

Keeping COPD Patients at Home this Winter

Sebastian Le Feuvre

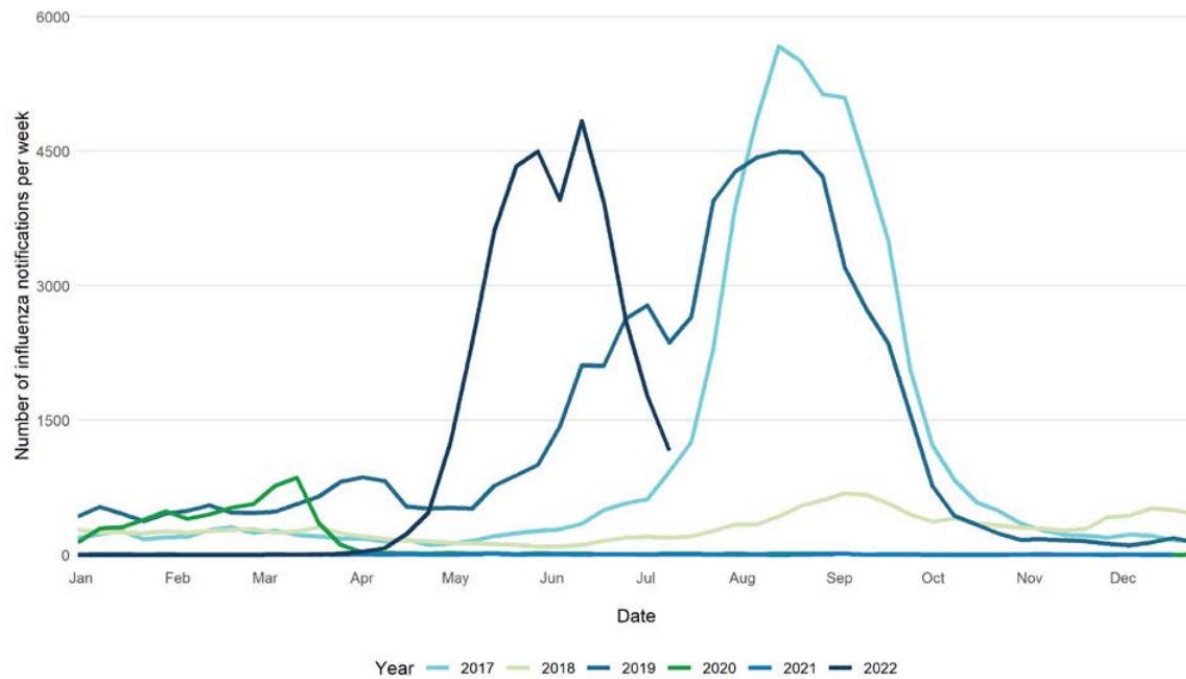
Thoracic & Sleep Physician (FRACP)

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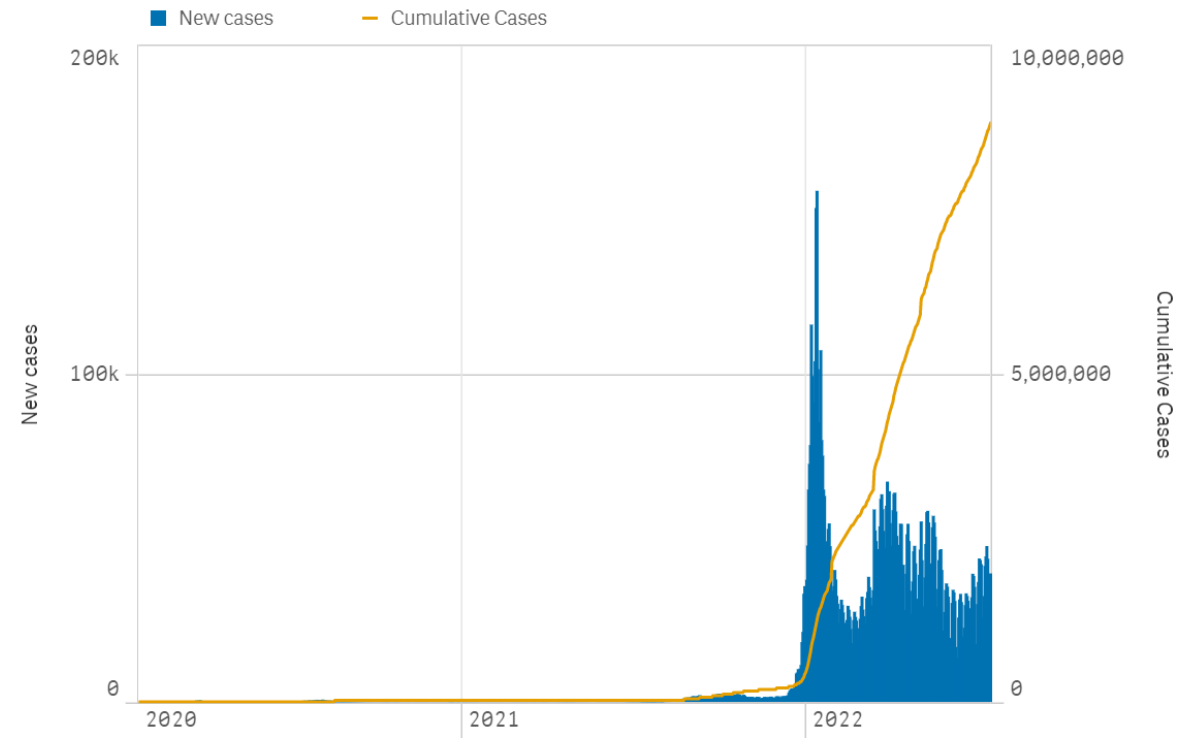
Winter 2022 (So far)

Figure 1: Laboratory-confirmed influenza notifications in Queensland, by week and month of onset, 1 January 2017 to 17 July 2022.



