DROPERIDOL PROPOSAL

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Executive Summary:

Droperidol will replace haloperidol and metoclopramide, simplifying the EMS formulary. The addition of droperidol to the COGs would give providers a single agent alternative to potentially prevent the need for co-administrations due to droperidol's faster onset and help slow the utilization of ketamine due to current supply chain challenges. There are concerns with the vial appearing similar to another medication already in the system and the fact that training will be necessary.

OVERVIEW

Below is a summary of current haloperidol and metoclopramide use in the system.

Over the last year, haloperidol has been used 657 times and metoclopramide has been used 92 times, with an overall downward trend of usage of both medications over the same time period..

During the last year, there have been 11 instances where haloperidol has been administered and the patient was subsequently administered ketamine. Due to its faster effect, we believe that droperidol has the potential to reduce the number of instances that this occurs.

Assuming the use rate remains unchanged, the annual cost of droperidol administrations would be $9519.79 compared to $827.84 for haloperidol and $885.41 for metoclopramide. Some cost savings would be achieved due to the elimination of routine co-administration with diphenhydramine with haloperidol, however, through chart review we have discovered haloperidol is often administered as a single agent.

Needs

It is necessary to add a medication that can potentially slow the usage of ketamine while it is on backorder, while simultaneously providing a safe and effective replacement for haloperidol and metoclopramide.

- Need #1: Ensure patient safety.
- Need #2: Ensure ease of provider use across multiple patient complaints.
- Need #3: Maintain adequate supply while attempting to conserve ketamine while supply chain challenges persist

The Opportunity

Three major operational advantages have been identified: versatility, safety, and simplification.

- **Versatility**
  - Droperidol is a safe and effective sedative that also treats nausea/vomiting, cannabinoid hyperemesis syndrome and headaches.
- **Safety**
  - Droperidol has been shown to achieve more rapid control of agitation than the same dose of haloperidol (Calver, et al., 2015).
  - Patients would only require a single IM injection compared to at least two for haloperidol and diphenhydramine.
  - Droperidol has a proven safety record in the in-hospital setting, where patients are arguably less routinely monitored than in the ATCEMS system after sedation. (Gaw, Cabrera, Bellolio, Mattson, & Jeffery, 2020)
- **Simplification**
  - Substituting droperidol for haloperidol and metoclopramide will simplify the EMS formulary.
    - The elimination of metoclopramide would slow the burn rate of 250mL normal saline bags and 60gttts sets (Isbister, et al., 2010).
  - Switching to a single agent would potentially reduce the number of medication errors. In chart review it has been found that haloperidol is often given without diphenhydramine, as required per COGs.

CLINICAL JUSTIFICATION

Replacement of Haloperidol for Behavioral and Hyperactive Delirium with Severe Agitation

Ketamine will remain as the first line medication to deal with patients that are violent, cannot be deescalated by any other means, and pose an active risk to themselves or others. Within the current COGs, there is no middle ground between rapid dissociation via ketamine and the longer onset of haloperidol. Droperidol's onset ranges from 3-10 minutes based on dosage, compared to haloperidol's 20-30 minutes and a randomized, double-blind, prospective study has shown that IM droperidol achieves a more rapid control of agitation than the same dose of haloperidol (Isbister, et al., 2010). The addition of droperidol offers a faster, safer alternative than haloperidol and has the potential to reduce total ketamine administrations in this patient population.

Replacement of Metoclopramide and Haloperidol for Nausea/Vomiting and Headache

An additional benefit to droperidol is its proven record of effectiveness for the control of nausea/vomiting and headaches, which would allow for the complete removal of haloperidol and metoclopramide from the formulary. In a study in patients presenting to the ED with nausea, low-dose droperidol reduced symptoms better than metoclopramide or prochlorperazine. Compared to haloperidol, droperidol has shown a decrease in hospital rebound visits when used for cannaboid hyperemesis syndrome. (Chopra, et al., 2022). For the treatment of atraumatic headaches, multiple studies have shown low-dose droperidol is superior to prochlorperazine for migraine and headache control via IV and IM routes (Gaw, Cabrera, Bellolio, Mattson, & Jeffery, 2020).

OPTIONS

Several solutions are available to address the ketamine shortage

- Recommendation #1: Switch to droperidol, discontinuing use of haloperidol and metoclopramide
- Option #2: No changes to the formulary and consider further restrictions on ketamine.
- Option #3: Replace haloperidol with droperidol and retain metoclopramide in the formulary.

EXECUTION STRATEGY

Goals include working with stakeholders to ensure adequate supply of the medication and patient safety, creating and disseminating provider education, and developing measureables prior to clinical change implementation

Supply

Per local EMS systems using the medication, there have only been minor shipment delays, but they have not experienced a shortage or significant back order that negatively impacted clinical operations. EMS supply states that shipments of Droperidol are available.

Patient Safety

Stated concerns include inadvertent routine administrations of diphenhydramine with droperidol and the medication potentially being used on patients that still need ketamine administration (RAAS +4). There no significant changes in contraindications that would result from this change. Same red vial cap as Dexamethasone.

Recommend storing in a significantly different area than Dexamethasone and TXA due to similar vials.

Education

A just-in-time training covering:

- *Indications and background on each*
- *Dosage per indication*
- *Side effects*
- *Potential problems with medication (look-alike, sound alike issues) – mainly: Dexamethasone*
- *The importance of medication cross-check*
- *When this goes into effect*

Training during already planned in-person fall ALS CE (in order to mitigate costs) covering:

- *RASS scores*
- *Medical direction intent for different sedation options (reduce Ketamine usage)*

Measurables

*Use and administration will be measured in KPIs in the three months following roll-out to ensure feedback that administrations are given at the appropriate dosing for each indication, tracking any accidental instances of co-administration with diphenhydramine and how often additional sedation is needed.*** Afterwards, it will be tracked using ESO Insights at 6 month and 12 month marks as is normal for all new medications in the system.*

Measured KPIs would include: confirming dosing administration according to clinical indication, tracking instances of accidental co-administration with diphenhydramine, and any needs for additional sedation.

Clinical Practice

Formulary addition
Changes to authorized procedures & medications
COGs affected: Headache, Nausea/Vomiting, Diphenhydramine formulary entry, Behavioral
Recommend adding coadministration with Midazolam for RASS +4 due to possible loss of Ketamine supply

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Thank you for your consideration,

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