Asthma Guidelines
Adults (aged 17 years and over)

(Diagnosis and management of diseases of chronic airflow limitation in Bedfordshire)

Last updated December 2019

These guidelines are designed for use across all healthcare settings in Bedfordshire by any suitably trained healthcare professional.
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Occupational Asthma

Difficult Asthma

Asthma inhaler choices and treatments

Glossary

Appendix 1: NICE Asthma Quality Standards (QS25)


Appendix 3: Asthma Review Checklist

Appendix 4: Inhaled Corticosteroid safety information for adults

Appendix 5: How to get extra help with inhaler training and assessment

The Community Pharmacy New Medicine Service (NMS) and Medicine Use Reviews (MURs)

Appendix 6: New Medicine Service: helping you with your new medicine

Appendix 7: Self-management of worsening asthma in adults and adolescents with a written asthma action plan (for healthcare professional use only)

References
Introduction and acknowledgements

These guidelines are intended to assist healthcare professionals diagnose and manage patients with Asthma in Bedfordshire. They are intended to support the local implementation of the:

- BTS/SIGN asthma guideline 2019\textsuperscript{1}
- Global Initiative for Asthma. Global strategy for Asthma management and prevention. (GINA) 2019\textsuperscript{2}
- Diagnosis of Diseases of Chronic Airflow Limitation: Asthma, COPD and Asthma-COPD Overlap (ACO) 2018. A Joint Project of GINA and GOLD.\textsuperscript{3*}
- NICE Quality Standard for asthma\textsuperscript{4} (Appendix 1)
- National Review of Asthma Deaths (NRAD)\textsuperscript{5} (Appendix 2)
- NICE guideline NG80 Asthma Diagnosis Monitoring and chronic asthma management \textsuperscript{11}

We acknowledge their use in preparation of these guidelines.

This comprehensive guideline was ratified by the Bedfordshire and Luton Joint Prescribing Committee (JPC) in December 2019 and will be reviewed approximately every two years.

We hope you will find these guidelines a useful resource to help improve outcomes for your patients with Asthma.

Many thanks to the Bedfordshire Respiratory Implementation Network (RIN) and Milton Keynes Clinical Commissioning Group (MKCCG) who have supported the development of these guidelines. We would particularly like to acknowledge comments received from: Dr Enson Thomas, Dr Tariq Syed, Dr Dinesh Bagmane, Joanne Robertson, Dr John Fsadni, Farida Parker, Fiona Garnett, Jacqueline Clayton, Tess Dawoud and Anne Graeff.

Editors: Dr Dayo Kuku, Respiratory Clinical Lead GP and Dona Wingfield, Pharmaceutical Advisor. We welcome any comments on the guidelines. Contact details: Dona Wingfield, c/o Suite 2, Capability House, Wrest Park, Silsoe, Bedfordshire, MK45 4HR. E-mail: BEDCCG.bedsmeds@nhs.net or a.kuku@nhs.net

These guidelines are based on the best available evidence but their application can always be modified by professional judgement.
Preface

Asthma is a common and potentially serious condition affecting an estimated 5.4 million people in the UK. Spending for asthma in the UK exceeds £1 billion each year, majority of this cost arising from prescriptions and estimated 6.4 million primary care consultations that occur each year. This imposes an unacceptable burden on the health care systems and on society through loss of productivity in the workplace and disruption to family.

Individuals with asthma may present with wheeze, shortness of breath, cough and chest tightness, limiting everyday activities and fulfilment of roles at home and work. Due to the variable nature of symptoms, heterogeneity of presentation and variable lung function over time, the diagnosis of asthma can be challenging even with careful structured clinical assessment and diagnostic work-up.

Evidence based management can maintain good day-to-day control for most people with asthma and substantially reduce the risk of asthma attacks. Management of asthma should be patient-centred, making treatment decisions in partnership with the individual, encouraging lifestyle changes including smoking cessation, offer of supporting self-management which should include the provision of a written personalised asthma action plan, emphasising the importance of preventative therapy.

Fractional exhaled nitric oxide (FeNO) is an objective test for asthma recommended by NICE for patients aged 5 years and above due to its high specificity and selectivity. A positive FeNO test indicates the presence of eosinophilic inflammation providing supportive rather than conclusive evidence of asthma diagnosis. It is being considered locally, and is likely to be a phased implementation due to the investment and training required. Further work is necessary to explore how to achieve the greatest value from FeNO alongside Spirometry in the diagnostic pathway. It is important that the initiation of appropriate treatment should not be delayed while waiting for a confirmation of asthma using these tests.

We hope you find this comprehensive guideline a useful resource in the prevention and management of adult asthma, reducing variations in the provision of asthma care locally with resultant improved patient experience and outcomes.

Dr Dayo Kuku
Respiratory Clinical Lead GP
Bedfordshire Clinical Commissioning Group
### Asthma Diagnosis and Management Overview

<table>
<thead>
<tr>
<th>Diagnosis</th>
<th>Asthma symptom control</th>
<th>Management</th>
</tr>
</thead>
<tbody>
<tr>
<td>- More than one of these symptoms:</td>
<td>- Well controlled: All of:</td>
<td>- This is based on:</td>
</tr>
<tr>
<td>o Wheeze (includes observations documented in medical notes)</td>
<td>- Daytime symptoms ≤2 days per week</td>
<td>- Confirming the diagnosis.</td>
</tr>
<tr>
<td>o Breathlessness</td>
<td>- Need for reliever ≤2 days per week</td>
<td>- Assessing asthma control (recent asthma symptom control and risk factor (Refer Step 2)).</td>
</tr>
<tr>
<td>o Chest tightness</td>
<td>- No limitation of activities</td>
<td>- Choosing initial treatment appropriate to recent asthma control, risk factors and patient preference.</td>
</tr>
<tr>
<td>o Cough</td>
<td>- No symptoms during night or waking</td>
<td>- Review and adjust drug treatment in 4 to 8 weeks.(^1)</td>
</tr>
<tr>
<td>- Symptoms recurrent or seasonal.</td>
<td>- Uncontrolled: Three or more of:</td>
<td>- Check inhaler technique and adherence, educate and support.</td>
</tr>
<tr>
<td>- Symptoms worse at night or early in the morning.</td>
<td>- Daytime symptoms &gt;2 per week</td>
<td>- Written personalised action asthma plan.</td>
</tr>
<tr>
<td>- History of allergies and/or atopy</td>
<td>- Need for reliever &gt;2 days per week</td>
<td>- Avoiding triggers where appropriate and managing exacerbations when they occur.</td>
</tr>
<tr>
<td>- Symptoms obviously triggered by exercise, allergies, viral, cold air, irritants, medicines.</td>
<td>- Any limitation of activities</td>
<td>- Provide advice about smoking, healthy weight and immunisation.</td>
</tr>
<tr>
<td>- Family history of asthma or allergies.</td>
<td>- Any symptoms during the night or on waking*</td>
<td></td>
</tr>
<tr>
<td>- Symptoms began in childhood.</td>
<td>*Not including SABA taken periodically before exercise (Record separately and take into account when assessing management.)</td>
<td></td>
</tr>
<tr>
<td>- Widespread wheeze audible on auscultation.</td>
<td>~Any experience of flare-ups or night-time waking due to asthma symptoms even if infrequent usually indicates that the person needs regular preventer treatment.</td>
<td></td>
</tr>
<tr>
<td>- FEV(_1) or PEF lower than predicted, without other explanation, including historical record</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Eosinophilia or raised IgE, without other explanation.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Symptoms relieved by a bronchodilator.</td>
<td>Complete control(^{11}):</td>
<td></td>
</tr>
<tr>
<td>The diagnosis of asthma in adults is based on:</td>
<td>- No daytime symptoms</td>
<td></td>
</tr>
<tr>
<td>- History and physical examination</td>
<td>- No need for rescue medication</td>
<td></td>
</tr>
<tr>
<td>- Considering alternate diagnosis and</td>
<td>- No limitation of activities including exercise</td>
<td></td>
</tr>
<tr>
<td>- Documenting variable airflow limitation.</td>
<td>- No night time awakening due to asthma</td>
<td></td>
</tr>
</tbody>
</table>

\(^1\)Not including SABA taken periodically before exercise (Record separately and take into account when assessing management.)

