

Droperidol is back

- Droperidol was first approved by the FDA in 1971 for nausea, vomiting, anxiety, and sedation. By year 2001, droperidol had captured nearly one third of the market share for antiemetics. However, the same year, the US FDA placed a black box warning over concern about potential cardiac adverse effects. Soon droperidol disappeared from hospitals.
- In 2015, the American Academy of Emergency Medicine issued a position statement that supported the use of droperidol in the emergency setting with conclusions:
 - Droperidol is an effective and safe in the treatment of nausea, headache, and agitation
 - The literature search did not support mandating an ECG or telemetry monitoring for doses <2.5 mg given either IV or IM
 - IM doses of up to 10 mg seem to be as safe and as effective as other medications used for sedation of agitated patients
- Droperidol was reintroduced to the US market in Feb 2019, still with the black box warning
 - Droperidol is a butyrophenone antipsychotic (like haloperidol); antiemetic effect is a result of blockade of dopamine stimulation of the chemoreceptor trigger zone
 - The onset of action is 3 to 10 minutes. Peak effect is about 30 min. Half-life is about 2 hours
 - Indications/Dosing (Sources: UpToDate and Clinical pharmacology)
 - **Acute undifferentiated agitation** (off-label use): Initial 2.5mg to 5mg IV or IM as monotherapy or in combination with a benzodiazepine. May repeat droperidol dose every 5-10 minutes until sedation is achieved. Max dose 20 mg per episode
 - **Nausea/vomiting:** Per manufacturer, max initial dose is 2.5 mg IM, IV; additional doses of 1.25 mg may be administered
 - Other uses (Migraine, anxiety etc.)
 - **Black Box warnings:** arrhythmias (QT prolongation and/or torsade de pointes); potential for serious proarrhythmic effects and death
 - Contraindicated in known or suspected QT prolongation (eg., QTc greater than 440 msec for males or 450 msec for females), including pts with congenital long QT syndrome
- Available in ED Pyxis machine. Order strings built in Meditech

Order String
droperidoL 0.625 MG (SOLN) IV PUSH ONEDOSE ONE
droperidoL 0.625 MG (SOLN) IM ONEDOSE ONE
droperidoL 1.25 MG (SOLN) IV PUSH ONEDOSE ONE
droperidoL 1.25 MG (SOLN) IM ONEDOSE ONE
droperidoL 2.5 MG (SOLN) IV PUSH ONEDOSE ONE
droperidoL 2.5 MG (SOLN) IM ONEDOSE ONE

ED Pediatric Sepsis Orderset Updated

- Changes in ED Pediatric Sepsis Orderset in Meditech
 - Lab: added venous blood gas, Magnesium, Phosphorus and ionized calcium
 - **Fluid: Lactated Ringers as a preferred fluid**
The guideline suggest using balanced/buffered crystalloids, rather than NS for the initial resuscitation of children with septic shock or other sepsis associated organ dysfunction
 - Empiric antibiotics (infants wt >2 kg): included
Regimen 1: Ceftriaxone + Metronidazole + Vancomycin
Regimen 2: For betalactam allergy: Aztreonam + Metronidazole + Vancomycin
 - Pressor: Epinephrine drip as 1st line
 - Hypoglycemia treatment: Dextrose 10% 0.5 g/kg (= 5 mL/kg)
 - Electrolytes: added choices of Magnesium Sulfate IV and Calcium Gluconate IV

- **Lactated Ringers contain calcium**

- LR must NOT be administered concomitantly with IV ceftriaxone due to ceftriaxone-calcium precipitation (LR contains Calcium)

- Comparison of Fluid Electrolyte Compositions

	Unbalanced	Balanced	
Electrolyte (mEq/L)	Normal Saline	Lactated Ringer's	Plasma-Lyte, Normosol ^a
Na⁺	154	130	140
Cl⁻	154	109	98
K⁺		4	5
Ca²⁺		3	
Mg²⁺			3
Lactate		28	
Acetate			27
Gluconate			23
Osmolarity (mOsm/L)	308	273	294
pH (avg.)	5.6	6.6	6.6

- Source: Weiss et al. Surviving Sepsis Campaign International Guidelines for the Management of Septic Shock and Sepsis-Associated Organ Dysfunction in Children, Feb 2020
https://journals.lww.com/pccmjournal/fulltext/2020/02000/surviving_sepsis_campaign_international_guidelines.20.aspx

Emergency Department Pharmacist's Notes

October 2020

Droperidol | PED Sepsis Orderset | Naloxone | Benzodiazepine FDA Warning | Gardasil in SA orderset

ED plans to develop Take Home Naloxone Program

- Goal is to provide naloxone (antidote to opioids) to ED patients with opioid overdose
- Chicago has seen 61% increase in opioid-related EMS responses and a 55% increase in opioid-related overdose deaths (Jan-June 2020 vs. Jan - June 2019).
 - Month of June: 1316 opioid-related EMS responses, 77 opioid-related overdose deaths (Source: Chicago HAN Alert)
- A case-series postmortem analysis found 1 in 6 out-of-hospital cardiac arrest deaths were caused by occult overdoses <https://www.acpjournals.org/doi/10.7326/M20-0977>
 - Most occult overdose deaths involved multiple drugs, including opioids, sedative-hypnotics, and stimulants, and ~50% of opioids had been prescribed
 - Consideration of administering naloxone is needed during resuscitation efforts
- The Program framework
 - ED physicians prescribe naloxone nasal spray -> GMP pharmacy/or Inpt pharmacy processes Rx and dispense naloxone to ED -> RN provides naloxone with education to patients upon discharge from the ED
 - Funding is needed for the cost of Narcan spray (copay or unfunded pts): Under review

Benzodiazepines - FDA requiring Boxed Warnings be updated to improve safe use 9/23/2020

- To emphasize the risks for misuse, addiction, physical dependence, and withdrawal symptoms, even when the drugs are taken at the recommended dosages
- When prescribing benzodiazepine class,
 - Consider the patient's condition and the other medicines being taken (eg., opioid) and assess the risk of abuse, misuse, and addiction
 - Limit the dosage and duration of each medicine to the minimum needed to achieve the desired clinical effect when prescribing benzodiazepines, alone or in combination with other meds
 - Use a patient specific, gradual taper to reduce the dosage or to discontinue benzodiazepines to reduce the risk of acute withdrawal reactions
- Source: <https://www.fda.gov/safety/medical-product-safety-information/benzodiazepine-drug-class-drug-safety-communication-boxed-warning-updated-improve-safe-use>

Gardasil 9 [Human papillomavirus 9-valent vaccine (9vHPV)] is added to ED Sexual Assault Order set

- It is only orderable from the orderset and restricted to only Sexual Assault Victims
- HPV is one of SA Patient Discharge Medications required by IL State
- Will be offered to Female and male age of 9-26 years
- Gardasil 9 Dosing Schedules
 - CDC/ACIP recommended routine vaccination at 11 to 12 years of age
 - Age 9 to 14 years: **2-dose** series: IM: 0.5 mL at 0, and 6 to 12 months
 - Age ≥15 years: **3-dose** series: IM: 0.5 mL at 0, 1 to 2, and 6 months