

BNF 3. Respiratory System Formulary

RECOMMENDATIONS FOR THE PRESCRIBING OF RESPIRATORY DRUGS - ASTHMA

Formulary prepared and based on BNF, Summary of Product Characteristics and information provided below unless otherwise stated.

Norfolk & Waveney Asthma Guidelines October 2018: For use across all Norfolk & Waveney CCGs

[Link to the new guideline](#)

Produced by the Norfolk & Waveney RightCare Respiratory Group based on the Primary Care Respiratory Society (PCRS) – UK Consensus of current national guidelines: BTS / SIGN Sep 16 & NICE NG80 Nov 17

Follow the above guideline, which includes prescribing management algorithms for children, adolescents and adults. It does NOT cover the management of asthma in pregnancy, occupational asthma or difficult asthma all of which would require specialist input.

The stepwise treatment of asthma should be followed as per guidelines above and BTS/SIGN guidance. It is therefore sensible to ensure that the patient's inhaled dose of corticosteroid is kept no higher than that required to control the asthma. This should always be a balance between harms, risks and benefits. In particular, patients should be reviewed regularly, and treatment stepped down where possible.

The systemic side effects of corticosteroids are well known. High doses of Inhaled Corticosteroids ICS (i.e. ≥ 1000 microgram beclometasone dipropionate, or equivalent per day) are associated with clinically detectable adrenal suppression, increased risk of non-fatal pneumonia in patients with COPD, increased risk of type II diabetes, and may increase the risk of fractures and tuberculosis

[Guidance for healthcare professionals on Inhaled corticosteroids in Adults](#)

BRITISH THORACIC SOCIETY ASTHMA GUIDELINES

[BTS/SIGN Guidance](#) - home page for further information on Asthma.

[QRG 153: British Guideline on the Management of Asthma - QUICK reference guide 2016 \(update due 2019\)](#)

[SIGN 153: British Guideline on the management of Asthma - FULL reference guide 2016 \(update due 2019\)](#)

NICE NG80: Asthma: diagnosis, monitoring and chronic asthma management - published Nov 2017

[Asthma - NICE NG80 - Contains information on asthma overview and management](#)

NICE QS25: Asthma - last updated Nov 2017

[Asthma -NICE Quality Standard QS25](#)

Treatment with an ICS and LABA

If treatment with an ICS and LABA is considered appropriate, inhaled corticosteroids for the treatment of chronic asthma in adults and in children aged 12 years and over (NICE technology appraisal guidance 138) recommends that using a combination inhaler within its marketing authorisation is an option. NICE recommends that the decision to use a combination inhaler or the two agents in separate inhalers should be made on an individual basis, taking into consideration therapeutic need and the likelihood of treatment adherence. If a combination inhaler is chosen, then the least costly device that is suitable for the individual is recommended. BTS/SIGN Guidelines 2016 states that combination inhalers are recommended

NICE TA 138 -Inhaled corticosteroids for the treatment of chronic asthma in adults and in children over the age of 12 years

[NICE TA 138](#)

NICE TA 131 -Inhaled corticosteroids for the treatment of chronic asthma in children under the age of 12 years

[NICE TA 131](#)

SMOKING CESSATION

<http://www.knowledgeanglia.nhs.uk/KMS/Norwich/Home/ClinicalInformation/Other/SmokingCessation.aspx>

DEVICES

Metered dose inhalers (MDIs), with a spacer if necessary, should be the first choice device. Spacers should be compatible for use with the inhaler prescribed.

Patients prescribed higher doses of inhaled steroids (beclometasone or budesonide 800 to 2000 micrograms per day, or fluticasone 400 to 1000 micrograms per day) should be advised to administer it via a spacer (if using an MDI) and rinse mouth to reduce oral side-effects.

NEBULISERS

Inappropriate use can be dangerous. Please refer to BNF section 3.1.5 for appropriate use of nebulisers:

ADDITIONAL LOCAL GUIDANCE AVAILABLE FOR FURTHER INFORMATION

ASTHMA

Norfolk & Waveney ACUTE Asthma Guidelines October 2018

[Link to new Acute Asthma Guidelines](#)

Other relevant Medicine Management Bulletins

Inhaler types and devices ASTHMA

<http://www.knowledgeanglia.nhs.uk/LinkClick.aspx?fileticket=s8ff8tLZcfY%3d&tabid=197&portalid=1&mid=1927>





How long inhalers last

http://www.knowledgeanglia.nhs.uk/LinkClick.aspx?fileticket=DSGm_c2roHU%3d&tabid=197&portalid=1&mid=1927

Bulletin 18 - Inhaler spacer devices

<http://www.knowledgeanglia.nhs.uk/LinkClick.aspx?fileticket=ma7JbU4Z6YY%3d&tabid=197&portalid=1&mid=1927>

Formulary Key

1st line formulary choice		Encouraged
Alternative formulary choice		On Formulary
2nd line formulary choice		2nd Line
Shared Care (TAG Amber)		Shared Care Agreement

▼ This medicinal product is subject to additional monitoring by regulatory authorities in the European Union (EU) - Healthcare professionals are asked to report any suspected adverse reactions [via the Yellow Card Scheme](#).

INHALER DEVICES

Where available brands are listed under the notes section - **green** denotes most cost effective choice(s)

Advice from the [British Thoracic Guidelines Asthma 2016](#) suggests:

There is no evidence to dictate an order in which devices should be tested for those patients who cannot use pMDI. In the absence of evidence, the most important points to consider are patient preference and local cost.

Prescribe inhalers only after patients have received training in the use of the device and have demonstrated satisfactory technique. Use In-check inspiratory flow measurement device to assess the ability of the patient to use the inhaler.

