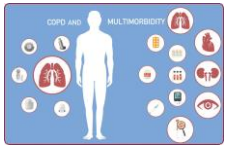
International Primary Care Respiratory Group
IPCRG work locally collaborate globally



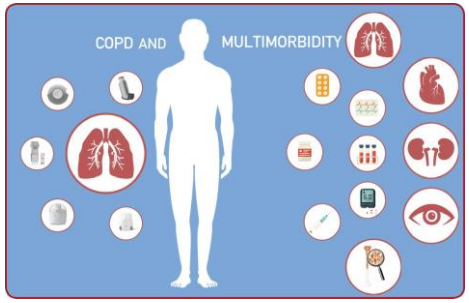
Multimorbidity

An IPCRG initiative
Multimorbidity management in COPD

Boehringer Ingelheim provided an unrestricted educational grant to support the development, typesetting, printing and associated costs but did not contribute to the content of this document.

Breathing and feeling well through universal access to right care

International Primary Care Respiratory Group
IPCRG work locally collaborate globally



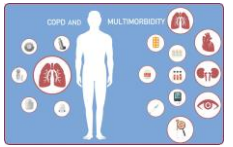
Multimorbidity Case Studies

A complex case in a woman with COPD

Authors: Ioanna Tsiligianni, Cláudia Vicente

Breathing and feeling well through universal access to right care

About these slides



- Please feel free to use, update and share some or all of these slides in your non-commercial presentations to colleagues or patients

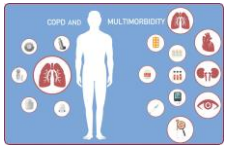
- There is a general introduction to multimorbidity management in COPD, followed by a case study

- The slides are provided under creative commons licence CC BY-NC-ND
  - BY stands for attribution (the obligation to credit the author and other parties designated for attribution);
  - NC stands for NonCommercial (commercial use is excluded from the license grant);
  - ND means NoDerivatives (only verbatim copies of the work can be shared)

- When using our slides, please retain the source attribution: IPCRG 2020 Multimorbidity

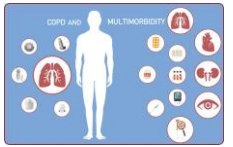
Boehringer Ingelheim provided an unrestricted educational grant to support the development, typesetting, printing and associated costs but did not contribute to the content of this document.

What you will learn



- Why we are focused on multimorbidity
- What multimorbidity means in people with chronic respiratory disease
- How we can improve the management of the patient with chronic respiratory disease and multiple comorbid conditions
- How you can be part of that change

Multimorbidity in COPD (I)

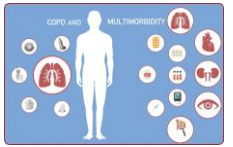


- Patients with COPD typically also present with multiple comorbid conditions which may require long-term management alongside their COPD
- An additional challenge is that concomitant conditions can be overlooked because signs and symptoms overlap with those associated with COPD
- Up to 80% of patients with COPD will have at least one comorbid condition of clinical relevance, half of them will have three or more
- Comorbid conditions are more frequent in women than men and increase in prevalence with worsening COPD severity

COPD, chronic obstructive respiratory disease

IPCRG. Desktop Helper No. 10. Rational use of inhaled medications for the patient with COPD and multiple comorbid conditions: Guidance for primary care. Available at: https://www.ipcrg.org/dth10

Multimorbidity in COPD (II)

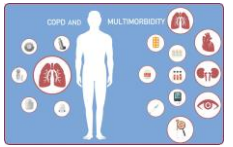


- Comorbidities often appear in clusters, which suggests common risk factors (e.g. smoking, inactivity), shared underlying pathobiological mechanisms (e.g. accelerated ageing), and side effects of COPD treatment

- Common comorbidities in patients with COPD include:

Cardiovascular diseases	Metabolic syndrome
Muscle weakness	Diabetes
Osteoporosis	Gastroesophageal reflux
Anxiety and depression	Bronchiectasis
Lung cancer	Obstructive sleep apnoea

Managing the multimorbid patient with COPD (I)

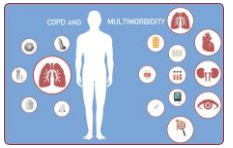


- The management of individual patients with COPD and multimorbidities is often complex requiring the simultaneous application of several disease-specific treatment guidelines

