraosseous, and intravenous epinephrine in a swine model of traumatic cardiac arrest

James M Burgert [1], Arthur D Johnson [2], Joseph C O'Sullivan [3], Wayne J Blalock [4], Brent C Duffield [4], Brian P Albright [4], Cory C Herzog [4], Matthew S Moore [4], Katelyn S Dempster [4], Japeth W Rauch [4]

Traumatic Cardiac Arrest in Swine: Epinephrine levels by Route



Conclusions

The pharmacokinetics of IV, HIO, and SIO epinephrine were comparable.

Endotracheal epinephrine absorption was highly variable and unreliable compared to IV and IO epinephrine.

Epinephrine appeared to have a lesser role than volume replacement in resuscitating TCA.

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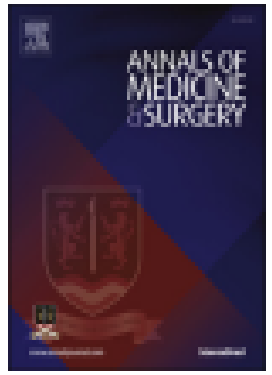

Effects of humeral intraosseous versus intravenous epinephrine on pharmacokinetics and return of spontaneous circulation in a porcine cardiac arrest model: A randomized control trial

Don Johnson [a, b, *], Jose Garcia-Blanco [b], James Burgert [a, b], Lawrence Fulton [c], Patrick Kadilak [a], Katherine Perry [a], Jeffrey Burke [a]

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Humeral vs IV Epinephrine in Cardiac Arrest in swine (Johnson)

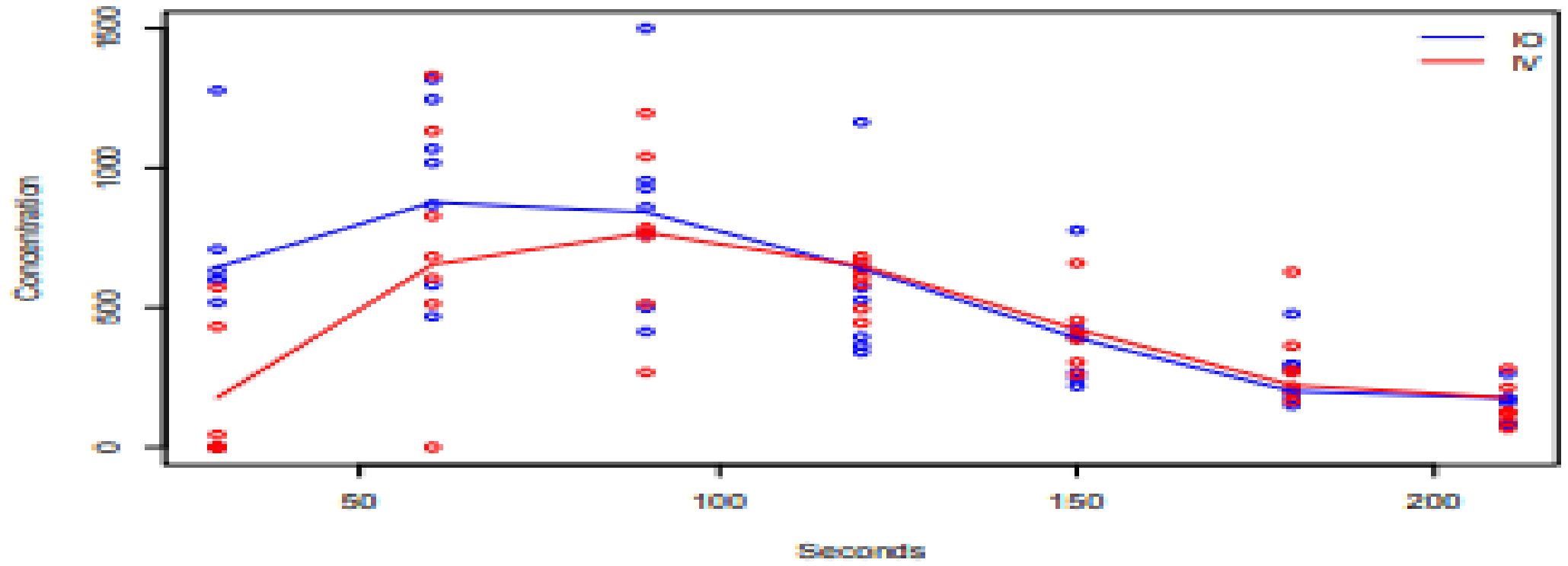
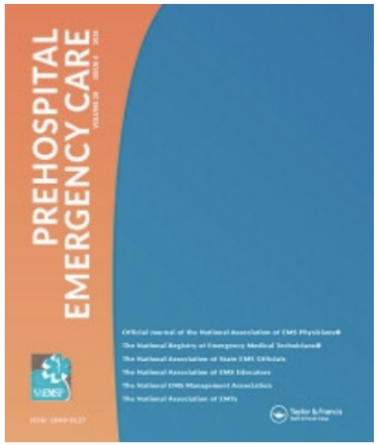