Prescribing mixed inhaler types may cause confusion and lead to increased errors in use. Using the same type of device to deliver preventer and reliever treatments may improve outcomes.

In children, pMDI and spacer are the preferred method of delivery of β_2 agonists or inhaled corticosteroids. A face mask is required until the child can breathe reproducibly using the spacer mouthpiece.

NICE quality statement 4: [NICE QS ASTHMA Feb 2013 updated November 2017](#)



People with asthma are given specific training and assessment in inhaler technique before starting any new inhaler treatment.

BNF Chapter: 3 Respiratory System

Bronchodilators

Selective Beta₂-adrenoceptor Agonists

Short-acting Bronchodilators (oral not recommended)

Drug		Formulations	Dose	Notes
SALBUTAMOL		Aerosol(pMDI): 100 micrograms / metered inhalation	Child – 1 puff increased to 2 puffs if necessary for persistent symptoms if necessary four times daily. Adult - 1-2 puffs as required - four times daily	First line – pMDI (plus spacer is preferred for both adults and children) Could use dry powder inhaler or Easyhaler® if more acceptable for the individual
		Dry powder: 100 micrograms / metered inhalation	Child 5 - 12 years: 100 - 200 micrograms per dose. Up to 400 micrograms per day. Adult and child over 12 years: initially 100-200 micrograms. Up to 800 micrograms per day.	See individual brands and product literature for dosage instructions. Pre-loaded dose: Easyhaler® , in use shelf life 6 months after opening pouch
		Breath actuated: 100 micrograms/ inhalation.	Adult - 1-2 puffs as required - four times daily Child – 1 puff increased to 2 puffs if necessary for persistent symptoms if necessary four times daily.	pMDI Airomir Autohaler®, Salamol Easi-breathe®
TERBUTALINE		Turbohaler® 500 micrograms / metered inhalation	Adult & Child over 5 1 puff up to four times daily	As Bricanyl Turbohaler® For those who cannot tolerate salbutamol. Child under 5 NOT recommended

Long –acting Bronchodilators LABA


Not for immediate relief of acute attacks. Use as **combination inhaler** with corticosteroid in the treatment of Asthma as per BTS/SIGN .

Combination inhalers are recommended to:

- guarantee that the LABA is not taken without the ICS
- improve inhaler adherence

Long –acting Bronchodilators LAMA


On specialist advice only. Not for immediate relief of acute attacks .

TIOTROPIUM (as Tiotropium bromide) 2.5 microgram per 1 dose.		Respimat	Adult: 5 micrograms once daily.	Spiriva Respimat®
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Theophylline

For advice on prescribing Theophylline - [see Appendix 4](#) or [use link below](#)

<https://www.sps.nhs.uk/articles/suggestions-for-therapeutic-drug-monitoring-in-adults-in-primary-care/>

THEOPHYLLINE		Uniphyllin Continus ® T: 200mg, 300mg, 400mg	Adult: 200mg every 12 hours, increased according to response to 400mg every 12 hours.	Prescribed by brand name as the rate of absorption from modified release preparations can vary between brands. Patients currently prescribed other brands should continue as before. For further information please refer to Appendix 4 , Theophylline Prescribing, drug interactions and smoking guidelines. Caution – Therapeutic Drug Monitoring is required. See BNF for drug interactions
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Peak flow meters, inhaler devices and nebulisers

Peak flow meter NB readings from new meters are often lower than old Wright-scale meters – the correct chart should be used.		Standard range	60-800 litres/minute
		Low range	30-400 litres/minute
		Replacement mouth piece	Specify brand and adult or child as they are not interchangeable

Spacers

Anyone prescribed a pMDI should be encouraged to use a spacer and replace it every 6-12 months.





Use and care of Spacers - BTS Guidelines 2016 suggests

Use spacers with pressurised Metered Dose Inhaler (pMDI). Ensure compatible and correct use by the patient

The British Thoracic Society (BTS), SIGN and NICE CG101 COPD recommend:

- In children **aged 0-5 years, pMDI + spacer are the preferred method of delivery.** A face mask is required until the child can breathe reproducibly using the spacer mouthpiece
- In children **aged 5-12 and adults a pMDI + spacer is as effective as other inhaler devices** but choice should be based on patient preference and assessment of correct use
- **At high doses of inhaled corticosteroid (ICS) via a pMDI, a spacer *should* be used**
- **Use a pMDI + spacer (up to 10 puffs) instead of a nebuliser** for treatment with beta 2-agonists in **children and adults with mild to moderate exacerbations of asthma**
- It is important to **use the same spacer device when titrating doses** according to clinical response. A change in spacer may alter effective dose delivered.

See [Key Message Bulletin 18 Inhaler Spacer Devices](#) for information about the different features of each device and compatibility with inhalers

A2A SPACER ®		Medium volume device when opened - 210ml	Also available with mask: small , medium, large
AEROCHAMBER - plus ®		small volume device - 149ml	Standard device: also available with mask: infant, child, adult Flow -vu Antistatic: without mask - 5 + years and adult option with mask - 0-18months, 1-5 years, adult:small and large
SPACE CHAMBER PLUS ®		Available as standard medium volume device - 230ml & small volume compact device 160ml	Standard or compact: also available with mask: small, medium, large Antistatic standard and compact: also available with mask:small, medium, large
VOLUMATIC ®		Large volume device - 750ml	Also available with paediatric mask

Drug Delivery Devices - Inhalation Aid

These devices are **available to purchase only** to assist patients with impaired strength to operate their inhalers. They are available for 120 or 200 dose inhalers and are compatible with GSK MDIs and Sereflo® only.

Corticosteroids

Please issue a steroid card to all patients who require prolonged treatment with high-dose inhaled steroids – as recommended in May 06 Current Problems in Pharmacovigilance and more recently by the London Respiratory Network (2010 - 2013)

The dose of inhaled corticosteroid should be reduced to the lowest dose at which effective control of asthma is maintained.