- These guidelines are not always well aligned with regard to treatment recommendations in the face of multimorbidity therefore a holistic approach is of particular importance for patients with COPD
  - Primary care physicians should seek to undertake at least annual (re)assessment and treatment adjustment for patients with COPD

- Emergence of multimorbidity should be regarded as a signal and call to action to undertake a review of COPD treatment with a focus on the interface between symptoms of comorbid disease and side effects of medication

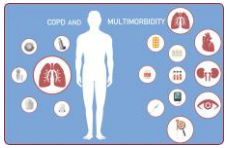
- In this set of slides we focus on COPD and the whole patient context. It is important to engage with the patient about what problem (symptoms/disease) concerns them most – both worries them and causes most daily limitations, what is their perception of their problems and what is most important to them. As GPs, we deal with them all, and do need to prioritise in line with the patient. Having said that, and reiterating as a general principle, this set is about COPD, but it's important not to lose sight of the whole patient context.



Managing the multimorbid patient with COPD (II)

- For patients with COPD, multimorbidity is associated with:
  - A high level of polypharmacy and an increased risk for adverse drug reactions and interactions
  - An increased risk of hospitalisation
  - An increased risk of premature death

- Polypharmacy is of particular concern when drugs with potential for similar adverse reactions are combined and when comorbid conditions and adverse reactions to treatment look alike

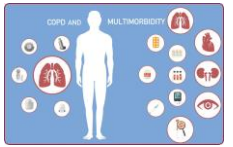


Managing the multimorbid patient with COPD (III)

- According to GOLD 2020, in general, multimorbidity should not delay the treatment of COPD and comorbidities should be managed according to usual standards
- Attention should be directed to ensure treatment simplicity and to minimise polypharmacy

The Global Initiative for Chronic Obstructive Lung Disease (GOLD) 2020. Available at: https://goldcopd.org/

Improving the management of multimorbid COPD patients in primary care



- Optimise the treatment regimen according to GOLD classification (GOLD 2020) and assess and treat comorbidities[1,2]

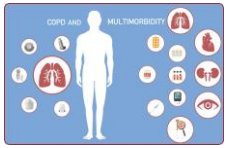
- For patients with multimorbidities undertake a review of COPD treatment with a focus on the interface between symptoms of comorbid disease and side effects of medication[1]

- In addition, think carefully about the indications for ICS use before prescribing. Use in line with guideline recommendations and note the latest IPCRG advice on appropriate use of ICS and guidance on ICS withdrawal[1]

ICS, inhaled corticosteroid

1. IPCRG. Desktop Helper No. 10. Rational use of inhaled medications for the patient with COPD and multiple comorbid conditions: Guidance for primary care. Available at: https://www.ipcrg.org/dth10; 2. The Global Initiative for Chronic Obstructive Lung Disease (GOLD) 2020. Available at: https://goldcopd.org/.

Additional essential action points



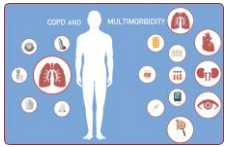
1. Increase awareness of COPD multimorbidity and screen and monitor patients for the most common comorbidities
2. Ensure at least yearly patient (re)assessment and treatment adjustment in the primary care setting, including stopping of inappropriate medication. Don't forget lung cancer
3. Review inhalation technique and adherence to medication
4. Empower multimorbid patients with COPD and caregivers to help them cope with potentially overwhelming amounts of information and associated depression and anxiety
5. Carefully evaluate the indication before initiating ICS treatment
6. Closely monitor for cardiac rhythm disorders, including atrial fibrillation, when initiating patients on a LABA
7. Monitor for emergent urinary symptoms when initiating patients with chronic kidney or prostate disease on LAMA

With regard to ongoing ICS treatment, consider

- **Asthma:** ICS treatment must be continued
- **Diabetes:** reconsider if ICS treatment is needed; if ICS is continued, close follow up, glucose monitoring and titration of antidiabetic treatment are required
- **Osteoporosis:** reconsider if ICS treatment is needed; if ICS is continued, close follow up for loss of bone mineral density and risk of fractures is required. Screening for osteopenia or osteoporosis is recommended in patients receiving high dose of ICS or low to medium dose ICS with frequent use of oral corticosteroids
- **Infections (pneumonia or tuberculosis):** consider withdrawal of ICS and maximize bronchodilation

