

CHANGING LIVES

# An Introduction to COPD Diagnosis and Management

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# Why is it important?

- COPD is a preventable disease.
- Avoidable death due to Respiratory Disease is 7 times higher in the most deprived area's of England compared to the least deprived. Related to smoking, air pollution, poor housing, occupational hazards, variation in healthcare quality and access.
- Hospital admissions due to Respiratory conditions are a major factor in winter pressures faced by the NHS.

(Public Health England, 2019)

# Responsibility of Healthcare Professionals

- Understand prevention and protection and be able to promote public health
- Understand your role and role of partners in prevention
- Understand the needs of your patient and have an awareness of the services available to address these needs
- Consider the impact of earlier diagnosis and better management.

(Public Health England, 2019)

# How do we impact individual's?

- Have an understanding of risk factors that increase the risk of respiratory illness and provide advice to patients
- Be able to identify at risk patients and recognise the signs and symptoms of respiratory illness in order to detect and diagnose early
- Implement best practice guidelines around diagnosis and management.
- Refer for specialist services where appropriate
- Provide personalised care to support self management and maintain good quality of life.
- Promote uptake of vaccines
- Investigate and act on variation in care quality and health outcomes  
(Public Health England, 2019)

Indicator	Period	England																							
		North East and Yorkshire (Yorkshl...	NHS Alredale, Wharfedale And Crave...	NHS Barnsley CCG	NHS Bassetlaw CCG	NHS Bradford City CCG	NHS Bradford Districts CCG	NHS Calderdale CCG	NHS Doncaster CCG	NHS East Riding Of Yorkshire CCG	NHS Greater Huddersfield CCG	NHS Harrogate And Rural District...	NHS Hull CCG	NHS Leeds North CCG	NHS Leeds South And East CCG	NHS Leeds West CCG	NHS North East Lincolnshire CCG	NHS North Kirklees CCG	NHS North Lincolnshire CCG	NHS Rotherham CCG	NHS Scarborough And Ryedale CCG	NHS Sheffield CCG	NHS Vale Of York CCG	NHS Wakefield CCG	
Registered population - % aged 35+ years	2012	55.9	55.5*	60.0	58.3	60.8	33.7	52.7	57.2	57.4	63.5	55.5	62.2	53.0	54.2	53.2	47.7	57.7	52.4	59.8	57.6	62.2	52.5	57.4	57.9
% aged 75+ years	2018	7.8	7.9*	9.8	8.0	9.2	2.8	6.9	7.4	8.3	11.2	7.4	10.4	6.7	7.5*	6.8*	6.1*	8.9	6.9	9.0	8.3	11.0	7.5	8.8	7.8
IDAOP1 (Income Depr. - Older People)	2015	16.2	-	12.8	18.6	14.3	52.9	22.4	16.4	18.3	12.8	14.7	9.3	28.4	15.0	21.6	17.6	19.3	20.2	15.6	19.0	15.5	20.8	10.7	16.9
COPD: QOF prevalence (all ages)	2017/18	1.9	2.3*	2.1	3.2	2.4	1.3	2.5	2.3	2.8	2.4	1.8	1.9	2.7	1.5*	2.7*	1.7*	2.5	2.4	2.3	2.9	2.3	2.1	1.7	2.9
COPD002: Diagnosis conf. by spirometry (den. incl. exc.)	2017/18	80.8	81.6*	83.9	77.0	80.9	79.0	84.1	83.1	82.0	81.0	84.9	85.6	77.9	80.7*	83.3*	81.9*	85.2	84.9	78.3	81.0	81.7	78.2	82.0	84.0
