ASTHMA TREATMENT GUIDE (ADULTS)

The SIGN/BTS guideline provides a wide range of information and guidance on the treatment of patients with asthma.
http://sign.ac.uk/guidelines/fulltext/101/

NHS Lanarkshire (NHSL) has the highest cost per patient for respiratory medicines in Scotland, especially inhaled corticosteroids for the treatment of asthma and COPD. This is independent of the higher prevalence of both conditions within NHSL. Safe and cost-effective use of inhaled corticosteroids is of paramount importance.

With these objectives in mind NHSL has reviewed its respiratory formulary options and a step-wise summary can be found in Appendix 1. Further information can be found by accessing the NHSL Formulary.
http://www.medednhsl.com/meded/nhsl_formulary/

STEPPING DOWN THERAPY IN ADULTS>18YEARS

It is important that patients being treated for asthma using inhaled corticosteroids (ICS) are titrated down to the lowest dose that controls their symptoms. 85% of all patients with asthma should be able to achieve control on Step 1, 2 or 3 of the BTS asthma guidelines.¹ For most patients step 3 would be considered to be equivalent to fluticasone propionate 200mcg daily (equivalent to 400mcg daily of BDP). This is an important point to bear in mind when considering a patient’s medication.

**What is the evidence for stepping-down?**

Evidence indicates that optimal asthma control can be achieved with lower doses of ICS than were used previously. Meta analyses have evaluated the efficacy and safety of ICS in asthma, one of which highlighted that over 90% of the clinical benefit was achieved at a total daily dose of 200mcg of fluticasone propionate ³ (equivalent to 400mcg BDP/day). The second found that the dose-response curve for efficacy was relatively flat and the difference between fluticasone propionate 100mcg and 1,000mcg daily is relatively small.⁶

**PRACTICE POINTS**

Patients should have their asthma control assessed using a validated symptom control questionnaire (e.g. ACT, RCP or ACQ). Step-down of treatment should be considered for patients whose asthma symptoms are well controlled (see Table 1, Page 2) for at least 12 weeks. Stepping down before this can lead to exacerbations and hospital admissions.¹

When stepping patients down or changing therapy, prescribers should keep device changes to a minimum and consider the beclometasone dipropionate (BDP) equivalence of different inhaler devices.¹,² (see Table 2, Page 3)

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**Dose-response curve for inhaled corticosteroids**

- **Clinical Benefit**
- **Adverse effect**

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As demonstrated in the graph above, the majority of clinical benefit is seen at lower doses and then tails off. In contrast the dose response curve for side-effects (e.g. bruising and thinning of the skin, glaucoma, cataracts, and decrease in bone mineral density) increases sharply with higher doses of ICS (>500mcg/day fluticasone propionate).

What do the guidelines say about stepping-down?
The decision to step-down therapy should be jointly made between the clinician and the patient. Reductions should be considered every three months, but only if the patient’s symptoms are well controlled. When reducing inhaled corticosteroids (ICS) clinicians should remember that patients deteriorate at different rates. If asthma is controlled with a combination ICS/long acting beta agonist (LABA) inhaler, the preferred approach is to reduce the ICS by approximately 50% whilst continuing the LABA at the same dose. NICE guidance advises that combination inhalers may increase adherence to therapy. AS LABA monotherapy can increase the risk of asthma related deaths, prescribers should consider each patient on an individual basis taking into account patient preference, therapeutic need and the likelihood of adherence with all asthma therapy. Any decision should be taken after having a full discussion with the patient covering the potential consequences; such as reappearance of symptoms and what to do if they occur.

If control is maintained after stepping-down, further reductions in the ICS should be attempted until a low dose is reached after which the LABA may be stopped.

### TABLE 1: LEVEL OF ASTHMA CONTROL

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Well controlled</th>
<th>Partly controlled</th>
<th>Uncontrolled</th>
</tr>
</thead>
<tbody>
<tr>
<td>Daytime symptoms</td>
<td>None (twice or less/week)</td>
<td>&gt;Twice/week</td>
<td>Three or more features of partly controlled asthma</td>
</tr>
<tr>
<td>Limitation on activities</td>
<td>None</td>
<td>Any</td>
<td></td>
</tr>
<tr>
<td>Nocturnal symptoms/awakening</td>
<td>None</td>
<td>None</td>
<td></td>
</tr>
<tr>
<td>Need for reliever/rescue treatment</td>
<td>None (twice or less/week)</td>
<td>&gt;Twice/week</td>
<td></td>
</tr>
<tr>
<td>Lung function (PEF or FEV1)</td>
<td>Normal</td>
<td>&lt;80% predicted or personal best (if known)</td>
<td></td>
</tr>
</tbody>
</table>