Queensland Health Weekly Influenza Surveillance Report

New and cumulative number of reported COVID-19 cases in Australia

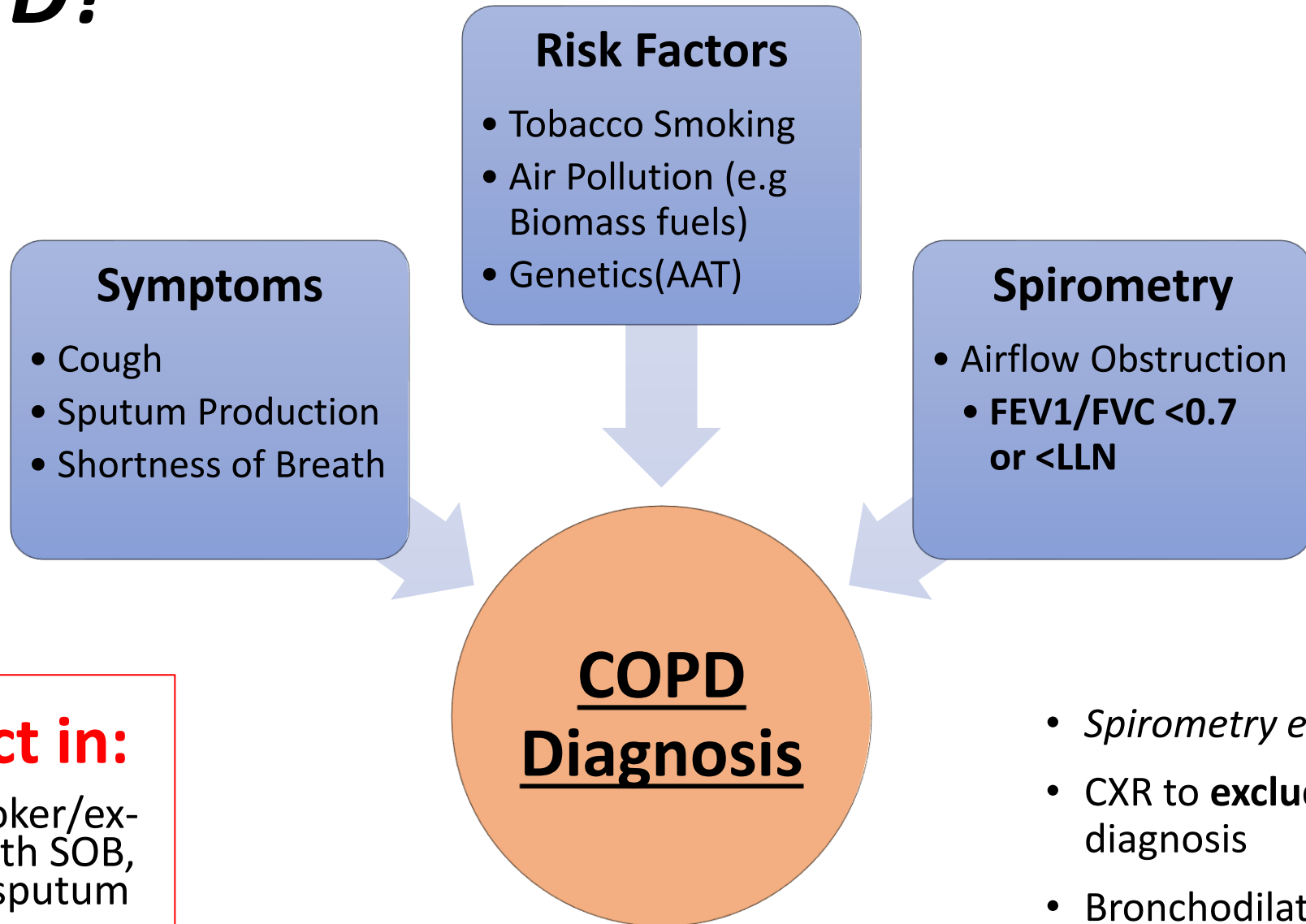


Source: Department of Health, States & Territories Report 18/7/2022

Outline

- The Diagnosis
- Optimization & Prevention – The Goals of COPD Management
 - Pharmacological Interventions
 - Non-Pharmacological Interventions
- Managing Exacerbations
- Refer to Hospital or Respiratory Specialist

Is it COPD?



Suspect in:

>35yo smoker/ex-smoker with SOB, cough or sputum

- Spirometry essential for diagnosis
- CXR to **exclude** alternative diagnosis
- Bronchodilator response to look for Asthma/COPD Overlap

Is it Severe?

	Increasing COPD severity		
	MILD	MODERATE	SEVERE
Typical symptoms	<ul style="list-style-type: none"> ⊕ few symptoms ⊕ breathless on moderate exertion ⊕ little or no effect on daily activities ⊕ cough and sputum production 	<ul style="list-style-type: none"> ⊕ breathless walking on level ground ⊕ increasing limitation of daily activities ⊕ recurrent chest infections ⊕ exacerbations requiring oral corticosteroids and/or antibiotics 	<ul style="list-style-type: none"> ⊕ breathless on minimal exertion ⊕ daily activities severely curtailed ⊕ exacerbations of increasing frequency and severity
Typical lung function	FEV₁ ≈ 60-80% predicted	FEV₁ ≈ 40-59% predicted	FEV₁ < 40% predicted

COPD-X Guidelines

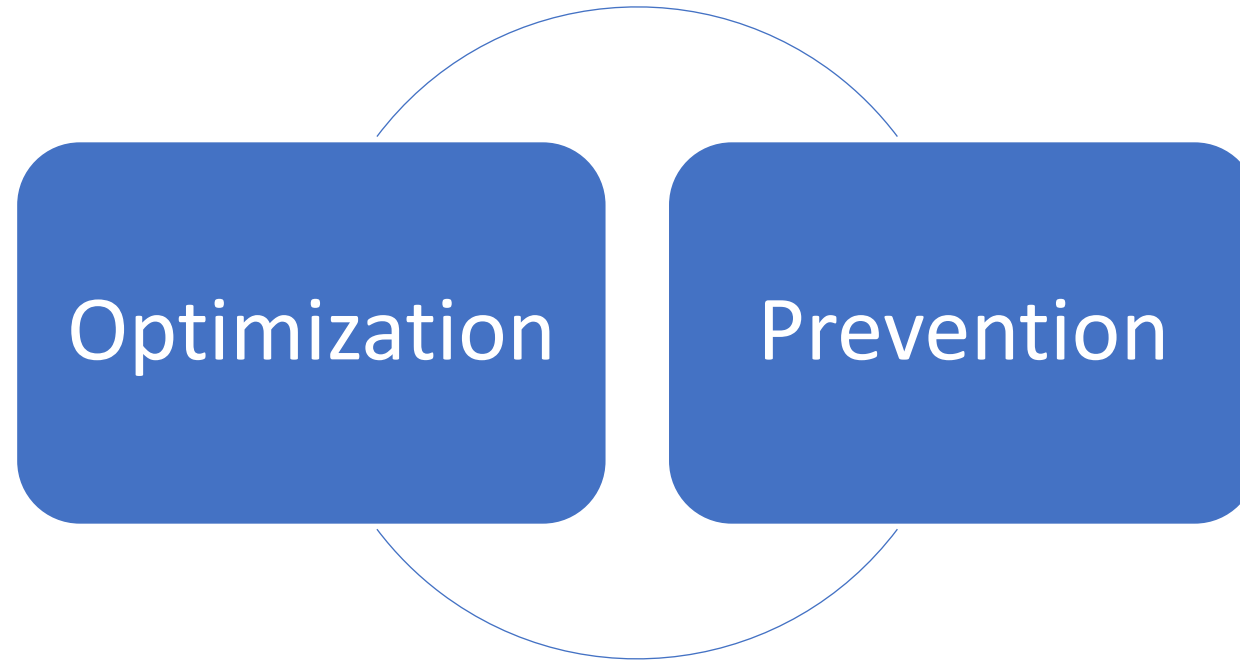
Alternative
Criteria is **COPD
GOLD Criteria**

What else could it be?

