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REDUCING MEDICATION ERROR RISK IN THE EMERGENCY DEPARTMENT

GROWING CONCERNS

With higher volumes of patients, reduced time to deal with them, less physical space to care for them, hospital ED's are at increased risk for medication errors.

INCIDENCE OF MEDICATION ERROR (ME)

EMERGENCY DEPARTMENT (ED)

- At least 1 error occurred in 60% of patients, and 37% of patients overall had an error reach them¹
- US Pediatric Emergency Care Applied Research Network (PECARN) reported medication event incident rate of 19%²
 - 13% resulted in patient harm
 - 94% were MEs (ie. wrong dose, incorrect drug)
- MEs were found in 7 of 8 pediatric mock resuscitations³
 - Of the prepared syringes that could be examined (58 of 72), 9 were above the expected dose by 20%, and 4 were above by 50% or more

PACU, ICU, CCU

- Of recovery room incidents, drug error was 11%⁴
- A PACU review of MEs found that 5.8% were harmful⁵
- In ICU, ME is the most common error, accounting for 78% of serious MEs⁶

OR

- A review found syringe or drug preparation errors to be 50% of the reported errors⁷



ROLE OF BOLUS DOSE VASOPRESSOR IN THE ED

- For decades, anesthesiologists have used bolus dose vasopressors for managing hypotension in the OR
 - Recent Emergency Medicine focused blogs support the use of bolus dose vasopressors and its use is transitioning to the ED⁸
- In the ED, the use of bolus dose vasopressors represents safety challenges not present in the OR⁹
 - Ordering, preparing, administering, and monitoring may be done by several individuals less familiar with the practice and who have other tasks to perform which increases the risk for error
- Bolus dose vasopressors can be an effective temporary intervention for treating hypotension when rapid treatment is needed
- **It is recommended to use the lowest appropriate concentration to reduce risk**
- Preparation of bolus doses of vasopressors like phenylephrine can be complex, and the risk of error is increased in the ED setting⁸
- A commercially manufactured phenylephrine pre-filled syringe offers a solution to:
 - Rapidly treat emergent hypotensive situations in hemodynamically unstable patients
 - Help reduce the risk of medication errors, simplifies administration, and reduces wastage

Isn't it time for your hospital to switch to pre-filled syringes?

1. Patanwala AE, et al. A Prospective Observational Study of Medication Errors in a Tertiary Care Emergency Department. *Annals of Emergency Medicine*, June 2010, Volume 55, Issue 6, Pages 522-526. 2. Shaw K, et al. Reported medicine events in a paediatric emergency research network: sharing to improve patient safety. *Emergency Medicine Journal* 2012; 00:1-5. DOI:10.1136/emmermed-2012201642. 3. Kozler E, et al. Prospective observational study on the incidence of medication errors during simulated resuscitation in a paediatric emergency department. *The BMJ*, September 28, 2004. DOI:10.1136/bmj.38244.607083.55. 4. Kluger MT, et al. Recovery room incidents: a review of 419 reports from the Anaesthetic Incident Monitoring Study (AIMS). *Anaesthesia* 2002, 57, pages 1060-1066. 5. Hicks RW, et al. Medication Errors in the PACU.

Journal of PeriAnesthesia Nursing, Vol 22, No 6 (Dec), 2007; p 413-419. 6. Camire E, et al. Medication errors in critical care: risk factors, prevention and disclosure. *CMAJ*, April 28, 2009, 180(9), p 936-943. 7. Abeysekera A, et al. Drug error in anesthetic practice: a review of 896 reports from the Australian Incident Monitoring Study Database. *Anaesthesia* 2005, 60 p 20-227. 8. Tilton L, et al. Utility of Push-Dose Vasopressors for Temporary Treatment for Hypotension in the Emergency Department. *J Emerg Nurs* 2016;42, Issue 3, p 279-81. 9. Holden D, et al. Safety Considerations and Guideline-Based Safe Use Recommendations for "Bolus-Dose" Vasopressors in the Emergency Department. *Annals of Emergency Medicine*, Jan. 2018, Vol. 71, Issue 1, pp. 83-92.

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FINALLY, THERE'S A BOLUS DOSE VASOPRESSOR FOR USE IN THE EMERGENCY DEPARTMENT

Phenylephrine Pre-Filled Syringe

500 mcg / 10 mL (50 mcg/ mL)

An excellent choice to help manage hypotension in the Emergency Department

Reduces risk of preparation error and medication error,
as well as sterility and stability issues

Preparation of bolus dose phenylephrine is a multi-step process, which carries a high risk for errors¹

While not treating the underlying cause of hypotension, bolus dose pressors:²

- Can be an effective bridging measure when rapid intervention is needed
- Allows immediate administration and incremental dosing via I.V. from a syringe
- May benefit patients by shortening the duration of hypotension and improving the perfusion of vital organs



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INDICATIONS: For the treatment of clinically important hypotensive states, including overcoming peripheral vascular failure (shock or shock-like states), maintenance of blood pressure in the setting of anesthesia, drug induced hypotension, or hypersensitivity with circulatory compromise.

CONTRAINDICATION: Contraindicated in patients with hypertension or ventricular tachycardia or in patients who are hypersensitive to the drug.

PRECAUTIONS: Use with extreme caution in elderly patients or those with hyperthyroidism, bradycardia, partial heart block, myocardial disease, or severe arteriosclerosis. Vasopressors may cause serious cardiac arrhythmias during halothane anesthesia and should be used with great caution or not at all.

Oxytocics: If used in obstetrics to treat hypotension, be warned that some oxytocic drugs may cause severe persistent hypertension or a rupture of a cerebral blood vessel during postpartum.

MAO Inhibitors: The pressor effects of sympathomimetic pressor amines are markedly potentiated in patients receiving a monoamine oxidase (MAO) inhibitor. When initiating pressor therapy in these patients, use a small initial dose with due caution. The pressor response of adrenergic agents may also be potentiated by tricyclic antidepressants.

Pregnancy: Studies have not been conducted on pregnant women to determine potential fetal harm or effect on reproduction. Use in pregnancy only if clearly needed.

Lactation: Unknown if it is excreted in human milk, use with caution in nursing woman.

Consult Package Insert for full Prescribing Information.

1. Lauren Tilton et al, Utility of Push-Dose Vasopressors for Temporary Treatment for Hypotension in the Emergency Department, J Emerg Nurs 2016;42, Issue 3,279-81
 2. Devin Holden, PharmD, BCPS; Jessica Ramich, PharmD; Edward Timm, PharmD; Denis Pauze, MD; Timothy Lesar, PharmD, Safety Considerations and Guideline-Based Safe Use Recommendations for "Bolus-Dose" Vasopressors in the Emergency Department. Annals of Emergency Medicine, Jan. 2018, Vol. 71, Issue 1, pp. 83-92. DOI: <https://doi.org/10.1016/j.annemergmed.2017.04.021>
- † 3 year shelf life at date of manufacture

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