Management of asthma in pregnancy (GL789)

Approval

<table>
<thead>
<tr>
<th>Approval Group</th>
<th>Job Title, Chair of Committee</th>
<th>Date</th>
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<tbody>
<tr>
<td>Maternity &amp; Children’s Services</td>
<td>Chair, Maternity Clinical Governance Committee</td>
<td>7th June 2019</td>
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Change History

<table>
<thead>
<tr>
<th>Version</th>
<th>Date</th>
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<tr>
<td>3.0</td>
<td>Feb 2017</td>
<td>Dr Mable Pereira (Speciality Dr)</td>
<td>Reviewed</td>
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<td>March 2019</td>
<td>Anna Ashcroft (ST6 Registrar)</td>
<td>Reviewed – inclusion of recommendations for management of women with pre-existing medical conditions as per NICE NG121 (Mar 19) (mainly regarding clarification of analgesia for women in labour, and steroid replacement) and restructure for ease of use</td>
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1.0 Introduction

Asthma is a common chronic respiratory condition affecting up to 7% of women of childbearing age. It is characterised by reversible bronchoconstriction with smooth muscle spasms and inflammation/excessive production of mucus.

The majority of women with asthma have normal pregnancies and the risk of complications is small in those with well-controlled asthma. During pregnancy about one third of asthma patients experience an improvement in their asthma, one third experience worsening of symptoms, and one third remain the same. Severe asthma is more likely to worsen during pregnancy than mild asthma. Exacerbations are more common between 24 and 36 weeks.

2.0 Clinical Features of Asthma

2.1 Symptoms

- Cough
- Breathlessness
- Wheeze
- Chest tightness
- Presence of triggers (e.g. pollen, animal dander, dust, exercise, cold, emotion, upper respiratory tract infections, medications)

2.2 Signs

- Increased respiratory rate
- Inability to complete sentences
- Wheeze
- Accessory Muscle use
- Tachycardia

2.3 Diagnosis

A diagnosis of asthma is usually made following history covering above symptoms and signs, family history and personal history of atopy.

Peak Expiratory Flow Rate (PEFR) and spirometry measurement of Forced Expiratory Volume in 1 minute (FEV1) and Forced Vital Capacity (FVC) are also used to measure the degree of bronchoconstriction:

- FEV1/FVC <0.7 warrants trial of treatment
- >20% diurnal variation in PEFR for more than 3 days within a 2 week trial period is diagnostic of asthma
3.0 Asthma in Pregnancy

3.1 Effect of pregnancy on asthma
- Asthma may improve, worsen or remain stable in pregnancy
- Women with mild asthma are unlikely to experience problems
- Asthma attacks in labour are unlikely due to increased endogenous steroids
- Deterioration in disease control is commonly caused by reduction or even complete cessation of medication due to fears about its safety

3.2 Effect of asthma on pregnancy
- In the majority of women there are no adverse effects
- Severe and poorly controlled asthma may adversely affect the fetus
- There is some association between asthma and following conditions: PIH & pre-eclampsia, preterm births and preterm labour, fetal growth restriction, neonatal morbidity (TTN, admission to neonatal unit, seizures)

4.0 Referral for Consultant Care
Women with uncontrolled asthma should be referred for consultant care. Uncontrolled asthma includes any of:
- Daytime symptoms
- Night time awakening due to asthma
- Need for rescue medication – patients required add on therapy beyond Inhaled short-acting β agonist and inhaled steroids and patients with persistent poor control
- Asthma attacks/exacerbations
- Limitation of daily activity
- PFR< 80% of expected

5.0 Management

5.1 Pre-pregnancy
- Women with asthma should be specifically advised NOT to stop or decrease their asthma medication when they find they are pregnant.
- Control of asthma should be optimised before conception.

5.2 Antenatal
- Women should be encouraged to stop smoking
- Avoid known trigger factors
- Reassurance regarding asthma medications to improve compliance
- Home peak flow monitoring and personalised self-management plans should be encouraged
- Women should be counselled about indications for an increase in inhaled steroid dosage and if appropriate given an emergency supply of oral steroids
- Serial growth scans in women with severe asthma

5.3 Intrapartum
5.3.1 General Advice
Asthma attacks are exceedingly rare in labour due to endogenous steroids.
Women should not discontinue their inhalers during labour as there is no evidence to suggest that beta 2 agonists inhalers will impair uterine contractions
Caesarean section is reserved for obstetric indications only

5.3.2 Induction of labour
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.

5.3.3 Analgesia for Labour
Offer women with asthma the same options for pain relief during labour as women without asthma, including:
- Entonox (50% nitrous oxide plus 50% oxygen)
- intravenous and intramuscular opioids
- epidural
- combined spinal–epidural analgesia
Regional anaesthesia is preferred for caesarean section because of the decreased risk of chest infection and atelectasis

5.3.4 Management of Third Stage
Syntometrine (oxytocin + ergometrine) does not appear to worsen asthma
Ergometrine has been reported to cause bronchospasm in particular in association with general anaesthesia
Consider prostaglandin E1 (misoprostol) as an option for treating postpartum haemorrhage in women with asthma because there is no evidence it worsens asthma.

