

# Opinion

## Asthma – Special Situations

### Introduction

An overview of the management of asthma in special situations including asthma in pregnancy, asthma on holiday, and occupational asthma are discussed in this opinion sheet.

### Asthma in pregnancy

A meta-analysis of 14 studies confirms that during pregnancy approximately one third of women will suffer deterioration in asthma control, one third will have an improvement, and one third will have asthma that remains unchanged. Women with more severe asthma are likely to have worsening asthma during pregnancy,<sup>1</sup> and should be monitored closely. If symptoms do worsen, this is most likely in the second and third trimesters, with a peak in the sixth month. There is also some evidence that the course of asthma is similar in successive pregnancies.<sup>2</sup>

The therapeutic management of asthma should ideally be optimised by offering pre-pregnancy counselling, with reinforcement during pregnancy to ensure that the women understands the importance of continuing their asthma medication and optimising the use of inhaled corticosteroids and  $\beta_2$ -agonist bronchodilators during pregnancy. No increased risk of major congenital malformations was identified in a UK case control study of women receiving asthma medications in the year before or during pregnancy.<sup>3</sup> The use of oral or intravenous theophylline is not contraindicated in pregnancy. However, since protein binding of theophyllines decreases in pregnancy a lower therapeutic range may be appropriate.

The data on the safety of leukotriene receptor antagonists in pregnancy is limited. However, the BTS/SIGN guideline recommends that if leukotriene antagonists are required to achieve adequate control of asthma then they should not be

withheld in pregnancy.<sup>1</sup>

The normal physiological changes that occur during pregnancy should not be confused with uncontrolled asthma. Rhinitis-type symptoms may occur and it is normal to have shortness of breath during the last trimester. Some aspects of lung function are altered in pregnancy but dynamic lung volumes remain unchanged. If changes do occur in the FEV<sub>1</sub> and FVC or FEV<sub>1</sub>/FVC ratio, this generally indicates poorly controlled asthma.<sup>4</sup>

Uncontrolled asthma is associated with many maternal and foetal complications,<sup>3</sup> and referral of women with severe or difficult to control symptoms to a respiratory physician is therefore essential. Regular review of asthma control and close liaison between the respiratory physician and the obstetrician are essential for the well-being of the mother and foetus.

### Management of acute asthma in pregnancy

It is worth remembering that the maternal compensatory mechanism will maintain the blood flow and oxygenation of the maternal organs as a priority, and foetal distress can occur even when there is no maternal hypoxia. Therefore, supplementary oxygen should be administered immediately to maintain oxygen saturation levels above 95%.<sup>1</sup>

Drug therapy for acute asthma should be given as for the non-pregnant woman, with repeated doses of  $\beta_2$ -agonists either through a pressurised metered dose inhaler (pMDI) and spacer, or a nebuliser. Oral steroids are indicated for uncontrolled asthma in the same way as for the non-pregnant woman and should never be withheld because of pregnancy.<sup>1</sup> Acute severe asthma in pregnancy is an emergency and early referral to hospital for vigorous treatment is vital.

Acute asthma is rare in labour and

women should be advised to continue their usual asthma medications during labour and whilst breast-feeding.<sup>1</sup>

### Asthma on holiday

Asthma should not normally cause any particular problems with being on holiday. One of the main risks is from a change of usual daily routine and forgetting to take preventative therapy regularly or failing to recognise deteriorating asthma.

*Pre-holiday preparations* - Whilst it may seem obvious planning a holiday should take into account any known allergens; for example a camping holiday at the height of the pollen season would not be sensible if the person has a known allergy to pollen. Animal induced asthma may also need to be considered – for example, it may be unwise to stay at the house of a relative with cats if a member of the family has asthma that is triggered by contact with cat dander.

*Holiday destination* - Prior to travelling, people should be advised to ask their travel representative or contact the destination country's consulate as some countries require tourists to have a certified statement of medicines which may have to be carried at all times. In the UK we encourage sporting activities but some countries may have restrictions for people with asthma who wish to participate in certain sporting activities e.g., scuba diving or mountain climbing. Internal and external environmental factors may also differ depending on the country, for example, what is the smoking policy, are pets allowed to stay in the hotel rooms?