Differential Diagnosis

- **Asthma**
- **Bronchiectasis**
- **Heart Failure**
- *Other: Bronchiolitis Obliterans, Diffuse Panbronchiolitis*

Keeping COPD Patient Healthy & At Home



*Goal of COPD management is to **optimise** function through symptom relief and to **prevent** and treat aggravating factors and complications*

Optimization and Prevention:

The Goal of COPD Management

Reduce **Dyspnoea**, Cough + Sputum

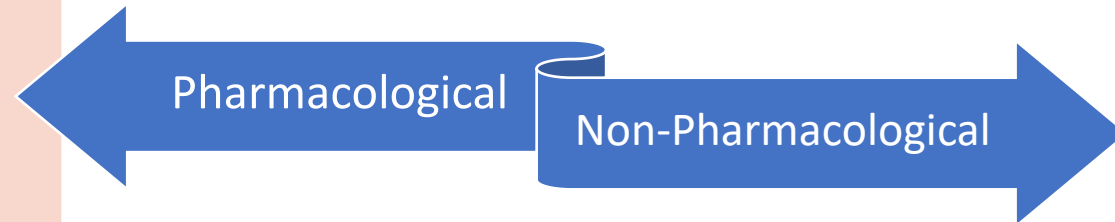
Improve **Exercise Tolerance**

Improve **Quality of Life**

Prevent **Disease Progression**/↓Lung Fx

Prevent and treat early **COPD Exacerbations**

Reduce **Mortality**



Pharmacological Interventions

Question

Mr Smith is a 66yo new patient with an ex smoking history and a diagnosis of COPD. Spirometry revealed mild airflow obstruction (FEV1 70%). He denies significant dyspnoea, except if hurrying on the flat or walking up a slight hill. He has been treated for 2 exacerbations of COPD this year. He is not on any inhalers.

Which Inhaler Class would you commence:

- A. Regular SAMA
- B. LAMA monotherapy
- C. LABA monotherapy
- D. LAMA/LABA combination
- E. LAMA/LABA/ICS combination

Pharmacotherapy:

Inhaled Medications for COPD




























SABA (Short acting Beta Agonists)	SAMA (Short Acting Muscarinic Antagonists)
LAMA (Long Acting Muscarinic Antagonists)	LABA (Long Acting Beta Agonists)
LAMA/LABA	ICS (Inhaled Corticosteroids)
LABA/ICS	LAMA/LABA/ ICS

- Short Acting Bronchodilators
 - “Relievers”
- Long Acting Bronchodilators
 - Improve Lung Function, Dyspnoea, QOL, Exacerbation Frequency
- Inhaled Corticosteroids (ICS)
 - Add on to decrease exacerbations
- ICS + Long Acting Bronchodilator(s)

Pharmacotherapy: Inhaled Medications for COPD

- **22+** long acting inhalers approved for COPD treatment
- All contain one or combination of **LABA, LAMAs** and/or **ICS**
- **Dosing Frequency, Device type and Combination** is where variety lies
 - What does the patient prefer?
- Newer ≠ Better
- Add on classes **Stepwise**

Which inhaler(s) do you use for Chronic Obstructive Pulmonary Disease (COPD)?

LAMAs: Long-acting muscarinic antagonists		LABAs: Long-acting β_2 -agonists		LAMA/LABA combinations		ICS/LABA combinations (Inhaled corticosteroid/Long-acting β_2 -agonist)	
	Braltus® Zonda® (tiotropium)		Onbrez® Breezhaler® (indacaterol)		Anoro® Ellipta® (umeclidinium/vilanterol)		Breo® Ellipta® (fluticasone furoate/vilanterol)
	Bretaris® Genuair® (acridinium)		Foradil® Aerolizer® (formoterol (eformoterol))		Brimica® Genuair® (acridinium/formoterol (eformoterol))		Cipla® (fluticasone propionate/salmeterol)
	Incruse® Ellipta® (umeclidinium)		Oxis® Turbuhaler® (formoterol (eformoterol))		Spiolto® (tiotropium/vlodaterol)		DuoResp® Spiromax® (budesonide/formoterol (eformoterol))
	Seebri® Breezhaler® (glycopyrronium)		Serevent® Accuhaler® (salmeterol)		Ultibro® Breezhaler® (indacaterol/glycopyrronium)		Fostair® (beclomethasone/formoterol (eformoterol))
	Spiriva® HandiHaler® & Respimat® (tiotropium)		Aiomir® Autohaler® (salbutamol)		Aiomir® Inhaler® (salbutamol)		Asmol® Inhaler® (salbutamol)
	Aiomir® Inhaler® (salbutamol)		Atrovent® Metered Aerosol® (piropatrium)		Bricanyl® Turbuhaler® (terbutaline)		Ventolin® Inhaler® (salbutamol)
	Breztri® Aerosphere™ (budesonide/glycopyrronium/formoterol fumarate dihydrate)		Tregley® Ellipta® (fluticasone furoate/umeclidinium/vilanterol)		Trimbow® (beclomethasone/formoterol (eformoterol)/glycopyrronium)		

Short-acting reliever medicines

ICS/LAMA/LABA combinations

Short-acting reliever medicines: Airomir® Autohaler® (salbutamol), Airomir® Inhaler® (salbutamol), Asmol® Inhaler® (salbutamol), Atrovent® Metered Aerosol® (piropatrium), Bricanyl® Turbuhaler® (terbutaline), Ventolin® Inhaler® (salbutamol).

ICS/LAMA/LABA combinations: Breztri® Aerosphere™ (budesonide/glycopyrronium/formoterol fumarate dihydrate), Tregley® Ellipta® (fluticasone furoate/umeclidinium/vilanterol), Trimbow® (beclomethasone/formoterol (eformoterol)/glycopyrronium).