COPD003: assessed using MRC dyspnoea score last 12mths (den. incl. exc.)	2017/18	79.4	79.4*	76.1	78.5	75.2	79.8	81.9	77.5	79.4	75.3	82.1	86.3	73.0	78.7*	81.5*	80.2*	83.0	82.6	81.5	80.0	81.9	78.5	78.5	81.4
COPD004: Record of FEV1 in last 12mths (den. incl. exc.)	2017/18	71.1	70.6*	69.7	70.8	70.7	74.0	72.1	67.6	68.3	71.1	76.8	78.2	65.5	72.8*	77.6*	74.5*	74.4	75.3	74.0	67.6	71.4	63.2	70.6	69.4
COPD005: Patients w. MRC dyspnoea score >=3 w. oxygen saturation value (last 12mths) (den.incl.exc.)	2017/18	95.6	95.4*	94.9	94.3	93.7	93.8	95.0	96.1	96.7	96.4	94.6	95.9	96.4	96.4*	95.4*	95.4*	94.5	95.2	96.1	96.9	96.6	93.0	96.7	95.5
COPD007: Influenza immunisation given 1 Aug - 31 Mar (den. incl. exc.)	2017/18	80.0	79.7*	79.0	78.7	77.0	75.5	79.6	80.1	80.3	79.0	80.2	82.9	74.8	81.5*	80.0*	82.2*	78.3	79.8	79.3	79.9	76.4	82.3	81.4	80.2
Exception rate for COPD indicators	2017/18	13.1	13.3*	14.2	13.2	18.1	13.4	13.1	12.7	14.8	13.4	11.1	9.2	18.0	12.8*	10.1*	10.6*	11.9	10.9	12.6	11.3	15.4	14.8	13.7	13.6
SMOK001: record of smoking status in last 24 months (15+ y), den. incl. exc. - retired	2013/14	85.6	85.5*	84.9	83.8	85.4	84.2	85.5	85.1	86.6	86.5	85.2	85.1	86.2	86.9	86.4	81.9	90.7	87.9	87.3	86.1	86.6	84.1	84.7	85.6
SMOK002: status recorded in last 12 mths (certain conditions), den.incl.exc.	2017/18	94.4	94.8*	94.2	94.3	94.6	95.6	95.0	94.3	95.4	94.7	94.5	94.9	93.8	94.4*	94.6*	94.0*	96.5	96.0	95.6	95.4	94.8	94.3	94.9	94.9
SMOK004: record of offer of support and treatment (15+, last 24 mnths), den. incl. exc.	2017/18	89.2	89.7*	93.1	86.4	83.1	94.3	93.6	90.9	88.7	91.2	89.9	91.6	89.5	93.2*	89.5*	89.0*	88.7	87.3	88.1	84.0	92.7	91.0	90.9	88.1
SMOK005: cessation support and treatment offered (certain conditions), den. incl. exc.	2017/18	94.9	95.4*	95.7	93.4	96.5	95.1	97.4	94.8	95.4	95.9	94.8	96.3	94.4	97.4*	95.7*	95.4*	97.0	94.7	95.3	93.1	96.0	95.4	96.1	95.6
Total COPD admissions per 1,000 population	2012/13	2.15	2.72*	2.15	4.01	2.34	1.22	2.33	2.85	3.33	2.63	1.73	1.63	3.51	1.64	3.56	2.16	2.60	2.77	3.41	4.55	2.27	2.56	1.89	3.21
Emergency COPD admissions per 1,000 population	2012/13	2.06	2.61*	2.10	3.89	2.32	1.19	2.28	2.79	3.19	2.52	1.69	1.58	3.45	1.60	3.49	2.10	2.50	2.72	3.36	3.70	2.15	2.45	1.81	3.11
COPD admissions per 100 patients on disease register	2010/11	12.6	13.5*	11.5	14.8	10.5	15.3	11.9	15.0	11.2	12.6	12.0	11.3	17.1	11.3	14.6	14.3	9.3	11.4	13.3	21.3	12.7	13.6	10.8	13.8
Emergency COPD admissions per 100 patients on disease register	2010/11	12.0	12.9*	10.8	14.1	10.3	15.2	11.7	14.8	10.8	12.3	11.5	11.1	17.0	11.1	14.2	13.8	9.0	11.2	12.9	16.9	12.3	13.0	10.6	13.5

# COPD Definition

- GOLD (2020) defines COPD as a common, preventable and treatable disease that is characterized by persistent respiratory symptoms and airflow limitation that is due to airway and/or alveolar abnormalities usually caused by significant exposure to noxious particles or gases and influenced by host factors including abnormal lung development. Significant comorbidities may have an impact on morbidity and mortality.

