

Position Statement

Asthma management in pregnancy

Key points

- Asthma is the most common chronic disease in pregnancy
- The safety of short acting beta agonists and inhaled corticosteroids in pregnancy has been established
- Good preventive treatment is important and can improve maternal and infant outcomes
- Exacerbations should be treated as aggressively in pregnant as in non-pregnant women
- Every pregnant woman who has asthma should have a written asthma action plan
- It is more dangerous to have untreated asthma during pregnancy than to continue with the prescribed medications

1. Purpose of this statement

The aim of this position statement is to improve the quality of care for women with asthma during pregnancy, and was developed with the following objectives:

- Provide an evidence-based approach to the management of asthma in pregnant women
- Improve consistency in the management of asthma in pregnant women;
- Assist health care providers with information to counsel pregnant women with asthma;
- Reduce maternal anxiety about their asthma and
- Improve outcomes for women and their babies.

2. Target audience

This statement aims to raise awareness among health care providers including obstetricians, midwives, GPs and specialists in obstetric medicine, of the increased risks of asthma in pregnancy and to provide practical advice for its management.

An additional section for women with asthma is included to assist women in talking about their asthma at antenatal appointments, with suggested questions to ask their doctor or midwife and to better understand self-care and clinical management.

3. Background

Asthma prevalence in pregnancy

Asthma is the most common chronic disease in pregnancy, affecting at least 1 in every 8 pregnant women in Australia¹. This makes asthma as common as gestational diabetes² and more common than hypertensive disorders in pregnancy³.

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4. Asthma management in pregnancy

Asthma treatment in pregnancy

Asthma is primarily treated with reliever and controller medications. Relievers (including short acting and long acting beta agonists) are bronchodilators which treat the symptoms of asthma, while controllers such as inhaled corticosteroids (ICS) reduce the underlying inflammation.

There is an abundance of reassuring safety data for the use of short acting beta agonists during pregnancy (particularly for salbutamol)⁴, and for the use of ICS during pregnancy (particularly for budesonide)⁵.

Long acting beta agonists (LABA) may be used in combination with ICS in pregnancy. There is less safety data available for LABA, however recommendations from the National Asthma Council suggest continuing with asthma medications during pregnancy, as there are more risks associated with untreated asthma during pregnancy.

Asthma exacerbations in pregnancy

Exacerbations (or asthma attacks or flare-ups) are a common clinical problem in pregnancy. It is well described that at least one third of women experience a worsening of their asthma symptoms with pregnancy⁶, with 20-45% of women^{7,8} experiencing exacerbations which require medical intervention (unscheduled GP visit, emergency department presentation, hospital admission, or course of rescue oral corticosteroids). Exacerbations can occur any time during pregnancy⁸⁻¹⁰ and, although uncommon, can occur during labour and birth⁶. Exacerbation treatment should be aggressive, and similar to that for non-pregnant women^{11,12}.

Pregnancy outcomes for women with asthma

Maternal asthma itself is associated with an increased risk of a range of adverse perinatal outcomes¹³⁻¹⁵. These include low birth weight, preterm birth, pre-eclampsia¹³, gestational diabetes, placenta previa, antepartum haemorrhage, postpartum haemorrhage, placental abruption, premature rupture of membranes¹⁵, congenital malformations, neonatal hospitalisation and perinatal mortality¹⁴.

In particular, exacerbations of asthma are associated with even greater risks of some poor outcomes. Notably, low birth weight is 3 times more likely among women with exacerbations compared to women with asthma but no exacerbations¹⁶, and preterm birth is 50% more likely among women with exacerbations requiring rescue oral corticosteroids during pregnancy, than women with asthma but not requiring oral steroid use¹⁶. However, studies show that many perinatal outcomes for women with asthma are equivalent to women without asthma when asthma is well-controlled¹⁷ and when ICS medications are used^{18,19}. Evidence from a systematic review of the observational literature suggests that active asthma management in pregnancy may mitigate some of the increased risks, particularly for preterm birth¹³, neonatal hospitalisation¹⁴ and gestational diabetes¹⁵.