Fig. 3. Epinephrine concentration over time.

Background Literature

The vast majority of the literature does not show any difference between Tibial vs Humeral Intraosseous when survival is the outcome.

But…no publications have examined by presenting rhythm



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Prehospital Emergency Care

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Retrospective Comparison of Upper and Lower Extremity Intraosseous Access During Out-of-Hospital Cardiac Arrest Resuscitation

Tanner Smida, Remle Crowe, Jeffrey Jarvis, Taylor Ratcliff & Mat Goebel

To cite this article: Tanner Smida, Remle Crowe, Jeffrey Jarvis, Taylor Ratcliff & Mat Goebel (26 Mar 2024): Retrospective Comparison of Upper and Lower Extremity Intraosseous Access During Out-of-Hospital Cardiac Arrest Resuscitation, Prehospital Emergency Care, DOI: 10.1080/10903127.2024.2321285

To link to this article: https://doi.org/10.1080/10903127.2024.2321285

Results

155,884 patients who received IO access during resuscitation remained (76% lower extremity, 24% upper extremity).

Upper extremity IO access was associated with greater adjusted odds of ROSC (1.11 [1.08, 1.15]), and this finding was consistent across multiple patient subgroups.

Secondary analyses suggested that **upper** extremity access was associated with increased survival to discharge (1.18 [1.00, 1.39]) and survival to discharge to home (1.23 [1.02, 1.48]) in comparison to lower extremity IO access