# When should we suspect COPD?

People over the age of 35 with a risk factor (usually smoking or history of smoking) who present with 1 or more of the following symptoms:

- exertional breathlessness
- chronic cough
- regular sputum production
- frequent winter 'bronchitis'
- wheeze

# Diagnosis

## History

In depth history taking is essential to diagnosing COPD

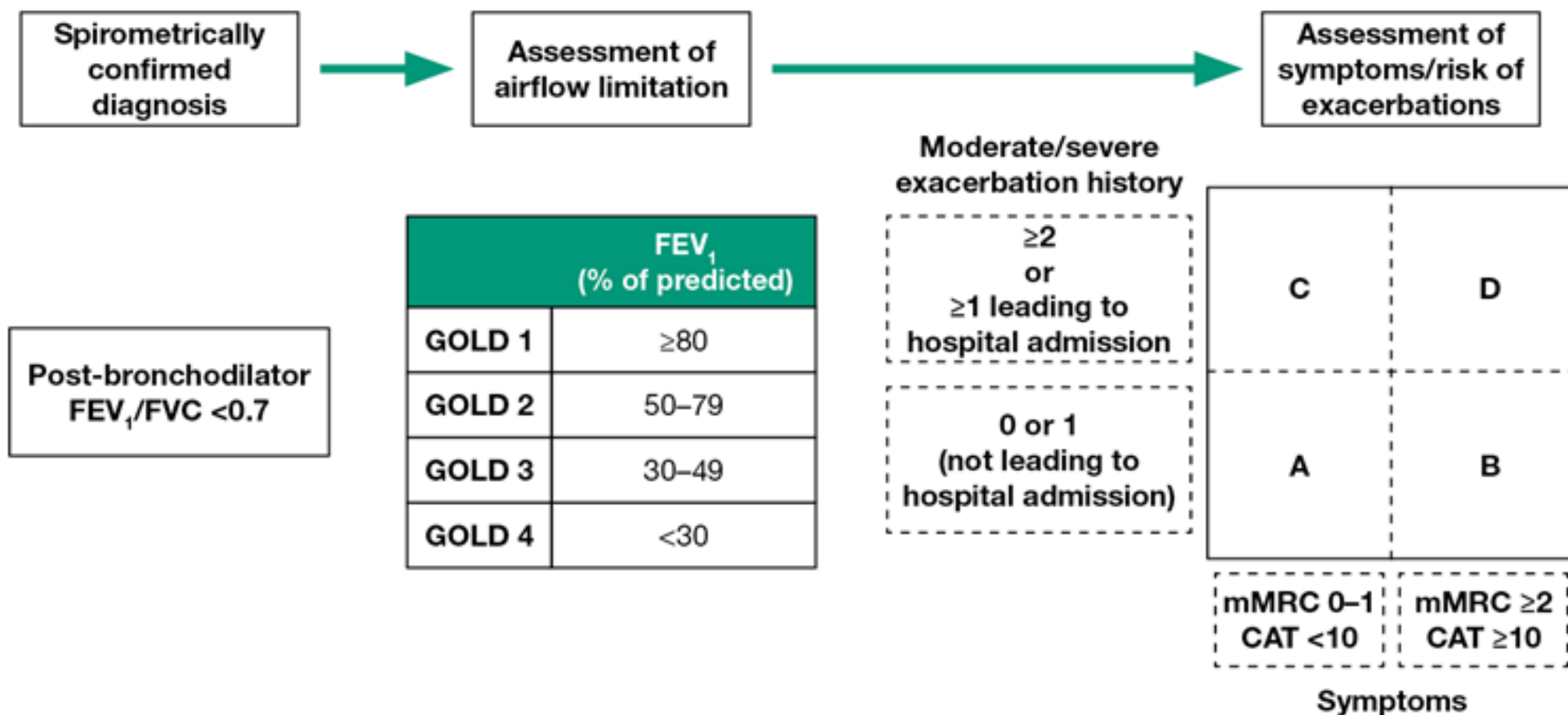
- Symptoms
- Patterns of symptoms
- Age of onset
- Smoking history
- Occupation
- Family history / previous history



# Diagnosis

- **Spirometry**
- Criteria for airflow limitation – post bronchodilator fixed ratio of  $FEV_1/FVC < 0.70$
- Use of fixed ratio to define airflow limitation results in over diagnosis in elderly and under diagnosis in <45's
- NICE recommends the use of Global Lung initiative (GLI) values to determine the lower limit of normal
- GOLD mentions GLI but favours the use of fixed ratio

# Severity



$FEV_1$ =forced expiratory volume in the first second; FVC=forced vital capacity; mMRC=modified Medical Research Council dyspnoea questionnaire; CAT=COPD assessment test.