The Norfolk & Waveney Asthma Guidelines recommends seeking advice from an appropriately qualified respiratory specialist (primary or secondary care) before prescribing high dose ICS.

[Current Problems in Pharmacovigilance: Volume 31 \(pages 1-12\) May 2006 : MHRA](#)









[London Respiratory Network \(2010-2013\) Inhaled Steroid Safety Information for Adults and Steroid Card Information](#)

Steroid cards can be obtained from: http://www.ashleyforms.co.uk/images/uploads/pdf/Order_Form_High_Dose_ICs_Safety_Card_100_and_500.pdf

[For advice on bisphosphonate prophylaxis with corticosteroid prescribing please refer to Key Message 33](#)

Prescribe by brand - MHRA /CHM advice (July 2008) Beclometasone dipropionate CFC-free pressurised metered-dose inhalers (Qvar® and Clenil Modulite®) are not interchangeable and should be prescribed by brand name; Qvar® has extra-fine particles, is more potent than traditional beclometasone dipropionate CFC-containing inhalers, and is approximately twice as potent as Clenil Modulite®. See BNF for dose if switching from another corticosteroid inhaler.

Spacer recommended for all high doses given via aerosol inhalation.

First Line				
Preferred choice				
MDI INHALER				
BECLOMETASONE DIPROPIONATE		Aerosol: 50 micrograms, 100 micrograms, 200 micrograms, 250micrograms/metered inhalation	Adult 200-400 micrograms twice daily, adjusted as necessary up to max 1000microgram twice daily. Child: 100-200 micrograms twice daily, under 5's use spacer + facemask if necessary.	Clenil Modulite® Children < 5 years - maintenance doses above 200microgram per day should be on advice via respiratory specialist only Children 5 - 11years maintenance doses above 400microgram per day should be on advice via respiratory specialist only
Breath -actuated Preloaded DPI				
BECLOMETASONE DIPROPIONATE		Dry powder: 200 micrograms per metered inhalation.	Adult: 200-400 micrograms twice daily; adjusted as necessary up to 800 micrograms twice daily.	Easyhaler® Beclometasone Not licensed for under 18 years old In use shelf – life: 6 months after opening the pouch.
BUDESONIDE		Dry Powder: 100 micrograms, 200 micrograms/metered inhalation	Adult 200-800 micrograms twice daily Child 2-12 years: 100-400 micrograms twice daily	Easyhaler® Budesonide Not licensed for under 6 years In use shelf – life: 6 months after opening the pouch. Children < 5 years - maintenance doses above 200microgram per day should be on advice via respiratory specialist only Children 5 - 11years maintenance doses above 400microgram per day should be on advice via respiratory specialist only
Alternative first line choice extra fine particle beclometasone pMDI - Qvar - Not licensed for children under 12 years				
MDI INHALER				
BECLOMETASONE DIPROPIONATE - extra fine particle size	 	Aerosol: 50 micrograms, 100 micrograms, per metered inhalation Breath Actuated aerosol: 50 microgram and 100 microgram / metered inhalation	Adult and child over 12 years: 50-200 micrograms twice daily, increased if necessary to max 400micrograms twice daily.	Qvar®, Qvar - Not licensed for children under 12 years Qvar® Easi-Breathe, Qvar® Autohaler Not licensed for children under 12 years
Second Line				
Breath -actuated Preloaded DPI				
BUDESONIDE		Turbohaler: 100 micrograms, 200 micrograms, 400 micrograms	Adult and child over 12 years: 100-800 micrograms twice daily Child 5- 12 years: 100-400 micrograms twice daily	Pulmicort Turbohaler®
MDI INHALER				
FLUTICASONE MDI		Aerosol: 25 micrograms, 50 micrograms Aerosol: 125 micrograms, 250 micrograms / metered inhalation	Child 4-16 yrs 50-100 micrograms twice daily, adjusted as necessary . Maximum 200 micrograms twice daily Adult 100-250 micrograms twice daily. Maximum 1000microgram twice daily Child: not indicated for children. Adult: 100-250 micrograms twice daily. Maximum 1000microgram twice daily	Flixotide Evohaler® Flixotide Evohaler®
Breath -actuated Preloaded DPI				
FLUTICASONE DPI		Accuhaler: 50 micrograms, 100 micrograms	Child 4- 16 years: 50-100 micrograms twice daily. Maximum 200 micrograms twice daily Adult and child over 16 years: 100-500 micrograms twice daily. Maximum 1000microgram twice daily	Flixotide Accuhaler®

		Accuhaler:250 micrograms, 500 micrograms	Child: not indicated for children.	
			Adult and child over 16 years: 100-500 micrograms twice daily. Maximum 1000microgram twice daily.	Flixotide Accuhaler ® Adult and child over 16 years: Doses above 500 micrograms twice daily to be initiated by a specialist.

Combination Preparations


BTS/SIGN Guidelines 2016 states that combination inhalers are recommended to: guarantee that the long-acting β_2 agonist is not taken without inhaled corticosteroid and to improve inhaler adherence. Whilst combination products have a place in treatment regimes, particularly where compliance, or regime complexity, is a problem, we would recommend use predominantly where patients have relatively stable requirements and where the specific dosage combination fits the patient's needs. Please refer to BTS/SIGN 2016, NICE TA 131 and NICE TA 138 for further information.

