February 7, 2008 — The American College of Obstetricians and Gynecologists (ACOG) has issued a practice bulletin for management of asthma during pregnancy. The new recommendations appear in the February issue of *Obstetrics & Gynecology*.

"Asthma is a common, potentially serious medical condition that complicates approximately 4–8% of pregnancies," write Mitchell P. Dombrowski, MD, Michael Schatz, MD, MS, and colleagues from the ACOG Committee on Practice.
Bulletins. "In general, the prevalence of and morbidity from asthma are increasing, although asthma mortality rates have decreased in recent years. The purpose of this document is to review the best available evidence about the management of asthma during pregnancy."

Specific recommendations based on limited or inconsistent scientific evidence (level B) are as follows:

- During pregnancy, it is safer for women with asthma to be treated with asthma medications than to have asthma symptoms and exacerbations.

- The clinical assessment of asthma includes both subjective evaluations as well as pulmonary function tests.

- During pregnancy, the main goal of asthma treatment is to maintain sufficient oxygenation of the fetus by preventing hypoxic episodes in the mother.

- The step-care therapeutic approach entails increasing both the number and dosage of medications as asthma severity increases.

- For persistent asthma during
pregnancy, first-line controller therapy consists of inhaled corticosteroids.

- During pregnancy, budesonide is the preferred inhaled corticosteroid.

- For pregnant women with asthma, recommended rescue therapy is inhaled albuterol.

- Maternal well-being can be improved, with less need for medication, by identifying and controlling or avoiding exposure to tobacco smoke and other allergens and irritants.

- Continuing immunotherapy is recommended for women who are at or near a maintenance dose, who are not having adverse reactions to the injections, and who seem to be deriving clinical benefit.

- In general, only small amounts of asthma medications enter breast milk. During breast-feeding, use of prednisone, theophylline, antihistamines, inhaled corticosteroids, beta2-agonists, and cromolyn is therefore not contraindicated.

"Mild and well-controlled moderate asthma can be associated with excellent
maternal and perinatal pregnancy outcomes," the bulletin authors write. "Severe and poorly controlled asthma may be associated with increased prematurity, need for cesarean delivery, preeclampsia, growth restriction, other perinatal complications, and maternal morbidity and mortality."

Additional recommendations and conclusions that are based primarily on consensus and expert opinion (level C) are as follows:

- Asthma self-management skills can enhance asthma control. These include self-monitoring, knowledge concerning correct use of inhalers, compliance with a plan for long-term asthma management, and promptly addressing signs of worsening asthma.

- Spirometry is the preferred method for pulmonary function testing during outpatient visits. However, peak expiratory flow measurement with a peak flow meter is also adequate.

- For women with moderate or severe asthma during pregnancy, ultrasound and antenatal fetal testing should be considered.
Pregnant patients with asthma should be monitored with testing of peak expiratory flow rate and forced expiratory volume in 1 second as well as by following their symptoms during pregnancy. This applies even to women with mild or well-controlled disease.

Pregnant women with persistent asthma should undergo routine evaluation of pulmonary function, because pulmonary function and asthma severity may change during the course of pregnancy.

"Research consistently shows that women with well-controlled asthma can have healthy pregnancies with excellent maternal and perinatal outcomes," coauthor Dr. Dombrowski says in a news release. "The ultimate goal of controlling asthma during pregnancy is to ensure that the fetus continues to get adequate oxygen by preventing asthma attacks."

Recommendations for step therapy medical management of asthma during pregnancy are as follows:

- For mild intermittent asthma, albuterol should be given as needed, with no regular daily medications.
For mild persistent asthma, the preferred regimen is a low-dose inhaled corticosteroid, with alternative treatments being cromolyn, a leukotriene receptor antagonist, or theophylline to a target serum level of 5 to 12 µg/mL.

For moderate persistent asthma the preferred treatment is a low-dose inhaled corticosteroid and salmeterol or medium-dose inhaled corticosteroid or medium-dose inhaled corticosteroid and salmeterol if needed. An alternative regimen is a low-dose or medium-dose (if needed) inhaled corticosteroid with either a leukotriene receptor antagonist or theophylline to a target serum level of 5 to 12 µg/mL.

For severe persistent asthma, preferred treatment is a high-dose inhaled corticosteroid and salmeterol, plus oral corticosteroid if needed. An alternative regimen is a high-dose inhaled corticosteroid and theophylline to a target serum level of 5 to 12 µg/mL, plus an oral corticosteroid if needed.

As a proposed performance measure, this practice bulletin recommends the percentage of pregnant patients with
persistent asthma who have undergone pulmonary function testing.

"Optimal management of asthma during pregnancy includes objective monitoring of lung function, avoiding or controlling asthma triggers, educating patients, and individualizing pharmacologic therapy to maintain normal pulmonary function," the bulletin authors conclude. "The step-care therapeutic approach uses the lowest amount of drug intervention necessary to control a patient's severity of asthma."