Avoid the use of prostaglandin F2 alpha (carboprost/haemabate) to women with asthma because of the risk of bronchospasm.
5.3.5 **Intrapartum Steroid Replacement**

Women receiving oral steroids (> 5mg prednisolone daily for more than 3 weeks) should receive additional steroids to cover delivery.

<table>
<thead>
<tr>
<th>Mode of Delivery</th>
<th>Hydrocortisone regime</th>
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<tr>
<td>Planned Vaginal Birth</td>
<td>50mg IV QDS until 6h after delivery</td>
</tr>
<tr>
<td>Emergency Caesarean Section</td>
<td>50mg IV stat if received doses during labour</td>
</tr>
<tr>
<td></td>
<td>100mg IV stat if no previous doses</td>
</tr>
<tr>
<td></td>
<td>Further 50mg IV 6h after delivery</td>
</tr>
<tr>
<td>Elective Caesarean Section</td>
<td>100mg IV stat</td>
</tr>
</tbody>
</table>

5.4 **Postnatal**

All drugs used routinely in asthma, including oral steroids, are safe in breast feeding mothers.

There is some evidence that breast feeding may reduce the risk of asthma in 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.

6.0 **Acute Severe Asthma in Pregnancy and Labour**

6.1 **Classification**

**Acute severe asthma**

Any one of:
- PEFR 33-50% best or predicted
- Respiratory rate ≥25/min
- Heart rate ≥110/min
- Inability to complete sentences in one breath

**Life threatening asthma**

In a patient with severe asthma any one of:
- PEFR <33% best or predicted
- SpO2 <92%
- PaO2 <8 kPa
- Normal or raised PaCO2 (4.6-6.0 kPa)
- Silent chest, cyanosis, poor respiratory effort
- Arrhythmia, exhaustion, hypotension, altered consciousness

**Near fatal asthma**
- Raised PaCO2 and/or requiring mechanical ventilation with raised inflation pressures

### 6.2 Management of Acute Severe Asthma in Pregnancy and Labour

Severe asthma in pregnancy is a medical emergency and should be vigorously treated in hospital in conjunction with the respiratory physicians.

Pregnant women with acute severe asthma should be managed as in the non-pregnant patient.

Treatment should include the following;
- High flow oxygen to maintain saturation of 94-98%
- 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.
7.0 Appendices

7.1 Appendix 1 - British Thoracic Society Step-Up Medication Guidance

<table>
<thead>
<tr>
<th>Step 1 - Mild intermittent asthma</th>
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<tr>
<td>Inhaled short-acting β agonist as required</td>
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<th>Step 2 - Regular preventer therapy</th>
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<td>Add inhaled corticosteroid 200-800 micrograms/day 400 micrograms is an appropriate starting dose for many patients</td>
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<tr>
<th>Step 3 - Initial add-on therapy</th>
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<tbody>
<tr>
<td>Add inhaled long-acting β agonist (LABA)</td>
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<tr>
<td>Assess control of asthma:</td>
</tr>
<tr>
<td>1. Good response to LABA - continue LABA</td>
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<tr>
<td>2. Benefit from LABA but control still inadequate - continue LABA and increase inhaled corticosteroid dose to 800 micrograms/day</td>
</tr>
<tr>
<td>3. No response to LABA - stops LABA and increase inhaled corticosteroid to 800 micrograms/day. If control still inadequate, start other therapies as leukotriene receptor antagonist (LRA) or SR theophylline</td>
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<th>Step 4 - Persistent poor control</th>
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<td>Increasing inhaled corticosteroid up to 2,000 micrograms/day</td>
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<td>Addition of fourth drug e.g. LRA, SR theophylline, β 2 agonist tablet</td>
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<th>Step 5 - Continuous or frequent use of oral steroids</th>
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<tr>
<td>Use daily steroid tablet in lowest dose providing adequate control</td>
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<tr>
<td>Maintain high dose inhaled corticosteroid at 2,000 micrograms/day</td>
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<td>Refer patient for specialist care</td>
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</table>
7.2 **Appendix 2 - Peak Flow Chart**

![Peak Flow Chart](image)

8.0 **References**

2. Handbook of Obstetric Medicine: Catherine Nelson-Piercy
4. NICE Guideline 121: Intrapartum care for women with existing medical conditions or obstetric complications and their babies, March 2019