Combination products :The dose should always be titrated to the lowest dose at which effective control of symptoms is maintained


Children age 4 years and over

Fluticasone propionate + Salmeterol

MDI INHALER

COMBISAL ®		Aerosol Salmeterol 25 micrograms and fluticasone 50 micrograms per inhalation	Adult and child over 4 Two inhalations twice daily	The maximum licensed dose of fluticasone propionate delivered by Combisal inhaler in children is 100 microgram twice daily
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Breath -actuated Preloaded DPI

SERETIDE ACCUHALER ®		Accuhaler 100 salmeterol 50 micrograms and fluticasone 100 micrograms per inhalation	Children 4 years and older: One inhalation twice daily	The maximum licensed dose of fluticasone propionate delivered by Seretide ® inhaler/ accuhaler in children is 100 microgram twice daily.
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Children age 6 years and over

Fluticasone propionate + Salmeterol

MDI INHALER


COMBISAL ®		Aerosol Salmeterol 25 micrograms and fluticasone 50 micrograms per inhalation	Adult and child over 4 Two inhalations twice daily	The maximum licensed dose of fluticasone propionate delivered by Combisal inhaler in children is 100 microgram twice daily
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Breath -actuated Preloaded DPI

SERETIDE ACCUHALER ®		Accuhaler 100 : salmeterol 50 micrograms and fluticasone 100 micrograms per inhalation	Children 4 years and older: One inhalation twice daily	The maximum licensed dose of fluticasone propionate delivered by Seretide ® inhaler/ accuhaler in children is 100 microgram twice daily.
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Budesonide + Formoterol




Breath -actuated Preloaded DPI

SYMBICORT ® TURBOHALER		Turbohaler 100/6 6 microgram formoterol + 100 microgram Budesonide	Child over 6: Two inhalations twice daily.	Not recommended for children under 6 years
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Adolescents aged 12 years and above












Fluticasone propionate + Salmeterol














MDI INHALER







COMBISAL ®		Aerosol Salmeterol 25 micrograms and fluticasone propionate 50 micrograms per inhalation	Adult and child over 4: Two inhalations twice daily	The maximum licensed dose of fluticasone propionate delivered by Combisal inhaler in children under 12 is 100 microgram twice daily
		Aerosol Salmeterol 25 micrograms and fluticasone propionate 125 micrograms per inhalation	Adult and child over 12: Two inhalations twice daily	
		Aerosol Salmeterol 25 micrograms and fluticasone propionate 250 micrograms per inhalation	Adult and child over 12: Two inhalations twice daily	HIGH DOSE Combisal ® is licensed for age 12 years and over but do prescribe unless on specialist advice

Breath -actuated Preloaded DPI

FUSACOMB EASYHALER ®		Easyhaler 250 : salmeterol 50 micrograms and fluticasone propionate 250 micrograms per inhalation	Children 12 years and older: One inhalation twice daily	In use shelf – life: 1 month after opening the pouch.
		Easyhaler 500 : salmeterol 50 micrograms and fluticasone propionate 500 micrograms per inhalation	Children 12 years and older: One inhalation twice daily	HIGH DOSE Fusacomb easyhaler ® is licensed for age 12 years and over but do prescribe unless on specialist advice In use shelf – life: 2 months after opening the pouch.


Fluticasone propionate + Formoterol				
MDI INHALER				
FLUTIFORM MDI ®		Aerosol 50 micrograms fluticasone propionate and 5 micrograms formoterol per inhalation	Adults and adolescents aged 12 years and above. Two inhalations twice a day	Prescribers should be aware that, in patients with asthma, fluticasone propionate is as effective as some other inhaled steroids when administered at approximately half the total daily dose (in micrograms) - SPC Flutiform
		Aerosol 125 micrograms fluticasone propionate and 5 micrograms formoterol per inhalation	Adults and adolescents aged 12 years and above. Two inhalations twice a day	
Breath -actuated MDI INHALER				
FLUTIFORM K-HALER ®		Breath Actuated aerosol: 50 micrograms fluticasone propionate and 5 micrograms formoterol per inhalation	Adults and adolescents aged 12 years and above. Two inhalations twice a day	Prescribers should be aware that, in patients with asthma, fluticasone propionate is as effective as some other inhaled steroids when administered at approximately half the total daily dose (in micrograms) - SPC Flutiform
		Breath Actuated aerosol: 125 micrograms fluticasone propionate and 5 micrograms formoterol per inhalation	Adults and adolescents aged 12 years and above. Two inhalations twice a day	
Fluticasone FUROATE + vilanterol				
Breath -actuated Preloaded DPI				
RELVAR ELLIPTA ®		DPI: 22/92 22 microgram vilanterol and 92 microgram fluticasone furoate	Adults and adolescents aged 12 years and above. One inhalation once daily	Prescribers should be aware that in patients with asthma, fluticasone furoate (FF) 100 micrograms once daily is approximately equivalent to fluticasone propionate (FP) 250 micrograms twice daily, while FF 200 micrograms once daily is approximately equivalent to FP 500 micrograms twice daily.
		DPI: 22/184 22 microgram vilanterol and 184 microgram fluticasone furoate	Adults and adolescents aged 12 years and above. One inhalation once daily HIGH DOSE on specialist advice only	
Budesonide + Formoterol				
Breath -actuated Preloaded DPI				
SYMBICORT ® TURBOHALER		Turbohaler 100/6 6 microgram formoterol and 100 microgram budesonide per inhalation	Child over 6: Two inhalations twice daily.	Symbicort is licensed for MART for 12 years and over but ONLY the 100/6 and 200/6 strengths. - See MART section below
		Turbohaler 200/6 6 microgram formoterol and 200 microgram budesonide per inhalation	Adolescent 12- 17 years: One to two inhalations twice daily reduced to one puff once daily if control maintained.	
		Turbohaler 400/12 12 microgram formoterol and 400 microgram budesonide per inhalation	Adolescent 12- 17 years: One inhalation twice daily reduced to one inhalation once daily if control maintained.	
Adults (over 18 years)				
Extra fine Beclometasone + Formoterol				
MDI INHALER				
FOSTAIR MDI ®		Aerosol 6 microgram formoterol + 100 microgram Beclometasone dipropionate	Adult (over 18 years) One to two inhalations twice a day	Contains micronised betamethasone therefore when switching from non-micronised beclometasone (eg Clenil) steroid dose should be halved. Patients on 250mcg cfc free non-micronised beclometasone can be switched to 100/6 of Fostair (see BNF)
		Aerosol 6 microgram formoterol + 200 microgram Beclometasone dipropionate	Adult (over 18 years) Two inhalations twice a day HIGH DOSE on specialist advice only Not licensed for under 18 years	
Breath -actuated Preloaded DPI				
FOSTAIR NEXThaler DPI ®		NEXThaler DPI : 6 microgram formoterol + 100 microgram Beclometasone dipropionate	Adult (over 18 years) 1-2 inhalations twice daily and the maximum daily dose is 4 inhalations daily. Not licensed for under 18 years	<p>Fostair NEXThaler contains beclometasone in an extrafine particle formulation. Dose adjustment may be required if people are transferred to Fostair NEXThaler inhalation powder from other inhalers containing non-extrafine beclometasone or different ICS medicines. (NICE)</p> <p>Suitable for people not adequately controlled with ICS and 'as needed' inhaled short-acting beta2-agonist.</p> <p>Suitable for people already adequately controlled on both ICS and LABAs.</p> <p>ONLY licensed for maintenance therapy not reliever.</p> <p>In use shelf – life: 6 months after opening the pouch.</p>