MENARINI is a proud supporter of Lung Foundation Australia, provider of clinical education, resources and patient support and information. Call 1800 654 301 or visit <http://lungfoundation.com.au/>

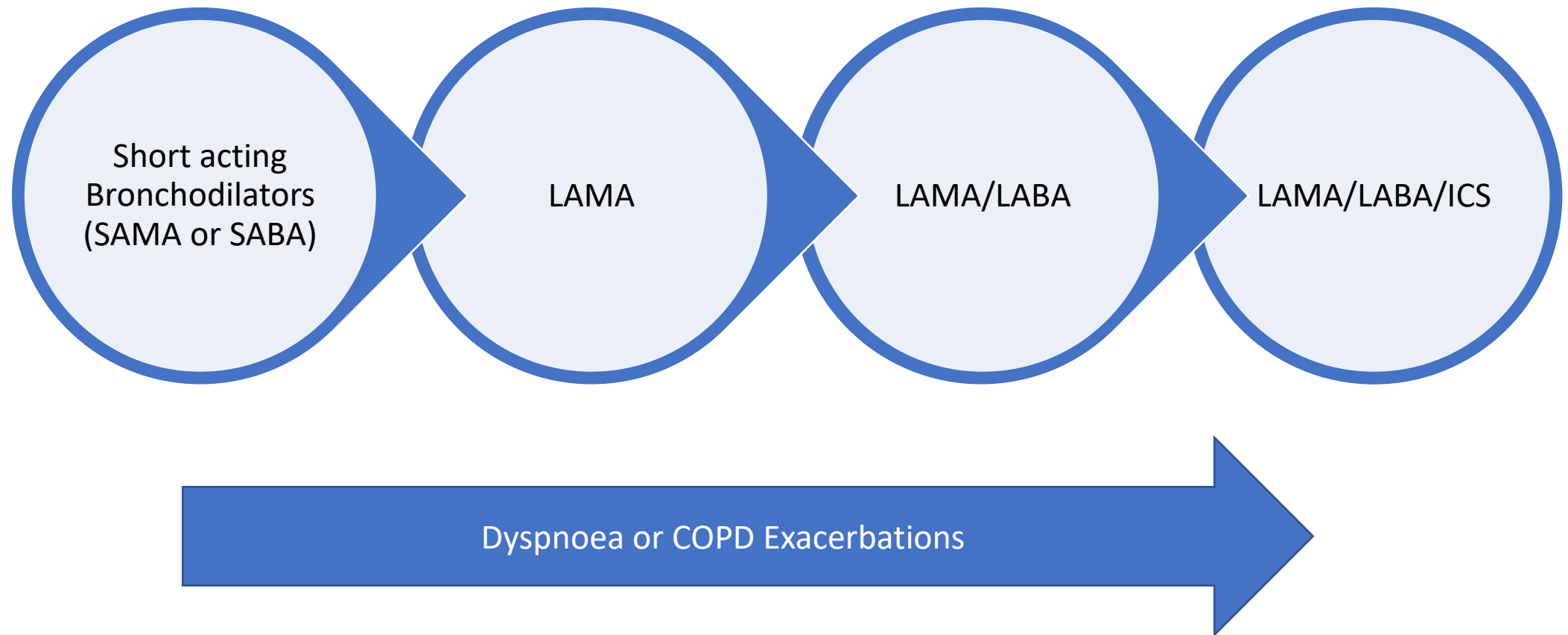
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A. Menarini Australia Pty Ltd, Level 8, 67 Albert Avenue, Cheltenham NSW 2022, tel: (02) 9080 7200, ABN 62 116 925 758, BR-AU-1908, CH, MDA-002811-00, December 2021.

MDI = metered dose inhaler. The products included were those available on the PBS as at June 2021. *Available via PBS for asthma only. †Not on the PBS. Please visit www.ebs.tga.gov.au for full Product Information of the products listed. **Bretaris® Genuair® and Brimica® Genuair® are marketed in Australia by Menarini Australia Pty Ltd.

Scan the QR code to access Lung Foundation Australia's inhaler technique videos.

Stepwise introduction of inhaled medications



Short Acting Bronchodilators (“Relievers”)

PRN relief medication to be used in addition to regular long acting inhaler, or as PRN sole therapy in minimal symptomatic COPD

- Effect:
 - Improve symptoms (esp dyspnoea) and Lung Function (FEV1)
 - Reduces treatment failure in acute exacerbations
- Rapid onset and offset (duration of action ~4-6hrs)

Short Acting Beta Agonists (SABAs)

- *Salbutamol, Terbutaline*
- Sympathomimetic Side Effects (E.g. Arrhythmia, tremor)








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Short Acting Muscarinic Antagonists (SAMAs)

- *Ipratropium*
- Anticholinergic Side Effects (E.g. dry mouth, urinary retention in men with BPH)





Long Acting Muscarinic Antagonists (LAMAs)

- **Indications:**
 - COPD with symptoms (mild-severe)
 - +/- History of a COPD exacerbation
- **Effect:**
 - ↑ Lung Function (FEV1 ~119ml)
 - ↑ QOL
 - ↓ Dyspnoea
 - ↓ Exacerbations
 - ↓ Hospitalizations
- No proven mortality benefit
- AE: dry mouth, constipation, urinary retention

LAMAs: Long-acting muscarinic antagonists	
	Braltus® Zonda® (tiotropium)
	Bretaris® Genuair®* (aclidinium)
	Incruse® Ellipta® (umeclidinium)
	Seebri® Breezhaler® (glycopyrronium)
	Spiriva® HandiHaler® & Respimat® (tiotropium)

Long Acting Beta Agonists (LABAs):

- Rarely used as sole agent, as LAMAs have superior exacerbation and hospitalization reduction rate (29% lower in LAMA), with similar improvement in dyspnoea and QOL scores (Maia 2007)
- Could consider if dyspnoeic without exacerbations and wanting to avoid anticholinergic AE.

LABAs: Long-acting β_2 -agonists	
	Onbrez® Breezhaler® (indacaterol)
	Foradil® Aerolizer®† (formoterol (eformoterol))
	Oxis® Turbuhaler®† (formoterol (eformoterol))
	Serevent® Accuhaler®† (salmeterol)

LAMA/LABA Combination

- **Indication:**
 - Severe dyspnoea despite monotherapy
 - Exacerbations despite monotherapy
- **Effects (cf monotherapy):**
 - Improvement in dyspnoea and mild increase FEV1
 - Modest reduction in exacerbation rates

LAMA/LABA combinations	
	Anoro® Ellipta® (umeclidinium/vilanterol)
	Brimica® Genuair®* (aclidinium/formoterol (eformoterol))
	Spiolto® (tiotropium/olodaterol)
	Ultibro® Breezhaler® (indacaterol/glycopyrronium)

Inhaled Corticosteroids (ICS)

Add on therapy to LABA/LAMA

- Limit to patients with severe COPD symptoms and frequent exacerbations
 - ≥ 1 Exacerbation requiring Hospitalization
 - ≥ 2 moderate or severe exacerbations of COPD/year
 - AND significant symptoms despite LABA/LAMA
 - (*Blood eosinophils ≥ 300 cell/uL and/or coexisting asthma*)
- Benefits LABA/LAMA/ICS vs LAMA/LABA:
 - \downarrow mod/severe exacerbation rate
 - \downarrow hospitalizations (32% Lipson 2018)
 - \uparrow Pneumonia
 - No mortality benefit
- AE:
 - \uparrow Risk of Pneumonia – especially in severe COPD
 - Oral Candidiasis, dysphonia