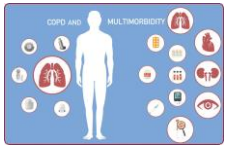
LABA, long-acting beta agonist; LAMA, long-acting muscarinic antagonist

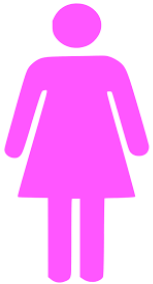
Our aim



- To use a case study to teach how to identify and manage the multimorbidity of people with COPD

A complex case with multimorbidity (I)





Mrs Vitalina
70 years old

Race: Caucasian	**Marital status:** Married
Place of birth: Mozambique	**Education level:** Middle school
Residence: Mealhada	**Employment:** Owner/manager of a small cork company

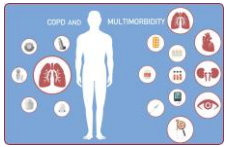
Risk assessment:

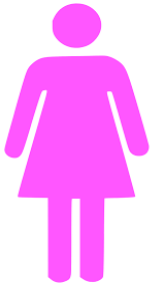
- *Alcohol consumption:* None
- *Smoker:* No, but passive exposure through husband (80 pack year)
- Unprotected wood burning fire
- *Exercise:* Limited, she has lost 5 kg in the last year; she feels constantly fatigued

Allergies: None

Vaccinations: Up to date with influenza and antipneumococcal vaccinations (Pn23 eVPP13)

A complex case with multimorbidity (II)





Mrs Vitalina
70 years old

Medical history

- Hypertension
- Atrial fibrillation
- Mitral valve prosthesis
- Dyslipidemia
- Depression
- Osteoporosis
- Type 2 diabetes mellitus
- COPD

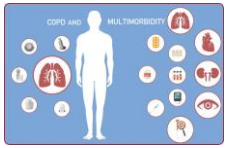
Frailty?

Current medication

- Perindopril 5 mg + amlodipine 5 mg od
- Atorvastatin 10 mg od
- Warfarin
- Escitalopram 10 mg od
- Alendronic acid 70 mg + cholecalciferol 5600 UI (weekly)
- Metformin 1000 mg twice daily
- Salmeterol 500 mg + fluticasone fuorate 50 mg twice daily(Diskus) + salbutamol (as needed)

od, once daily

Presentation



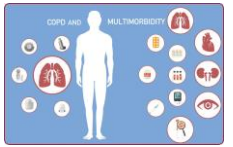
- Mrs Vitalina went to the family doctor to discuss her hypertension
- She looked depressed and her doctor knows she has serious family problems but she never complains about anything
- Sometimes she asks for assistance from social workers for her husband who has had a stroke and is bed bound
- When consulting the records, the family doctor finds 2 moderate COPD exacerbations in the past 12 months
  - After looking on the electronic national health register (she had 2 appointments for uncontrolled COPD which where treated with OCS)

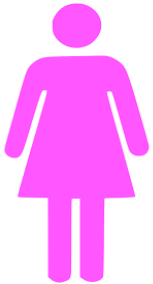
- When the family doctor asked her about the cough and shortness of breath she said.....

"Im always a bit tired, I still have cough in the morning and I take my respiratory medication every day"

OCS, oral corticosteroids

Physical examination





Mrs Vitalina
70 years old

- No signs of respiratory distress
- Blood pressure: 138 / 94mmHg; heart rate: 80bpm
- CA: S1 and S2 arrhythmic, without murmur
- PA: vesicular murmur present bilaterally, globally diminished, normal without sounds like wheezing or crackles
- Abdomen: all normal
- No oedema of lower limbs
- Height 149 cm; weight 52 kg
- BMI 23.4 kg / m^2

