BNF 3. Chronic Obstructive Pulmonary Disease Formulary

RECOMMENDATIONS FOR THE PRESCRIBING OF RESPIRATORY DRUGS

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

GOLD - The Global Initiative for Chronic Obstructive Lung Disease

Global Strategy for the Diagnosis, Management and Prevention of COPD, Global Initiative for Chronic Obstructive Lung Disease (GOLD) 2017 is the premiere evidence-based reference tool for the implementation of effective disease management plans, and represents the current best practices for the care of people living with COPD.

GOLD uses an ABCD assessment tool, which places more emphasis on a patient's symptom burden when evaluating disease severity and determining appropraite inhaled treatment.

GOLD 2017 Guidelines

See also **Norfolk & Waveney Primary Care COPD Guidance** on diagnosis and management

SMOKING CESSATION

For smoking cessation guidance and resources, see:
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. p MDI + spacer is preferred, if not appropriate device choice should be based on product licence, patient ability to use the device and cost.
See Key Message Bulletin 18: Inhaler Spacer devices and Inhaler Types and Devices - COPD (links below)

Patients prescribed high doses of inhaled steroids (beclometasone or budesonide 0.8 to 2mg per day, or fluticasone 0.4 to 1mg per day) should be advised to administer it via a spacer (if using an MDI) and rinse mouth to reduce oral side-effects.

See inhaler types and devices guidance for COPD:

Bulletin 18: Inhaler Spacer Devices

Inhaler types and devices - COPD

NEBULISERS

Inappropriate use can be dangerous. Use on specialist advice only.

Other relevant Key Messages

How long inhalers last:
http://www.knowledgeanglia.nhs.uk/LinkClick.aspx?fileticket=DSGm_c2roHU%3d&tabid=905&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
Prescribe inhalers only after patients have received training in the use of the device and have demonstrated satisfactory technique.
GOLD COPD January 2017 suggests:
The choice of inhaler device has to be individually tailored to the patient and will depend on access, cost, prescriber and most importantly patient's ability and preference.
It is essential to ensure that inhaler technique is correct and to re-check this at every review. Inhaler technique and adherence to therapy should be asessed before concluding that the current therapy is insufficient.

BNF Chapter: 3 Respiratory System

Bronchodilators

Selective Beta$_2$-adrenoceptor Agonists

Short-acting Bronchodilators (oral not recommended) - GOLD A, B, C, D

Drug		Formulations	Dose	Notes
First Line				
SALBUTAMOL		**MDI CFC Free** 100 micrograms / metered inhalation	**Adult -** 1-2 puffs as required - four times daily	Use MDI (plus spacer if required) as the preferred option or DPI if unable to use the MDI.
		Dry powder Easyhaler ® 100micrograms / inhalation	**Adult -** 1-2 puffs as required - four times daily	in use shelf life 6 months after opening pouch

Long – acting Bronchodilators - GOLD B

First Line				
FORMOTEROL		**Dry powder Easyhaler ®** 12 micrograms / inhalation	1 puff twice daily	in use shelf life 4 months after opening pouch
		MDI Atimos Modulite ® 12 micrograms / metered inhalation	1 puff twice daily	
Second Line				
INDACATEROL		**Dry powder Onbrez Breezhaler ®** 150 micrograms or 300micorgrams / inhalation capsule	150 micrograms once daily. If indicated may be increased to 300 micrograms once daily.	
OLODATEROL		**MDI Striverdi Respimat ®** 2.5micrograms / metered inhalation	2 puffs once daily	in use shelf life 3 months

Antimuscarinic bronchodilators

Short-acting Antimuscarinic Bronchodilators - GOLD A

IPRATROPIUM		**Aerosol:** 20 micrograms / inhalation	**Adult** 1-2 puffs three - four times daily	Should not be taken by patients with known hypersensitivity to atropine