### TABLE 2: VARIATIONS IN BECLOMETASONE DIPROPIONATE (BDP) EQUIVALENCE

<table>
<thead>
<tr>
<th>Inhaled Corticosteroid (ICS)</th>
<th>Equivalence to 400mcg BDP/day</th>
</tr>
</thead>
<tbody>
<tr>
<td>Beclometasone - Clenil®</td>
<td>400mcg</td>
</tr>
<tr>
<td>Beclometasone - Qvar®</td>
<td>200mcg Qvar = 400-500mcg BDP (refer to SPC)</td>
</tr>
<tr>
<td>Beclometasone - Fostair®</td>
<td>No 400mcg equivalent: 200mcg Fostair = 500mcg BDP</td>
</tr>
<tr>
<td>Budesonide - Pulmicort®/Symbicort®</td>
<td>400mcg</td>
</tr>
<tr>
<td>Budesonide – DuoResp Spiromax®</td>
<td>320mcg</td>
</tr>
<tr>
<td>Fluticasone – Flixotide®/Seretide®/ Flutiform®</td>
<td>200mcg</td>
</tr>
<tr>
<td>Fluticasone - Relvar®</td>
<td>Dose equivalence not established</td>
</tr>
<tr>
<td>*Ciclesonide - Alvesco®</td>
<td>200-300mcg</td>
</tr>
<tr>
<td>*Mometasone - Asmanex®</td>
<td>200mcg</td>
</tr>
</tbody>
</table>

Adapted from MeRec Bulletin 2008;13/2 and BTS/SIGN Asthma guideline 2012. *Dose equivalence not well established

References:


This document is adapted from guidelines produced by Bristol PCT with kind permission from the author (J Gibbs).
APPENDIX 1:
FORMULARY TREATMENT ALGORITHM (ADULTS >18YRS)

BEFORE STEPPING UP OR DOWN TREATMENT PATHWAY CONSIDER:
- INHALER TECHNIQUE
- COMPLIANCE

**STEP 1**
- Salbutamol 100mcg 1-2 doses when required
- Terbutaline 500mcg 1 dose when required

**STEP 2**
- Qvar 50mcg 2 doses twice daily
- Clenil Modulite 100mcg 2 doses twice daily
- Easyhaler Budesonide 100mcg 2 doses twice daily

**STEP 3**
- Fostair 100mcg/6mcg 1 dose twice daily
- DuoResp 160mcg/4.5mcg Increased to 2 doses twice daily if not controlled
- If no response to LABA then increase steroid to 800mcg BDP equiv. and add in an *ADJUNCT

**STEP 4**
- Flutiform 250mcg/10mcg 2 doses twice daily
- Seretide Accuhaler 500mcg/50mcg 1 dose twice daily
- Seretide Evohaler 250mcg/25mcg 2 doses twice daily
- Symbicort 400mcg/12mcg 2 doses twice daily
- Relvar 184mcg/22mcg 1 dose daily

**STEP 4: ALTERNATIVES**
- Flutiform 50mcg/5mcg 2 doses twice daily
- Seretide Accuhaler 100mcg/50mcg 1 dose twice daily
- Seretide Evohaler 50mcg/25mcg 2 doses twice daily
- Symbicort 200mcg/6mcg 1 dose twice daily
- Relvar 92mcg/22mcg 1 dose daily (may be beneficial for patients with problems with adherence)

**STEP 5**
Refer to Respiratory specialist team

*ADJUNCT
- LTRA - Montelukast
- Theophylline - Phyllocontin or Uniphyllin
- Tiotropium - Spiriva Respimat

**STEP 3: ALTERNATIVES**
- Flutiform 200mcg/6mcg 2 doses twice daily
- Seretide Accuhaler 250mcg/50mcg 1 dose twice daily
- Seretide Evohaler 125mcg/25mcg 2 doses twice daily
- Symbicort 400mcg/12mcg 2 doses twice daily
- Relvar 184mcg/22mcg 1 dose daily

Step 3 doses can be increased if asthma symptoms are not controlled.