\(^{11}\)Any experience of flare-ups or night-time waking due to asthma symptoms even if infrequent usually indicates that the person needs regular preventer treatment.
How to use the Bedfordshire Asthma guidelines 2019

These guidelines are designed for use across all healthcare settings in Bedfordshire, by any suitably trained healthcare professional to support the optimal delivery of care and utilisation of services locally. There are three sections to the guidelines:

1. Diagnosis of Asthma
2. Management of Asthma
3. Inhaler choices and treatments for Asthma

Algorithms used in the guidelines

The disease management algorithms are colour coded in line with a traffic light system:

<table>
<thead>
<tr>
<th>Colour</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Green</td>
<td>Actions to be undertaken within <strong>primary care</strong>.</td>
</tr>
<tr>
<td>Amber</td>
<td><strong>Consider referral to the Respiratory Team (RT) in secondary care</strong> Where GPs are competent in care of exacerbations and appropriate community services, including Respiratory Nurse Specialists, are available these patients may be cared for in primary care.</td>
</tr>
<tr>
<td>Red</td>
<td><strong>Referral to RT</strong> is strongly recommended.</td>
</tr>
<tr>
<td>Blue</td>
<td><strong>Notes</strong>.</td>
</tr>
</tbody>
</table>

These guidelines are available electronically via the BCCG extranet and the GP Ref websites.
Current definition of Asthma

Asthma is a heterogeneous disease, usually characterised by chronic airway inflammation. It is defined by the history of respiratory symptoms such as wheeze, shortness of breath, chest tightness and cough that vary over time and in intensity, together with variable expiratory airflow limitation.\(^2\)

<table>
<thead>
<tr>
<th>Diagnostic feature</th>
<th>Criteria for making the diagnosis of asthma</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. History of variable respiratory symptoms</td>
<td>• Generally more than one type of respiratory symptom (isolated cough is seldom due to asthma) • Symptoms occur variably over time and vary in intensity • Symptoms are often worse at night or on waking • Symptoms are often triggered by exercise, laughter, allergens, cold air • Symptoms often appear or worsen with viral infections</td>
</tr>
<tr>
<td>Wheeze, shortness of breath, chest tightness and cough</td>
<td></td>
</tr>
<tr>
<td>Descriptors may vary between cultures and by age.</td>
<td></td>
</tr>
</tbody>
</table>

2. Confirmed variable expiratory airflow limitation

<table>
<thead>
<tr>
<th>Test</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Documented excessive variability in lung function* and documented airflow limitation. One or more of the tests below:</td>
<td>The greater the variations, or the more occasions excess variation is seen, the more confident the diagnosis At least once during diagnostic process (spirometry) when FEV(_1) is low, confirm that FEV1/FVC is reduced (less than 70%) (&lt;0.70) (normally &gt;0.75–0.80)</td>
</tr>
<tr>
<td>Positive bronchodilator reversibility (BDR) test* (more likely to be positive if bronchodilator medication is withheld before test: SABA ≥4 hours, LABA ≥15 hours)</td>
<td>Increase in FEV(_1) of &gt;12% and &gt;200 mL from baseline, 10–15 minutes after 200–400 mcg salbutamol or equivalent. Greater confidence in asthma diagnosis if increase &gt;15% and &gt;400ml</td>
</tr>
<tr>
<td>Excessive variability in twice-daily PEF over 2 weeks* (Peak flow variability)</td>
<td>Average daily diurnal PEF variability &gt;20%**11</td>
</tr>
<tr>
<td>Significant increase in lung function after 4 weeks of anti-inflammatory treatment</td>
<td>Increase in FEV1 by &gt;12% and &gt;200 mL (or PEF† by &gt;20%) from baseline after 4 weeks of treatment, outside respiratory infections.</td>
</tr>
<tr>
<td>Positive exercise challenge test*</td>
<td>Fall in FEV(_1) of &gt;10% and &gt;200 mL from baseline</td>
</tr>
<tr>
<td>Positive bronchial challenge test</td>
<td>Fall in FEV(_2) from baseline of ≥20% with standard doses of methacholine or histamine, or ≥15% with standardized hyperventilation, hypertonc saline or mannitol challenge</td>
</tr>
<tr>
<td>Excessive variation in lung function between visits* (less reliable)</td>
<td>Variation in FEV(_1): of &gt;12% and &gt;200 mL between visits, outside of respiratory infections</td>
</tr>
</tbody>
</table>

BD: bronchodilator (short-acting SABA or rapid-acting LABA); FEV\(_1\): forced expiratory volume in 1 second; LABA: long-acting beta\(_2\)-agonist; PEF: peak expiratory flow (highest of three readings); SABA: short-acting beta\(_2\)-agonist. *These tests can be repeated during symptoms or in the early morning. **Daily diurnal PEF variability is calculated from twice daily PEF as ((Highest PEF-Lowest PEF) / Highest PEF) X 100%. Look for 20% change or more from baseline AND at least 60L/min on 3 or more days over 2 weeks. Ref: BTS\(^1\). †For PEF, use the same meter each time, as PEF may vary by up to 20% between different meters. BD reversibility may be lost during severe exacerbations or viral infections. If bronchodilator reversibility is not present at initial presentation, the next step depends on the availability of other tests and the urgency of the need for treatment. In a situation of clinical urgency, asthma treatment may be commenced and diagnostic testing arranged within the next few weeks, but other conditions that can mimic asthma should be considered, and the diagnosis of asthma confirmed as soon as possible. (Adapted from the Global Initiative for Asthma (GINA) Global Strategy for Asthma Management and Strategy (Updated 2017) available at www.ginasthma.org and accessed 02/02/18.)
Step 1b: Diagnostic flow chart.\textsuperscript{1,2,11}

Patient with respiratory symptoms

*Are they symptoms typical of asthma? (Refer step 1a page 7)*

- **YES**
  - Detailed history/examination for asthma
    - History/examination supports asthma diagnosis?
      - **YES**
        - Clinical urgency and other diagnosis unlikely
      - **NO**
        - Clinical assessment including spirometry. Monitor peak flow variability for 2-4 weeks if spirometry not available.*
          - **High probability:** diagnosis of asthma likely
          - **Intermediate probability:** spirometry + bronchodilator reversibility
          - **Low probability:** other diagnosis likely

- **NO**
  - Further history and tests for alternative diagnosis. *Alternative diagnosis confirmed?*
    - **YES**
      - Offer BDR test
        - **Response?**
          - **YES**
            - Continue treatment
          - **NO**
            - Further investigation.*
              - Consider referral
    - **NO**
      - Investigate/treat other condition
        - **Response?**
          - **YES**
            - Continue treatment
          - **NO**

*Fractional exhaled nitric oxide (FeNO) is an objective test for asthma recommended by NICE for patients ≥5 years of age due to its high specificity and high selectivity. It is currently being considered locally. The introduction of FeNO testing is likely to be a phased implementation due to the investment and training required. Other options for investigations of eosinophilic inflammation or atopy include blood eosinophils, skin prick test, IgE (requires referral). Options for variability include reversibility, PEF charting and challenge tests (step 1a).*
Step 1c: Confirming the diagnosis of asthma in patients already taking controller treatment

25-35% of patients in primary care cannot be confirmed as having asthma. If confirmation of asthma diagnosis has not been previously documented, confirmation with objective testing should be undertaken.

<table>
<thead>
<tr>
<th>Current status</th>
<th>Steps to confirm asthma diagnosis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Variable respiratory symptoms and variable airflow limitation</td>
<td>Diagnosis of asthma is confirmed. Assess the level of asthma control (refer to step 2b-page 13) and review controller treatment (Refer to pages 16 to 19).</td>
</tr>
<tr>
<td>Variable respiratory symptoms but no variable airflow limitation</td>
<td>Repeat bronchodilator reversibility test after withholding bronchodilator (SABA 4 hours; LABA 12+ hours) or during symptoms. If normal, consider alternative diagnosis. If FEV$_1$ &gt;70% predicted: consider referral for a bronchial provocation test. If negative, consider stepping down controller treatment and reassess in 2-4 weeks. If FEV$_1$ &lt;70% predicted: consider stepping up controller treatment for 3 months, then reassess symptoms and lung function. If no response, resume previous treatment and refer patient for diagnosis and investigation.</td>
</tr>
<tr>
<td>Few respiratory symptoms, normal lung function, and no variable airflow limitation</td>
<td>Repeat bronchodilator reversibility test again during symptoms or after withholding bronchodilator (SABA 4 hours; LABA 12+ hours). If normal, consider alternative diagnosis. Consider stepping down controller treatment: ●If symptoms emerge and lung function falls: asthma is confirmed. Step up controller treatment to lowest previous effective dose. ●If no change in symptoms or lung function at lowest controller step: consider ceasing controller, and monitor patient closely for at least 12 months.</td>
</tr>
<tr>
<td>Persistent shortness of breath and fixed airflow limitation</td>
<td>Consider stepping up controller treatment for 3 months, then reassess symptoms and lung function. If no response, resume previous treatment and refer patient for diagnosis and investigation. Consider asthma-COPD overlap (ACO).</td>
</tr>
</tbody>
</table>
### Step 1d: How to step down controller treatment to help confirm asthma diagnosis

<table>
<thead>
<tr>
<th>1. ASSESS</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Document the patient’s current status including asthma control and lung function.</strong> If the patient has risk factors for asthma exacerbations, do not step down treatment without close supervision.</td>
</tr>
<tr>
<td><strong>Choose a suitable time (e.g. no respiratory infection, not going away on holiday, not pregnant).</strong></td>
</tr>
<tr>
<td><strong>Provide a written personalised asthma action plan (PAAP) so the patient knows how to recognise and respond if symptoms worsen. Ensure they have enough medication to resume their previous dose if their asthma worsens.</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>2. ADJUST</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Show the patient how to reduce their ICS dose by 25-50%, or stop extra controller (e.g. LABA, leukotriene receptor antagonist) if being used.</strong></td>
</tr>
<tr>
<td><strong>Schedule a review visit for 2-4 weeks.</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>3. REVIEW RESPONSE</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Repeat assessment of asthma control and lung function tests in 2-4 weeks.</strong></td>
</tr>
<tr>
<td><strong>If symptoms increase and variable airflow limitation is confirmed after stepping down treatment, the diagnosis of asthma is confirmed. The controller dose should be returned to the lowest previous effective dose.</strong></td>
</tr>
<tr>
<td><strong>If, after 6-12 months of stepping down to a low dose controller treatment, symptoms do not worsen and there is still no evidence of variable airflow limitation, consider ceasing controller treatment and repeat asthma control assessment and lung function tests in 2-3 weeks, but follow the patient for at least 12 months.</strong></td>
</tr>
</tbody>
</table>
Step 2: Assessment of asthma and asthma control

Step 2a: Assessment of asthma

1. Assess asthma control = symptom control and future risk of adverse outcomes
   - Assess symptom control over the last 4 weeks (Refer to Step 2b).
   - Identify any other risk factors for exacerbations, fixed airflow limitation or side-effects.
   - Measure lung function at diagnosis/start of treatment, 3–6 months after starting controller treatment, then periodically every 1–2 years.