Long –acting Antimuscarinic Bronchodilators (LAMAs) - GOLD B, C

NOT TO BE PRESCRIBED IN COMBINATION WITH IPRATROPIUM

First Line				
First line listed as LAMA alphabetically - not as preference of choice.				
ACLIDINIUM BROMIDE ▼		**DPI Eklira Genuair ®** 322 micrograms Aclidinium inhalation powder (equivalent to 375 micrograms of aclidinium bromide)	322 micrograms - One inhaled dose twice daily	To be used within 90 days of opening the pouch.
GLYCOPYRRONIUM BROMIDE ▼		**DPI Seebri Breezehaler ®** 44 microgram inhalation capsule (equivalent to 55 micrograms of glycopyrronium bromide)	44 micrograms - One inhaled dose daily	Each inhaler should be disposed of after 30 days of use - capsules only to be removed from the blister immediately before use.
TIOTROPIUM (prescribe by brand)		**DPI Braltus Zonda ®**10 microgram inhalation capsule (equivalent to 18micrograns of tiotropium bromide)	10 micrograms - One inhaled dose daily	shelf life after first opening: 30 days (15 capsule bottle) or 60 days (30 capsule bottle)
UMECLIDINIUM BROMIDE ▼		**DPI Incruse Ellipta ®** 55 micrograms inhalation powder (equivalent to 65 micrograms umeclidinium bromide)	55 micrograms - One inhaled dose daily	Incruse should be administered once daily at the same time of the day each day to maintain bronchodilation Inhaler should be discarded 6 weeks after the date of opening.
Second Line- use as an option where a sub - optimal response has occurred with first line choice due to medication choice or inability to use device correctly.				
TIOTROPIUM		**MDI Spiriva Respimat ®**2.5micrograms / metered inhalation	2 puffs once daily	in use shelf life 3 months

LABA / LAMA Combination Preparations - GOLD B, C, D

Combination treatment with a LABA and LAMA increases FEV_1 and reduces symptoms compared to monotherapy (Gold 2017). Combination treatment has also been shown to reduce exacerbations compared to monotherapy and there is some evidence to suggest reduced exacerbations compared to ICS/ LABA.

Listed alphabetically as LAMA - not as preference of choice.

ACLIDINIUM / FORMOTEROL ▼		**DPI Duaklir Genuair ®** 340 micrograms aclidinium / 12 micrograms formoterol inhalation powder	One inhaled dose twice daily	Indicated as a maintenance bronchodilator treatment to relieve symptoms in adult patients with COPD. Not for acute use To be used within 60 days of opening the pouch
GLYCOPYRRONIUM / INDACATEROL ▼		**DPI Ultibro Breezehaler ® DPI** 85 micrograms indacaterol / 43 micrograms glycopyrronium inhalation capsule	One inhaled dose daily	Indicated as a maintenance bronchodilator treatment to relieve symptoms in adult patients with COPD. Not for acute use To be used within 60 days of opening the pouch
OLODATEROL / TIOTROPIUM ▼		**MDI Spiolto Respimat ®**2.5 microgram/2.5 microgram / inhalation	2 puffs once daily	in use shelf life 3 months
UMECLIDINIUM / VILANTEROL ▼		**DPI Anoro Ellipta ®** 55 micrograms umeclidinium / 22 micrograms vilanterol inhalation powder	One inhaled dose daily	Indicated as a maintenance bronchodilator treatment to relieve symptoms in adult patients with COPD. Not for acute use In-use shelf-life: 6 weeks

Theophylline

For advice on prescribing Theophylline - **see Appendix 2**

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 an vary between brands. Patients currently prescribed other brands should continue as before. For further information please refer to **Appendix 2** Theophylline Prescribing, drug interactions and smoking guidelines. **Caution – Therapeutic Drug Monitoring is required.** See BNF for drug interactions

3.1.5 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 pMDI inhalers. They are available for 120 or 200 dose inhalers and are compatible with GSK MDIs and Serflo® only- *none of which are licensed for COPD* .

Corticosteroids

Monotherapy with inhaled corticosteroids (ICS) is NOT recommended in COPD because it is less effective than the combination of inhaled corticosteroids with LABAs. Regular treatment with ICS may increase the risk of pneumonia especially in those with severe disease GOLD (2017)

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)

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

For advice on bisphosphonate prophylaxis with corticosteroid prescribing please refer to **Appendix 3**

ICS / LABA Combination Preparations - MAY be suitable for SOME patients at GOLD (C), D