Interventions to improve maternal and perinatal outcomes

There is a lack of high quality studies testing interventions to improve maternal and perinatal outcomes in this population. A 2014 Cochrane review described 8 randomised controlled trials in the area, of which 5 trials tested pharmacological interventions and 3 trials tested non-pharmacological interventions²⁰. The only RCT using modern asthma pharmacotherapy, which demonstrated a significant reduction in maternal exacerbations, was the Managing Asthma in Pregnancy (MAP) study²¹. This study compared a treatment adjustment algorithm which assessed eosinophilic lung inflammation (fractional exhaled nitric oxide, FeNO) as well as symptoms (Asthma Control Questionnaire), with a treatment adjustment algorithm using symptoms alone in pregnant asthmatic women who were non-smokers. FeNO is an emerging tool for the assessment of corticosteroid responsive eosinophilic airway inflammation, which can be measured with a non-invasive breath test but still needs to be optimised to account for the effect of maternal smoking on airway inflammation. However the results are promising as in addition to fewer exacerbations, women managed with the FeNO-based approach were also more likely to be

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given ICS during pregnancy, but at a lower dose, and more likely to be given ICS/LABA combination therapy²¹. Follow-up of the children from this trial demonstrated that infants were at significantly reduced risk of recurrent bronchiolitis in the first year of life²², and less likely to have doctor diagnosed asthma at 4-6 years of age²³.

Asthma self-management education during pregnancy

Non-adherence to ICS medication is a common problem, self-reported by approximately 40% of pregnant women with asthma²⁴. Self-management education, which encompasses correction of inhaler technique, discussion about the use of reliever and controller medications during pregnancy and their importance, and the provision of a written asthma action plan, have been associated with improvements in asthma medication knowledge, optimal inhaler technique and non-adherence to ICS, which are sustained during pregnancy²⁴.

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6. Conflict of Interest

The authors declare that they have no conflicts of interest.

7. Date for Revision

Recommendations to be revised every 2 years

8. Resources:

National Asthma Council: Asthma Handbook 2019 Version 2.0

South Australian Perinatal Practice Guidelines

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9. References

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TABLE

Key points for health professionals in identifying and managing asthma in pregnancy

Timing	Clinical Management	Advice for pregnant women
First pregnancy visit / booking visit	<ul style="list-style-type: none"> Review medical history to confirm if the woman has had a diagnosis of asthma from a doctor Establish asthma severity through asthma related events in the past 12 months [Mild asthma: use of reliever medications or symptoms (cough, wheeze, shortness of breath)] [Moderate/severe asthma: Emergency department visit / Hospital admission / oral corticosteroid use / high dose ICS/ unscheduled GP visit / use of reliever >2 days per week (not including short acting beta agonists taken prophylactically before exercise)] Refer women with asthma for an asthma review by a GP (for women with mild asthma) or respiratory physician/obstetric medicine specialist (for women with moderate/severe asthma) For more information on asthma management, refer to the Australian Asthma Handbook (https://www.astmahandbook.org.au/) 	<p>Key messages:</p> <ul style="list-style-type: none"> Controlling asthma by adhering to preventer medication (specifically inhaled corticosteroids [ICS]) protects the baby from the harmful effects of asthma All women should have a written asthma action plan If asthma worsens see the GP immediately If a woman is having trouble breathing and/or medication is not providing relief go to emergency department/call an ambulance
Follow-up visits during pregnancy (monthly)	<ul style="list-style-type: none"> Conduct an asthma health check (assess asthma control) at each antenatal visit by asking these 4 questions: <ol style="list-style-type: none"> Are you waking at night with asthma symptoms (such as wheeze, cough, chest tightness and / or shortness of breath?) Do you have asthma symptoms when waking in the morning? Do your asthma symptoms stop you from doing your normal activities? Have you used your reliever > 2 days in the past week? If woman answers yes to 1 or more, refer for asthma medication review (GP, respiratory physician / obstetric medicine specialist) Consider monitoring of lung function (spirometry, peak flow) and/or airway inflammation (FeNO) 	
Asthma exacerbation	<p><i>An asthma exacerbation is a loss of asthma control and can be classified as mild, moderate or severe. Clinical indicators of moderate or severe acute asthma include being unable to complete sentences, tachycardia (> 120 beats per minute), raised respiratory rate (> 30 beats per minute), moderate to severe wheeze (or chest can sound quiet), oximetry less than 94 %, FEV₁ between 50-75 % predicted (or less than 1 litre)</i></p> <ul style="list-style-type: none"> All asthma exacerbations need to be treated promptly and aggressively with inhaled beta2 agonists, an increase in ICS or ICS+LABA dose if it is a mild exacerbation and oral corticosteroids if clinically indicated. <p>For further information on managing acute asthma see:</p>	