2. Assess treatment issues
   - Document the patient’s current treatment.
   - Watch inhaler technique; assess adherence and side-effects.
   - Check that the patient has a written personalised asthma action plan (PAAP).
   - Ask about the patient’s attitudes and goals for their asthma and medications.

3. Assess comorbidities
   - Rhinitis, rhinosinusitis, gastro-oesophageal reflux, obesity, obstructive sleep apnoea, depression and anxiety can contribute to symptoms and poor quality of life, and sometimes to poor asthma control.

Step 2b: Assessment of asthma control in adults

<table>
<thead>
<tr>
<th>Asthma symptom control</th>
<th>Level of asthma symptom control</th>
</tr>
</thead>
<tbody>
<tr>
<td>In the past 4 weeks, has the patient had:</td>
<td>Well controlled</td>
</tr>
<tr>
<td>Daytime asthma symptoms more than twice/week?</td>
<td>☐ YES ☐ NO</td>
</tr>
<tr>
<td>Any night waking due to asthma?</td>
<td>☐ YES ☐ NO</td>
</tr>
<tr>
<td>Reliever needed for symptoms more than twice/week? (excluding reliever used before exercise)</td>
<td>☐ YES ☐ NO</td>
</tr>
<tr>
<td>Any activity limitation due to asthma?</td>
<td>☐ YES ☐ NO</td>
</tr>
</tbody>
</table>
# Step 3: Differential diagnosis of asthma

The differential diagnosis in a patient with suspected asthma varies with age. Any of the alternative diagnoses may also be found together with asthma.

<table>
<thead>
<tr>
<th>Age</th>
<th>Condition</th>
<th>Symptoms</th>
</tr>
</thead>
<tbody>
<tr>
<td>17-39 years</td>
<td>Chronic upper airway cough syndrome</td>
<td>Sneezing, itching, blocked nose, throat-clearing</td>
</tr>
<tr>
<td></td>
<td>Vocal cord dysfunction</td>
<td>Dyspnoea, inspiratory wheezing (stridor)</td>
</tr>
<tr>
<td></td>
<td>Hyperventilation, dysfunctional breathing</td>
<td>Dizziness, paraesthesia, sighing</td>
</tr>
<tr>
<td></td>
<td>Bronchiectasis</td>
<td>Productive cough, recurrent infections</td>
</tr>
<tr>
<td></td>
<td>Cystic fibrosis</td>
<td>Excessive cough and mucus production</td>
</tr>
<tr>
<td></td>
<td>Congenital heart disease</td>
<td>Cardiac murmurs</td>
</tr>
<tr>
<td></td>
<td>Alpha1-antitrypsin deficiency</td>
<td>Shortness of breath, family history of early emphysema</td>
</tr>
<tr>
<td></td>
<td>Inhaled foreign body</td>
<td>Sudden onset of symptoms</td>
</tr>
<tr>
<td>40+ years</td>
<td>Vocal cord dysfunction</td>
<td>Dyspnoea, inspiratory wheezing (stridor)</td>
</tr>
<tr>
<td></td>
<td>Hyperventilation, dysfunctional breathing</td>
<td>Dizziness, paraesthesia, sighing</td>
</tr>
<tr>
<td></td>
<td>COPD</td>
<td>Cough, sputum, dyspnoea on exertion, smoking or noxious exposure</td>
</tr>
<tr>
<td></td>
<td>Bronchiectasis</td>
<td>Productive cough, recurrent infections</td>
</tr>
<tr>
<td></td>
<td>Cardiac failure</td>
<td>Dyspnoea with exertion, nocturnal symptoms</td>
</tr>
<tr>
<td></td>
<td>Medication-related cough</td>
<td>Treatment with angiotensin converting enzyme (ACE) inhibitor</td>
</tr>
<tr>
<td></td>
<td>Parenchymal lung disease</td>
<td>Dyspnoea with exertion, non-productive cough, finger clubbing</td>
</tr>
<tr>
<td></td>
<td>Pulmonary embolism</td>
<td>Sudden onset of dyspnoea, chest pain</td>
</tr>
<tr>
<td></td>
<td>Central airway obstruction</td>
<td>Dyspnoea, unresponsive to bronchodilators</td>
</tr>
</tbody>
</table>
The long term goals of asthma management are symptom control and risk reduction by routine clinical review on at least an annual basis by a healthcare professional with appropriate training in asthma management. Steps include:

**Monitoring Asthma**
- The RCP 3 questions help monitor asthma control:
  1. Have you had difficulty sleeping due to your asthma (including cough symptoms)?
  2. Have you had your usual asthma symptoms (e.g. cough, wheeze, chest tightness, shortness of breath) during the day?
  3. Has your asthma interfered with your usual daily activities (e.g. work, housework)?
- **No to all 3 suggest good control; Take action if yes to any of the 3 questions.**

**Total Control is defined as:**
- No daytime symptoms
- No night time wakening due to asthma
- No need for rescue medication
- No exacerbations
- No limitation on activity including exercise
- Normal lung function in practical terms FEV\(_1\) and/or PEF>80% predicted or best

**Well controlled is defined as:**
- Symptoms on <2 days/week
- Salbutamol use <2 times/week
- No nocturnal wakening
- No emergency visits
- No days with morning PEF <80%
- **Supported self-care:**
  - *Allergen and trigger avoidance*, e.g. Stop smoking.
  - *Avoid medicines which may aggravate or are contra-indicated in asthma*: NSAIDS (such as ibuprofen, naproxen), **aspirin**, **beta-blockers** (such as propranolol, atenolol, bisoprolol), **ACE Inhibitors** (such as Lisinopril, perindopril and Ramipril), **opioid analgesics** (such as codeine, morphine)
  - **Supported self-management programme** with structured education (e.g. Expert Patient Programme for asthma) and written (PAAP) and annual professional review (see Appendix 3).
  - **Support networks**, e.g. Asthma UK helpline.
- **Inhaler technique – training and assessment.** Consider referral to community pharmacist for annual Medicines Use Review (MUR) and / or New Medicine Service (NMS) for inhaler technique check and demonstration- see Appendix 5 and 6.
- Please see link to UK Inhaler Group Standards and Competency Document http://www.respiratoryfutures.org.uk/programmes/uk-inhaler-group/standards-policies-and-protocols/
Non Pharmacological interventions
These should be considered where relevant in addition to pharmacological treatments to improve symptom control and/or reducing future risk:

- Strongly encourage smokers to quit at every visit- Offer support and referral to smoking cessation programme.
- Parents, parents-to-be, carers and patients should be advised of the many adverse effects which smoking has on their children including increased wheezing in infancy and increased risk of persistent asthma.
- Encourage regular physical activity, provide advice about prevention and management of exercise-induced bronchoconstriction.
- Encourage healthy lifestyle including advice on diet, weight reduction in obese patient.
- Offer NHS health checks to patients between 40-74yrs who have not had one in last 5 years.
- Advise yearly flu vaccination for patients with moderate – severe asthma on regular inhaled corticosteroids or oral steroids.
- Advise single dose pneumococcal vaccine for patients with severe asthma requiring continuous or frequently repeated use of systemic steroids or adults over 65 years. Please refer to https://www.gov.uk/government/publications/pneumococcal-the-green-book-chapter-25
- Breathing exercise programmes (including physiotherapist taught methods) should be offered as an adjuvant to pharmacological treatment to improve quality of life and reduce symptoms.
- The following non-pharmacological interventions are not routinely recommended by the BTS/SIGN guideline: measures to reduce in utero or early life exposure to single aeroallergens for primary prevention, Acupuncture, Air ionisers, Air pollution, Allergens (pets) reduction, probiotics, antioxidants, fish oils, electrolytes, Chinese medicine, homeopathy, hypnosis and relaxation, massage therapy and house dust mite reduction and avoidance.

The aim of pharmacotherapy is to control disease and alleviate symptoms.
- Adopt a Staged Approach to treatment:
  - Stop smoking. This includes parents of asthmatic children.
  - Start treatment at the step most appropriate to initial severity.
  - Step up treatment to gain good control and step down to avoid overtreatment.
  - Prescribe inhalers only after patients have been trained in the use of the device and have demonstrated satisfactory technique.
  - Achieve early control (Overuse (>1 SABA per month) suggest poorly controlled asthma).
  - Consider regular preventer therapy in anyone:
    - Who has an exacerbation in the last 2 years;
    - Using inhaled SABA 3x a week or more; symptomatic 3 times a week or more, or waking one night a week because of asthma.
  - Maintain control by stepping up treatment and stepping down when control is good.
- Before initiating a new drug therapy or stepping up treatment, check compliance with existing therapies, inhaler technique (Can they use it? Do they use it?) and eliminate trigger factors.
- Patients should receive training for each device prescribed, and be able to demonstrate satisfactory technique. Try to limit the number of different devices a patient has.
- Monitor patient for indicators associated with increased risk of death (from NRAD report) - see Appendix 2.
• Check concordance and reconsider diagnosis if response to treatment is unexpectedly poor.
• Consider a spacer device for patients prescribed a metered dose inhaler (MDI) who are:
  o Having difficulty co-ordinating actuation and inhalation.
  o Receiving high doses of inhaled corticosteroid (ICS) (>800 mcg of beclometasone or equivalent daily).
• Counsel patient on ongoing care for spacers
• Maintenance and reliever therapy (MART) may be considered for patients with a PAAP to enable them to manage their own treatment. Caution – This regimen can become expensive and needs closer monitoring of patient/prescriptions. Use Fostair® CFC free inhaler (beclometasone / formoterol) 100 microgram / 6 microgram +/- spacer 1 inhalation twice daily; for the relief of symptoms 1 extra puff as needed; max. 8 puffs daily or DuoResp® Spiromax® (budesonide/formoterol) 160 microgram/4.5microgram DPI 2 puffs daily in 1-2 divided doses, can increase to 2 puffs bd, 1 extra puff as required for relief of symptoms, max. 8 puffs daily. For patients aged 17 years of age, use Symbicort® turbohaler (budesonide 200 micrograms /formoterol fumarate dihydrate 6 micrograms per dose), 2 puffs daily in 1-2 divided doses, can increase to 2 puff bd, 1 extra puff as required for relief of symptoms, max. 8 puffs daily.
• Once patient is on stable therapy, consider changing to combination inhalers. They have the advantage of ensuring a long acting beta_2 agonist is not used without inhaled steroid.
• Patients on short term oral steroid therapy should be informed of the common side effects including sleep disturbance, increased appetite, reflux and mood changes.
• There is also a risk of systemic side effects with longer term or very frequent oral steroid therapy (oral steroid course 3-4/year).
  o Monitor Blood Pressure
  o Check for signs of diabetes and osteoporosis
  o Consider bone protection if >3 months use of oral steroid
• Assess risk of future asthma attacks at every asthma review by asking about history of previous attacks, objectively assessing asthma control and reviewing reliever use.
ICS Dose Escalation and Dose De-escalation in the Management of Chronic Asthma in Adults ≥ 17 years of age