### Medication

The patient should have sufficient asthma medication to cover the holiday period (and enough for a few extra days) and an emergency/reserve course of prednisolone. A written personal asthma action plan should be drawn up with the asthma nurse or GP.<sup>1</sup>

Asthma UK provide self management plans which have clear and explicit instructions for self- management of any asthma deterioration, and guidance as to when to seek emergency help.<sup>5</sup>

If a spacer device is used with the inhalers, encourage the person to take it with them even if it may be tempting to leave it behind to 'save space'. In acute asthma repeated activation of a  $\beta_2$ -agonist pMDI via a large volume spacer is as effective as when the drug is given through a nebuliser.<sup>1</sup> Ideally this technique should be taught well in advance of the holiday. If it is necessary for a nebuliser to be taken on holiday for regular use, it should be checked for compatibility with the voltage used at the holiday destination.

For extended travel the person should find out how to obtain further supplies of their medication whilst abroad.

#### Travel insurance

The recommendations are the same for all individuals. If travelling in Europe patients need to ensure they have a European health insurance card (EHIC). Private travel insurance will also be necessary to cover any unexpected costs. To ensure cover is valid the individual must declare 'asthma' as a pre-existing medical condition.

#### Flight

Advise the person with asthma or their carer to read the current airline travel policies. Inhalers and other medication should be packed in hand luggage, and the reserve course of prednisolone should be in its original packaging. A named prescription should also be carried with all the medications documented.

If the person is undertaking extensive travel and needs to carry larger quantities of medication, or suspects that they may require emergency help, it would be appropriate to carry a letter on headed paper from the GP or other healthcare professional explaining the medication.

Any asthma emergency should not be underestimated and the person should be encouraged to seek medical support and not hold on until they get home! Advice for travel and asthma can be found at [www.asthma.org.uk](http://www.asthma.org.uk).

#### Occupational asthma

Occupational asthma is often a hidden disease in that the individual may not link their symptoms with their occupation or they may be fearful of losing their job. In addition it may remain unconfirmed due to diagnostic difficulties. Therefore, the true incidence of occupational asthma is unknown and under-reported, but may account for 9-15% of adult onset asthma.<sup>6</sup> Occupational asthma should be suspected in all adults of working age with adult onset asthma, or reappear-ance of childhood asthma.<sup>7</sup> It is worth remembering that some agents used at home or as part of a hobby may also cause asthma.

#### Diagnosis

A detailed history and objective measures of airflow limitation are essential.

There are two screening questions that may assist in establishing an occupational link:-

*Are you better on days away from work?*

*Are you better on holiday?*

If the response to these questions is positive, a detailed occupational history should be elicited. This should include type of industry, work pattern/shift pattern, work environment e.g. the presence or absence of working extraction fan, contact with causative agents, and respiratory symptoms whilst at work.

Although any agent has the potential to cause occupational asthma, with many new causes being reported, the most frequently reported causative agents include wood dust, flour and grain dust, colophony, flux, aldehydes, isocyanates, latex and animals.<sup>8</sup>

The diagnosis of occupational asthma needs to be confirmed objectively. Serial peak expiratory flow (PEFR) measurements have a high level of sensitivity and specificity. Four high quality PEFR readings a day are needed for at least four continuous weeks. If less than four readings a day are documented the diagnostic performance of PEFR falls.<sup>1,9</sup>

#### Management

Patients with suspected occupational asthma should be referred to a respiratory physician with an interest in occupational asthma. It is helpful if PEFR monitoring is initiated prior to referral to max-

imise compliance of readings whilst exposed to the trigger.<sup>9</sup> This will reduce the likelihood of the worker being removed from the causative agent due to their symptoms, making the interpretation of any investigations and therefore the diagnosis more difficult.

When occupational asthma is confirmed the worker should be relocated away from the causative agent, ideally within 12 months of the first work-related symptoms.<sup>12</sup> Improvement or resolution of symptoms has been reported where exposure has been minimised. However, relocation can often prove difficult and result in unemployment.

The pharmacological management of occupational asthma is the same as non-occupational induced asthma and should follow the BTS/SIGN guideline.<sup>1</sup>

Further advice on occupational lung disorders can be obtained from the PCRS-UK opinion sheet on the identification and management of occupational lung disease which can be found at [http://www.pcrs-uk.org/opinions/occupationalallungdisease\\_final.pdf](http://www.pcrs-uk.org/opinions/occupationalallungdisease_final.pdf)

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