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	<p>http://www.astmahandbook.org.au/figure/show/65</p> <ul style="list-style-type: none"> • If a woman is having an asthma exacerbation during an antenatal appointment refer to ED immediately • During a severe acute asthma episode in a pregnant woman: <ul style="list-style-type: none"> • Monitor oxygen saturation and maintain above 95 % • Consider fetal monitoring using CTG during and after the exacerbation due to the risk of stillbirth and follow-up ultrasound for monitoring growth given the risk of growth restriction in this population especially after an exacerbation • Women with moderate/severe exacerbations of pregnancy could be characterised as high risk; consider inclusion into high risk clinic 	
Hospitalisation for severe asthma exacerbation	<ul style="list-style-type: none"> • Measure SpO₂ / provide supplemental O₂ if required • Fetal monitoring using CTG and/or ultrasound • Nebulised or inhaled bronchodilators as required • If poor response, add IV magnesium sulfate • Consider add-on treatment with systemic corticosteroids (i.e. oral prednisolone or IV hydrocortisone) • At discharge – provide an emergency pack (OCS/ICS) and book follow-up appointments 	
Hospitalisation discharge follow-up	<ul style="list-style-type: none"> • Fetal monitoring within 2 days by CTG and/or ultrasound • Asthma follow-up within 1 week (medication review (including checking and correcting inhaler device technique), lung function, similar to ongoing pregnancy management, reiteration of importance of ICS adherence, update of action plan if required) • Provide an emergency pack if required 	
Labour	<p><i>Intrapartum considerations</i></p> <ul style="list-style-type: none"> • Continue preventer medications in labour and use standard medications to control increased asthma symptoms in labour • Inhaled beta 2 agonists do not impair labour • Prostaglandins are not contraindicated for labour induction • There is no evidence oxytocin causes bronchoconstriction • Occasionally very severe asthma may require an elective delivery at a time when asthma is well controlled <p><i>Labour and acute exacerbations</i></p> <ul style="list-style-type: none"> • During labour consider IV hydrocortisone in women with asthma if they have taken > 5mg oral prednisolone per day for > 3 weeks in the last year or women on any dose of oral corticosteroids and who are cushingoid in appearance (see South Australian Perinatal Guidelines for detail) <p><i>Asthma Exacerbations in labour</i></p>	<p>Key messages:</p> <ul style="list-style-type: none"> • Medication can be continued during labour • Exacerbations of asthma are uncommon in labour • A birth plan established with health care professionals may be useful

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	<p><i>Clinical indicators include unable to complete sentences in one breath, tachycardia (>120 beats per minute), raised respiratory rate (>30 beats per minute), wheeze, and oximetry <94%</i></p> <ul style="list-style-type: none"> • Management of exacerbations includes: Upright position, 100% oxygen via Hudson mask, salbutamol via nebuliser with oxygen, IV hydrocortisone every 6 hrs and consult an intensivist or respiratory physician. Consider IV bolus magnesium sulphate as ordered by an intensivist or respiratory physician. Assess need for ventilatory support if response to above treatment is inadequate 	
Postpartum	<ul style="list-style-type: none"> • Postpartum haemorrhage – prostaglandin E1 may be used but be cautious with use of intra-myometrial PGF2 alpha as this may trigger bronchospasm • Breastfeeding should be encouraged and there is no contraindication with breastfeeding and asthma medications • Postpartum review of asthma management and education (as per baseline asthma review) 	
Tools for monitoring asthma during pregnancy	<ul style="list-style-type: none"> • Spirometry – FEV₁ and FVC are unaltered by pregnancy • Fractional exhaled nitric oxide (FeNO) - a non-invasive measure of eosinophilic lung inflammation 	
Comorbidities that affect asthma severity or are associated with asthma	<p>Consider comorbidities that may affect the woman's asthma, and others that contribute to poor fetal outcomes. Consider multi-disciplinary management of these aspects:</p> <ul style="list-style-type: none"> • Smoking • Depression/anxiety (refer to a guideline on the management of depression and anxiety during pregnancy) • Obesity/diet (refer to PSANZ position statement) • Rhinitis • Reflux • Respiratory viral infections • Gestational diabetes (more common among women with asthma) • Pre-eclampsia (more common among women with asthma) 	<p>Key messages:</p> <ul style="list-style-type: none"> • Don't stop your medications before talking to your doctor. It is important for your asthma to control other medical conditions such as rhinitis, reflux, depression and anxiety. • Maintaining a healthy diet with lots of fruit and vegetables will also help your asthma. • Seek assistance for quitting smoking as it can worsen your asthma and harm your baby. Smoking is known to be associated with stillbirth.