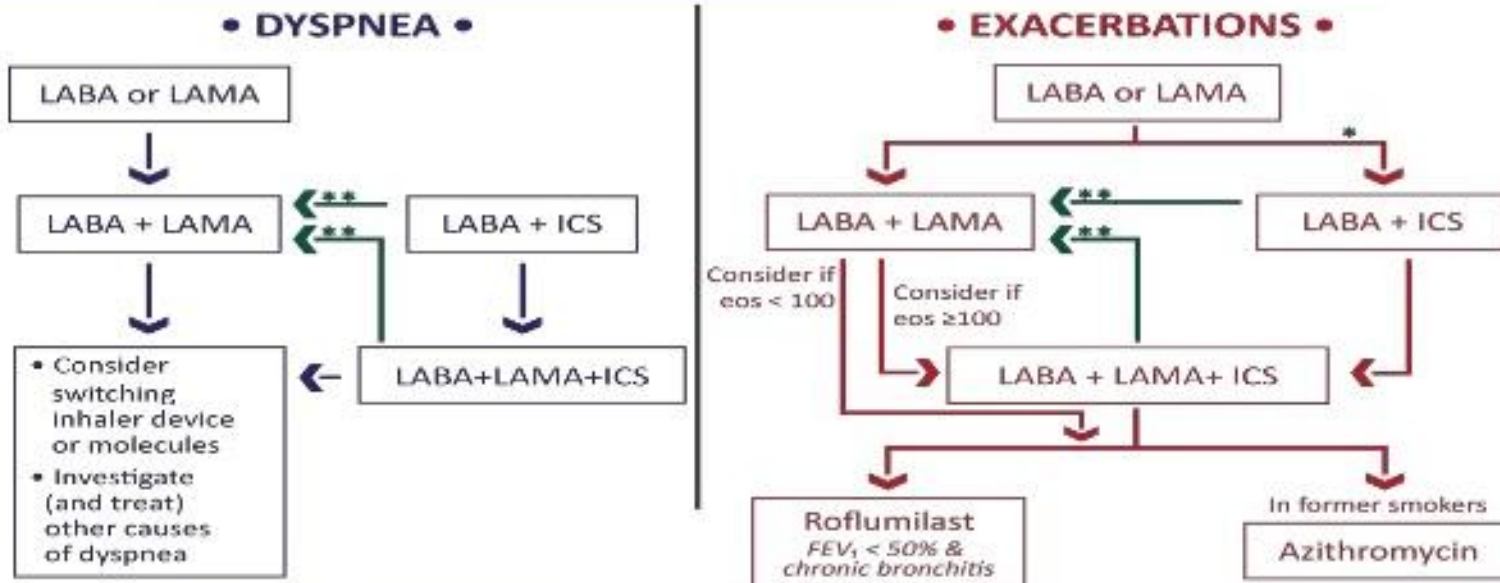
# Initial Pharmacological treatment

<b>≥2 moderate exacerbations or ≥1 leading to hospitalisation</b>	<b>Group C</b>  LAMA	<b>Group D</b>  LAMA or LAMA + LABA* or ICS + LABA**  * Consider if highly symptomatic (e.g. CAT >20) ** Consider if eos ≥300
	<b>0 or 1 moderate exacerbations (not leading to hospital admission)</b>	<b>Group A</b>  A bronchodilator
	mMRC 0–1 CAT <10	mMRC ≥2 CAT ≥10

LAMA=long-acting muscarinic receptor antagonists; LABA=long-acting beta<sub>2</sub> agonist; ICS=inhaled corticosteroids; CAT=COPD assessment test; COPD=chronic obstructive pulmonary disease; eos=blood eosinophil count in cells per microlitre; mMRC=modified Medical Research Council dyspnoea questionnaire.