<table>
<thead>
<tr>
<th>Asthma – Suspected</th>
<th>Asthma - Diagnosed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diagnosis and assessment</td>
<td>Evaluation: ☐ Assess symptoms ☐ Measure lung function ☐ Check inhaler technique ☐ Adherence ☐ Adjust dose ☐ Update self-management plan (PAAP) ☐ Move up and down as appropriate</td>
</tr>
</tbody>
</table>

(S/MART – Symbicort*/Fostair*/DuoResp Spiromax*) Single/ Maintenance and reliever therapy (S/MART) is a form of combined ICS and LABA treatment in which a single inhaler, containing both ICS and a fast-acting LABA, is used for both daily maintenance therapy and the relief of symptoms as required. S/MART is only available for ICS and LABA.\(^\text{11}\)

Low Dose ICS
- Consider monitored initiation of treatment with Low dose ICS
  - Clenil Modulite\(^*\) (pMDI + spacer) or Beclomethasone Easyhaler\(^*\)

Regular Preventer
- Clenil Modulite\(^*\) (pMDI + spacer) or Beclomethasone Easyhaler\(^*\)

Low Dose ICS
- Infrequent, short-lived wheeze

Initial add-on therapy
- Add LTRA\(^\text{11}\) Montelukast 10 mg daily and monitor for 4-8 weeks then review, if response, continue, if not stop if symptoms persist
- Switch to:
  - Fostair\(^*\) (pMDI + spacer)/ NEXThaler or
  - Symbicort Turbohaler or
  - DuoResp Spiromax\(^*\)

Additional add-on therapies
- If no response to LABA:
  - Clenil Modulite\(^*\) (pMDI + spacer) +/- LTRA
- If benefit from LABA:
  - Fostair\(^*\) (pMDI + spacer/NEXThaler or
  - Symbicort Turbohaler or
  - DuoResp Spiromax\(^*\)

ADD in if exercise induced asthma:
- LTRA
- Phyllocontin Continus\(^*\)

Low Dose ICS

Moderate Dose ICS

High Dose ICS

High-dose therapies
- If no response to LABA:
  - Clenil Modulite\(^*\) (pMDI + spacer) +/- LTRA
- If benefit from LABA:
  - Fostair\(^*\) (pMDI + spacer/NEXThaler or
  - Symbicort Turbohaler or
  - DuoResp Spiromax\(^*\)

Upon specialist advice add in:
- Phyllocontin Continus\(^*\)
- LAMA Spiriva\(^*\) Respimat\(^*\)
  - 2 puffs DAILY\(^*\)

In the event of exacerbation, not requiring hospital admission, consider quadrupling inhaled corticosteroid dose for 7-14 days
- If symptoms persist consider oral steroids: Prednisolone 40mg – 50mg once a day for 5 days

Short acting β2 agonists (SABA) as required (unless using MART) – consider moving up if using three doses a week or more

*If control in adults remains inadequate on medium-dose ICS/LABA inhaler AND has ≥ 1 exacerbations in the previous year, addition of Spiriva Respimat\(^*\) can be considered ICS=inhaled corticosteroids; LABA=long-acting beta agonists; LTRA=leukotriene receptor antagonists; LAMA=long-acting muscarinic antagonists.

High dose ICS should only be used after referring patient to specialist/secondary care
# First line ICS and first line ICS/LABA combination inhaler dosage table for adults

<table>
<thead>
<tr>
<th>First line inhaler*</th>
<th>Low ICS dose</th>
<th>Moderate ICS dose</th>
<th>High ICS dose</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Beclometasone dipropionate</strong></td>
<td>200–400 micrograms per day in 2 divided doses</td>
<td>600–800 micrograms per day in 2 divided doses</td>
<td>1,000–2,000 micrograms per day in 2 divided doses</td>
</tr>
<tr>
<td>Dose regimen:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Clenil Modulite® MDI +/- spacer</td>
<td>100 mcg strength</td>
<td>200 mcg strength</td>
<td>250 mcg strength</td>
</tr>
<tr>
<td></td>
<td>1 to 2 puffs BD</td>
<td>2 puffs BD</td>
<td>2-4 puffs BD</td>
</tr>
<tr>
<td>Easyhaler Beclomethasone DPI</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>One puff BD</td>
<td>Two puffs BD</td>
<td></td>
</tr>
<tr>
<td><strong>Beclometasone dipropionate + formoterol</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dose regimen:</td>
<td>100–200 micrograms per day in 2 divided doses</td>
<td>300–400 micrograms per day in 2 divided doses</td>
<td>500–800 micrograms per day in 2 divided doses</td>
</tr>
<tr>
<td>Fostair® MDI +/- spacer OR Fostair Nexthaler® DPI</td>
<td>100 mcg/6 mcg strength</td>
<td>200 mcg/6 mcg strength</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1 puff BD</td>
<td>2 puffs BD</td>
<td>2 puffs BD</td>
</tr>
<tr>
<td><strong>Budesonide + formoterol</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dose regimen:</td>
<td>200–400 micrograms per day as a single dose or in 2 divided doses</td>
<td>600–800 micrograms per day as a single dose or in 2 divided doses</td>
<td>1,000–1,600 micrograms per day in 2 divided doses</td>
</tr>
<tr>
<td>Symbicort® Turbohaler</td>
<td>200mcg/6mcg strength</td>
<td>400mcg/12mcg strength</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1 puff BD</td>
<td>1-2 puffs BD</td>
<td>1-2 puffs BD</td>
</tr>
<tr>
<td>DuoResp® Spiromax®</td>
<td>160 mcg/4.5 mcg strength ≡ 200 mcg/6mcg</td>
<td>320mcg/9mcg strength ≡ 400 mcg/12 mcg</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1 puff BD</td>
<td>1-2 puffs BD</td>
<td>1-2 puffs BD</td>
</tr>
</tbody>
</table>

*These first line choices are evidence based, cost effective and are currently the lowest acquisition cost; any changes will be highlighted via scriptswitch/optimise, refer to SPC for further information. High dose ICS should only be used after referring patient to specialist/secondary care.

≡ = CCG preferred lower carbon footprint inhaler choice
Management of asthma exacerbation

- In asthma action plans for adults, health professionals are advised to consider quadrupling the level of the key inhaled preventer medication - inhaled corticosteroids (ICS) - at the onset of an asthma attack - and if necessary for 7 days up to maximum 14 days after - in order to abort the attack and the need for ongoing oral steroids.
- Quadruple dosing of ICS in adults: the frequency of dosing remains the same; it is the quantity of puffs that is increased by a multiple factor of four, e.g. ‘Symbicort 200 inhaler, ONE puff TWICE daily’ if the dose is quadrupled, the new dosing instructions would be ‘Symbicort 100 inhaler, FOUR puffs TWICE daily’
- The dosage regimen applies to people who are using ICS in a single inhaler only.
- The maximum licensed dose should not be exceeded.
- Advise the patient to resume normal dosing regimen once symptoms or peak flow has returned to normal or after a max of 14 days
- Quadrupling the dose will increase the risk of side effects – use of a spacer should be encouraged and if the patient is not using a spacer, washing the mouth with water after use is recommended.
Stepping Down Treatment\textsuperscript{1,2}

Reviewing controlled patients on high dose ICS (High daily dose = 1000-2000 micrograms CFC-beclometasone dipropionate.)