Further information can be accessed in the following guideline documents:

National Asthma Council's Australian Asthma Handbook <https://www.nationalasthma.org.au/health-professionals/australian-asthma-handbook>

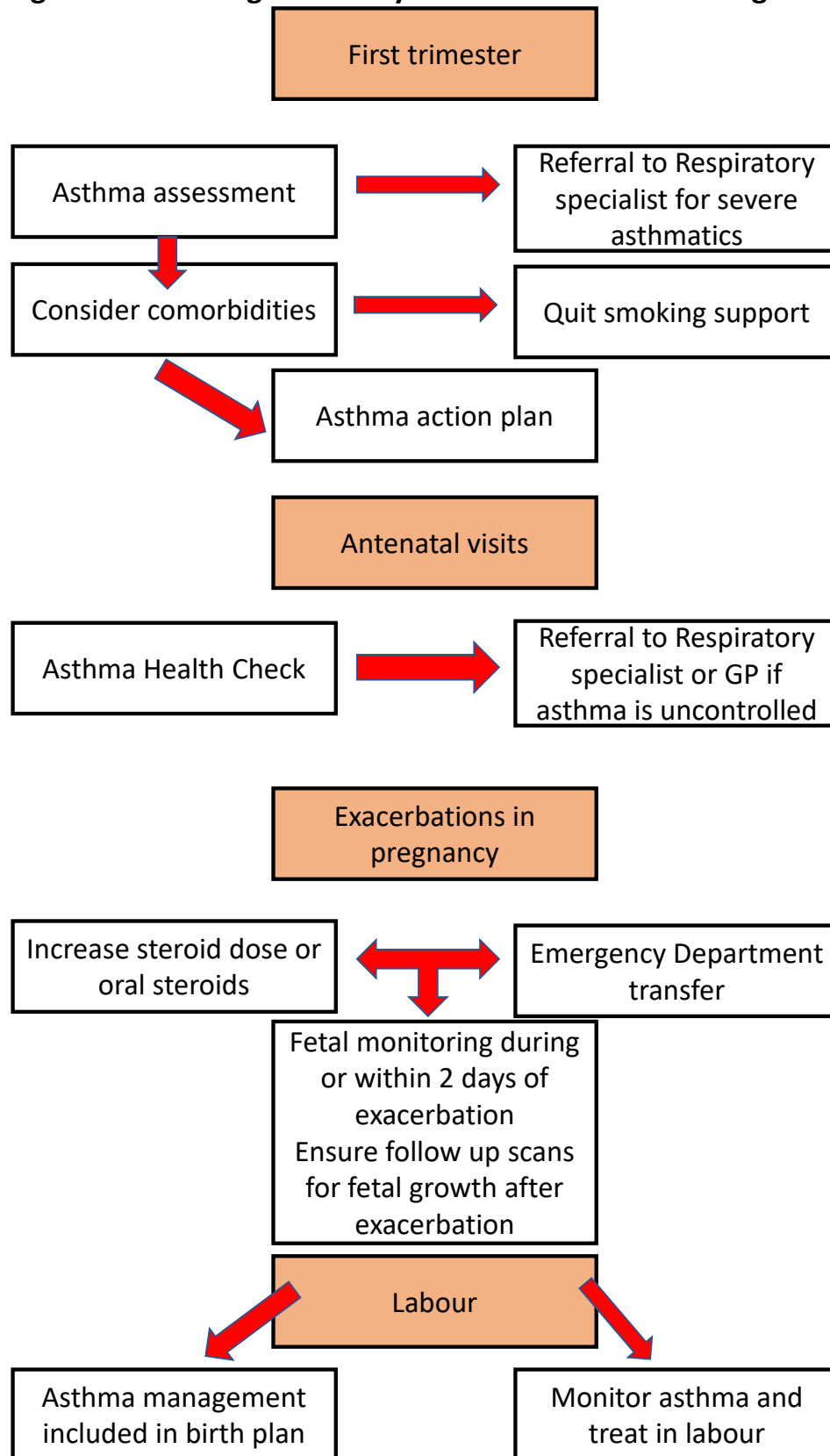
Allergic Rhinitis Treatment Plan

<https://allergy.org.au/patients/allergic-rhinitis-hay-fever-and-sinusitis/allergic-rhinitis-treatment-plan>