# Follow-up Pharmacological Treatment

## FOLLOW-UP PHARMACOLOGICAL TREATMENT



eos = blood eosinophil count (cells/ $\mu$ L)

\* Consider if eos  $\geq$  300 or eos  $\geq$  100 AND  $\geq$  2 moderate exacerbations / 1 hospitalization

\*\* Consider de-escalation of ICS or switch if pneumonia, inappropriate original indication or lack of response to ICS

## Chronic obstructive pulmonary disease in over 16s: non-pharmacological management and use of inhaled therapies

### Confirmed diagnosis of COPD

#### Fundamentals of COPD care:

- Offer treatment and support to stop smoking
- Offer pneumococcal and influenza vaccinations
- Offer pulmonary rehabilitation if indicated
- Co-develop a personalised self-management plan
- Optimise treatment for comorbidities

These treatments and plans should be revisited at every review

#### Start inhaled therapies only if:

- all the above interventions have been offered (if appropriate), and
- inhaled therapies are needed to relieve breathlessness and exercise limitation, and
- people have been trained to use inhalers and can demonstrate satisfactory technique

Review medication and assess inhaler technique and adherence regularly for all inhaled therapies

Offer SABA or SAMA to use as needed

### If the person is limited by symptoms or has exacerbations despite treatment:

No asthmatic features or features suggesting steroid responsiveness<sup>a</sup>

Asthmatic features or features suggesting steroid responsiveness<sup>a</sup>

Offer LABA + LAMA

Consider LABA + ICS<sup>b</sup>

Person has day-to-day symptoms that adversely impact quality of life

Person has 1 severe or 2 moderate exacerbations within a year

Person has day-to-day symptoms that adversely impact quality of life, or has 1 severe or 2 moderate exacerbations within a year

Consider 3-month trial of LABA + LAMA + ICS<sup>b,c</sup>

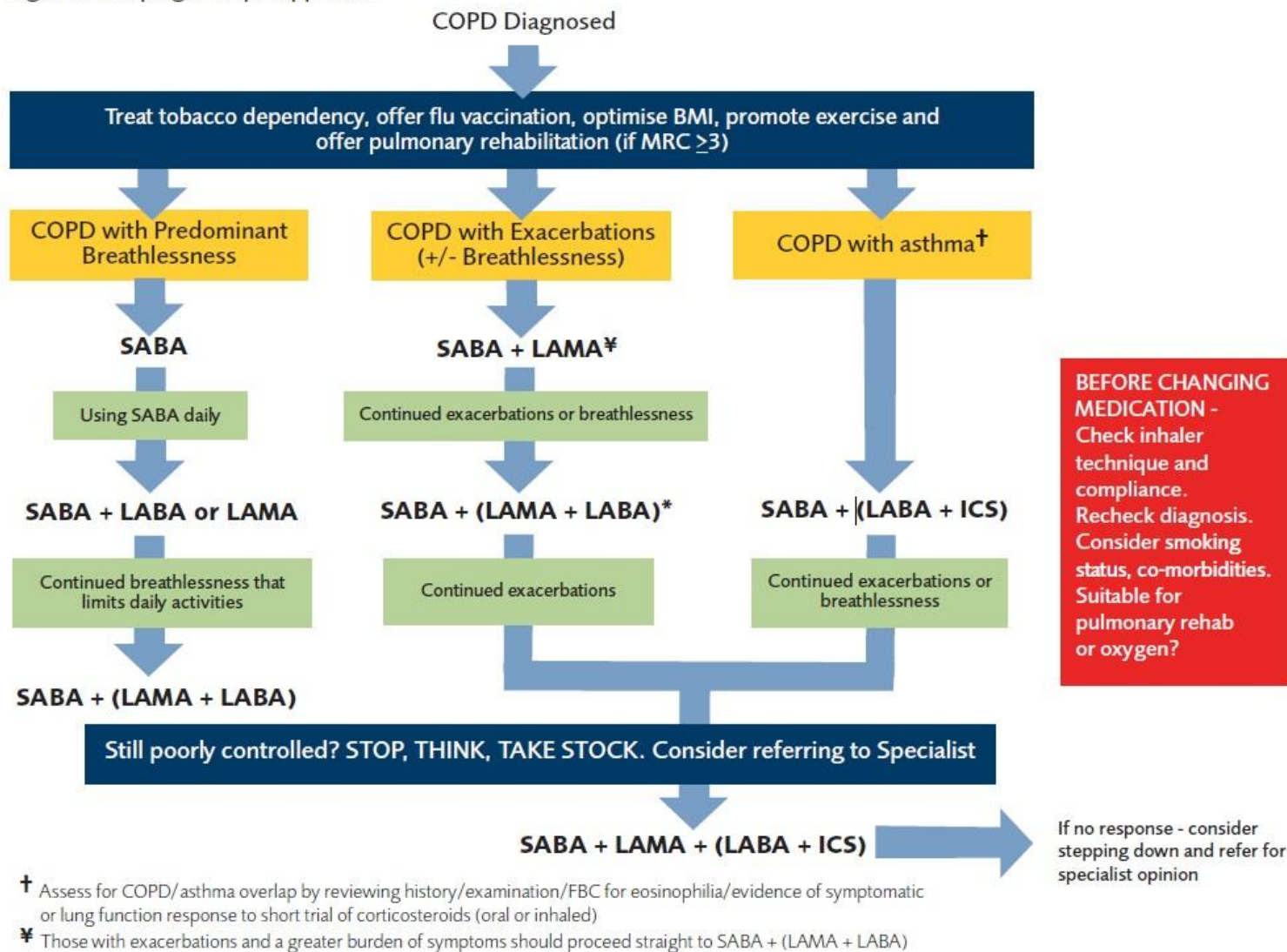
Consider LABA + LAMA + ICS<sup>b,c</sup>