- Regular review of patients as treatment is stepped down is important. When deciding which drug to step down first and at what rate, take into account:
  - Side effects of the treatment
  - Time on the treatment
  - Time on current dose
  - Beneficial effect achieved
  - Patient’s Preference
- Consider stepping down when asthma is well-controlled for at least 3 months and at an appropriate time, e.g. not travelling, no respiratory infection, not pregnant.
- Reduce ICS dose by 25-50% at 2-3 month intervals.
- Maintain patients at the lowest possible dose of inhaled steroid.
- Consider stopping controller treatment only if there have been no symptoms for 6-12 months and patients have no risk factors, provide a PAAP and monitor closely
- Complete cessation of ICS in adults is generally not advised as the risk of exacerbations is increased
Personalised Asthma Action Plan (PAAP)6
Asthma UK available at: www.asthma.org.uk/advice-asthma-action-plan

- Offer all patients on general practice ‘active asthma’ registers, self-management education, supported by a written personalised asthma action plan (PAAP)
- Trained healthcare professionals should be providing support on self-management
  - Their own symptom triggers and peak flow levels at which action should be taken
  - Current treatment
  - How to adjust treatment to prevent relapse:
  - **PEF <80% best**: increase inhaled corticosteroid dose
  - **PEF <60% best**: commence oral steroids and seek medical advice
  - **PEF <40%**: seek urgent medical advice
- Advice on trigger avoidance and occupational exposure to support person and their families living with asthma

Consider emergency supply (if appropriate) of 40-50mg prednisolone daily for at least 5 days. Advise patient to use if the patient has had a history of exacerbations, a PEF or FEV1 <60% of their personal best or predicted value and have failed on increased reliever and controller medication over 2-3 days. Advise patient to contact surgery for review once prednisolone is started.2

When and how to seek help in an emergency.

- PAAPs have been acknowledged to improve asthma care, as people with a plan are 4 times less likely to be admitted to hospital because of their asthma.
- Asthma UK’s asthma attack information is not designed for people using the MART regimes. Patients should be advised by the GP or asthma nurse about what to do in an asthma attack and given a written asthma action plan specifically for their therapy.
- Invite for urgent review all asthma patients who have been prescribed more than 1 short acting reliever inhaler per month or more than 12 short acting reliever inhalers in the previous 12 months with the aim of improving their asthma control through education and change of treatment, if required. Consider if concordance is an issue and Can they use it? Do they use it?
Indicators for patients at high risk of severe asthma\textsuperscript{1,2}

- Previous near fatal asthma (Previous ventilation or respiratory acidosis).
- Previous hospital admission especially if in the last year.
- High use of SABA (two inhalers per month or more than 12 inhalers per year).
- Repeated attendances at Emergency department or urgent care centre especially if in the last year.
- Difficult asthma –poor control at high dose ICS stage of BTS/SIGN guideline.
- Non concordance with treatment or monitoring.
- Failure to engage in review appointments or Denial.
- Frequent home visits.
- Comorbid conditions.
- Self-discharge from hospital.
- Psychosis, depression, major mental illness or deliberate self-harm.
- Social isolation, employment or income problems, alcohol or illicit drug use, tranquiliser use, severe domestic / marital /legal stress.
- Obesity, learning difficulties.

Criteria for specialist asthma referral\textsuperscript{1}

- Diagnosis unclear
- Atypical or unexpected clinical findings (crackles, clubbing, cyanosis, cardiac disease, monophonic wheeze or stridor)
- Suspected occupational asthma.
- Monophonic wheeze or stridor.
- Chronic sputum production
- Persistent non variable breathlessness
- Systemic features (myalgia, fever, weight loss)
- Difficult asthma or poor response to asthma treatment
- 2 or more urgent care centre attendance (A&E, Out Of Hours, Walk-in centres).
- 2 or more severe asthma exacerbations requiring oral corticosteroids
- Marked blood eosinophilia (>1x 10\textsuperscript{9}/L)
- Chest x-ray shadowing
- Unexplained restrictive spirometry
Criteria for Admission

Adult patients with any feature of a life-threatening or near-fatal asthma attack or a severe asthma attack that does not resolve after initial treatment should be admitted to hospital. Admission may also be appropriate when peak flow has improved to greater than 75% best or predicted one hour after initial treatment but concerns remain about symptoms, previous history or psychosocial issues.

- Admit patients with any feature of a life-threatening or near-fatal asthma attack.
- Admit patients with any feature of a severe asthma attack persisting after initial treatment.

Patients whose peak flow is greater than 75% best or predicted one hour after initial treatment may be discharged from emergency department unless they meet any of the following criteria, when admission may be appropriate:

- Still have significant symptoms.
- Concerns about adherence.
- Living alone/socially isolated.
- Psychological problems.
- Physical disability or learning difficulties.
- Previous near-fatal asthma attack.
- Asthma attack despite adequate dose steroid tablets pre-presentation.
- Presentation at night.
- Pregnancy.
<table>
<thead>
<tr>
<th>Moderate asthma</th>
<th>Acute severe asthma</th>
<th>Life-threatening asthma</th>
<th>Near fatal asthma</th>
</tr>
</thead>
</table>
| • Increasing symptoms  
• PEF>50-75% best or predicted 
• No features of acute severe asthma | Any one of :  
• PEF 33-50% best or predicted 
• Respiratory rate >25/min  
• Heart rate >110/min  
• Inability to complete sentences in one breath | Any one of the following in a patient with severe asthma: | • Raised PaCO₂ and/or requiring mechanical ventilation with raised inflation pressures |

<table>
<thead>
<tr>
<th>Clinical signs</th>
<th>Measurements</th>
</tr>
</thead>
</table>
| • Altered conscious level  
• Exhaustion  
• Arrhythmia  
• Hypotension  
• Cyanosis  
• Silent chest  
• Poor respiratory effort | • PEF<33% best or predicted  
• Pulse oximetry<92%  
• PaO₂ <8kPa  
• Normal PaCO₂(4.6-6.0 kPa) |

PaO₂: Partial arterial pressure of oxygen  
kPa: KiloPascals  
PaCO₂: Partial arterial pressure of carbon dioxide
Management of Acute Severe Asthma in Adults in General Practice

<table>
<thead>
<tr>
<th>Moderate Asthma</th>
<th>Acute Severe Asthma</th>
<th>Life-threatening Asthma</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Initial Assessment</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Best or predicted PEF &gt;50-75%</td>
<td>Best or predicted PEF 33-50%</td>
<td>Best or predicted PEF&lt;33%</td>
</tr>
<tr>
<td><strong>Further Assessment</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pulse oximetry ≥92%</td>
<td>Pulse oximetry ≥ 92%</td>
<td>Pulse oximetry &lt;92%</td>
</tr>
<tr>
<td>Speech normal</td>
<td>Can’t complete sentences</td>
<td>Silent chest, cyanosis or poor respiratory effort</td>
</tr>
<tr>
<td>Respiratory rate &lt;25 breaths/min</td>
<td>Respiratory rate &gt;25 breaths/minute</td>
<td>Arrhythmia or hypotension</td>
</tr>
<tr>
<td>Pulse &lt;110 beats/ min</td>
<td>Pulse ≥ 110 beats/ min</td>
<td>Exhaustion, altered consciousness.</td>
</tr>
</tbody>
</table>

**Management**

- Treat at home or in Surgery and assess response to treatment.
- Consider Hospital admission
- Immediate Hospital admission

**Treatment**

<table>
<thead>
<tr>
<th>Salbutamol inhaler 100 micrograms / inhalation</th>
<th>Oxygen if available to maintain SpO₂ 94-98%.</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Give 1 puff every 30-60 seconds adjusted to clinical response up to a max of 10 puffs.</td>
<td>- Give Nebulised Salbutamol 5mg preferably oxygen driven.</td>
</tr>
<tr>
<td><strong>If best or predicted PEF &gt;50-75%</strong></td>
<td><strong>or</strong></td>
</tr>
<tr>
<td>- Give Nebulised Salbutamol 5mg preferably oxygen driven.</td>
<td>- Give oral prednisolone 40-50mg preferably within 1 hour.</td>
</tr>
<tr>
<td>- Give oral prednisolone 40-50mg preferably within 1 hour.</td>
<td>- Oxygen if available to maintain SpO₂ 94-98%.</td>
</tr>
</tbody>
</table>

**Assess clinical response**

<table>
<thead>
<tr>
<th>Admit to Hospital</th>
<th>If no response or PEF&lt;50%</th>
</tr>
</thead>
<tbody>
<tr>
<td>If good response to first treatment (symptoms improved, respiration and pulse settling and PEF &gt;50%)</td>
<td>- Admit to hospital.</td>
</tr>
<tr>
<td>(see page 16, 17 and 18) and continue Prednisolone for 5 days</td>
<td>- Repeat Nebulised Salbutamol 5mg preferably oxygen driven while awaiting ambulance.</td>
</tr>
<tr>
<td><strong>Discharge home If Clinically Stable and PEF &gt;75%, Pulse oximetry ≥94%</strong></td>
<td>Monitor SpO₂, heart rate and respiratory rate.</td>
</tr>
<tr>
<td>- Arrange GP review and follow-up within 2 working days.</td>
<td>- Life threatening features</td>
</tr>
<tr>
<td>- Ensure patient has a written PAAP.</td>
<td>- Features of acute severe asthma present after initial treatment</td>
</tr>
<tr>
<td>- Check inhaler technique.</td>
<td>- Previous near-fatal asthma</td>
</tr>
<tr>
<td>- Address potentially preventable contributors to exacerbation/admission -Modify treatment according to BCCG guidelines for chronic persistent asthma (see page 16 to 18)</td>
<td>- Lower threshold for admission if afternoon or evening attack, recent nocturnal symptoms or hospital admission, previous severe attacks, patient unable to assess own condition, or concern over social circumstances.</td>
</tr>
<tr>
<td>If admitting the patient to hospital:</td>
<td>Admit to hospital if any:</td>
</tr>
<tr>
<td>- Stay with patient until ambulance arrives.</td>
<td>- Life threatening features</td>
</tr>
<tr>
<td>- Send written assessment and referral details to hospital</td>
<td>- Features of acute severe asthma present after initial treatment</td>
</tr>
<tr>
<td>- β2 bronchodilator via oxygen-driven nebuliser in ambulance.</td>
<td>- Previous near-fatal asthma</td>
</tr>
<tr>
<td><strong>While awaiting ambulance:</strong></td>
<td>- Lower threshold for admission if afternoon or evening attack, recent nocturnal symptoms or hospital admission, previous severe attacks, patient unable to assess own condition, or concern over social circumstances.</td>
</tr>
</tbody>
</table>
Exercise induced asthma