ICS/LABA combinations (Inhaled corticosteroid/Long-acting β_2 -agonist)	
	Brevo[®] Ellipta[®] (fluticasone furoate/vilanterol)
	Cipla[®] (fluticasone propionate/salmeterol)
	DuoResp[®] Spiromax[®] (budesonide/formoterol (eformoterol))
	Fostair^{®†} (beclometason/formoterol (eformoterol))
	Seretide[®] Accuhaler[®] & MDI (fluticasone propionate/salmeterol)
	Symbicort[®] Rapihaler[®] & Turbuhaler[®] (budesonide/formoterol (eformoterol))

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ICS/LAMA/LABA combinations			
	Breztri Aerosphere[™] (budesonide/ glycopyrronium/ formoterol fumarate dihydrate)	Trelegy[®] Ellipta[®] (fluticasone furoate/ umeclidinium/vilanterol)	Trimbow[®] (beclometason/eformoterol (eformoterol)/glycopyrronium)

- PBS Criteria: $\times 1$ exac causing hospitalisation or ≥ 2 mod exacerbations in 12 months, with significant symptoms despite LABA/LAMA or LABA/ICS.
- ICS monotherapy \uparrow risk of death in COPD

After 2 months...

Is it working?

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graph TD; A[Is it working?] --> B[Dyspnoea improved?]; A --> C[Exacerbation frequency reduced?]
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Dyspnoea
improved?

Exacerbation
frequency
reduced?

Question

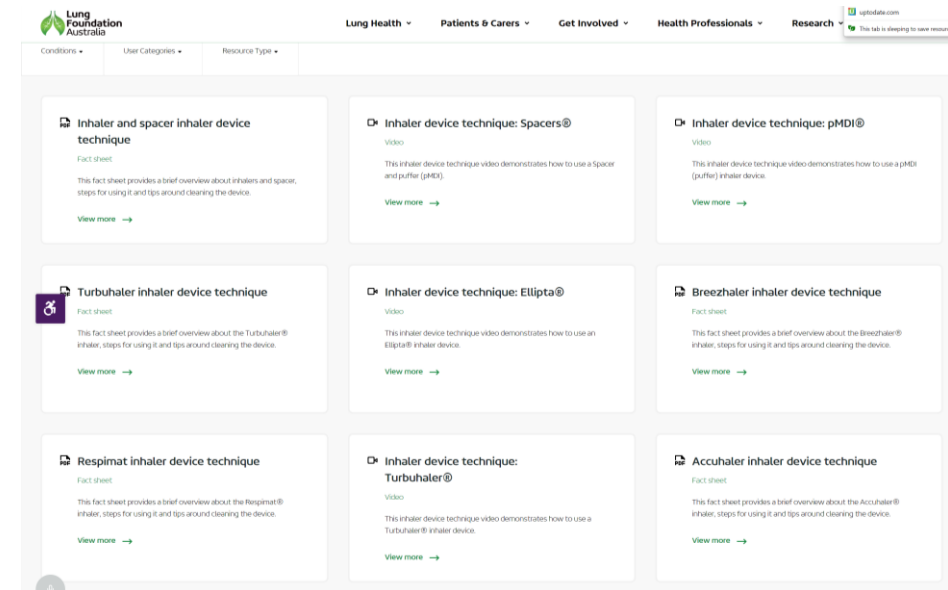
Mrs Jones has Moderate COPD. She complains of more bothersome dyspnoea of late. You decide to replace her longstanding inhaler tiotropium respimat (Spiriva) with Indacaterol/Glycopyrronium Breezhaler (Ultibro). She feels her dyspnoea has not improved at all after 2 months. She has not had any hospitalizations for exacerbations and averages 2 moderate exacerbations/year.

What is your next step?

- A. Go back to LAMA monotherapy (e.g. Tiotropium Respimat)
- B. Change to LABA/ICS
- C. Change to LAMA/LABA/ICS
- D. Review Inhaler Technique.
- E. Try different LAMA/LABA device

Inhaler Technique

- **Incorrect Inhaler technique** is common and associated with worse outcomes
 - Correct inhaler technique only ~31% in asthma and COPD patients (systematic review Sanchis 2016)
 - Inhaler non-adherence associated with increased hospitalizations, mortality, and poor QOL (Van Boven 2014 – systematic review of retrospective studies)
- **Common Errors:**
 - Poor coordination
 - Inadequate speed and/or depth of inspiration
 - Absence of post-inhalation breath holding
 - Not using spacer with MDI
- **Education** on correct inhaler technique is essential
 - Physician
 - Clinic Nurse
 - Online Videos (Lung Foundation Australia)
 - Pharmacist
- **Regular Review** of inhaler technique should be performed
- **Spacers** essential for MDIs



The Right Inhaler Device

Mode of Delivery

- Metered Dose Inhaler (MDI), Dry Powder Inhaler (DPI), Soft Mist Inhaler (SMI)
- Loading and activating inhaler mechanism

Dosing Frequency

- ?Once daily improves compliance vs BD

Combinations

- ?less inhalers = better compliance
- \$\$\$\$. 1 inhaler is cheaper than 2

- Device choice should be **individualised** based on patient's **preference** and **proficiency** with inhaler technique.
- Trends noticed in our clinic:
 - Breezhalers/Handihalers (e.g. Ultibro) – small capsules difficult to load if visually impaired, poor fine motor movement (e.g. parkinsons, arthritis, frail)
 - DPIs (e.g. Genuair) – if very severe lung function, sometimes inspiratory effort too poor to trigger device actuation.
 - SMI (e.g. Respimat) – Too fast inspiratory effort can give burning sensation
 - MDIs – Not using spacer. Good for poor inspiratory effort

Non-Pharmacological Interventions

Question

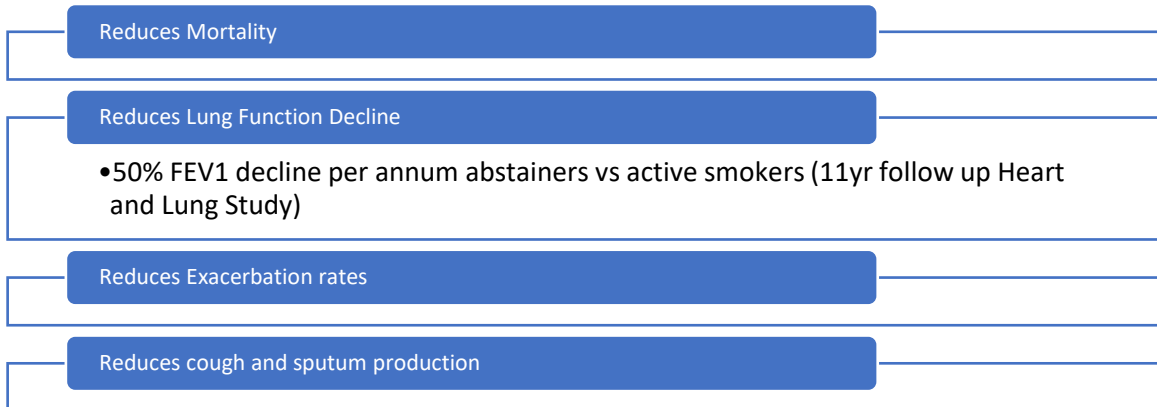
Which of the following is false about smoking cessation in COPD:

- A. Brief Counselling works
- B. Smoking cessation reduces exacerbation frequency
- C. Smoking cessation improves mortality in COPD
- D. Smoking cessation does not impact lung function in severe COPD
- E. Active smokers are ineligible for Govt subsidised Home Oxygen

Smoking Cessation

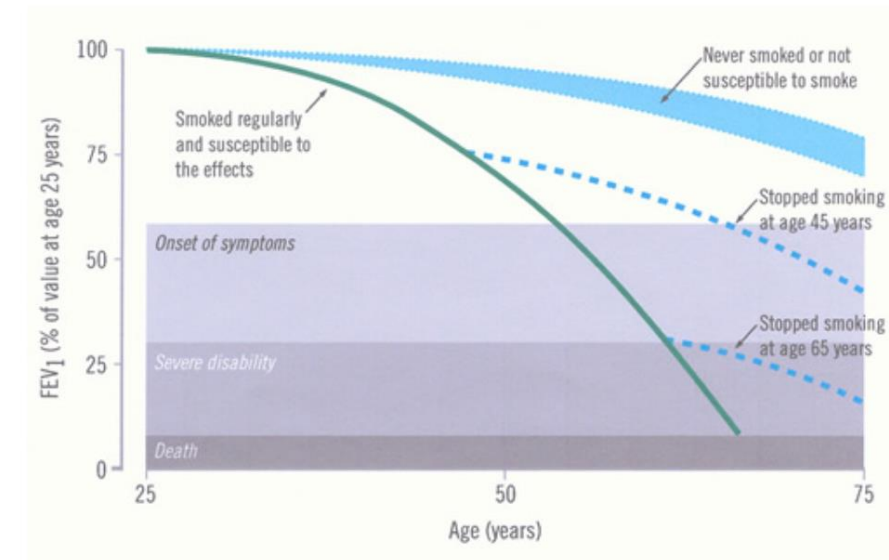
The most important intervention to prevent worsening of COPD

- Crucial at any point of the disease (never too late)

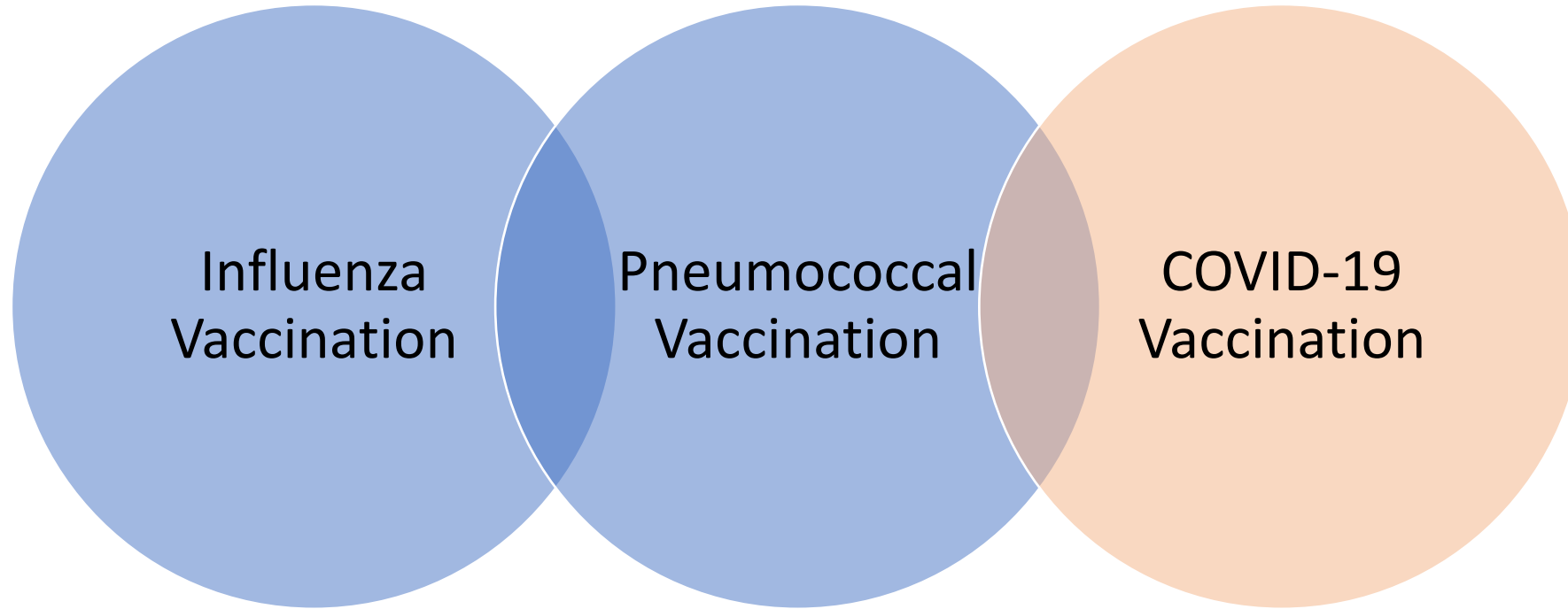


- Active smokers cannot receive home O₂
- Interventions:
 - Brief Counselling is effective (level I evidence)
 - Should be offered at every visit
 - Pharmacotherapy: Combination NRT(patch + quick acting PO), Varenicline (monotherapy) most effective
 - QUIT Line

Figure 2: Time-course of chronic obstructive pulmonary disease (COPD) (Fletcher 1977)



The figure (adapted from Fletcher C and Peto R. The natural history of chronic airflow obstruction. *BMJ* 1977;1:1645-1648 and reproduced with permission from the BMJ Publishing Group) shows the rate of loss of forced expiratory flow in one second (FEV₁) for a hypothetical, susceptible smoker, and the potential effect of stopping smoking early or late in the course of COPD. Other susceptible smokers will have different rates of loss, thus reaching “disability” at different ages. The normal FEV₁ ranges from below 80% to above 120%, so this will affect the starting point for the individual’s data (not shown).



