From theory to practice: Implementing ISMP Best Practices Surrounding Neuromuscular Blocking Agents

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• Nearly one-third of all beds at UMMC are dedicated to critical care in 11 specialized units dedicated to subspecialties such as neurotrauma, cardiac surgery, cardiac care and neurological critical care.

• UMMC treats more than 250,000 patients a year with a caring environment to facilitate research education for everyone.

• The R Adams Cowley Shock Trauma Center at UMMC serves more than 8,600 critically ill and severely injured people each year. It is the highest-volume trauma center in the United States.
Neuromuscular blocking agents (NMBs) are considered high-alert medications because of the potential for serious, permanent injury or even death when used in error.

Neuromuscular blockers have been inadvertently administered to both adult and pediatric patients who were not receiving proper ventilator assistance.

1. Severe psychological trauma can occur if the NMB is accidentally administered prior to sedation in patients requiring ventilator assistance.

Best Practice 7:
Segregate, sequester, and differentiate all neuromuscular blocking agents (NMBs) from other medications, wherever they are stored in the organization.

• Rationale:

- Look-alike packaging and labeling
- Look-alike drug names
- Drug administration after intubation
- Unsafe Storage
- Lack of knowledge
Recommendations to Avoid Unintended Use of NMBs

Classify NMBs as high alert medications

Eliminate storage of NMBs in areas where they are not routinely needed.

Sequester all NMBs away from other medications

Warnings and prompts in electronic ordering system and automated dispensing cabinet (ADC)
NMBs on formulary:

- Cisatracurium (Nimbex®)
- Rocuronium (Zemuron®)
- Succinylcholine (Anectine®)
- Vecuronium (Norcuron®)

**Assessment:**

- NMBs vials and syringes were placed in open bins inside refrigerator and ADC tower
- NMBs were stored in areas of low usage
- Some areas stored two formulations of same NMBs (syringes and vials)
Safety Initiatives Implemented

**Ordering**
- An alert will fire when paralytics are ordered on a patient without mechanical ventilation
- Epic orders will default to product available in nursing units

**Storage**
- The NMBs were removed from areas where they are not routinely used or needed
- NMBs are stored in cubies inside ADC and lidded bins inside refrigerator

**Labeling**
- Auxiliary labels were placed on all storage bins and automated dispensing cabinets cubies
Safety Initiatives Implemented

What does the alert look like?

How do the auxiliary labels look?

Medication refrigerator

Pyxis® cubie
How you can implement this initiative at your institution?

1. Review the NMBs on formulary and the different formulations you carry at your institution.

2. List all the areas that currently stock the NMBs and assess their usage.

3. Assess the storage of the NMBs and identify opportunities to segregate them from other medications.

4. Consider adding an auxiliary label to all storage bins to clearly communicate the risks associated with these agents.

5. Consider adding warnings and alerts in electronic ordering system and ADC.
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