Fluticasone propionate + Formoterol				
MDI INHALER				
FLUTIFORM MDI ®		Aerosol 50 micrograms fluticasone propionate and 5 micrograms formoterol	Adults and adolescents aged 12 years and above	Prescribers should be aware that, in patients with asthma, fluticasone propionate is as effective as some other inhaled steroids when administered at approximately half the total daily dose (in micrograms) - SPC Flutiform
		125 micrograms fluticasone + 5 micrograms formoterol	2 puffs twice a day	
		Aerosol 250 micrograms fluticasone propionate and 10 micrograms formoterol	Adult (over 18 years) 2 puffs twice a day HIGH DOSE on specialist advice only	THIS STRENGTH AEROSOL is indicated in ADULTS ONLY In use shelf – life: 3 months after opening the foil pouch.
Breath -actuated MDI INHALER				
FLUTIFORM K-HALER ®		Breath Actuated aerosol: 50 micrograms fluticasone propionate and 5 micrograms formoterol per inhalation	Adults and adolescents aged 12 years and above. Two inhalations twice a day	Prescribers should be aware that, in patients with asthma, fluticasone propionate is as effective as some other inhaled steroids when administered at approximately half the total daily dose (in micrograms) - SPC Flutiform
		Breath Actuated aerosol: 125 micrograms fluticasone propionate and 5 micrograms formoterol per inhalation	Adults and adolescents aged 12 years and above. Two inhalations twice a day	In use shelf – life: 3 months after opening the foil pouch.
Fluticasone propionate + Salmeterol				
MDI INHALER - 3 cost effective choices				
AIRFLUSAL ®		MDI: 25 micrograms salmeterol and 125 micrograms fluticasone propionate MDI: 25 micrograms salmeterol and 250 micrograms fluticasone propionate	Adult (over 18 years): Two inhalations twice daily Adult (over 18 years): Two inhalations twice daily	Where a lower dose of fluticasone is required use Combisal ® Not licensed for under 18 years After first opening pouch:expiry is 3 months HIGH DOSE on specialist advice only
COMBISAL ®		MDI: 25 micrograms salmeterol and 50 micrograms fluticasone propionate	Adult and child over 4: Two inhalations twice daily	
		MDI: 25 micrograms salmeterol and 125 micrograms fluticasone propionate MDI: 25 micrograms salmeterol and 250 micrograms fluticasone propionate	Adult (over 18 years): Two inhalations twice daily Adult (over 18 years): Two inhalations twice daily	HIGH DOSE on specialist advice only
SEREFLO ®		MDI: 25 micrograms salmeterol and 125 micrograms fluticasone propionate MDI: 25 micrograms salmeterol and 250 micrograms fluticasone propionate	Adult (over 18 years): Two inhalations twice daily Adult (over 18 years): Two inhalations twice daily	Where a lower dose of fluticasone is required use Combisal ® Not licensed for under 18 years HIGH DOSE on specialist advice only
Breath-actuated pre-loaded DPI INHALER				
AIRFLUSAL FORSPIRO 500/50 ® (pre-loaded breath actuated dry powder)		DPI: 50 micrograms salmeterol and 500 micrograms fluticasone propionate	Adult (over 18 years): One inhalation twice daily	AirFluSal Forspiro is for the treatment of patients with severe asthma only. Not licensed for under 18 years HIGH DOSE on specialist advice only
AERIVIO SPIROMAX ®		DPI: 50 micrograms salmeterol and 500 micrograms fluticasone propionate	Adult (over 18 years): One inhalation twice daily HIGH DOSE on specialist advice only	Aerivio Spiromax is for the treatment of patients with severe asthma only. Not licensed for under 18 years In use shelf – life: 3 month after opening the pouch.
FUSACOMB EASYHALER ®		Easyhaler 250 : salmeterol 50 micrograms and fluticasone propionate 250 micrograms per inhalation	Children 12 years and older: One inhalation twice daily	In use shelf – life: 1 month after opening the pouch.
		Easyhaler 500 : salmeterol 50 micrograms and fluticasone propionate 500 micrograms per inhalation	Children 12 years and older: One inhalation twice daily	HIGH DOSE Fusacomb easyhaler ® is licensed for age 12 years and over but do prescribe unless on specialist advice In use shelf – life: 2 months after opening the pouch.
Fluticasone FUROATE + vilanterol				
Breath -actuated Preloaded DPI				
RELVAR ELLIPTA ®		DPI: 22/92 22 microgram vilanterol and 92 microgram fluticasone furoate	Adults and adolescents aged 12 years and above. One inhalation once daily	Prescribers should be aware that in patients with asthma, fluticasone furoate (FF) 100 micrograms once daily is approximately equivalent to fluticasone propionate (FP) 250 micrograms twice daily, while FF 200 micrograms once daily is approximately equivalent to FP 500 micrograms twice daily.
		DPI: 22/184 22 microgram vilanterol and 184 microgram fluticasone furoate	Adults and adolescents aged 12 years and above. One inhalation once daily HIGH DOSE on specialist advice only	In-use shelf-life after opening the tray: 6 weeks.