Offer LABA + LAMA + ICS<sup>b,c</sup>

If no improvement, revert to LABA + LAMA

Explore further treatment options if still limited by breathlessness or subject to frequent exacerbations (see guideline for more details)

Figure 5 Keeping it simple approach



# Inhaler Technique

- Inhaled therapies are only effective if the patient can use the device.
- Poor technique is common, it is estimated that only 15% of patients use MDI's correctly
- Healthcare professionals also have poor technique
- <https://www.asthma.org.uk/advice/inhaler-videos/>

# Common Problems

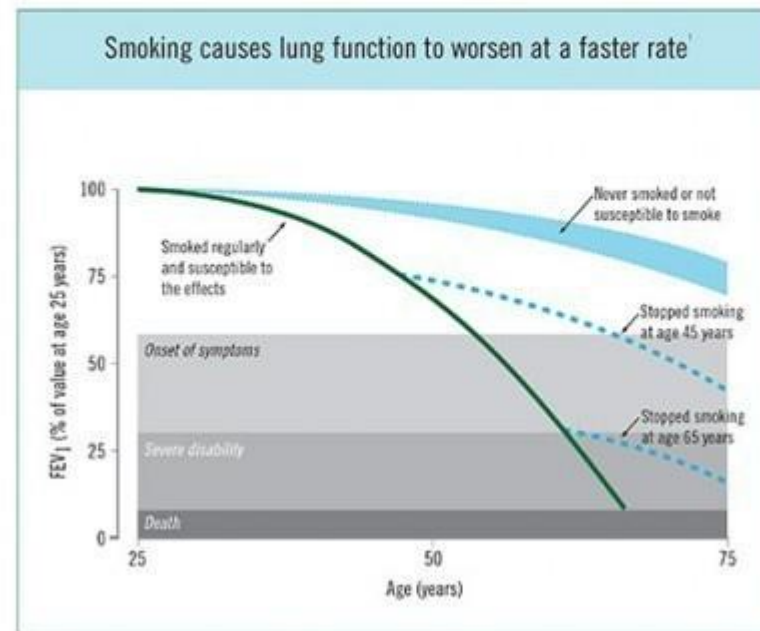
- Not breathing out first
- Not holding the breath after taking inhaler
- Not priming the device properly
- Not shaking the inhaler (if required)
- Not holding the inhaler in the upright position (where recommended)
- Inhaling too early or inhaling too late
- Not leaving enough time between doses
- Actuation against teeth, lips or tongue
- Stopping inhalation immediately after firing
- Not using correct inspiratory effort (firm/forceful and deep for dry powder device (DPI) and gentle and deep for pMDI/mist/spacer)
- Inhalation through nose whilst and after actuation
- Failing to form a good seal around the mouthpiece





# Smoking Cessation

Who benefits from quitting smoking?