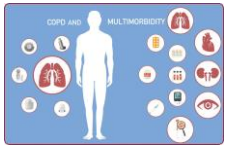
BMI, body mass index

PA, pulmonary auscultation; CA, cardiac auscultation

International Primary Care IPCRG Respiratory Group

DESKTOP HELPER

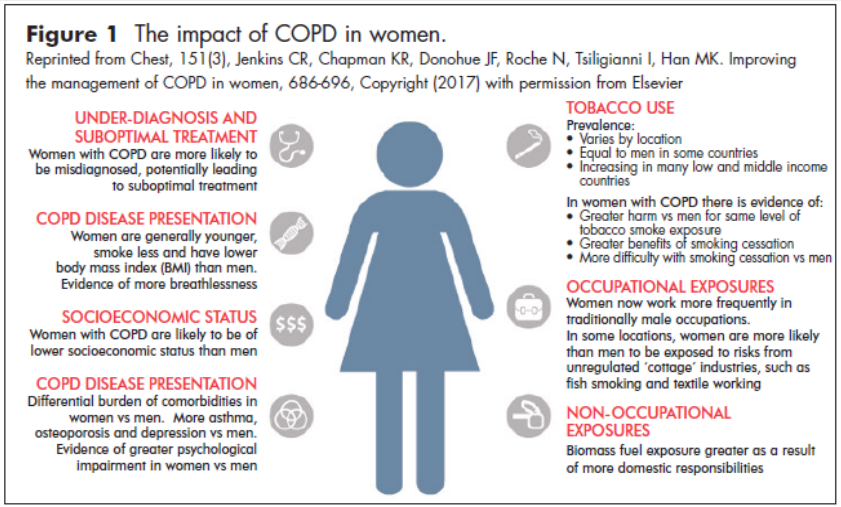
No. 8 January 2018



Improving care for women with COPD: guidance for primary care

Figure 1 The impact of COPD in women.

Reprinted from Chest, 151(3), Jenkins CR, Chapman KR, Donohue JF, Roche N, Tsiligianni I, Han MK. Improving the management of COPD in women, 686-696, Copyright (2017) with permission from Elsevier



Some of the validated questionnaires commonly used in primary care

mMRC	http://goldcopd.org
MRC	https://www.mrc.ac.uk/research/facilities-and-resources-for-researchers/mrc-scales/mrc-dyspnoea-scale-mrc-breathlessness-scale/
CCQ	http://ccq.nl/
CAT	http://www.catestonline.org/
PHQ4	http://gihep.com/phq4/
PHQ9	https://patient.info/doctor/patient-health-questionnaire-phq-9
GAD7	https://patient.info/doctor/generalised-anxiety-disorder-assessment-gad-7

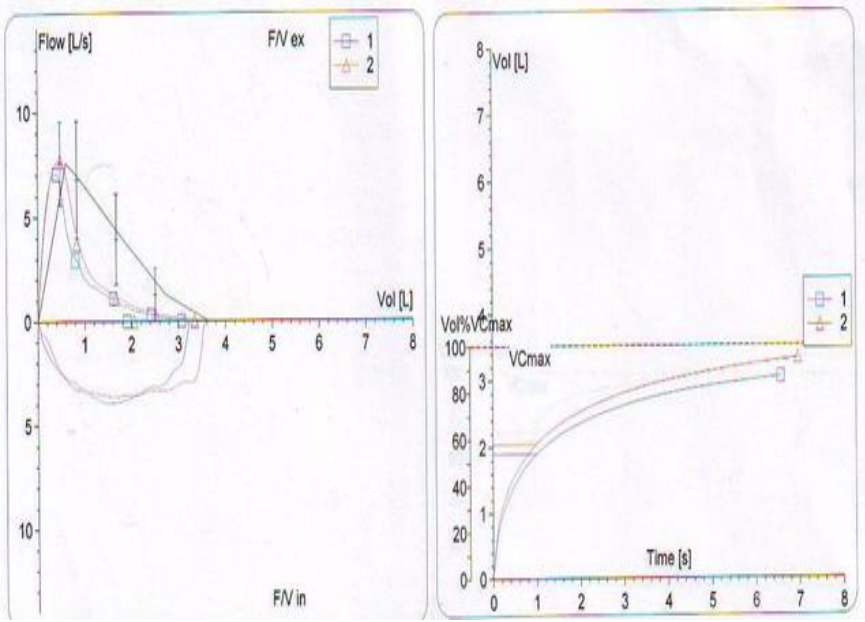
IPCRG. Desktop Helper No. 8. Improving care for women with COPD: guidance for primary care. Available at: https://www.ipcrg.org/dth8.