Budesonide + Formoterol				
Breath-actuated pre-loaded DPI INHALER				
DuoResp SPIROMAX® DPI		DPI: 160 micrograms of budesonide and 4.5 micrograms of formoterol fumarate dihydrate - delivered dose.	Adult (over 18 years) 1-2 inhalations twice daily up to a maximum of 4 doses twice daily.	160/4.5 dpi can also be used for rescue therapy (MART). See MART section below. Not more than 6 inhalations should be taken on any single occasion. In use shelf – life: 6 months after opening the pouch.
		DPI: 320 micrograms of budesonide and 9 micrograms of formoterol fumarate dihydrate - delivered dose.	Adult (over 18 years) One inhalation twice daily up to a maximum of two inhalations twice daily.	The 320/9 DPI Should be used as maintenance therapy ONLY HIGH DOSE on specialist advice only
FOBUMIX EASYHALER®		DPI: budesonide 80 micrograms and formoterol fumarate dihydrate 4.5 micrograms- delivered dose.	Adult (over 18 years) 1-2 inhalations twice daily. Some patients may require up to a maximum of 4 inhalations twice daily.	80/4.5 and 160/4.5 Easyhalers can also be used for rescue therapy (MART). See MART section below. Not more than 6 inhalations should be taken on any single occasion. A total daily dose of more than 8 inhalations is not normally needed; however, a total daily dose of up to 12 inhalations could be used for a limited period. In use shelf – life: 4 months after opening the pouch.
		DPI: 160 micrograms of budesonide and 4.5 micrograms of formoterol fumarate dihydrate - delivered dose.	Adult (over 18 years): 1-2 inhalations twice daily. Some patients may require up to a maximum of 4 inhalations twice daily	In use shelf – life: 4 months after opening the pouch.
		DPI: 320 micrograms of budesonide and 9 micrograms of formoterol fumarate dihydrate - delivered dose.	Adults (18 years and older): 1 inhalation twice daily. Some patients may require up to a maximum of 2 inhalations twice daily.	The 320/9 DPI Should be used as maintenance therapy ONLY In use shelf – life: 4 months after opening the pouch. HIGH DOSE on specialist advice only
SYMBICORT® TURBOHALER		Turbohaler 100/6 6 microgram formoterol and 100 microgram budesonide per inhalation	Child over 6: Two inhalations twice daily.	Children under 12 years: Symbicort maintenance and reliever therapy is not recommended for children. (SPC)
		Turbohaler 200/6 6 microgram formoterol and 200 microgram budesonide per inhalation	Adolescent 12- 17 years: One to two inhalations twice daily reduced to one puff once daily if control maintained. Adults (18 years and older): One to two inhalations twice daily. Some patients may require up to a maximum of four inhalations twice daily.	For adults and children OVER 12 100/6 and 200/6 can also be used for rescue therapy (MART). See MART section below.
		Turbohaler 400/12 12 microgram formoterol and 400 microgram budesonide per inhalation	Adolescent 12- 17 years: One inhalation twice daily reduced to one inhalation once daily if control maintained. Adult 18 years and older: 1 inhalation twice daily. Some patients may require up to a maximum of 2 inhalations twice daily	HIGH DOSE on specialist advice only

MAINTENANCE AND RELIEVER THERAPY (MART) dosing - licensed inhalers

Patients requiring frequent use of rescue inhalations daily, should be strongly recommended to seek medical advice. Their asthma should be reassessed and their maintenance therapy should be reconsidered.

FOSTAIR MDI® Not licensed for under 18 years		Aerosol 6 microgram formoterol + 100 microgram Beclometasone dipropionate	Maintenance Adult (over 18 years) One to two puffs twice a day (max four puffs /day)	Contains micronised betamethasone therefore when switching from non-micronised beclometasone (eg Clenil) steroid dose should be halved. Patients on 250mcg cfc free non-micronised beclometasone can be switched to 100/6 of Fostair (see BNF)
			Reliever Adult (over 18 years) Patients should take 1 additional inhalation as needed in response to symptoms. If symptoms persist after a few minutes, an additional inhalation should be taken. The maximum daily dose is 8 inhalations.	Fostair maintenance and reliever therapy should especially be considered for patients with : • not fully controlled asthma and in need of reliever medication • asthma exacerbations in the past requiring medical intervention.