MULTNOMAH COUNTY EMS CARDIAC ARREST

Multnomah County

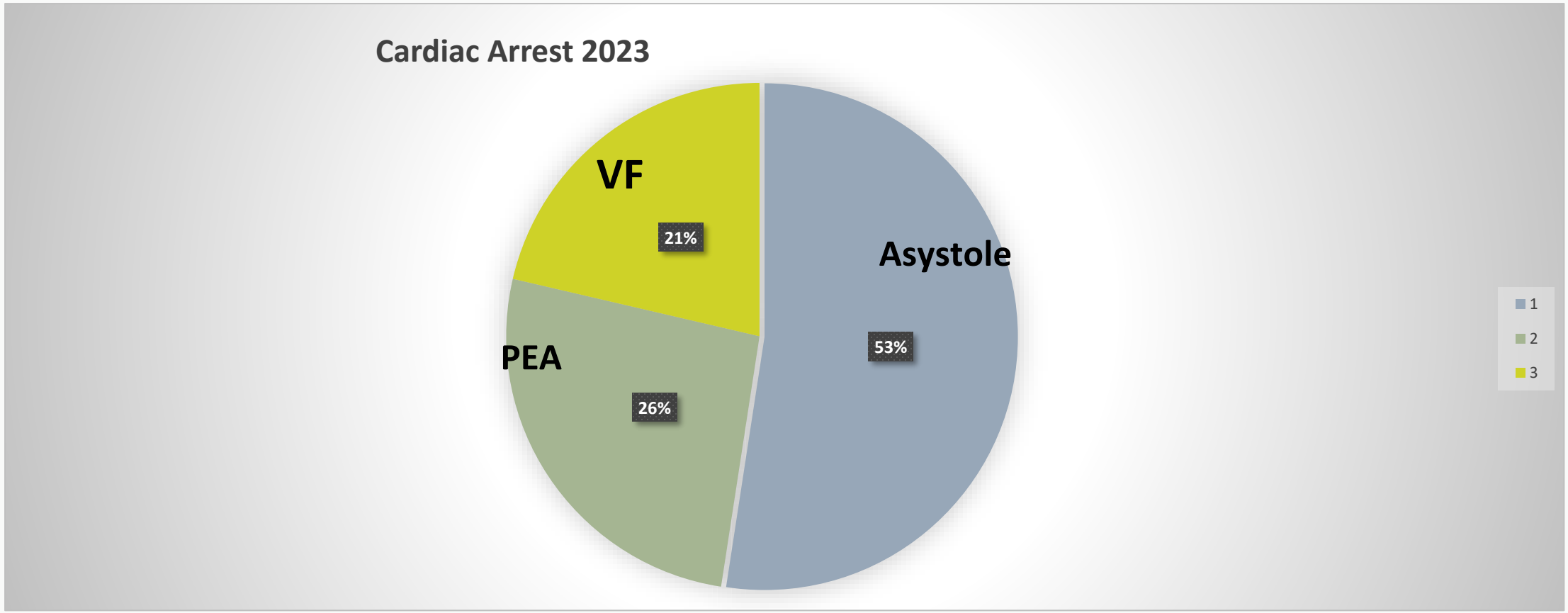
MCEMS ROSC 2022 -2023

Presenting Rhythm	Field ROSC 2022	Field ROSC 2023
Asystole	21.25%	23.5%
PEA	44.8%	48.1%
VF	54.42%	42.1%
Overall	34.4%	34%

MCEMS Cardiac Arrest Survival

Presenting Rhythm	DC Alive 2022	DC Alive 2023
Asystole	2.5%	2.2%
PEA	16.4%	22.3%
VF	28.6%	30%
Overall	15.8%	12.8%

MCEMS CARDIAC ARREST BY PRESENTING RHYTHM



Cardiac Arrest : Total Cohort 2022 to 2023

ROSC by Site		year		Total
		2022	2023	
Humeral	NULL	264	328	592
	YES	196	221	417
		460	549	1009
Tibia	NULL	73	61	134
	YES	42	30	72
		115	91	206
Femur (PEDS)	NULL	8	11	19
	YES	0	3	3
		8	14	22
Total	NULL	345	400	745
	YES	238	254	492
		583	654	1237

NON Shockable Rhythms : ROSC

ROSC	Humeral	Percent	Tibia	Percent	Total
NULL	438		98		536
YES	219	33%	32	25%	251
Total	657		130		787

Chi SQ: 0.051. LR 0.047

Shockable Rhythms : ROSC

ROSC	Humeral	%	Tibia	%	
NULL	72		17		89
YES	61	45	17	50	78
Total	133		34		167

Chi SQ: 0.666. LR 0.666

Cardiac Arrest : Total Cohort

	2022	2023	Total
Null	112	122	234
Died in the hospital	49	61	110
Discharged Alive	69	42	111
Not ‘transported	234	245	479
Patient made DNR	75	80	155
	539	550	1089

Non Shockable Hospital Outcome

	Humeral	%	Tibia	%	
Discharge Alive	27	16	1	0.58	28
Died	133		16		149
	160		17		177

Fischer Exact (2 sided) 0.48: LR 0.238

Shockable Hospital Outcome

	Humeral	%	Tibia	%	Total
Discharge Alive	31		8		39
Died	26	54	8	50	34
TOTAL	57		16		73

ChiSQ 0.758. LR 0.096

Conclusions : Humeral vs Tibial IO ROSC

Humeral IO access had superior and almost significant ROSC for NON shockable rhythms

Humeral IO did NOT show superior ROSC outcomes of shockable rhythms

Conclusions : Humeral vs Tibial IO ROSC

Humeral IO access did not have superior survival for NON shockable rhythms

Humeral IO did NOT have superior outcomes of shockable rhythms

The End