Gather all the information

- **What to do?**
- **Plan:**
  - Assess adherence to therapy ⇨ That was ok
  - Assess inhaler technique ⇨ That was ok
  - Look for other exams that she has already done:
    - **Spirometry**

Spirometry

		Pred	A1	%(A1/P)	A2	%(A2/A1)
VT	[L]	0.59				
BF	[1/min]	20.00				
MV	[L/min]	11.86				
VC MAX	[L]	3.76	3.22	85.5	3.52	109.5
ERV	[L]	0.98				
IC	[L]	2.78				
FVC	[L]	3.63	3.06	84.3	3.34	109.1
FEV 1	[L]	2.79	1.90	68.1	2.05	107.8
FEV 1 % FVC	[%]		62.10		61.37	98.8
FVC IN	[L]	3.76	3.22	85.5	3.52	109.5
FIV1	[L]		3.14		3.29	104.7
FIV1 % VC MAX	[%]		97.64		93.35	95.6
MMEF 75/25	[L/s]	2.99	0.76	25.5	0.79	104.0
FEF 75	[L/s]	1.28	0.29	22.8	0.29	99.7
FEF 50	[L/s]	3.92	1.10	27.9	1.09	99.5
FEF 25	[L/s]	6.78	2.95	43.5	3.70	125.6
PEF	[L/s]	7.58	7.07	93.3	7.70	108.8



Gather more information

Spirometry	Tiffeneau index post-bronchodilation: 61.37 Bronchodilation test: Reversibility of 7.8% (<12%)
Chest X-ray	Normal
Blood test	No eosinophils (<80 cells)
HbA1c	6.9%
Total cholesterol	212 mg/dL (HDL 63.3 mg/dL, triglycerides 161 mg/dL, LDL 118.5 mg/dL) • LDL level is very high: goal should be < 40 mg/dl[1]

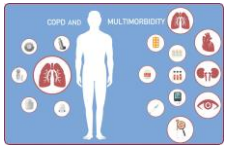
HDL, high density lipoprotein cholesterol; LDL, low density lipoprotein cholesterol

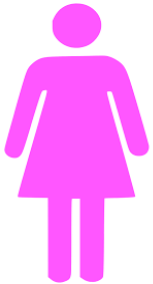
1. European Society of Cardiology. 2019 Guidelines on Dyslipidaemias (Management of). ESC Clinical Practice Guidelines. Available at: https://www.escardio.org/Guidelines/Clinical-Practice-Guidelines/Dyslipidaemias-Management-of

Thinking about Mrs Vitalina's clinical picture

- Her COPD is not controlled with her current medication
- She has a number of comorbid conditions:
  - Diabetes: not optimally controlled
  - Depression: not optimally controlled
  - Hypertension: not meeting current target
  - Dyslipidaemia: not meeting current target
- Medication
  - As she has diabetes and osteoporosis, ICS is not the best option for treating her COPD

Thinking about Mrs Vitalina's COPD

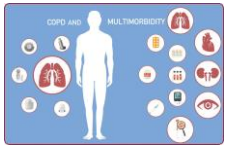




Mrs Vitalina
70 years old

Challenges	Positives
• She has 7 comorbid conditions in addition to her COPD • She takes 10 medications every day plus her reliever as needed • Her COPD is not well controlled • Her COPD is not optimally treated	• She is up to date with her vaccinations • She is a non smoker • She adheres well to her medication regimen • She has a good relationship with her doctor • Cancer screens have all been negative

Mrs Vitalina's CAT test results

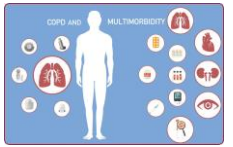


								SCORE
I never cough	0	1	2	**X**	4	5	I cough all the time	3
I have no phlegm (mucus) on my chest at all	0	1	2	**X**	4	5	My chest is full of phlegm (mucus)	3
My chest does not feel tight at all	0	1	2	3	**X**	5	My chest feels very tight	4
When I walk up a hill or a flight of stairs I am not out of breath	0	1	2	3	**X**	5	When I walk up a hill or a flight of stairs I am completely out of breath	4
I am not limited to doing any activities at home	0	1	2	3	**X**	5	I am completely limited to doing all activities at home	4
I am confident leaving my home despite my lung condition	0	1	2	**X**	4	5	I am not confident leaving my home at all because of my lung condition	3
I sleep soundly	0	1	2	**X**	4	5	I do not sleep soundly because of my lung condition	3
I have lots of energy	0	1	2	3	**X**	5	I have no energy at all	4
							TOTAL SCORE	28