### 20 minutes

**Blood pressure** and pulse rate return to normal.

### 24 hours

Carbon monoxide will be **eliminated from the body**. Lungs start to clear out mucus and other smoking debris.

### 72 hours

**Breathing becomes easier**. Bronchial tubes begin to relax and **energy levels increase**.

### 3-9 months

Coughs, wheezing and breathing problems improve as **lung function increases by up to 10%**.

### 10 years

Risk of lung cancer falls to **half that of a smoker**. Risk of heart attack falls to **the same as someone who has never smoked**.

### 8 hours

Nicotine and carbon monoxide levels in blood **reduce by half**, oxygen levels return to normal.

### 48 hours

**There is no nicotine in the body**. Ability to taste and smell is greatly improved.

### 2-12 weeks

Your circulation improves.

### 5 years

Risk of heart attacks **falls to about half** compared to a person who is still smoking.

# Benefits of Smoking Cessation

- Increased life expectancy
- Reduces the risk of pneumonia
- Reduces the risk of heart disease, stroke and lung Ca
- Can save up to £500 per month
- Protect other people from passive smoking
- COPD patient's will see a reduction in exacerbations
- Many COPD treatments are not effective in smokers and therefore will not be offered e.g. Azithromycin, Roflumilast, LTOT

# QUIT in Barnsley

- **Measure exhaled carbon monoxide level** and record in clinical notes
- **Ask smoking status** and record in clinical notes:
  - Ask “*Have you smoked at all in the last 4 weeks?*”
  - Use exhaled carbon monoxide levels to guide the question (see chart)
- If identified as a smoker:
- **Give very brief advice (VBA):**
  - “*the best way to stop smoking is with a combination of specialist support and medication. Both are free on the NHS*”
- <https://www.ncsct.co.uk/> - e-learning under training resources
- **Refer to Stop Smoking Service (SSS)**
  - Say “*we refer all clinic patients who smoke to the stop smoking services in Barnsley*”
  - Provide **patient sticker AND contact number** on Respiratory Out-Patients Stop Smoking Service referral form or SSS referral form
- **Provide Stop Smoking Service information leaflet**
- **Please note:** we are using an **opt-out** approach so smokers are identified and fully supported to stop. However, please respect their wishes if a person chooses not to answer or be referred to the stop smoking service.

# Vaccines

- GOLD (2020) recommends that patients get vaccinated against flu and pneumonia.
- Helps prevent infections and reduces the risk of acute exacerbations.
- Cheap and cost effective.
- Can have side effects such as low grade pyrexia, aches and fatigue, pain redness and swelling at the injection site.

# Pulmonary Rehab

- A multidisciplinary program that helps improve the quality of life for with people with respiratory conditions.
- Educates patients on how to manage their condition e.g. inhaler technique and how to manage acute exacerbations
- Program lasts for 6-8 weeks 2 sessions per week.
- Based at Dorothy Hymen Centre, also programmes available at Hoyland Sports Centre, Dearneside leisure centre and Recovery College.

# Benefits of Pulmonary Rehab

- Helps patients manage their symptoms
- Improves exercise tolerance
- Helps patients deal with and reduce anxiety
- Improves emotional wellbeing
- Promotes healthy eating
- Reduces risk of exacerbations and patients are less likely to be admitted to hospital
- Reduces mortality

# Criteria for referral

- Respiratory diagnosis confirmed with spirometry
- Symptomatic SOB
- No cardiac event in past 8 weeks
- Optimised respiratory medication/therapy
- Motivated to attend & complete the programme

Excluded – unstable cardiac condition i.e. Angina, severe aortic stenosis, impaired cognitive function, other comorbidity disease with prognosis less than 6 months, awaiting results of investigations i.e. cardiac



# Rescue Packs

- Rescue packs are both over and underused
- Patients who frequently exacerbate (more than 2 per year) are most likely to benefit.
- On optimised treatment
- Able to understand the information provided
- They need education alongside rescue packs – how to recognise exacerbations, risks and benefits, safety netting, alarming symptoms
- Overuse of steroids – osteoporosis, diabetes, weight gain, cataracts, pneumonia.
- Over use of antibiotics – antimicrobial resistance
- Should be given alongside self management plans

## When you are well:

### Make sure you know

- How far you can walk before you are out of breath.
- How much sputum you produce daily.
- What colour your sputum is.
- How your breathing is at rest and when you are doing something.
- What makes your breathing worse - avoid triggers like cigarette smoke, but don't avoid activity when you are well as getting a bit breathless will help make you fitter.
- How well you sleep, including the number of pillows.
- How to use your inhalers, and what they are for.
- What to do if your symptoms get worse.