**Number of doses per day remains the same**
- Flutiform 125mcg/5mcg
- Seretide Accuhaler 250mcg/50mcg
- Seretide Evohaler 125mcg/25mcg
- Symbicort 400mcg/12mcg
- Relvar - not applicable
APPENDIX 2: COST GRAPH FOR INHALED CORTICOSTEROID INHALER DEVICES

Step 3 and 4 BTS/SIGN Asthma guideline

- **SYMPLICORT** [Budesonide(400) & formoterol (12mcg)] - 2 doses twice daily
- **SERTIDE EVOHALER** [Fluticasone Propionate(250mcg) & Salmeterol(25mcg)] - 2 doses twice daily
- **FLUTIFORM** [Fluticasone Propionate(250mcg) & Formoterol(10mcg)] - 2 doses twice daily
- **SERTIDE ACCUHALER** [Fluticasone Propionate (500mcg) & Salmeterol(50mcg)] - 1 dose twice daily
- **RELVAR** [Fluticasone Furoate (184mcg) & vilanterol (22mcg)] - 1 dose daily
- **DUORESP** [Budesonide(320mcg) & formoterol (9mcg)] - 2 doses twice daily
- **FOSTAIR** [Beclometason(200mcg) & formoterol (6mcg)] - 2 doses twice daily
- **SYMPLICORT** [Budesonide(200) & formoterol (6mcg)] - 2 doses twice daily
- **SERTIDE EVOHALER** [Fluticasone Propionate(125mcg) & Salmeterol(25mcg)] - 2 doses twice daily
- **SERTIDE ACCUHALER** [Fluticasone Propionate (250mcg) & Salmeterol(50mcg)] - 1 dose twice daily
- **FLUTIFORM** [Fluticasone Propionate(125mcg) & Formoterol(5mcg)] - 2 doses twice daily
- **RELVAR** [Fluticasone Furoate (92mcg) & vilanterol (22mcg)] - 1 dose daily
- **DUORESP** [Budesonide(160mcg) & formoterol (4.5mcg)] - 2 doses twice daily
- **FOSTAIR** [Beclometason(100mcg) & formoterol (6mcg)] - 2 doses twice daily
- **RELVAR** [Fluticasone Furoate (184mcg) & vilanterol (22mcg)] - 1 dose daily
- **SYMPLICORT** [Budesonide(200) & formoterol (6mcg)] - 1 dose twice daily
- **SERTIDE EVOHALER** [Fluticasone Propionate(50mcg) & Salmeterol(25mcg)] - 2 doses twice daily
- **SERTIDE ACCUHALER** [Fluticasone Propionate (100mcg) & Salmeterol(50mcg)] - 1 dose twice daily
- **FLUTIFORM** [Fluticasone Propionate(50mcg) & Formoterol(5mcg)] - 2 doses twice daily
- **DUORESP** [Budesonide(160mcg) & formoterol (4.5mcg)] - 1 dose twice daily
- **FOSTAIR** [Beclometason(100mcg) & formoterol (6mcg)] - 1 dose twice daily

**STEP 3a (~800mcg BDP equiv.)**
BDP equivalence of Relvar unclear.

**STEP 3b**

**STEP 4** (Maximum licensed doses up to 2,000mcg BDP equiv.)

Costs – 30 days without spacer (MIMS May 2016)
APPENDIX 3:  

Stepping-down therapy – the process

Has the patient’s asthma been well controlled for at least 3 months?  
See Table 1, Page 2

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**Step the patient down**

1. Check inhaler technique (add spacer to MDI if required)
2. Check exposure to trigger factors
3. Check adherence to therapy and consider any issues which may affect compliance
4. What would be the potential consequences of an exacerbation and does the patient know what to do if this occurs? e.g. does the patient have a self management plan?

**Patients using a combination inhaler**
1. Identify which combination inhaler the patient is using and select the relevant flow-chart (page 4 & 5)
2. Identify the patient’s current dose and locate where this is positioned in the flow-chart
3. Follow the arrow and prescribe the next recommended inhaler(s)

**Patients using a single ICS inhaler**
1. Identify which ICS inhaler the patient is using
2. Reduce the ICS dose by 50%  
   Note: if the patient is prescribed add-on therapies (e.g. montelukast, oral prednisolone) consider reducing/stopping these one by one before attempting to reduce the ICS dose

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**Do not step the patient down**

1. Check inhaler technique(add spacer to MDI if required)
2. Check exposure to trigger factors
3. Check adherence to therapy and consider any issues which may affect compliance
   **If these have been excluded, step-up therapy**

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**Clinicians should consider:**
Patients achieve asthma control at different rates. Clinicians should have a discussion with the patient to decide whether to trial the current therapy for longer or to step-up again.

