Frimley Health
NHS Foundation Trust

Asthma in Pregnancy

Key Points

- The majority of women with asthma have normal pregnancies and the risk of complications is small in those with well-controlled asthma.
- Women should be advised regarding the importance and safety of continuing their asthma medications during pregnancy to ensure good asthma control.
- If anaesthesia is required, regional blockade is preferable to general anaesthesia in women with asthma due to the potential risk of bronchospasm with certain inhaled anaesthetic agents.
- Women with asthma should be encouraged to breastfeed since breastfeeding reduces the risk of asthma in the baby.
- There should be close liaison between the respiratory physician and obstetrician, with early referral to critical care physicians for women with acute severe asthma.

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Abbreviations

MDT	Multi-Disciplinary Team
DR CTG	Dawes-Redman Cardiotocography
TTN	Transient Tachypnoea of the New-born
BTS	British Thoracic Society
SIGN	Scottish Intercollegiate Guideline Network
AMU	Acute Medical Unit
MAU	Medical Assessment Unit
A&E	Accident and Emergency
PPH	Postpartum Haemorrhage

Contents

1. INTRODUCTION

Asthma is a common condition that affects 4% to 8% of pregnant women, making it the most common chronic condition in pregnancy. It is characterised by reversible bronchoconstriction with smooth muscle spasms and inflammation/excessive production of mucous.

Symptoms include wheeze, cough, shortness of breath and chest tightness. These are frequent and recurrent and particularly worse at night and in the early morning.

Symptoms may occur in response to triggers e.g. house dust mite, pollen, pets, animal dander, smoking, exercise, exposure to cold or damp air, emotion or laughter, food and drinks such as dairy produce, alcohol, peanuts and orange juice, additives such as monosodium glutamate and tartrazine, medical conditions, such as upper respiratory tract infections and gastric reflux, medications such as aspirin, beta blockers).

In the four confidential enquiries into maternal deaths in UK covering 1994-2005, there were 17 maternal deaths from asthma. Maternal Mortality report 2013-2015 reported 2 deaths from asthma-one woman died due to non-compliance to steroid inhalation treatment. The 2014-2017 and the recent 2017-2019 reports did not mention of any further death related to asthma which may reflect better MDT care and patient compliance.

1.1 Effect of pregnancy on course of asthma

In general, about one third of patients experience improvement of asthma during pregnancy, one third experience a worsening of asthma during pregnancy commonly caused by reduction or even complete cessation of medication due to fears about its safety and one third remain the same.

For women with severe asthma, control is more likely to deteriorate (around 60% of cases) compared to women with mild asthma (around 10% of cases). If symptoms do worsen, this is most likely in the second and third trimesters, with the peak in the sixth month and asthma course is usually similar in successive pregnancies.

Patients are least likely to have an asthma exacerbation in the last month of pregnancy.

1.2 Effect of asthma on pregnancy

For the majority of women with pre-existing well controlled asthma, there does not appear to be an increased risk of adverse maternal or fetal complication. There is some association between asthma and following conditions: hyperemesis, gestational hypertension& pre-eclampsia, preterm births and preterm labour, fetal growth restriction, higher frequency of caesarean section neonatal morbidity (TTN, admission to neonatal unit with hypoxia and seizures). Those women with pre-existing severe and/or poorly controlled asthma are at an increased risk of pre-eclampsia, premature labour and iatrogenic birth, fetal growth restriction and low birthweight babies. These risks increase with the frequency and duration of acute episodes of exacerbation.

1.3 Effects of asthma in labour and post-natal period

Asthma does not usually affect labour or delivery due to increased endogenous steroids with less than a fifth of women experiencing an exacerbation during labour and severe or life-threatening exacerbations are very rare.
Additionally, in the postpartum period there is no increased risk of asthma exacerbations and within a few months after delivery a woman's asthma severity typically reverts to its pre-pregnancy level.

2. ANTENATAL MANAGEMENT OF ASTHMA

All pregnant women with asthma need to be closely reviewed throughout pregnancy, irrespective of disease severity to optimise therapy and maximise lung function in order to reduce the risk of acute exacerbations of asthma. In general, women with mild asthma with no previous hospital admissions, well controlled on inhaled medication are managed in the community unless they have exacerbations during pregnancy or need review of their medications, when they can be referred to consultant led care.