CAT, COPD Assessment Test

The Global Initiative for Chronic Obstructive Lung Disease (GOLD) 2020. Available at: https://goldcopd.org/.

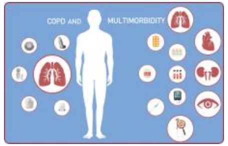
(Re) Evaluating Mrs Vitalina's COPD



- CAT score: 28
- 2 moderate exacerbations in the past 12 months
- $FEV_{1:}$ 68.1% pre-bronchodilator, 73.47 post-bronchodilator
- No eosinophlis
- Non-smoker

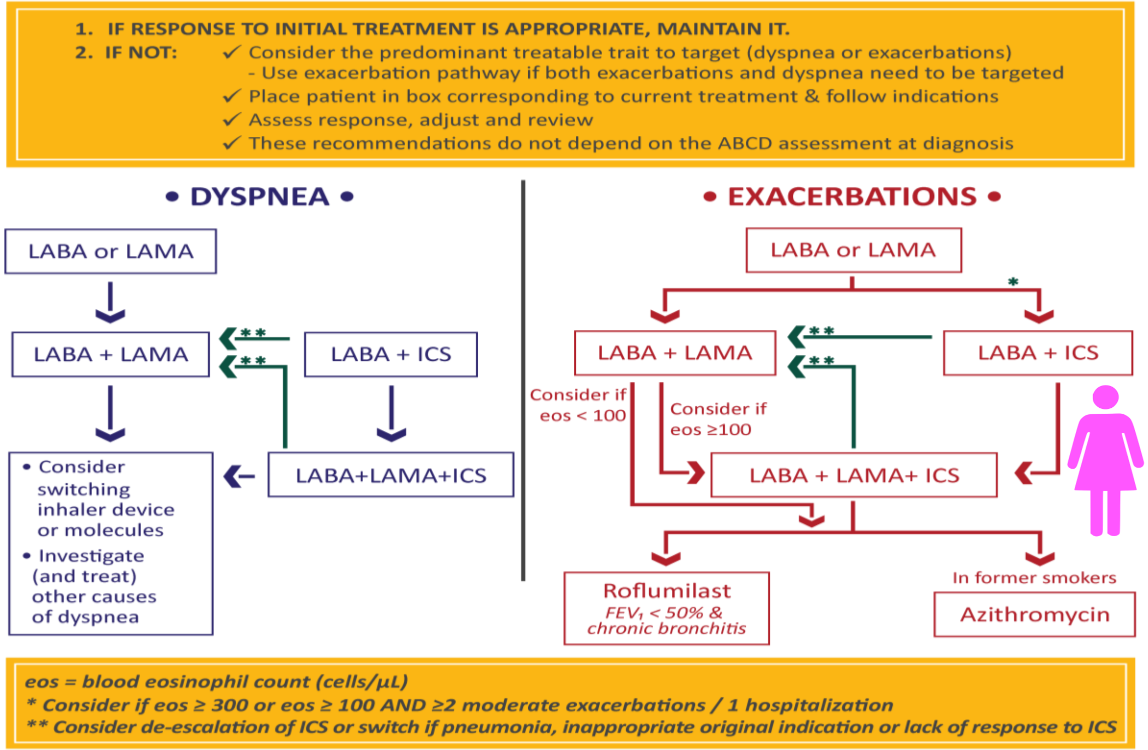
≥ 2 moderate exacerbations or ≥ 1 leading to hospitalization	**Group C** LAMA	**Group D** LAMA or LAMA + LABA* or ICS + LABA** *Consider if highly symptomatic (e.g. CAT > 20) **Consider if eos ≥ 300
0 or 1 moderate exacerbations (not leading to hospital admission)	**Group A** A Bronchodilator	**Group B** A Long Acting Bronchodilator (LABA or LAMA)
	mMRC 0-1 CAT < 10	mMRC ≥ 2 CAT ≥ 10

FEV_1, forced expiratory volume in 1 second
Adapted from: The Global Initiative for Chronic Obstructive Lung Disease (GOLD) 2020. Available at: https://goldcopd.org/.