Prescribe by Brand

Beclometasone / Formoterol				
FOSTAIR ®		**pMDI** 6 microgram formoterol + 100 microgram Beclometasone dipropionate	**Adult** 2 puffs twice a day	Contains micronised beclometasone so 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) After dispensing: Do not store above 25°C (for a maximum of 5 months).
FOSTAIR NEXThaler®		**DPI** 6 microgram formoterol + 100 microgram Beclometasone dipropionate	2 inhalations twice daily	In use shelf – life: 6 months after opening the pouch.
Budesonide / Formoterol				
DUORESP SPIROMAX ®		**DPI: 160/4.5** 160micrograms budesonide and 4.5 micrograms formoterol	**Adult:** 2 inhalations twice daily	Dose quoted 160/4.5 is the dose leaving the mouthpiece. It is equivalent to 200 micrograms budesonide and 6 micrograms formoterol in each metered dose. In use shelf – life: 6 months after opening the pouch.
		DPI: 320/9 320 micrograms budesonide and 9 micrograms formoterol	**Adult:** 1 inhalation twice daily	Dose quoted 320/9 is the dose leaving the mouthpiece. It is equivalent to 400 micrograms budesonide and 12 micrograms formoterol in each metered dose.
FOBUMIX EASYHALER ®		**DPI: 320/9** 320 micrograms budesonide and 9 micrograms formoterol	**Adult:** 1 inhalation twice daily	Dose quoted 320/9 is the dose leaving the mouthpiece. It is equivalent to 400 micrograms budesonide and 12 micrograms formoterol in each metered dose. In use shelf – life: 4 months after opening the pouch.
SYMBICORT turbohaler ®		**DPI: 400/12** 200 micrograms budesonide and 6 micrograms formoterol	**Adult:** 1 inhalation twice daily	
SYMBICORT MDI ®		**MDI: 200/6** 200 micrograms budesonide and 6 micrograms formoterol	**Adult:** 2 puffs twice daily	Inhaler should be discarded 6 weeks after the date of opening.
Fluticasone/ Salmeterol				
AERIVIO SPIROMAX ®		**DPI:** 50 micrograms salmeterol and 500 micrograms fluticasone	**Adult (over 18 years):** One inhalation twice daily	After opening the foil wrap: expiry 3 months. **High dose ICS = 1000mcg beclometasone dipropionate / day**
AIRFLUSAL FORSPIRO 500/50 ®		**DPI:** 50 micrograms salmeterol and 500 micrograms fluticasone	**Adult (over 18 years):** One inhalation twice daily	**High dose ICS = 1000mcg beclometasone dipropionate / day**
FUSACOMB EASYHALER ® 500/50		**DPI:** 50 micrograms salmeterol and 500 micrograms fluticasone	**Adult (over 18 years):** One inhalation twice daily	After opening the foil wrap: expiry 2 months. **High dose ICS = 1000mcg beclometasone dipropionate / day**

Fluticasone Furoate / Vilanterol				
RELVAR ELLIPTA ®		**DPI: 22/92** 22 microgram vilanterol and 92 microgram fluticasone furoate	**Adult:** 1 inhalation daily	Inhaler should be discarded 6 weeks after the date of opening.
LAMA / LABA / ICS Combination Preparations - GOLD D once ongoing need of triple therapy is established **Prescribe by Brand**				
TRIMBOW ®		**MDI**:(Dose leaving the mouthpiece) 87 micrograms of **beclometasone** dipropionate, 5 micrograms of **formoterol** fumarate dihydrate and 9 micrograms of **glycopyrronium.**	**Adults:** Two inhalations of twice daily.	After dispensing, the medicinal product may be stored for a maximum of 4 months at a temperature up to 25°C.
TRELEGY ELLIPTA ® ▼		**DPI:(Dose leaving the mouthpiece)** 92 micrograms **fluticasone** furoate, 55 micrograms **umeclidinium** and 22 micrograms **vilanterol.**	**Adults:** One inhalation once daily	Shelf-life after opening the tray: 6 weeks
Mucolytics				
CARBOCISTEINE		Capsules: 375mg	**Adult: Initially** 2.25g daily in divided doses **then** 1.5g daily in divided doses as condition improves.	Consider where the COPD patient has a FEV1 < 50% and has a chronic productive cough
		Liquid sachets: 750mg/10ml	**Adult: Initially** 1x10ml sachet three times a day (total 2.25g daily), **then** 1x10ml sachet twice a day (total 1.5g daily).	**Contraindicated in active peptic ulceration** Mucolytic therapy should be stopped if there is no benefit after a 4 week trial.
Oral Corticorticosteroids				
Oral corticosteroids may be prescribed for an acute exacerbation of COPD if increased breathlessness interferes with activities of daily living. Always consider 'total steroid load' (e.g. oral, inhaled and nasal), when assessing patients. Prolonged treatment with oral prednisolone is of no benefit and maintenance treatment is not recommended (GOLD 2017 , BNF). For advice on prescribing oral corticosteroids in respiratory patients see - **Appendix 2**				
PREDNISOLONE		Tablets: 5mg	40mg in the morning for 5 days (GOLD 2017)	To be taken as s single daily dose taken in the morning. Bone protection should be considered for all long-term oral corticosteroid patients For advice on bisphosphonate prophylaxis please refer to **Appendix 2 - see also Key Message Bulletin 33.** Key Message 33 (part 3)