NICE NG80 gives 'off licence' use of MART regimens as an option to consider for children. Local consensus is that this should only be via specialist advice


<p>DuoResp SPIROMAX® DPI Not licensed for under 18 years</p> <p><i>NICE NG80 gives 'off licence' use of MART regimens as an option to consider for children. Local consensus is that this should only be via specialist advice</i></p>		<p>DPI: 160 micrograms of budesonide and 4.5 micrograms of formoterol fumarate dihydrate - delivered dose</p>	<p>Maintenance Adult (over 18 years) One to two inhalations twice daily up to a maximum of four doses twice daily.</p>	<p>In use shelf – life: 6 months after opening the pouch.</p>
<p>FOBUMIX EASYHALER® Not licensed for under 18 years</p> <p><i>NICE NG80 gives 'off licence' use of MART regimens as an option to consider for children. Local consensus is that this should only be via specialist advice</i></p>		<p>DPI: budesonide 80 micrograms and formoterol fumarate dihydrate 4.5 micrograms- delivered dose.</p>	<p>Maintenance Adult (over 18 years) 1-2 inhalations twice daily. Some patients may require up to a maximum of 4 inhalations twice daily.</p>	<p>A total daily dose of more than 8 inhalations is not normally needed; however, a total daily dose of up to 12 inhalations could be used for a limited period. Patients using more than 8 inhalations daily should be strongly recommended to seek medical advice.</p>
		<p>DPI: 160 micrograms of budesonide and 4.5 micrograms of formoterol fumarate dihydrate - delivered dose.</p>	<p>Reliever Adult (over 18 years): Patients should take 1 additional inhalation as needed in response to symptoms. If symptoms persist after a few minutes, an additional inhalation should be taken. Not more than 6 inhalations should be taken on any single occasion.</p>	<p>Not more than 6 inhalations should be taken on any single occasion. A total daily dose of more than 8 inhalations is not normally needed; however, a total daily dose of up to 12 inhalations could be used for a limited period. In use shelf – life: 4 months after opening the pouch.</p>
<p>SYMBICORT® TURBOHALER Reliever for Adults and adolescents over 12 years.</p> <p><i>NICE NG80 gives 'off licence' use of MART regimens as an option to consider for children. Local consensus is that this should only be via specialist advice</i></p>		<p>Turbohaler 100/6 6 microgram formoterol and 100 microgram budesonide per inhalation</p>	<p>Maintenance: Child over 6: Two inhalations twice daily.</p>	
			<p>Reliever Adults and adolescents (12 years and older) Patients should take ONE additional inhalation as needed in response to symptoms. If symptoms persist after a few minutes, an additional inhalation should be taken. Not more than 6 inhalations should be taken on any single occasion.</p>	<p>A total daily dose of more than 8 inhalations is not normally needed; however, a total daily dose of up to 12 inhalations could be used for a limited period. Patients using more than 8 inhalations daily should be strongly recommended to seek medical advice.</p>
		<p>Turbohaler 200/6 6 microgram formoterol and 200 microgram budesonide per inhalation</p>	<p>Maintenance Adolescent 12-17 years: One to two inhalations twice daily reduced to one puff once daily if control maintained. Maintenance Adults (18 years and older): One to two inhalations twice daily. Some patients may require up to a maximum of four inhalations twice daily.</p>	
			<p>Reliever Adults and adolescents (12 years and older) Patients should take ONE additional inhalation as needed in response to symptoms. If symptoms persist after a few minutes, an additional inhalation should be taken. Not more than 6 inhalations should be taken on any single occasion.</p>	<p>A total daily dose of more than 8 inhalations is not normally needed; however, a total daily dose of up to 12 inhalations could be used for a limited period. Patients using more than 8 inhalations daily should be strongly recommended to seek medical advice.</p>

3.3 Cromoglycate and related therapy (leukotriene receptor antagonists LTRA)

See - Norfolk & Waveney Asthma Guidelines October 2018 for place in therapy

LTRA more likely to be beneficial if allergic rhinitis, allergic asthma, triad of NSAID sensitivity/nasal polyps and asthma, low adherence to inhalers.


ADD LINK TO GUIDELINE

MONTELUKAST		<p>Tablets: 10mg</p> <p>Tablets: 4mg and 5mg (chewable)</p> <p>Granules: 4mg (may be swallowed or mixed with cold, soft food (but not fluid) and taken immediately.</p>	<p>Child 6 months-6yrs 4mg once daily in the evening</p> <p>Child 6-15 yrs 5mg once daily in the evening</p> <p>Adult and child over 15 years 10mg once daily in the evening</p>	
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Oral Steroid use in Asthma

Always consider 'total steroid load' (e.g. oral, inhaled and nasal), when assessing patients. See table 9 and 10 in the BTS guidance & NICE 80 tables 1 and 2 for ICS steroid content / doses.

For advice on prescribing oral corticosteroids in respiratory patients see BTS guide 2016

PREDNISOLONE		Tablets 1mg, 5mg	<p>Acute Asthma</p> <p>Adult: 40-50mg in the morning for at least 5 days or until recovery.</p> <p>Child: 1 year and over (BTS)</p> <p>Use a dose of 10 mg prednisolone for children under 2 years of age, 20 mg for children aged 2-5 years and 30-40 mg for children >5 years.</p> <p>Those already receiving maintenance steroid tablets should receive 2 mg/kg prednisolone up to a maximum dose of 60 mg.</p>	<p>To be taken as a single daily dose taken in the morning.</p> <p>Bone protection should be considered for all long-term oral corticosteroid patients. For advice on bisphosphonate prophylaxis please refer to Key Message Bulletin 33.</p>
			Key Message 33 (part 3)	

Appendix 1 - taken from Suggestions for Drug Monitoring in Adults in Primary Care October 2017 available at https://www.sps.nhs.uk/wp-content/uploads/2017/12/Drug-monitoring_October-2017.pdf

Theophylline/ aminophylline

Tests prior to starting treatment

U&Es (paying particular attention to potassium)^{2,3,5}

LFTs^{2,3,5}

Enquire about smoking status for patient, and advise patient to seek advice from doctor if status is likely to change¹.