- Advice on use of inhaled short acting beta$_2$ agonist immediately before exercise.
- For most patients this is an expression of poorly controlled asthma and regular treatment including inhaled corticosteroids should be reviewed.
- Consider adding one of the following if exercise is a specific problem in patients on inhaled corticosteroids who are otherwise well controlled:
  - Leukotriene receptor antagonist (LTRA)
  - Long-acting beta$_2$ agonist (LABA)
  - Sodium cromoglicate or nedocromil sodium
  - Theophyllines

Asthma in Adolescents

- Adolescents are defined by the World Health Organisation (WHO) as young people between the age of 10 and 19 years.
- For information on the process (including roles and responsibilities of health care professionals and sector) for patients transitioning from adolescent to adult provision of care please refer to the Bedfordshire CCG and Luton CCG Paediatric Asthma and Wheeze Guideline
- During consultations, the adolescent should be seen on their own, separate from parent /carer for part of the consultation, and discussing confidentiality and its limitations. Issues such as smoking, smoking cessation options, interventions to reduce exposure, inhaler adherence and mental health can be discussed privately and agreed as well as exploring health beliefs such as complementary therapies.
- Medication regimes should be tailored to the adolescent’s needs and lifestyle, reviews should be arranged regularly so that medication regime can be adjusted for changing needs. The ACQ and ACT have been validated in adolescents with asthma.
- Adolescents may be concerned about the impact of treatment on their physical and sexual capabilities as well as their entry into the workplace. These aspects should be discussed with the patient as appropriate.
- As well as checking inhaler technique it is important to enquire about factors that may affect inhaler device use and adherence in real life settings.
Asthma in pregnancy

- The severity of asthma may improve, worsen or remain unchanged during pregnancy.
- Women should be advised of the importance of maintaining good control of their asthma during pregnancy to avoid problems for both mother and baby.
- In general the medicines used to treat asthma in pregnancy are considered safe.
- Monitor pregnant women with moderate/severe asthma closely to keep their asthma well controlled.
- Advise women who smoke about the dangers for themselves and their babies and give appropriate support to stop smoking.
- The risk of harm to the foetus from severe or chronically undertreated asthma outweighs any small risk from the medications used to control asthma.
- Short and long acting B₂-agonists, inhaled corticosteroids and oral steroids, oral and intravenous theophyllines can be used safely in pregnancy.
- If leukotriene receptor antagonists are required to achieve adequate control of asthma then they should not be withheld during pregnancy.
- Breast feeding should be encouraged.
- Asthma medications can be used as normal (in line with the manufacturers’ recommendations) during breast feeding.
- Acute exacerbations should be managed as in non-pregnant patients.

Occupational Asthma

- At least 1:10 new cases of asthma developing in adulthood (or reappearance of childhood asthma in adult life) is due to occupational asthma.
- Look for occupational asthma especially in new onset adult asthma.
- Ask the question – Do your symptoms improve when away from work or deteriorate when at work?
- If yes, arrange serial PEF measurements and refer (Chest physician or Occupation Physician) for expert assessment and advice.

High risk occupations include:

- Food processing, especially baking/pastry making
- Laboratory work
• Metal work, especially welding/soldering
• Chemical processing
• Farming and other jobs with exposure to dust/fumes
• Spray painting
• Health/dental care
• Woodwork
• Textiles/plastics/rubber manufacture

**Difficult Asthma**

- This is defined as persistent symptoms and/or frequent asthma attacks despite treatment with high dose ICS or continuous or frequent use of oral steroids
- Do they really have asthma? Confirm diagnosis, review history and examination findings, exclude other causes.
- Are there any persistent symptoms? What are the causes?
- Are they taking the prescribed drugs, are they taking them properly? Assess adherence. *Can they use it? Do they use it? Is it drug induced?*
- Are lifestyle or occupational factors exacerbating the asthma?
- Consider assessment for Dysfunctional breathing
- Do they have co-existent psychological morbidity?
- Review every 3 months until treatment goals are achieved, then annually.
- People with difficult asthma should be offered an assessment by a multidisciplinary difficult asthma team or service.

**Consider SIMPLIES process for improving care for people with difficult asthma**

**Smoking**
- Ask about current smoking habits, use of a written self-completed questionnaire may encourage an honest response.
- Encourage and offer smokers help and support to quit (medication and referral to appropriate stop smoking services)
- Smokers respond less well to ICS than non-smokers, consider alternative therapy in patients who cannot quit smoking.

**Inhalers**
• Is it appropriate choice? - Can they use it, do they use it?
• Observe inhaler technique – offer spacer device with MDI.
• Recheck inhaler technique at every visit.

Monitoring
• Use RCP 3 questions to assess Asthma control.
• Yes to any of the 3 questions indicate uncontrolled asthma – explore further.
• Yes to all 3 questions indicate high risk of hospital admissions.

Pharmacotherapy
• Is patient receiving treatment at the right step for severity of their asthma?
• Check adherence and inhaler technique, side effects, drug interactions. Can they use it, do they use it?
• Check the patient understands their treatment, tailoring information to their specific needs.

Lifestyle
• Identify modifiable risk factors.
• Ask specific questions about exposure to risk factors including occupational exposure.

Education
• Check patient understand their asthma, what it is and why treatment help.
• Identify avoidable triggers for exacerbations.
• Discuss and provide an agreed written personalised asthma action plan.

Support
Check what support the patient has, involve family where possible and appropriate with patient consent.
Asthma inhaler choices and treatments

= CCG preferred lower carbon footprint inhaler choice

<table>
<thead>
<tr>
<th>Short-acting beta2-agonist (SABA) inhaler</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Salbutamol 100mcg/dose CFC-free MDI +/- spacer</td>
</tr>
<tr>
<td>2. Easyhaler Salbutamol Sulfate 100 micrograms per actuation inhalation powder</td>
</tr>
<tr>
<td>2. Terbutaline® Turbohaler 500 microgram per inhalation</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Inhaled Corticosteroid (ICS) inhaler (BDP is the equivalent steroid dose to beclomethasone dipropionate)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Clenil Modulite® CFC-free aerosol inhaler (beclometasone dipropionate) 50 micrograms per dose +/- spacer</td>
</tr>
<tr>
<td>1. Clenil Modulite® CFC-free aerosol inhaler (beclometasone dipropionate) 100 micrograms per dose +/- spacer</td>
</tr>
</tbody>
</table>
1. Clenil Modulite® CFC-free aerosol inhaler (beclometasone dipropionate) **200** micrograms per dose +/- spacer
   - One puff twice daily [total BDP 400 micrograms per day]
   - Two puffs twice daily [total BDP 800 micrograms per day]
   - Four puffs twice daily [total BDP 1600 micrograms per day]

1. Clenil Modulite® CFC-free aerosol inhaler (beclometasone dipropionate) **250** micrograms per dose +/- spacer
   - Four puffs twice daily [total BDP 2000 micrograms per day]

1. Easyhaler® Beclometasone 200 micrograms/dose inhalation powder
   - One puff twice daily
   - [NOT recommended for use in children]

2. Pulmicort® Turbohaler® Budesonide **100** micrograms/actuation
   - Children aged 5 years and above and adults
   - Two puffs (200 micrograms) in divided doses [total BDP 1600 micrograms per day.]

2. Pulmicort® Turbohaler® Budesonide **200** micrograms/actuation
   - Children aged 5 years and above and adults
   - One puff (200 micrograms) in divided doses [total BDP 1600 micrograms per day.]

