Pharmacy Friday

Brief pearls related to acute care pharmacology and evidence-based medicine
Other pearls can be found at:

- https://sites.google.com/presby.edu/pharmacy-friday

Corticosteroids in Asthma & COPD

Patient Case

- The team gets a call that there is **a 36-year-old that present with SOB brought in by EMS and is currently displaying increased work of breathing and in acute distress**
- Patient has been out of her albuterol inhaler for 7 days
- The provider has **asthma exacerbation** at the top of the differential diagnosis
- Respiratory therapy has started albuterol and ipratropium and the team asks should the team start steroids
- **Should we use steroids? Which pharmacologic agent should we use? What dose should we use?**

Pharmacology			
	Prednisone	**Methylprednisolone (Solu-Medrol, Depo-Medrol)**	**Dexamethasone (Decadron)**
Dose	PO: 40 to 80 mg/day ORALLY in 1 or 2 divided doses	IV/PO: 0.5 mg/kg q6h or **40 to 80 mg/day** in 1 or 2 divided doses IM: 120-240 mg x 1	**IV/IM/PO: 0.5 to 9 mg/day** • IV: Admin over 1 min
Formulation	Oral tablet Oral Solution	Oral tablet Oral Solution IV solution IM	Oral tablet IV solution IM
PK/PD	**Time to Peak** • **~2 hours** **Duration** • **12-36 hr**	**Onset:** • **Solu-Medrol: 0.5-2 hrs** • Depo-Medrol **6-48 hrs** **Duration** • Depo-Medrol ~**15 days** • **Solu-Medrol: 12-36 hr**	**Onset:** • IM: 8-24 hr **Duration** • IM **: ~ 4 days**
Adverse Effects	Hyperglycemia Disturbance in mood Hypertension	Hyperglycemia Disturbance in mood Hypertension	Hyperglycemia Disturbance in mood Perianal itching
Precautions	adrenocortical insufficiency may result from rapid withdrawal	adrenocortical insufficiency may result from rapid withdrawal	adrenocortical insufficiency may result from rapid withdrawal
Compatibility/ Comment	Refrigerated Prednisolone is more palatable	Incompatible with calcium chloride/gluconate and **magnesium sulfate**	Incompatible with calcium chloride/gluconate and **magnesium sulfate**
Location in GHS	Zone 2, Zone 3, Trauma Pyxis	Zone 2, Zone 3, Trauma Pyxis	Zone 2, Zone 3, Trauma Pyxis

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What are the Benefits of Corticosteroids ?

- **Asthma: ↑ in peak expiratory flow rate (PEFR)**
- **COPD:** ↓ duration of mechanical ventilation, NIV failures, ↓ hopsital LOS, improvement in lung function and dyspnea over the first 72 hours

What route to administer corticosteroids in Asthma/COPD Exacerbation ?

- Current guidelines for the management of COPD and asthma recommend low-dose **oral** corticosteroids for the treatment of exacerbations
- Comparisons of oral prednisone and intravenous corticosteroids have **not shown differences** in the rate of improvement of lung function or in the length of the hospital stay

What is the optimal duration of corticosteroid therapy?

Asthma: Guidelines recommend 5-10 days of therapy
COPD: GOLD guidelines recommmend no longer than 5-7 days

How to manage corticosteroids and discharged patients

Oral: Discharge with 40 to 60 mg of prednisone (or equivalent) in single daily dose for a total of 5 to 10 days

IM: Prior to discharge administer a single depot dose of dexamethasone 10 mg, triamcinolone diacetate 40 mg, or methylprednisolone (Depo-Medrol) 160 mg before discharge

References

1. Micromedex [Electronic version].Greenwood Village, CO: Truven Health Analytics. Retrieved April 1, 2019, from http://www.micromedexsolutions.com/
2. Walters JA,et al. Different durations of corticosteroid therapy for exacerbations of chronic obstructive pulmonary disease. Cochrane Database Syst Rev. 2018 Mar 19;3:CD006897. doi: 10.1002/14651858.CD006897.pub4.
3. Lazarus SC, et al. Clinical practice. Emergency treatment of asthma. N Engl J Med. 2010 Aug 19;363(8):755-64
4. Woods JA, et al. Corticosteroids in the treatment of acute exacerbations of chronic obstructive pulmonary disease. Int J Chron Obstruct Pulmon Dis. 2014 May 3;9:421-30
5. Global Strategy for Asthma Management and Prevention, Global Initiative for Asthma (GINA). www.ginasthma.org
6. Vogelmeier CF, et al. Global Strategy for the Diagnosis, Management, and Prevention of Chronic Obstructive Lung Disease 2017 Report. GOLD Executive Summary. Am J Respir Crit Care Med. 2017 Mar 1;195(5):557-582.
7. Walls. R, et al. (2018). *Rosen's emergency medicine: Concepts and clinical practice* (9th ed.). Philadelphia, PA: Elsevier/Saunders.
8. Niewoehner DE, et al. Effect of systemic glucocorticoids on exacerbations of chronic obstructive pulmonary disease. Department of Veterans Affairs Cooperative Study Group. *N Engl J Med*. 1999;340(25):1941-1947.

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