Consider Antibiotics if sputum becomes discoloured or increases in volume - see NELCSU Antiobiotic Formulary:

Appendix 2 – Oral Corticosteroids in COPD

Dose of Oral Corticosteroids for exacerbations:

- Prednisolone 40mg OM for 5 days then stop GOLD 2017

CSM recommends gradual withdrawal if:

- Recent repeated courses (particularly if taken for longer than 3 weeks)
- Taken short course within 1 year of stopping long-term therapy
- Other possible causes of adrenal suppression
- Received more than 40mg OD prednisolone (or equivalent)
- Received more than 3 weeks treatment

- During withdrawal, dose may be reduced rapidly (5mg every 3 days) to physiological doses (i.e. prednisolone 7.5mg) and then more slowly.
- Some patients may need to be maintained on a low dose long-term, i.e. 5mg OD.

Withdrawal of oral Corticosteroids – https://www.medicinescomplete.com/mc/bnf/current/PHP519-prednisolone.htm

Corticosteroid-induced Osteoporosis – See Key Message 33 – part 3

To reduce the risk of osteoporosis doses of oral corticosteroids should be **as low as possible** and courses of treatment **as short as possible.**

- Risk may be related to cumulative doses – even intermittent courses can increase the risk.
- Greatest bone loss occurs during first 6-12 months of corticosteroid use.
- Long-term use of high-dose **inhaled corticosteroid** may also contribute.
- **Prophylaxis –** All patients taking or likely to take equivalent of prednisolone 7.5mg daily at least 3 months should be assessed and where necessary given prophylactic treatment. NB Those aged over 65 are at greater risk and also those taking regular intermittent courses. These patients should receive ongoing monitoring.
- **Treatment –** Patients taking oral corticosteroids who have sustained a low-trauma fracture should receive treatment for osteoporosis.
- Treatment and prophylaxis are the same – bisphosphonate and calcium and vitamin D – alendronic acid 70mg each week and **Adcal® D3** one tablet twice a day or **teiCal-D3®** 1000mg/880 IU chewable tablets one tablet daily.
- Lifestyle advice should be given:
  - Adequate nutrition especially calcium and vitamin D – patient leaflets available
  - Regular weight bearing exercise and balance
  - Avoid tobacco and excessive alcohol
- Medicines Management points with bisphosphonates
  - Check compliance – large quantities of these expensive drugs have been returned unused
  - Administration counselling – swallow whole with plenty of water while sitting or standing; to be taken on an empty stomach at least 30 mins before breakfast; should stand or sit upright for at least 30 mins after taking
  - Avoid the calcium on the day the bisphosphonate is taken, due to potential drug interaction

Oral / inhaled Corticosteroids – General Messages

- Please refer to BNF https://www.medicinescomplete.com/mc/bnf/current/PHP519-prednisolone.htm for general advice on prescribing oral corticosteroids, e.g. availability of steroid cards, give as single daily dose OM to minimise suppressive action on cortisol secretion, etc.
- Advice from MHRA – inhaled corticosteroids and steroid cards – http://www.mhra.gov.uk/Publications/Safetyguidance/CurrentProblemsinPharmacovigilance/CON2023859
- Always consider 'total steroid load' (oral, inhaled and nasal) when assessing patients.