**LABA + ICS combination inhaler (BDP is the equivalent steroid dose to beclometasone dipropionate)**

1. Fostair® 100/6 MDI (beclometasone / formoterol 100 microgram / 6 microgram) +/- spacer
   - Adults over 18 years
   - One puff twice daily [total BDP 500 micrograms per day]
   - Two puffs twice daily [total BDP 1000 micrograms per day]
<table>
<thead>
<tr>
<th>Product</th>
<th>Dosage Instructions</th>
<th>Adults over 18 years</th>
<th>Child 12-17 years</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fostair® 200/6 MDI (beclometasone / formoterol 200 microgram / 6 microgram) +/- spacer</td>
<td>Two puffs twice daily. [total BDP 2000 micrograms per day]</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fostair NEXThaler® 100/6 (beclometasone dipropionate 100mcg / formoterol fumarate dihydrate 6mcg per dose) dry powder inhaler</td>
<td>One puff twice daily [total BDP 500 micrograms per day] Two puffs twice daily [total BDP 1000 micrograms per day]</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fostair NEXThaler® 200/6 (beclometasone dipropionate 200mcg / formoterol fumarate dihydrate 6mcg per dose) dry powder inhaler</td>
<td>Two puffs twice daily. [total BDP 2000 micrograms per day]</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DuoResp® Spiromax® 160/4.5 (budesonide 160 micrograms /formoterol 4.5 micrograms) inhalation powder</td>
<td>One puff twice daily. [total BDP 400 micrograms per day] Two puffs twice daily [total BDP 800 micrograms per day]</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DuoResp® Spiromax® 320/9 (budesonide 320 micrograms /formoterol 9 micrograms) inhalation powder</td>
<td>One puff twice daily. [total BDP 800 micrograms per day] Two puffs twice daily. [total BDP 1600 micrograms per day]</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Symbicort Turbohaler® (budesonide 200 micrograms /formoterol fumarate dihydrate 6 micrograms per dose) dry powder inhaler</td>
<td>One or two puffs twice daily. [total BDP 400 to 800 micrograms per day]</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Product Description</td>
<td>Dosage</td>
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<tr>
<td>----------------------------------------------------------------------------------</td>
<td>----------------------------------------------------------------------</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>1. Symbicort Turbohaler®</strong> (budesonide 400 micrograms/formoterol fumarate dihydrate 12 micrograms per dose) dry powder inhaler</td>
<td><strong>Child 12-17 years</strong>&lt;br&gt;One puff twice daily.&lt;br&gt;[total BDP 800 micrograms per day]&lt;br&gt;Two puffs twice daily.&lt;br&gt;[total BDP 1600 micrograms per day]</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>2. Fluticasone furoate/ vilanterol (Relvar®Ellipta®) 92 micrograms/22 micrograms</strong></td>
<td><strong>Adults and adolescents aged 12 years and over</strong>&lt;br&gt;One inhalation once a day&lt;br&gt;(For use in young people with ‘difficult to control’ asthma under tertiary care)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>2. Relvar Ellipta (fluticasone furoate/vilanterol) 184 micrograms/22 micrograms inhalation powder</strong></td>
<td><strong>Adults and adolescents aged 12 years and over</strong>&lt;br&gt;One puff once daily&lt;br&gt;(For use in young people with ‘difficult to control’ asthma under tertiary care)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Long-acting muscarinic agent (LAMA) inhaler</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Spiriva Respimat® (tiotropium) 2.5 micrograms per inhalation</td>
<td><strong>Two puffs once daily.</strong></td>
<td></td>
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</tr>
<tr>
<td><strong>Spacers - Spacers should be hand washed using warm water and washing up liquid and air dried, not more than monthly interval</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Volumatic® spacer</td>
<td>Solid adaptor, only fits specific MDIs, including all Chiesi (Clenil®, Fostair®, Atimos®) and GSK (Ventolin®, Flixotide®, Seretide®, Serevent®)</td>
<td>-Removable mask&lt;br&gt;-Perceivable valve movement</td>
<td></td>
</tr>
</tbody>
</table>


| A2A spacer® (includes Able®) | Universal adaptor (all MDIs) | -Low-static  
  -Anti-microbial  
  -Removable mask  
  -Perceivable valve movement |
|-----------------------------|-----------------------------|------------------------------------------------------------------|
| Space Chamber Plus®         | Universal adaptor (all MDIs) | -Removable mask  
  -Perceivable valve movement                                       |
| AeroChamber Plus Flow-Vu®   | Universal adaptor (all MDIs) | -Antistatic  
  -Visible value movement  
  -One size chamber  
  -With or without facemask small (0-18m), medium (1-5 years), small adult, large adult |

**Add-on Therapy**

<table>
<thead>
<tr>
<th>Montelukast Tablets</th>
<th>Montelukast 10mg tablets in the evening-adults and adolescents over 15 years;</th>
</tr>
</thead>
<tbody>
<tr>
<td>SR aminophylline (Phyllocontin Continus®) tablets 225mg</td>
<td>Phyllocontin Continus® tablets 225mg (Adult and child body weight over 40kg) One tablet twice daily for one week then increased to 2 tablets twice daily if necessary according to plasma concentrations.</td>
</tr>
</tbody>
</table>
## Glossary

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACO</td>
<td>Asthma-COPD overlap</td>
</tr>
<tr>
<td>ACQ</td>
<td>Asthma Control Questionnaire</td>
</tr>
<tr>
<td>ACT</td>
<td>Asthma Control Tool</td>
</tr>
<tr>
<td>BDP</td>
<td>Beclometasone Dipropionate</td>
</tr>
<tr>
<td>BDR</td>
<td>Bronchodilator Reversibility Test</td>
</tr>
<tr>
<td>BMI</td>
<td>Body Mass Index</td>
</tr>
<tr>
<td>BNF</td>
<td>British National Formulary</td>
</tr>
<tr>
<td>BTS/SIGN</td>
<td>British Thoracic Society / Scottish Intercollegiate Guidelines Network</td>
</tr>
<tr>
<td>CCG</td>
<td>Clinical Commissioning Group</td>
</tr>
<tr>
<td>COPD</td>
<td>Chronic Obstructive Pulmonary Disease</td>
</tr>
<tr>
<td>FeNO</td>
<td>Fractional exhaled nitric oxide</td>
</tr>
<tr>
<td>FEV₁</td>
<td>Forced expiratory volume in 1 second</td>
</tr>
<tr>
<td>FVC</td>
<td>Forced Vital Capacity</td>
</tr>
<tr>
<td>GINA</td>
<td>Global Initiative for Asthma</td>
</tr>
<tr>
<td>ICS</td>
<td>Inhaled corticosteroid</td>
</tr>
<tr>
<td>LABA</td>
<td>Long acting beta₂ agonist</td>
</tr>
<tr>
<td>LAMA</td>
<td>Long acting muscarinic agent</td>
</tr>
<tr>
<td>LTRA</td>
<td>Leukotriene receptor antagonist</td>
</tr>
<tr>
<td>MDI</td>
<td>Metered dose inhaler</td>
</tr>
<tr>
<td>MDT</td>
<td>Multi-Disciplinary Team</td>
</tr>
<tr>
<td>NICE</td>
<td>National Institute for Health and Care Excellence</td>
</tr>
<tr>
<td>NRAD</td>
<td>National Review of Asthma Deaths Report</td>
</tr>
<tr>
<td>OCS</td>
<td>Oral Corticosteroids</td>
</tr>
<tr>
<td>PAAP</td>
<td>Personalised Asthma Action Plan</td>
</tr>
<tr>
<td>PEF</td>
<td>Peak Expiratory Flow</td>
</tr>
<tr>
<td>PRN</td>
<td>Medication to be taken as required</td>
</tr>
<tr>
<td>QOF</td>
<td>Quality and Outcomes Framework</td>
</tr>
<tr>
<td>RCP</td>
<td>Royal College of Physicians</td>
</tr>
<tr>
<td>RNS</td>
<td>Respiratory Nurse Specialist</td>
</tr>
<tr>
<td>RT</td>
<td>Respiratory Information Services Team</td>
</tr>
<tr>
<td>SABA</td>
<td>Short-acting beta₂ agonist</td>
</tr>
</tbody>
</table>
Appendix 1: NICE Asthma Quality Standards (QS25)\(^4\)

Please also visit [www.nice.org.uk](http://www.nice.org.uk) to ensure you are using the current NICE Quality Standards for Asthma and for further information.

**Statement 1** People aged 5 years and over with suspected asthma have objective tests to support diagnosis. [2013, updated 2018]

**Statement 2** People aged 5 years and over with asthma discuss and agree a written personalised action plan. [2013, updated 2018]

**Statement 3** People with asthma have their asthma control monitored at every asthma review. [2013, updated 2018]

**Statement 4** People who receive treatment in an emergency care setting for an asthma attack are followed up by their general practice within 2 working days of discharge. [2013, updated 2018]

**Statement 5** People with suspected severe asthma are referred to a specialist multidisciplinary severe asthma service. [2013, updated 2018]

Statements from the 2013 quality standard for asthma that are still supported by the evidence may still be useful at a local level:

- Adults with new onset asthma are assessed for occupational causes.
- People with asthma are given specific training and assessment in inhaler technique before starting any new inhaler treatment.
- People with asthma receive a structured review at least annually.
- People with asthma who present with an exacerbation of their symptoms receive an objective measurement of severity at the time of presentation.
- People aged 5 years or older presenting to a healthcare professional with a severe or life-threatening acute exacerbation of asthma receive oral or intravenous steroids within 1 hour of presentation.
- People admitted to hospital with an acute exacerbation of asthma have a structured review by a member of a specialist respiratory team before discharge.

1. Every practice should have a named lead clinician for Asthma services (responsible for formal training in the management of acute asthma and routine care).
2. Patients must be referred to specialist service if they required more than two courses of systemic corticosteroids in last 12 months or require high dose inhaled corticosteroid therapy.
3. All patients should have a written personal asthma action plan (PAAP).
4. Structured reviews should be undertaken by people with specialist training in Asthma (at least annually). People at high risk of severe Asthma attacks should be monitored more closely.
5. Should elicit and record triggers in the medical records and PAAP.
6. Should review control at each Asthma review.
7. Inhaler technique should be routinely undertaken and documented.
8. Non-adherence should be identified and monitored.
9. Urgent review for all with more than 12 SABA inhalers in the previous 12 months.
10. Patients should not be prescribed a LABA alone (should be in combination with an inhaled corticosteroid).
11. Smoking record should be documented and support for smoking cessation.
12. Education is important for parents and children and those who teach them.
### Appendix 3: Asthma Review Checklist

**Initial assessment to confirm diagnosis**

- Take a full history, explore possible causes including triggers and occupational causes in adults
- Support diagnosis demonstration of airflow obstruction over short periods of time.
- Record the basis on which diagnosis of asthma is suspected (high, intermediate and low probability)
- Assess asthma control and future risk of adverse outcomes
- Ask about smoking status and desire to quit where appropriate. Offer smoking cessation advice and support
- Give weight management advice to those with BMI >25
- Offer written personalised asthma action plan which should include symptom triggers recognition, monitoring of peak flow, management of deteriorating symptoms and Peak flow levels at what actions should be taken

**Follow-up**

- There should be a structured review at least annually.
- Consider telephone review for people unable to attend or take time off work except in cases of poor asthma control.
- Assess asthma symptom control using validated questionnaire such as the RCP 3 questions.
- Ask about smoking status and desire to quit where appropriate. Offer smoking cessation advice and appropriate support.
- Weight management advice in overweight patients (BMI >25). Offer breathing exercise programme.
- Monitor and record lung function by Peak flow or Spirometry.
Record all exacerbations, oral corticosteroid use and hospital admission since last assessment.