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Figure 1: Flow diagram of key actions for asthma management in pregnancy



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APPENDIX A - Checklist of optimal management of asthma in pregnancy

1. Review medications and adherence, check and correct inhaler technique; review and update the asthma action plan
2. Provide self- management education
3. Assess need for influenza vaccination and COVID vaccination in line with antenatal care guidelines
4. Assess smoking status and explore strategies for cessation
5. Assess asthma control at each visit and reiterate importance of asthma control for normal fetal growth
6. Avoid or minimise asthma triggers where possible and minimise exposure to known allergens and irritants (including cigarette smoke)
7. Assess co-morbidities which may affect asthma (rhinitis, gastro-oesophageal reflux, depression and anxiety, obesity and diet)
8. Examine and adjust pharmacological treatment to maintain normal lung function
9. Routine booking appointment for asthma with antenatal care
10. Measure lung function with spirometry and consider monitoring airway inflammation using FeNO
11. Review the need for an immediate obstetric / respiratory physician review especially in women with moderate or severe persistent asthma. Women with moderate or severe persistent asthma or who are identified as very poorly controlled should be managed in close consultation with a physician who has expertise in pulmonary medicine
12. Arrange an antenatal anaesthetic referral / review for all women with severe and / or uncontrolled asthma
13. Manage exacerbations promptly and aggressively in line with the asthma action plan. Consider provision of an emergency pack.
14. Reinforce the importance of maintaining good control of their asthma with appropriate medications, especially ICS, to reduce the risk of asthma exacerbations
15. Explain to women that poorly controlled asthma and asthma exacerbations increases the risk of a poor outcome for the fetus. Good asthma control can reduce these risks.

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APPENDIX B - Advice for women during pregnancy

It is important to talk to your midwife or doctor about your asthma at each of your antenatal appointments / check-ups.

Frequently asked questions:

Will my asthma medication harm my baby?

No. Asthma medications (such as your blue reliever puffer) will provide relief of your asthma symptoms or provide long term control of your asthma. It is important that you keep taking your asthma medications (including your inhaled corticosteroid controller) to help protect your baby from the effects of asthma.

Will pregnancy make my asthma worse?

For some women, their asthma may become worse when they are pregnant. Some studies show that about 1 in every 3 women with asthma will find that their asthma symptoms worsen during pregnancy. It is hard to predict when this will happen, or if it will happen to you. This makes it very important that you control your asthma with your prescribed medications and talk to your doctor or midwife if your symptoms worsen in pregnancy. It is important to avoid flare-ups of your asthma and to get help straight away if this does occur.

Will my asthma affect my baby?

Having your asthma actively managed reduces the chance that asthma will affect your baby, so the best things you can do are:

- keep taking your asthma medications as prescribed
- avoid exposure to tobacco smoke and other triggers for your asthma
- have your asthma reviewed regularly (every 4-6 weeks) during pregnancy.

If my asthma worsens, what should I do?

Talk to your GP about getting a written asthma action plan so that you (and other family members) know what to do if your asthma worsens.

When to call your GP:

- If you have cold/flu symptoms and your asthma symptoms get worse, or
- If you are waking at night due to your asthma, or
- If you require your reliever medication frequently (e.g. Ventolin) and are not getting the same effect.

When to call an ambulance:

- If you have severe shortness of breath and can only speak in short sentences, or
- If you are having a severe attack of asthma and are frightened, or
- If you are needing your reliever medication (e.g. Ventolin) more than 4 hourly and not gaining an effect.

What should I do about my other allergies?

If you experience hayfever or other allergies, speak to your doctor as these can sometimes make your asthma worse.

Should I quit smoking?

Smoking is harmful to your unborn baby, increases the risk of your baby being stillborn or being born prematurely and can increase the chance of your baby having asthma symptoms in the first few years of life. Contact Quitline 13 7848 and talk to your GP about quitting for pregnancy.

Where can I get more information about asthma and pregnancy?

Asthma Australia has helpful information about asthma and pregnancy

Ring 1800ASTHMA (1800 278 462) or go to www.asthmaaustralia.org.au