**Clinical Context**

To decrease airway responsiveness and prevent asthma symptoms, current medical management for asthma mandates treatment of airway inflammation. According to the National Asthma Education and Prevention Program, it is safer during pregnancy for women with asthma to be treated with asthma medications than it is for them to have asthma symptoms and exacerbations.

During pregnancy, the ultimate goal of asthma therapy is to maintain adequate fetal oxygenation by preventing hypoxic
episodes in the mother. The purpose of this ACOG Practice Bulletin is to review the best available evidence concerning asthma management during pregnancy.

**Study Highlights**

- There can be excellent maternal and perinatal pregnancy outcomes with mild or well-controlled moderate asthma.

- However, severe and poorly controlled asthma may lead to prematurity, need for cesarean delivery, preeclampsia, growth restriction, other perinatal complications, and maternal morbidity and mortality.

- Treatment recommendations for optimal asthma control during pregnancy, based on level B evidence, are as follows:
  - It is safer for pregnant women with asthma to be treated with asthma medications than to have asthma symptoms and exacerbations.
  - Clinical assessment of asthma includes subjective evaluations and pulmonary function tests.
• The main goal of asthma treatment during pregnancy is to prevent hypoxic episodes in the mother and thereby maintain sufficient fetal oxygenation.

• With use of the step-care therapeutic approach, both the number and the dosage of medications increase as severity of asthma increases.

• Inhaled corticosteroids are first-line controller therapy for persistent asthma during pregnancy.

• Budesonide is the preferred inhaled corticosteroid.

• Recommended rescue therapy is inhaled albuterol.

• Controlling or avoiding exposure to tobacco smoke and other allergens and irritants can improve maternal well-being and reduce the need for medication.

• Continuing immunotherapy is recommended for women who are at or near a maintenance dose, who are not having adverse reactions to the
injections, and who seem to be receiving clinical benefit.

- Use of prednisone, theophylline, antihistamines, inhaled corticosteroids, beta2-agonists, and cromolyn during breast-feeding is not contraindicated.

- Recommendations for step therapy medical management of asthma during pregnancy are as follows:
  - For mild intermittent asthma, give albuterol as needed, with no regular daily medications.
  - For mild persistent asthma, a low-dose inhaled corticosteroid is preferred; alternative treatments are cromolyn, a leukotriene receptor antagonist, or theophylline (5 - 12 µg/mL).
  - For moderate persistent asthma the preferred treatment is a low-dose inhaled corticosteroid and salmeterol or a medium-dose inhaled corticosteroid, or a medium-dose inhaled corticosteroid and salmeterol if needed.
• For moderate persistent asthma, an alternative regimen is a low-dose or medium-dose (if needed) inhaled corticosteroid with either a leukotriene receptor antagonist or theophylline (5 - 12 µg/mL).

• For severe persistent asthma, a high-dose inhaled corticosteroid and salmeterol, plus oral corticosteroid if needed, is preferred.

• For severe persistent asthma, alternative treatment is a high-dose inhaled corticosteroid and theophylline (5 - 12 µg/mL), plus oral corticosteroid if needed.

• A proposed performance measure is the percentage of pregnant patients with persistent asthma who have undergone pulmonary function testing.

Pearls for Practice

• The ultimate goal of asthma therapy during pregnancy is to prevent hypoxic episodes in the mother, thereby maintaining adequate fetal
oxygenation. Optimal management of asthma during pregnancy includes objective monitoring of lung function, avoiding or controlling asthma triggers, patient education, and individualizing pharmacotherapy to maintain normal pulmonary function.

- The step-care therapeutic approach uses the lowest amount of drug intervention needed to control asthma, with specific recommendations based on degree of asthma severity.

CME/CE Test

Question 1 of 2

Based on the ACOG Practice Bulletin, which of the following is a recommendation for optimal asthma control during pregnancy, based on level B evidence?

- Pharmacotherapy should not be given because of potential fetal harm
Based on the ACOG Practice Bulletin, which of the following statements about the step-care therapeutic approach is not correct?

- Use of theophylline is contraindicated during breastfeeding
- Immunotherapy should be discontinued in all pregnant women
- Inhaled corticosteroids are first-line controller therapy for persistent asthma

For mild persistent asthma, a low-dose inhaled corticosteroid is preferred.
For severe persistent asthma, an oral corticosteroid should not be given.

For moderate persistent asthma, the preferred treatment is a low-dose inhaled corticosteroid and salmeterol or a medium-dose inhaled corticosteroid, or a medium-dose inhaled corticosteroid and salmeterol if needed.

For mild intermittent asthma, albuterol should be given as needed.
New Guidelines Issued for Management of Asthma During Pregnancy

Medscape Medical News © 2008 Medscape, LLC

The material presented here does not necessarily reflect the views of Medscape or companies that support educational programming on www.medscape.com. These materials may discuss therapeutic products that have not been approved by the US Food and Drug Administration and off-label uses of approved products. A qualified healthcare professional should be consulted before using any therapeutic product discussed. Readers should verify all information and data before treating patients or employing any therapies described in this educational activity.