Check inhaler technique and train as appropriate, prescribe and encourage use of spacer with pMDI inhaler.

Check concordance with therapy by reviewing the number of refill preventer prescription

Check number of prescribed short acting reliever (SABA) in last 12 months, more than 12 inhalers per year could be a sign of poor asthma control and could be an indicator of patients at a greater risk of potentially life threatening asthma. Average 3-4 inhalers per year is expected with good asthma symptom control.

Review written personalised asthma action plan which should include symptom triggers recognition, management of deteriorating symptoms and Peak flow levels at which action should be taken. Adjust as appropriate.

Refer Asthma preferred patient treatment pathway (BCCG asthma guidelines)

Step down and Step up asthma treatment as appropriate.

Consider referral of patients with difficult asthma to multidisciplinary difficult team /asthma service.
Appendix 4: Inhaled Corticosteroid safety information for adults⁹

Issue a steroid treatment card to:

- People using prolonged high doses (greater than 800 micrograms budesonide or equivalent) of inhaled corticosteroids (including off-label high doses, and maximum inhaled doses in conjunction with oral corticosteroids).  
  **NHS England Guidance on ICS in Adults**

- People taking inhaled corticosteroids plus drugs that inhibit their metabolism (for example cytochrome P450 inhibitors such as HIV protease inhibitors).

The steroid treatment card provides clear guidance on the precautions to minimise the risks of adverse effects, and provides details of the prescriber, drug, dosage, and the duration of treatment.

GP practices and community pharmacists can order supplies of steroid treatment cards using the Primary Care Support England (PCSE) online portal **www.pcse.england.nhs.uk**
Appendix 5: How to get extra help with inhaler training and assessment - The Community Pharmacy New Medicine Service (NMS) and Medicine Use Reviews (MURs)

Healthcare professionals in primary and secondary care can refer patients to their local community pharmacist when they prescribe a new inhaler or where they consider a patient would benefit from further support in using their existing inhalers. Community pharmacists provide patients prescribed inhalers and/or a New Medicine Service (NMS) or Medicines Use Review (MUR).

The New Medicine Service is a free to use NHS service provided by community pharmacists and aims to help patients get the most out of their medicines when they are first prescribed. The community pharmacist asks the patient if they would consent to use the service and then provides an explanation of what the medicine is for and how the inhaler is used correctly. Patients can also ask any questions about their new inhaler. The NMS also includes patients commenced on a new inhaler whilst in hospital. Community pharmacists can provide NMS post discharge from hospital.

The Medicine Use Review (MUR) service is for patients who are already prescribed inhalers. The MUR service is also a free to use NHS service and patients are asked to consent to have the service. The MUR aims to improve patient knowledge, adherence and use of their medicines by:

- Establishing the patient’s actual use, understanding and experience of taking their medicines
- Identifying, discussing and resolving poor or ineffective use of their medicines
- Identifying side effects and drug interactions that may affect adherence
- Improving the clinical and cost effectiveness of prescribed medicines and reducing medicine wastage.

Data from Bedfordshire community pharmacies indicate that the NMS and MUR services are currently underutilised. In particular, referral post discharge from hospital NMS is particularly low. A patient information leaflet on the NMS is provided in Appendix 6.
Appendix 6: New Medicine Service: helping you with your new medicine

What this leaflet is for
If you have been invited to use the New Medicine Service (NMS) or want to know more about it then this leaflet will give you the information you need.

What is the New Medicine Service?
The New Medicine Service is a free NHS service, offered through your pharmacy (chemist), to help you understand your condition and get the most out of your new medicine.

Who is it for?
The service is for people who have received their first prescription for a medicine to treat any of the following conditions:
- asthma
- lung conditions such as chronic bronchitis and emphysema
- type 2 diabetes
- high blood pressure
- conditions where you take a medicine to control the way your blood clots.

How will it help me?
Between 30% and 50% of prescribed medicines are not taken as recommended. This means that a lot of medicines are wasted or are not as effective as they could be. The service will:
- help you to find out more about the new medicine you are taking
- help to sort out any problems you are having with your new medicine
- give you a chance to ask questions about your medicine and discuss any concerns
- help to improve the effectiveness of your new medicine, for example, there may be an easier or better way to take it
- help you to make your own decisions about managing your condition
- help you to improve your health, which could lead to fewer GP and hospital visits.

The New Medicine Service will help provide better value for you and the NHS by making sure that your medicines are right for you.
**How does the service work?**

When you are given your new medicine you will be asked if you want to sign up to the service, which will be provided in three parts. If you agree, you will need to sign a consent form to allow your pharmacist to share your information with other parts of the NHS.

<table>
<thead>
<tr>
<th>Step 1</th>
<th>Your pharmacist will give you information about your new medicine.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Step 2</td>
<td>You will be invited to a meeting with your pharmacist between 7 and 14 days after you first receive your medicine. You will be able to choose a time that suits you. This is a confidential conversation and will be provided in a private area within the pharmacy or if you prefer, you could choose to have the discussion over the telephone. Your pharmacist will ask you questions about how you are getting on with your new medicine, find out if you are having any problems and give you any information and support you need. You may have concerns or questions that you want to ask. You can ask anything at all about your new medicine.</td>
</tr>
<tr>
<td>Step 3</td>
<td>Your pharmacist will arrange a follow-up discussion with you 14 to 21 days after step 2. You will be able to talk about how things are going with your medicine and ask for more advice if you need it.</td>
</tr>
</tbody>
</table>

**Why do I need to sign a consent form?**

In order to receive this service, you will be asked to give your consent for your pharmacist to share information from your New Medicine Service discussions with:

- your GP, if necessary (for example if they need to change your medicine because you are having a problem with it)
- your local NHS England area team to make sure that the service is being provided properly by your pharmacist
- your local NHS England area team, the NHS Business Services Authority and the Secretary of State for Health, to make sure your pharmacy is being paid the correct amount by the NHS for the service they have provided you. If you do not give your consent you will not be able to use the service. However, when you first receive your medicines your pharmacist will still give you advice about them.

**How can you prepare for your discussions with the pharmacist?**
• Read the leaflet that comes with your new medicine.
• Make a note of questions you want to ask about your new medicine.
• Make a note of any concerns about your new medicine that you may want to discuss with your pharmacist.
• Bring your new medicine to the meeting with your pharmacist.

What happens after the two discussions?
• Everything may be okay with your new medicine and nothing else will need to happen.
• If you have had problems with the medicine, you may agree with your pharmacist to change the way you use it.
• Your pharmacist may recommend that your doctor reviews your new medicine. If this is needed your pharmacist will send a note to your doctor explaining the issues raised. You can have a copy of this note.
Appendix 7: Self-management of worsening asthma in adults and adolescents with a written asthma action plan  
(for healthcare professional use only)

Effective asthma self-management education requires:

- Self-monitoring of symptoms and/or lung function
- Written asthma action plan
- Regular medical review

### All patients

- Increase reliever
- Early increase in controller as below
- Review response

#### If PEF or FEV<sub>1</sub> < 60% best, or not improving after 48 hours

- Continue reliever
- Continue controller
- Add prednisolone 40-50 mg/day
- Contact doctor

#### EARLY OR MILD

- Increase usual reliever:
  - Short-acting beta<sub>2</sub>-agonist (SABA)
  - Low does ICS/formoterol*

- Increase frequency of SABA use
  - For pMDI, add spacer
- Increase frequency of reliever use
  - (maximum formoterol total 72 mcg/day)

- Increase usual controller:
  - Maintenance and reliever ICS/formoterol*
  - Continue maintenance ICS/formoterol and increase reliever ICS/formoterol as needed* (maximum formoterol total 72 mcg/day)
  - Maintenance ICS with SABA as reliever
  - At least double ICS; consider increasing ICS to high dose (maximum 2000 mcg/day BDP equivalent)
  - Maintenance ICS/formoterol with SABA as reliever
  - Quadruple maintenance ICS/formoterol (maximum formoterol 72 mcg/day)
  - Maintenance ICS/other LABA, with SABA as reliever
  - Step up to higher dose formulation of ICS/other LABA, or consider adding a separate ICS inhaler (to maximum total 2000 mcg/day BDP equivalent)

- Add oral corticosteroids (OCS) and contact doctor
  - OCS (prednisone or prednisolone)
  - Add OCS for severe exacerbations (e.g. PEF or FEV<sub>1</sub> < 60% personal best or predicted), or patient not responding to treatment over 48 hours

  - Adults: prednisolone 1 mg/kg/day (maximum 50 mg) usually for 5-7 days.
  - Children: prednisolone 1-2 mg/kg/day (maximum 40 mg) usually for 3-5 days
  - Tapering is not needed if OCS are prescribed for <2 weeks

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BDP: beclomethasone dipropionate; FEV<sub>1</sub>: forced expiratory volume in 1 second; ICS: inhaled corticosteroid; PEF: peak expiratory flow; SABA: short-acting beta<sub>2</sub>-agonist. Options are listed in order of evidence

*ICS/formoterol maintenance and reliever regimen: low does budesonide or beclomethasone with formoterol.
References


3. Diagnosis of Diseases of Chronic Airflow Limitation: Asthma, COPD and Asthma-COPD Overlap Syndrome (ACO) (Updated 2017). A Joint Project of GINA and GOLD. Diagnosis and Initial Treatment of Asthma, COPD and Asthma-COPD Overlap 2017


10. Inhaled Corticosteroid Safety Information for Adults. London Respiratory Network.


