Comparing weight based and non-weight based norepinephrine dosing strategies

PROJECT DETAILS

Background
- Norepinephrine is designated a high-alert medication by the Institute for Safe Medication Practices.
- There is currently little guidance on norepinephrine dosing. Pharmacy resources advise to titrate to lowest effective dose and state that institutional protocols may vary.
- Current literature has not identified a clear benefit of either weight based (WBD) or non-weight based dosing (Non-WBD).

Objective
- To quantify and compare the use of norepinephrine between dosing strategies

Methods
- Single-centered, IRB-approved, retrospective chart review
- Pre and post June 2018 protocol revision from non-WBD to WBD of norepinephrine
- Inclusion criteria
  - Critical care patients receiving norepinephrine as their initial vasopressor for >1 hour
- Exclusion criteria
  - Pregnant or <18 years old
  - Initial vasopressor other than norepinephrine
  - Norepinephrine drip started at outside institution
  - Second shock event in same admission
- Discrete and continuous data were analyzed with the Chi Squared and Mann-Whitney U tests, respectively

Primary Outcome
- Assess differences in norepinephrine usage between the dosing strategies

Secondary Outcomes
- Initial, average, and maximum norepinephrine infusion rates
- Cumulative norepinephrine dose
- Use of second or third vasopressors

Results
- 69 patients were included, with 32 receiving non-WBD and 37 receiving WBD.

Discussion and Implications
- This study was limited by its small sample size and retrospective nature.
- Patients in the non-WBD group received higher infusion rates and cumulative doses of norepinephrine.
- Non-WBD patients were more severely ill at baseline and experienced increased mortality rates. This may limit the external validity of the study since sicker patients tend to require higher vasopressor doses.
- Future research will further assess the differences in severity of illness between the groups

INVESTIGATOR TEAM

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TABLES AND FIGURES

Table 1. Baseline Demographics

	Non-WBD (n=32)	WBD (n=37)	P-value
Age (years)	62 (53-72)	67 (56-76)	0.268
BMI	29 (23-35)	29 (25-39)	0.432
Male Gender	18 (56%)	19 (51%)	0.684
Caucasian Race	28 (88%)	30 (81%)	0.573
Cardiovascular ICU	16 (50%)	14 (38%)	0.422
All values presented as Number (%) or Median (Interquartile Range)			

Table 2. Co-morbidities and Organ Dysfunction

	Non-WBD (n=32)	WBD (n=37)	P-value
CAD	14 (44%)	11 (30%)	0.227
CHF	9 (28%)	14 (38%)	0.393
COPD	7 (22%)	8 (22%)	0.980
Liver dysfunction			0.238
Hepatitis	2 (6%)	3 (8%)	
Cirrhosis	0 (0%)	3 (8%)	
Kidney dysfunction			0.011
Renal	8 (25%)	0 (0%)	
CKD	1 (3%)	3 (8%)	
ESRD	1 (3%)	3 (8%)	
CRRT	7 (22%)	7 (19%)	0.761
SOFA score	12 (10-13)	8 (4.5-11)	<0.001
All values presented as Number (%) or Median (Interquartile Range)			

Figure 1. Norepinephrine Infusion Rates (mcg/min)

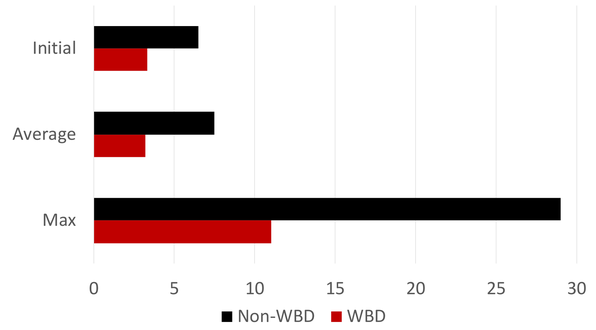

Table 3. Vasopressor Usage

	Non-WBD (n=32)	WBD (n=37)	P-value
Cumulative NE dose (mg)	39 (6-99)	7 (2-23)	0.003
Total NE Duration (days)	2.5 (1-5.5)	1 (1-2.5)	0.038
Use of second vasopressor	23 (72%)	8 (22%)	<0.001
Use of third vasopressor	12 (38%)	3 (8%)	0.003
Use of ionodilator	7 (22%)	2 (5%)	0.032
All values presented as Number (%) or Median (Interquartile Range)			

Table 4. Clinical Outcomes

	Non-WBD (n=32)	WBD (n=37)	P-value
Mortality	25 (78%)	9 (24%)	<0.001
Hospital LOS	6 (3 – 11)	9 (4 – 16)	0.158
Mechanical ventilation	32 (100%)	24 (65%)	<0.001
Vent free time (days)	0 (0-0)	25 (6-28)	<0.001
All numbers presented as Number (%) or Median (Interquartile Range)			