Pneumococcal & Influenza Vaccine Co-Administration in the Incarcerated Population
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PROBLEM INTRODUCTION
- Streptococcus Pneumoniae causes 20-60% of cases of bacterial pneumonia
- It has a mortality rate of 10-30% depending on risk factors
- Following ACIP Guidelines is 60-70% effective at preventing invasive pneumococcal disease
- Incarcerated individuals have increased risk of contracting pneumococcal disease due to the proximity of living quarters
- Department of Corrections reported 43% of incarcerated individuals <65 & 47% of those >=65 years have received pneumococcal vaccine

LITERATURE REVIEW
- Risk factors for deadly IPD are more common in incarcerated persons
  - Asthma is 2x as common
  - HIV and Hepatitis B are 3x more common
  - Hepatitis C is almost 6x more prevalent
- Outbreaks of IPD occur in state prisons
- Cigarette smoking is the single most important predictor of disease
- Co-administration significantly reduces all-cause mortality, mortality from pneumonia, and vascular-related mortality
- It has excellent hazard ratio (0.54-0.72)
- When information is provided by healthcare professional, hesitant individuals more likely to be vaccinated

PROJECT METHODS
- Confident recommending pneumococcal vaccines
  - Pre: 3.73/5
  - Post: 4.06/5 (8.8% increase)
- Knowledgeable about the 2021 ACIP guidelines
  - Pre: 3.14/5
  - Post: 4.03/5 (28% increase)
- Documentation is simple & quick
  - Pre: 3.27/5
  - Post: 3.53/5 (7.9% increase)

IMPACT ON PRACTICE
- Provider uncertainty about recommending pneumococcal vaccines
- Dissemination of pneumococcal disease brochures in English & Spanish
- Improvements in vaccination and offering
- Multifactorial
- Confounding factors
- Co-administration shows promise
- Knowledge and confidence improved

CONCLUSIONS
Recommendations for Sugammadex Administration in Standard and Special Populations
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PROBLEM
- Lack of standardization for use of sugammadex in standard and special populations including renal failure, breast feeding, pregnancy, and pediatrics at Memorial Hospital Belleville.
- Concerns about lack of evidence-based information about the use of sugammadex, access to quick references, and understanding of the cost analysis about the drug.
- This project will bridge the knowledge gap, provide evidence-based references, and explore causes for barriers to use of the medication.

PROJECT METHODS
- IRB approval was obtained from SIUE and Memorial Hospital Belleville.
- Non-experimental single group design using a convenience sample of approximately 25 anesthesia providers.
- Guidelines were created based on the current literature regarding sugammadex in standard and special patient populations.
- Current guidelines presented to the anesthesia staff.
- A quick reference card was distributed to all providers for ease of access.

LITERATURE REVIEW

Clinical Relevance
- Inadequate reversal of chemically induced paralysis can lead to increased morbidity & mortality including hypoxia, respiratory failure & increased length of hospital stay (Ayad et al., 2019).

Renal Impairment
- Should not be used if creatinine clearance < 30m/min
- No dose adjustments required. Slightly prolonged onset
- High flux dialysis within 24-48 hours of administration (Paredes et al., 2020).

Breast Feeding
- Avoid in the first 30 days postpartum. The large molecule can pass through maternal lactating ducts (Willett et al., 2019).
- Weigh risks versus benefits; effects on lactation are unknown (Willett et al., 2019).

Pregnancy
- Avoid in 1st trimester
- Safe to use near term (37 weeks) (Willett et al., 2019)

Birth Control
- Utilize nonhormonal birth control for 7 days after administration
- Hormonal birth control includes pills, IUDs, vaginal rings & implants (Willett et al., 2019).

Pediatrics
- Not FDA approved in children < 2 years (Merck & Co, 2022).
- Safe in children > 2 years; same dosing as adults

Cost Analysis
- Sugammadex resulted in fewer minutes in the OR and PACU when compared to neostigmine (Moss et al., 2022).
- Although sugammadex is more costly than neostigmine, saving OR time results in decreased overall costs (Children & Maggard-Gibbons, 2018).

DOsing
- ≥ 2 twitches = 2 mg/kg
- < 2 twitches or only post-tetanic twitches = 4 mg/kg
- Cannot intubate / cannot ventilate = 16 mg/kg
- Dose should be calculated on ACTUAL BODY WEIGHT.

Side Effects: Most common include rash, bradycardia, hypotension, nausea and vomiting, and prolonged clotting times. More commonly seen with large doses (16mg/kg) (Merck & Co, 2022).

IMPACT ON PRACTICE
- Increased use of sugammadex may lead to safer patient outcomes.
- Increased confidence in using sugammadex in special populations.
- Decreased incidence of postoperative complications from residual neuromuscular blockade.
- Easy accessibility to sugammadex when a Pyxis is implemented in each OR.

EVALUATION
- Multiple choice & Likert-style questions utilized in survey
- 13 total participants included in analysis
- 84.6% of participants indicated an increase in knowledge of sugammadex in standard and special patient populations and increased confidence in using sugammadex after implementation.
- Majority used sugammadex due to its reliable course of reversal and shorter reversal time.
- 100% said they would increase their use of sugammadex if it was accessible in a Pyxis in each OR.

CONCLUSIONS
Overall, current literature shows that sugammadex is superior to neostigmine in the reversal of steroidal NDMRs. Most of the data for the use of sugammadex in special populations shows that additional research is needed. Sugammadex has shown to decrease time in the OR, potentially further reducing healthcare costs. Further conclusions after implementation showed an increase in provider knowledge about the use of sugammadex in standard and special populations, with additional education and quick reference card. Barriers included lack of accessibility and more comfort with other reversal agents. 100% of participants found the quick reference card user friendly along with an increase in confidence in using sugammadex.
The project site uses clinical screening criteria (CSC) with extended Denver criteria (eDC), Denver criteria (DC), and the Memphis criteria (MC) to screen for BCVI in patients with blunt-force trauma.

- The project aims to implement CTA neck during the initial blunt trauma assessment.
- Relying solely on CSC will result in undiagnosed BCVI.
- Literature supports the use of CTA neck to screen for BCVI.
- Sole reliance on CSC can lead to undiagnosed BCVI.
- Median age for stroke-related BCVI is 39 years.
- Strokes result in severe long-term disabilities.
- Stroke care costs average $140,048 per patient in the U.S.
- Impose both economic and human productivity burden.

** литературы:**