

ASTHMA IN PREGNANCY – ANMC CLINICAL GUIDELINE

Section I: Background

Asthma complicates 4-8% of pregnancies. It has been associated with increased rates of premature birth, fetal growth restriction, and preeclampsia. The pathogenesis of asthma involves airway inflammation, and treatment is directed at decreasing airway reactivity and preventing maternal and fetal hypoxia. None of the drugs used in the treatment of asthma are teratogens.

A hand-held peak expiratory flow meter is the simplest and most objective method of evaluating pulmonary function in a pregnant patient with wheezing. A normal peak expiratory flow rate (PEFR) is between 350-550 L/min and is not changed from non-pregnant values. A PEFR of >80% of the patient's normal value is consistent with mild symptoms, and a value <50% of her norm is associated with severe asthma.

Consider these three questions early in your evaluation:

How often are you taking your albuterol?

How are you sleeping? Night time coughing?

How have your peak flows been?

As you see below, please emphasize inhaled corticosteroids over prn treatment with beta agonists. Treatment is "stepped up" based on severity of symptoms as determined by to the following 4 category classification:

CLASSIFICATION OF ASTHMA SEVERITY

MILD INTERMITTENT:

-symptom frequency 2 days per week or less, nighttime symptoms 2x per month or less, no interference with normal activity

MILD PERSISTENT:

-symptoms more than 2x per week, nighttime symptoms more than 2x per month, minor limitation of normal activities

MODERATE PERSISTENT:

-daily symptoms, nighttime symptoms more than once per week, some limitation of normal activities

SEVERE PERSISTENT:

-symptomatic throughout the day, nighttime symptoms 4x per week or more, extremely limited activities

Preferred pharmacologic step therapy of asthma during pregnancy (NAEPP*)

- Mild intermittent: inhaled short acting beta² agonist as needed
- Mild persistent: low dose inhaled glucocorticoid
- Moderate persistent: medium dose inhaled glucocorticoid -or-
 low dose inhaled glucocorticoid plus long-acting beta agonist
 medium dose inhaled glucocorticoid plus long-acting beta agonist, if needed
- Severe persistent: high dose inhaled glucocorticoid plus long-acting beta agonist (prednisone if needed)

*National Asthma Education and Prevention Program

Section II: Management

MAINTENANCE TREATMENT OF ASTHMA IN PREGNANCY

MILD INTERMITTENT:

- no daily medications
- short-acting beta agonist (e.g., albuterol inhaler 2 puffs Q4H as needed)

MILD PERSISTENT:

- low-dose inhaled corticosteroid (e.g., fluticasone [Flovent] 100 mcg per puff 2 puffs BID, -or- budesonide [Pulmicort] 200 mcg per puff 2 puffs BID)
- prn albuterol inhaler as above

MODERATE PERSISTENT:

- low-dose inhaled corticosteroid + long-acting beta agonist (e.g., fluticasone 100 mcg + salmeterol 50 mcg per puff [Advair] 2 puffs BID; may increase to 4 puffs BID)
- prn albuterol as above
- consider adding a leukotriene receptor antagonists (e.g., montelukast [Singulair] 10 mg PO daily)

SEVERE PERSISTENT:

- high dose inhaled corticosteroid + long-acting beta agonist (e.g., fluticasone 250-500 mcg + salmeterol 50 mcg per puff [Advair] 2-4 puffs BID)

- prn albuterol as above
- consider adding montelukast as above
- consider adding oral corticosteroid (e.g., prednisone 40-60 mg PO daily tapered over 7-10 days)
- consider adding oral antibiotic (e.g., amoxicillin 500 mg PO TID x5-7 days –or- azithromycin 250 mg PO BID x 4 days) if superimposed infection suspected (URI symptoms, purulent sputum)

ACUTE ASTHMA IN PREGNANCY

Acutely worsening symptoms, unresponsive to the patient's usual medical regimen, and requiring emergency treatment, may pose severe maternal and/or fetal consequences. Physical examination, monitoring oxygen saturation, PEFr, and possibly arterial blood gases, are indicated. The absence of wheezing ("tight chest") may indicate severe respiratory obstruction.

Normal blood gases in pregnancy (at sea level) are:

pH	7.44±0.4
pCO ₂	29±3
pO ₂	95±9
HCO ₃	22±2
BE	4±3

- Unlike in non-pregnant patients, a pCO₂ >35 is a danger sign of significant CO₂ retention, and a pCO₂ >42 may signal the need for ICU admission and intubation.
- A PEFr <50% may also indicate the need for hospitalization.

PHARMACOLOGIC MANAGEMENT OF ACUTE ASTHMA

- albuterol by MDI 4-8 puffs Q20 min x4 h –or-
- albuterol by nebulizer 5 mg Q20 min x3 doses
- consider ipratropium by nebulizer 500 mcg Q20 min x3 doses –or-
- ipratropium by MDI 4-8 puffs Q20 min x3 doses
- prednisone 40-80 mg PO in a single or divided dose
- consider methylprednisolone [Solu-Medrol] 60-80 mg IV Q6-12 h
- consider MgSO₄ 2 g IV over 20 min
- consider terbutaline 0.25 mg SQ Q20 min x 3 doses
- supplemental O₂ by re-breather mask to maintain O₂ saturation >95%
- IV fluids to maintain perfusion
- consider antibiotics if signs or symptoms of respiratory infection

PERIPARTUM MANAGEMENT OF WOMEN WITH ASTHMA

Use these:

- oxytocin is the drug of choice for control of postpartum hemorrhage
- prostaglandin E1 (misoprostol [Cytotec] does not cause bronchoconstriction and is safe

- epidural analgesia is preferred
- women on maintenance steroids should receive “stress dose” steroids in labor (e.g., hydrocortisone [Solu-Cortef] 100 mg IV q8h during labor and x24 h postpartum
- none of the drugs used for asthma contraindicate breast feeding

Use with caution or don't use these:

- methylergonovine and prostaglandin F2a (carboprost [Hemabate] are best avoided
- caution is required with use of both narcotic analgesics and NSAIDs

REFERENCES

1. Asthma in pregnancy. ACOG Practice Bulletin No. 90. American College of Obstetricians and Gynecologists. Obstet Gynecol 2008; 111:457–64. (Re-affirmed 2016)
2. UpToDate 2016. Management of asthma in pregnancy. (Accessed 7/13/18)
https://www.uptodate.com/contents/management-of-asthma-during-pregnancy?search=Management%20of%20asthma%20in%20pregnancy&source=search_result&selectedTitle=1~150&usage_type=default&display_rank=1
3. National Heart, Lung, and Blood Institute; National Asthma Education and Prevention Program Asthma and Pregnancy Working Group. NAEPP expert panel report. Managing asthma during pregnancy: recommendations for pharmacologic treatment-2004 update. J Allergy Clin Immunol. 2005 Jan;115(1):34-46.
4. Dombrowski MP, et al. Asthma during pregnancy. Obstet Gynecol 2004; 103:5-12.
5. Namazy JA, Schatz M. Pregnancy and asthma: recent developments. Curr Opin Pulm Med 2005; 11:56-
6. Guidelines for the Diagnosis and Management of Asthma (EPR-3). National Asthma Education and Prevention Program <http://www.nhlbi.nih.gov/guidelines/asthma/index.htm> (Accessed 7/13/18)

Revised 7/13/18njm
Revised 8/16/16 njm
Revised 8/18/14 njm
Approved 7/16/12