Those women with severe or poorly controlled asthma should be under the care of an obstetrician with a special interest in maternal medicine, in conjunction with a respiratory physician.

The intensity of antenatal maternal and fetal surveillance should be based on the severity of asthma, i.e., current need for therapy, symptom control, exacerbation frequency including high-dose corticosteroid usage and hospitalisation and lung function, for example, peak flow and spirometry together with the risk of fetal complications warranting serial growth scans.

Patient education is the cornerstone of asthma management and needs to include their understanding of the condition and its management, trigger avoidance, reassurance regarding asthma medications to improve compliance for asthma control, adequate use of devices, and the importance of adherence to medication together with the construction of personal action plans such as home peak flow monitoring and personalised self-management plans.

Smoking cessation (passive and active) is important in reducing symptoms. The efficacy of inhaled corticosteroids is reduced in asthmatics who smoke. Women who smoke should be advised about the dangers for themselves and their babies and appropriate support should be provided to stop smoking.

The British Thoracic Society recommends a stepwise approach to the management of asthma (same as non-pregnant women) with treatment starting at the most appropriate step to the initial severity of their asthma, moving up to improve control as needed and down to find and maintain the lowest controlling step.

The following drugs are safe in pregnancy and lactation:

- β 2 agonists (both long and short acting), e.g., salbutamol, salmeterol
- Inhaled corticosteroids, e.g., beclometasone, budesonide, fluticasone
- Oral corticosteroids, e.g., prednisolone (note prednisolone is metabolised by the placenta and only 10% reaches the fetus. Long-term oral steroids will increase the risk of gestational diabetes and therefore appropriate screening should be performed).
- Inhaled corticosteroid and long-acting beta-agonist combination therapy, e.g., Seretide®
- Theophyllines (both oral and intravenous) (note during pregnancy protein binding decreases; the free level of drug will increase; and so, a lower therapeutic range may be appropriate)
- Inhaled cromoglicate
- Inhaled anticholinergics, e.g., Atrovent

Leukotriene receptor antagonists, e.g., montelukast have limited safety data in pregnancy therefore they should only be continued in women who have demonstrated significant improvement in asthma control with these agents prior to pregnancy not achievable with other medications. Starting these medications in pregnancy is not advised.

Anti-IgE is the only biological therapy available for asthma. This therapy should only be prescribed in specialist tertiary asthma centers and although it is not recommended during pregnancy it needs to be considered in light of the risk–benefit ratio on an individual patient basis. Methotrexate is contraindicated in pregnancy.

3. MANAGEMENT OF ASTHMA DURING LABOUR

- Women should continue with all their usual asthma medications during labour. There is no evidence that inhaled β agonists are tocolytic.
- Women who have received prednisolone in excess of 7.5mg/day for more than 2 weeks prior to labour should receive hydrocortisone 100mg IV 6-8hourly during labour and until oral prednisolone can be restarted.
- Women may safely use all forms of pharmacological pain relief including Entonox (50% nitrous oxide plus 50% oxygen), intravenous and intramuscular opioids, epidural or combined spinal–epidural analgesia
- Induction of labour is the same as for those who are not asthmatic. Both Propess and Prostin are PGE2 analogues which are safe to use in women with asthma.

Misoprostol (PGE1 analogue) is safe to use for induction of labour for women with intra uterine fetal death or undergoing termination of pregnancy.

- In the absence of acute severe asthma, caesarean sections should only be done for obstetric reasons as postpartum exacerbation of asthma is increased, mainly thought to be due to postoperative pain with diaphragmatic splinting, hypoventilation, and atelectasis. Regional blockade is preferable to general anaesthesia due to the potential risk of bronchospasm with certain inhaled anaesthetic agents.

Safe & Avoid
In the management of postpartum haemorrhage, caution should be exercised when using prostaglandin F2α (Carboprost/Hemabate®) as it may cause bronchospasm. Similarly, Carbetocin (long-acting synthetic agonist analogue of human oxytocin) should be used cautiously for PPH prophylaxis in caesarean sections in women with asthma.

Ergometrine can also cause bronchospasm, particularly in association with general anaesthesia, however this does not occur with Syntometrine (Syntocinon and Ergometrine). Syntometrine can therefore be used for the third stage and prophylaxis of PPH as usual.