**Suggested discussion points with the patient:**
1. Are there any factors affecting adherence to therapy e.g. polypharmacy, social reasons or beliefs?
2. Are there any issues affecting compliance e.g. dexterity?
3. Is the patient exposed to trigger factors e.g. smoking, pets, pollen or stress?
4. Are there any lifestyle points to consider where asthma stability is crucial e.g. impending exam
5. How long did it take the patient to achieve complete asthma control last time?
6. What would be the potential consequences of an exacerbation and does the patient know what to do if this occurs? e.g. does the patient have a self management plan?
7. What would the patient prefer to do?

**Action:**
Clinicians should use their professional judgement to decide whether to continue trialling the current therapy, or to step-up again. If continuing on the current therapy for longer, the clinician should advise the patient to monitor their symptoms and SABA use, and review the patient again in 1 month. Patients should be advised to return to clinic if their symptoms become problematic within this time.  
**Refer to a specialist if necessary.**

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Review the patient in 3 months*

Has the patient’s asthma been well controlled over the last 3 months (see Table 1, Page 2)?

(*If you previously stepped the patient up to cover the hay fever season and wish to step them down again, review the patient in 1 month rather than 3 months)

Step the patient down again and repeat cycle
APPENDIX 4:

ASTHMA STEP-DOWN GUIDE

**BTS/SIGN Step 4**

**Fostair® inhaler**
- **Fostair 200/6 Inhaler™**
  - 2 puffs BD (£29.32)
  - (2,000mcg BDP* equiv./day + 24 mcg formoterol/day)

**Fostair 100/6 Inhaler™**
- 2 puff BD (£29.32)
- (1,000mcg BDP* equiv./day + 24mcg formoterol/day)

**Fostair 100/6 Inhaler™**
- 1 puff BD (£14.66)
- (500mcg BDP* equiv./day + 12mcg formoterol/day)

**Clenil Modulite® 100mcg**
- 2 puffs BD (£4.45)
- OR
- **Qvar Easi-breathe® 50mcg**
  - 2 puffs BD (£4.64)
  - OR
- **Qvar® MDI 50mcg**
  - 2 puffs BD (£4.72)

**BTS/SIGN Step 4**

**DuoResp Spiromax® Inhaler**
- **DuoResp Spiromax 320/9™**
  - 2 puffs BD (£59.94)
  - (1,600mcg BDP* equiv./day + 48mcg formoterol/day)

**DuoResp Spiromax 160/4.5™**
- 2 puffs BD (£29.97)
- (800mcg BDP* equiv./day + 24mcg formoterol/day)

**DuoResp Spiromax 160/4.5™**
- 1 puff BD (£14.99)
- (400mcg BDP* equiv./day + 12mcg formoterol/day)

**BTS/SIGN Step 2**

**Easyhaler® Budesonide 200mcg**
- 1 puff BD (£5.31)

**Symbicort® Turbohaler**
- **Symbicort Turbohaler 400/12™**
  - 2 puffs BD (£76.00)
  - (1,600mcg BDP* equiv./day + 48mcg formoterol/day)

**Symbicort Turbohaler 200/6™**
- 2 puffs BD (£38.00)
- (800mcg BDP* equiv./day + 24mcg formoterol/day)

**Symbicort Turbohaler 200/6™**
- 1 puff BD (£19.00)
- (400mcg BDP* equiv./day + 12mcg formoterol/day)

**Easyhaler® Budesonide 200mcg**
- 1 puff BD (£5.31)

**KEY:** Costs – 30 days without spacer (MIMS May 2016). *Total daily dose ICS in terms of beclometasone dipropionate (BDP) equivalent.

**If patient is taking add-on therapies (e.g. montelukast, oral prednisolone) consider reducing these before reducing the ICS**
**APPENDIX 4: ASTHMA STEP-DOWN GUIDE**

**NB. ALL PATIENTS** with asthma should be provided with a short-acting beta 2 agonist (salbutamol or terbutaline) to aid in the event of an acute exacerbation.

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**KEY:** Costs – 30 days without spacer (MIMS May 2016). *Total daily dose ICS in terms of beclometasone dipropionate (BDP) equivalent.

**** If patient is taking add-on therapies (e.g. montelukast, oral prednisolone) consider reducing these before reducing the ICS