### Lifestyle tips

- Stop smoking and avoid smoky areas.
- Keep active every day and ask your nurse or doctor about pulmonary rehabilitation.
- Ask your nurse or doctor for information about healthy eating.
- Drink plenty of fluids.
- Plan ahead and allow time to do things.
- Be sure to wrap up if it is cold outside.

### Your reliever is:

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### Other Inhalers:

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## Signs of becoming unwell:

- Increased breathlessness – not able to do as much as usual OR taking much longer to recover.
- Change in sputum colour from normal for you, to yellow, green or brown.
- Increase in the amount of sputum.

### If you have two or more of the above signs of becoming unwell or have blood in your sputum:

- Continue your usual medication including your inhalers.
- Increase your reliever to:

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**You may require antibiotics and/or steroids. If you have a rescue pack please refer to your rescue pack flare up plan or speak to your COPD specialist nurse/ GP Practice.**

### Other advice

- Allow more time for rest in the day.
- Drink extra fluids.
- Eat small amounts regularly.

**Additional information specifically for you (for example if you have been given additional medication to keep at home):**

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## Severe symptoms:

### The following symptoms need urgent medical attention:

- Too breathless to speak in sentences.
- Feel drowsy
- Not able to eat or drink.
- You have a high fever.
- Coughing up blood or blood in sputum.
- Your symptoms get worse after starting your rescue medication OR you are no better after two days of taking your rescue medication.

**Contact your GP Immediately for an urgent review.**

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This includes out of hours as they will redirect you.

If you are short of breath at rest, feeling agitated, afraid or drowsy you need to sit down and try to stay calm. Panicking will make your breathing worse.

### Call 999 if you experience any of the following:

- Confusion
- Severe central chest pain
- Feel exceptionally drowsy
- Symptoms come on rapidly
- Blue lips, fingers or toes

Take  puffs of \_\_\_\_\_

Use a large volume spacer if you have one while you are waiting for an ambulance.

# Prophylactic Antibiotic Therapy

- Not indicated in smokers
- Must have optimised non-pharmacological management
- If continues to exacerbate frequently (4 or more per year), has prolonged exacerbations with sputum production or exacerbations resulting in hospitalisation can consider prophylactic antibiotics.
- Sputum sample including TB
- Training on effective sputum clearance.
- CT scan
- ECG
- LFT's
- Review after 3 months then every 6 months.
- You do not need to stop during an acute exacerbation.

# Methylxanthines (Theophylline)

- Evidence shows only a modest bronchodilator effect compared with placebo in stable COPD.
- Limited/contradictory evidence regarding the effect on exacerbation rates
- Small therapeutic window
- Many side effects – palpitations caused by arrhythmias, headaches, insomnia, nausea, heartburn.
- Significant interactions with other commonly used drugs

# Long Term Nebulised Therapy Yes or No?

- Not well evidenced
- Side effects that include arrhythmia's, tachyphylaxis (rapidly diminishing response to successive doses of a drug, rendering it less effective), failure to call help in an emergency.
- BREATHE Service only recommend use of home nebulisers palliatively.

# LTOT assessment

- Should be assessed in patients who have  $SpO_2 < 92\%$  or  $SpO_2 \leq 94\%$  (on 2 separate occasions) with clinical evidence of peripheral oedema, polycythemia or pulmonary hypertension
- Should be carried out when patient is in a clinically stable state (i.e. 6-8 weeks post exacerbation)
- Indicated if  $PaO_2 < 7.3kpa$  or  $< 8kpa$  with comorbidities.
- Not routinely offered to patients for hospital discharge unless hypoxic on ABG and symptomatic.

# Role of the BREATHE Team

- Alliance
- KPI's
- Admission avoidance
- ESD
- HOT Clinic
- HOS-AR



Thank you

**Any Questions?**