- Vaccination reduces risk of exacerbations, hospitalization and death in COPD (Nichol 1994, Poole 2006)
- Annual **Influenza Vaccine**
 - Ideally before flu season starts
- **Pneumococcal Vaccination** as per immunization handbook
- **COVID-19 Vaccination** recommended given increased risk of severe COVID disease and death in COPD

Optimise: Nutrition

- **Malnutrition** is an independent predictor for mortality and healthcare use in COPD (Hoong 2017)
 - Low BMI and free fat mass (pulmonary cachexia) common in COPD and associated with mortality
 - High calorie nutritional supplementation in severe COPD with low BMI associated with small but significant increase in 6MWD (Ferreira 2012)
- **Obesity** impact is mixed
 - **Increased dyspnoea and decreased QOL scores**
 - **Reduced** mortality risk in severe COPD who were overweight or obese (Guo 2016)
- **Vitamin D Deficiency**
 - Associated with **reduced lung function** and **increased hospitalizations** for COPD exacerbations

Optimise: Associated Medical Comorbidities

- Associated comorbidities are associated with poor health outcomes and death in COPD
- Screen for and optimise associated medical conditions

Cardiovascular Disease

- IHD (x2-5 risk)
- Heart Failure (mimic exacerbations)
- AF (↑ risk with ↓ FEV1; salbutamol effect)

Sleep Disordered Breathing

- OSA + COPD = worse prognosis than either condition alone
- Sleep Hypoventilation, daytime hypercapnia
- Sleep Hypoxaemia
- * Low threshold for PSG

Metabolic

- Diabetes Mellitus (↑ risk factor for hospitalization and mortality)
- Osteoporosis

Mental Health

- Depression & Anxiety highly prevalent and associated with worse health status

Lung Cancer

- COPD independent risk factor (↑ risk 6-13 fold)

Exercise & Physiotherapy

Exercise

- Strong evidence for benefit of exercise in COPD
 - Dose response **reduction in mortality** for COPD patients who reported at least some exercise per week vs no physical exercise/inactivity (Cheng 2018)
 - Improved QOL, dyspnoea and exercise tolerance

Airway Clearance Techniques (ACT)

- For patients with **sputum production**
 - Refer to local Physiotherapist to determine best ACT (e.g. PEP, Acapella)



Pulmonary Rehabilitation

Aims to reduce COPD symptoms and increase exercise capacity to increase functional status (i.e. increase participation in everyday activities)

- *Improves*
 - **Dyspnoea and fatigue with ADLs**
 - **Exercise tolerance (e.g. walk distance)**
 - **QOL Scores**
- Likely **reduces hospitalisations** for COPD exacerbations
- Reduces symptoms of **anxiety/depression**

- 8 week Structured Course
 - 2 supervised group sessions/week + unsupervised home exercise program
 - Tailored exercise program, Education on COPD and provision of home exercise plan

	Baseline		Completion	Difference
6MWT – (This is a measure of fitness. Every additional metre walked has a health benefit.)	Walk 1	Walk 2		
Distance (m)	290		363	73
Nadir SpO ₂	97		93	
Modified BORG (10 point scale) 0=not breathless 10=severe breathlessness scale)	5		4	
Maximum Heart Rate (bpm)	127		134	
O ₂ (L/m)				
Dyspnoea score (MMRC) Self-rated: 0-only breathless on strenuous exercise, 4-too breathless to leave the house.	2		3	1
Timed sit to stand test (STS x5)	13.4		10.75	2.65

- *Who it should be offered to:*
 - Any COPD patients with any exertional dyspnoea
 - Recent exacerbation of COPD
- GPs can refer directly to MetroNorth Pulmonary Rehab services:

Locations of Metro North Queensland Health provided pulmonary rehabilitation programs

Program	Details
Community & Oral Health (COH) Complex Chronic Disease Team	Flexible models available including telerehabilitation Group based program twice weekly North Lakes Health Precinct <ul style="list-style-type: none">• Tuesday and Friday Burpengary Leisure Centre <ul style="list-style-type: none">• Tuesday and Friday
Herston – Royal Brisbane & Women’s Hospital	Group based program twice weekly Tuesday and Friday
Chermside – The Prince Charles Hospital	Group based program twice weekly Monday and Friday

[Lung Foundation Australia Website](#).- locations and further information regarding programs available within Australia

Example Pulmonary Rehabilitation Report

Self Management: COPD Action Plan

Written self management plan to allow early detection of management of COPD Exacerbations.

- Significantly reduces **ED presentations and hospital admissions.**
 - NNT = 19 (Howcroft 2016)
- Considerations:
 - Requires Individualisation:
 - Review Action Plan use regularly
 - Ensure prednisolone and SABA aren't being used in excess (Prednisolone sometimes omitted if this is a concern).

MY COPD ACTION PLAN

Your doctor, nurse and other members of your healthcare team can help you fill in your COPD Action Plan. Review it each year, and also after a flare-up.

MY DETAILS

Name *John Smith*
 Date of birth _____
 Date of influenza immunisation (annual) _____
 Date of pneumococcal immunisation _____

MY HEALTHCARE TEAM

Doctor _____
 Phone _____
 Other members of your healthcare team
 Name _____
 Profession _____
 If I am unwell, I can call _____
 on _____ for after hours advice.

I have a usual amount of phlegm/shortness of breath. I can do my usual activities.

ACTION: Take your usual COPD medicines.

My FEV₁ is I retain CO₂ Yes No Unknown

Medicine	Inhaler colour	Number of puffs	Times per day
<i>Ventolin 100mcg</i>	<i>Blue</i>	<i>2-4</i>	<i>(if needed)</i>
<i>Spiolto</i>	<i>Green</i>	<i>2</i>	<i>Morning</i>

I need to use home oxygen on _____ setting or L/min for _____ hours/day.

I am coughing more. I have more phlegm. It is harder to breathe than normal.

ACTION: Take your flare-up medicines. Monitor your COPD symptoms closely. Call your doctor.

Take puffs of (reliever) times every hours / A.M. / P.M. (circle)
 Use a spacer

I have taken my extra medicines but I am not getting better.

Take action **now** to manage your symptoms. Call your doctor.

Shortness of breath or wheeze	Phlegm has changed colour or fever
ACTION: Take <input type="text" value="2"/> prednisolone tablets 1mg, 5mg, 25mg (circle) <input type="text"/> times per day for <input type="text" value="5"/> days.	ACTION: Take <input type="text" value="1"/> antibiotic tablets <input type="text" value="3"/> times per day for <input type="text" value="7"/> days. Antibiotic name <input type="text" value="Amoxicillin"/>

My COPD symptoms have changed a lot. I am worried.

Difficulty sleeping/woken easily Blood in phlegm or swollen ankles.	Very short of breath/wheezy High fever or confusion Chest pain or slurred speech.
ACTION: Call your healthcare team today .	ACTION: Call 000 now .

CAUTION: Ambulance/Paramedics: Oxygen supplementation to maintain SpO₂ 88 - 92% to reduce risk of hypercapnia.

Health professional authorisation

This COPD Action Plan was prepared on / / by _____
 in consultation with the patient.