Monitoring until patient is stabilised

It is advisable to recheck the plasma level after dose adjustment (at least 3 days after dose adjustment or 5 days after starting oral treatment for the first time)⁴

Levels should be taken 4-6 hours after MR dose, at least 5 days after starting treatment and at least 3 days after dose adjustment. Sampling times may vary- consult local guidelines.⁴

Ongoing monitoring

It is advisable to recheck plasma levels every 6-12 months. Check more regularly in older people or those with heart failure or hepatic impairment. ⁵

Also check plasma theophylline levels if-

- If the person experiences side effects that may suggest toxicity (nausea, vomiting, tremor or palpitations) ⁵
- If an enzyme-inhibiting drug (such as erythromycin, clarithromycin, allopurinol, or cimetidine) is prescribed (raises plasma levels) or if an enzyme-inducing drug (such as carbamazepine, rifampicin, or St John's Wort) is prescribed (lowers plasma levels)⁵
- If the person starts or stops smoking — a dose adjustment may be needed because tobacco can lower the plasma levels of theophylline.

Check potassium levels: periodically in at risk patients^{2,3,5}

People taking theophylline alongside beta-2 agonists, corticosteroids, or diuretics, and in all people with severe asthma. Plasma potassium concentrations may be reduced by beta-2 agonists, corticosteroids, and diuretics. This effect may be potentiated by theophylline, and further exacerbated by hypoxia.

Monitor alcohol consumption as high levels of consumption can reduce plasma concentration of theophylline.^{2,3}

Action required if abnormal results

A lower dose may be required in patients with reduced hepatic function^{2,3}



Additional notes

In most individuals a plasma theophylline of between 10-20mg/ litre is required for satisfactory bronchodilation although a plasma theophylline concentration of 10mg/litre (or less) may be effective. Adverse effects can occur within the range 10-20mg/ litre and both the frequency and severity increase at concentrations above 20mg/ litre⁴

BTS/SIGN advise checking levels during pregnancy as protein binding decreases, the free level of drug will increase and so a lower therapeutic range is probably appropriate. They particularly recommend checking levels in pregnant women with acute severe asthma and in those that are critically dependent on therapeutic theophylline levels.⁶

References

1. Medicines and Healthcare products Regulatory Agency. Drug Safety Update: Volume 3, Issue 3, October 2009. [Available from <https://www.gov.uk/government/organisations/medicines-and-healthcare-products-regulatory-agency>]
2. Summary of Product Characteristics. Nuelin SA – Meda Pharmaceuticals. Date of revision of the text: Sept 2016.
3. Summary of Product Characteristics. Phyllocontin Continus. Date of revision of the text: Jan 2014.
4. BNF accessed via Medicines Complete February 2017
5. Clinical Knowledge Summaries – Asthma. Last updated December 2016. Accessed online via <https://cks.nice.org.uk/asthma#!prescribinginfosub:16/>
6. British Thoracic Society/ SIGN. British Guideline on the management of asthma (revised Sept 2016). Accessed online via <https://www.brit-thoracic.org.uk/document-library/clinical-information/asthma/btssign-asthma-guideline-2016/>

<p>Half-life is increased by</p> <p>= PLASMA THEOPHYLLINE CONCENTRATION IS INCREASED</p> 	Heart failure ⁵	
	Cirrhosis ⁵	
	Viral Infections	
	Elderly	
	With some drugs*: -	Cimetidine
		Ciprofloxacin / norfloxacin
	Erythromycin / clarithromycin / azithromycin	
	Allopurinol	
	Oral contraceptives	
<p>Half-life is decreased by</p> <p>= PLASMA THEOPHYLLINE CONCENTRATION IS DECREASED</p> 	Smoking ⁵	
	Chronic alcoholism ⁵	
	With some drugs*: -	Phenytoin
		Rifampicin
		Carbamazepine
	St Johns Wort	
<p>⁵There is considerable variation in its half-life particularly in smokers (tobacco can lower the plasma concentration of theophylline), hepatic impairment or heart failure</p>		
<p>*Please refer to BNF Appendix 1 for full details of all potential drug interactions and see therapeutic drug monitoring for theophylline details.</p>		

satisfactory bronchodilation although a plasma theophylline concentration of 10mg/litre (or less) may be effective. Adverse effects can occur within the range 10-20mg/ litre and both the frequency and severity increase at concentrations above 20mg/ litre⁴

BTS/SIGN advise checking levels during pregnancy as protein binding decreases, the free level of drug will increase. They particularly recommend checking levels in pregnant women with acute severe asthma and in those that are critically dependent on therapeutic theophylline levels.⁷

Significant drug interactions

- Antibacterials (ciprofloxacin, norfloxacin and other quinolones, clarithromycin, erythromycin)
- Antidepressants (fluvoxamine, St John's Wort).
- Antiepileptics (phenobarbitone, phenytoin)
- Antifungals (fluconazole, ketoconazole).
- Antivirals (ritonavir).
- Calcium-channel blockers (verapamil).
- Desifarox
- Febuxostat
- Interferon alfa
- Ulcer-healing drugs (cimetidine).
- Rifampicin
- Lithium

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3. Summary of Product Characteristics. Phyllocontin Continus. Date of revision of the text: July 2006.
4. BNF Issue 66
5. UK Medicines Information (UKMi). UKMi Q&A 136.4, Which medicines need dose adjustment when a patient stops smoking? August 2012. Accessed online via www.evidence.nhs.uk.
6. National Institute for Clinical Excellence. Clinical Knowledge Summaries – Asthma. June 2011. Accessed online via <http://cks.nice.org.uk/>
7. British Thoracic Society/ SIGN. British Guideline on the management of asthma (revised Jan 2012). Accessed online via <http://www.britthoracic.org.uk/Portals/0/Guidelines/AsthmaGuidelines/sign101%20Jan%202012.pdf>