4. POSTNATAL MANAGEMENT AND BREASTFEEDING

- Women with asthma should be encouraged to breastfeed since breastfeeding reduces the risk of asthma in the baby. The risk of atopic disease developing in the child of a woman with asthma is about 1 in 10, or 1 in 3 if both parents are atopic.
- Women should be advised to continue all their usual asthma medications, including oral steroids as studies have shown them to be safe in nursing mothers, with very little excreted into the breast milk.
- Paracetamol, either orally or IV is the analgesic of choice. Oral morphine can be considered for short-term use. Non-steroidal anti-inflammatory drugs (NSAIDs) such as ibuprofen or diclofenac may cause bronchospasm in some asthmatic women. Although some asthmatic women are able to take NSAIDs without any problems. NSAIDs should not be given routinely to asthmatic women unless the woman gives a clear history of previous use without complications.

5. MANAGEMENT OF AN ACUTE ASTHMA ATTACK

- Acute severe asthma is a **medical emergency** and should be treated in hospital in conjunction with the respiratory physicians in a medical setting such AMU/MAU or ED.

- **There should be an MDT approach to care as** there are a number of factors that are important in pregnancy. These include:

  Interpretation of arterial blood gases is different in pregnancy. The normal physiology of pregnancy whereby progesterone increases minute ventilation results in a relative hypocapnia and respiratory alkalosis. Therefore, hypercapnia and acidosis are extremely worrying sign. Acidosis is also poorly tolerated by the fetus.

  Impaired ventilatory mechanics in late pregnancy result in earlier desaturations than in non-pregnant women.

  Pregnant women are more difficult to intubate due to anatomical changes, particularly if they also have pre-eclampsia.

- Exacerbations of asthma should be managed in line with current guidelines from British Thoracic Society/Scottish Intercollegiate Guidelines Network.

- Treatment should therefore be **no different** from the emergency management outside of pregnancy and women should be treated vigorously.

Management of an acute exacerbation of asthma in pregnancy should include:

- High flow oxygen to maintain oxygen saturations >94% in order to prevent both maternal and fetal hypoxia

  Drug therapy should be **the same** as for the non-pregnant patient.

  β2 agonists administered via nebulizer which may need to be given repeatedly (5mg nebulised salbutamol)

- Nebulised ipratropium bromide should be added for severe or poorly responding asthma (0.5mg 4-6 hourly)
- Corticosteroids (IV hydrocortisone 100mg) and /or oral (40-50mg prednisolone for at least 5 days)
- Chest radiograph should be performed if there is any clinical suspicion of pneumonia or pneumothorax or if the woman fails to improve
- Management of life threatening or acute severe asthma that fails to respond should involve consultation with the critical care team and consideration should be given IV β2 agonists, IV magnesium sulphate and IV aminophylline.

Continuous fetal monitoring should be performed during an acute exacerbation, or when fetal assessment (preferably by DR CTG) on admission is not reassuring.

Consideration should be given to early referral to critical care services as impaired ventilatory mechanics in late pregnancy can lower functional residual capacity and may result in earlier oxygen desaturation.

6. MONITORING

This guideline will be monitored by individual case review via the maternity risk management group where risk issues are reported.

7. COMMUNICATION:

If there are communication issues (eg English as a second language, learning difficulties, blindness/partial sightedness, deafness) staff will take appropriate measures to ensure the patient (and her partner, if appropriate) understand the actions and rationale behind them.

8. EQUALITY AND DIVERSITY ASSESSMENT:

This guideline has been subject to an equality impact assessment.

9. PATIENT SUPPORT

- Asthma UK www.asthma.org.uk. Helpline 0300 222 5800 9am-5pm from Monday to Friday
- Asthma and Pregnancy NHS https://www.nhs.uk/conditions/pregnancy-and-baby/asthma-pregnant/
- Asthma in Pregnancy - Scottish Intercollegiate Guidelines Network (SIGN) - Patient Information Leaflet available on request, contact 0131 623 4720

10. REFERENCES

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This guideline has been registered with the trust. However, clinical guidelines are guidelines only. The interpretation and application of clinical guidelines will remain the responsibility of the individual clinician. If in doubt contact a senior colleague or expert. Caution is advised when using guidelines after the review date. This guideline is for use in Frimley Health Trust hospitals only. Any use outside this location will not be supported by the Trust and will be at the risk of the individual using it.

Version Control Sheet

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Related Documents

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