Signature: _____

Profession: _____

Authorised by (if prepared by a non-prescriber): _____

Signature: _____

Entered into recall system

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Acute Exacerbations of COPD

*Acute change in baseline dyspnoea, cough and/or sputum
(beyond normal day-day variation)*

- Frequent exacerbations associated with **worsening health status, rapid decline in lung function, death**
- **Prevent** Exacerbations and **treat early**
 - Early diagnosis and treatment of exacerbations **may prevent hospitalization and prevent COPD progression** (Wilkinson 2004)
 - **Mortality increases** with exacerbation frequency and hospitalization
- Infectious vs Non-Infectious
 - Increased volume and change in colour (purulent) sputum, fevers
- Triggers:
 - Viral or bacterial infection
 - CCF decompensation
 - Air pollution
 - Pulmonary Emboli

Acute Exacerbations of COPD

Short Acting Bronchodilators (SABA)

Salbutamol 100mcg 4puffs via MDI/Spacer QID - q4h.

- Combination with SAMA (Ipratropium) may provide further bronchodilation
- MDI = nebulizer in efficacy
- Avoid frequent high dose nebulized salbutamol (>2.5mg) with known cardiac disease

Oral Steroids

Prednisolone 30-50mg for 5 days

- No benefit >14 days
- No taper necessary
- Shortens recovery, ↓ severity, ↓ Relapse rate at 1mth, ↓treatment failure by 50%
- AE: Hyperglycaemia, HTN, fluid retention, psychosis, insomnia

Antimicrobials

PO Antibiotics if infectious symptoms (fevers, purulent sputum):

- Amoxicillin or Doxycycline
- *ciprofloxacin if pseudomonas
- Screen for influenza – Provide Tamiflu
- Screen for COVID – Refer to metronorth COVID virtual ward for disease modifying agents

To Hospital

Marked increased intensity of symptoms despite outpatient treatment

Inability to ambulate or perform ADLs around the house

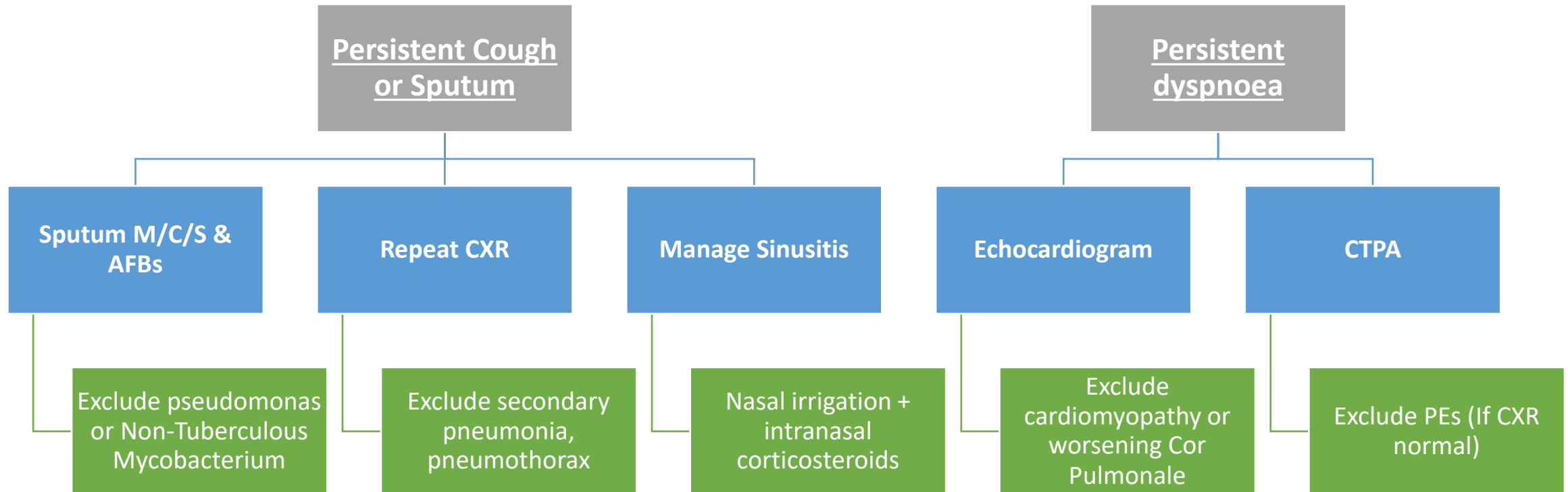
Altered mental state (suggestive of hypercapnia)

Hypoxaemia $<92\%$ RA (if not on O₂ or not usual for patient)

New or worsening peripheral oedema (cor pulmonale)

Worsening of comorbidities (e.g. IHD)

Persistent Symptoms following Exacerbations



Time & Reassurance – It is normal for cough, sputum and mild dyspnoea to take weeks to return to pre-exacerbation baseline.

When to Refer to a Respiratory Physician

Reason	Purpose
Diagnostic uncertainty and exclusion of asthma	Establish diagnosis and optimise treatment. Check degree of reversibility of airflow Obstruction
Unusual symptoms such as haemoptysis	Investigate cause including exclusion of Malignancy
Rapid decline in FEV ₁	Optimise management
Moderate or severe COPD	Optimise management
Onset of cor pulmonale	Confirm diagnosis and optimise treatment
Assessment of home oxygen therapy: ambulatory or long-term oxygen therapy	Optimise management, measure blood gases and prescribe oxygen therapy
Assessing the need for pulmonary rehabilitation	Optimise treatment and refer to specialist or community-based rehabilitation service
Bullous lung disease	Confirm diagnosis and refer to medical or surgical units for bullectomy
COPD <40 years of age	Establish diagnosis and exclude alpha1-antitrypsin deficiency
Assessment for lung transplantation or lung volume reduction surgery	Identify criteria for referral to transplant Centres
Frequent chest infections	Rule out co-existing bronchiectasis
Dysfunctional breathing	Establish diagnosis and refer for pharmacological and non-pharmacological management

FEV₁, forced expiratory volume in 1s; COPD, chronic obstructive pulmonary disease.

Box adapted from British Thoracic Society Statement ([British Thoracic Society 2008b](#)).

Helpful Resources

- Lung Foundation Australia
 - <https://lungfoundation.com.au/>
 - Action Plans, Educational print outs and videos, inhaler video demonstrations, pulmonary rehab locations, support groups
- COPD-X
 - [COPD-X \(copdx.org.au\)](http://copdx.org.au)
 - Concise and Comprehensive Guidelines for COPD Management
- Thoracic Society of Australia & NZ (TSANZ)
 - <https://www.thoracic.org.au/>
 - Spirometry accreditation
- UpToDate
- TPCH Thoracic Registrar/Consultant on Call
- Metro North Virtual ED

Questions?