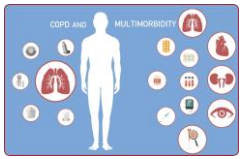
(Re) Evaluating Mrs Vitalina's treatment

- CAT score: 28
- 2 moderate exacerbations in the past 12 months
- No eosinophlis
- Non-smoker



The Global Initiative for Chronic Obstructive Lung Disease (GOLD) 2020. Available at: https://goldcopd.org/.

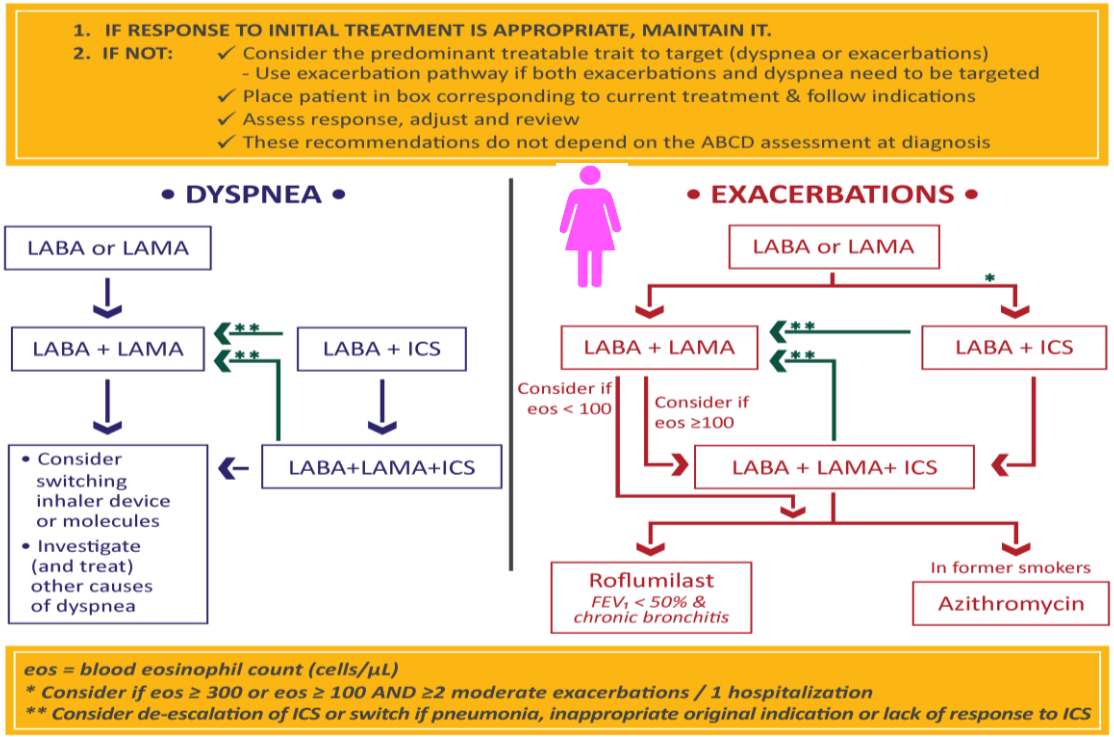
Next steps for Mrs Vitalina



- CAT score: 28
- 2 moderate exacerbations in the past 12 months
- No eosinophlis
- Non-smoker

We should:

- Manage the exacerbation
- Withdraw ICS
- Initiate LABA+ LAMA
- Recommend pulmonary rehabilitation



The Global Initiative for Chronic Obstructive Lung Disease (GOLD) 2020. Available at: https://goldcopd.org/.

Managing Mrs Vitalina's COPD exacerbation

- Self-management education (written action plan) that is personalized with respect to:
  - Avoidance of aggravating factors: <u>avoid unprotected fireplace</u>
  - How to monitor/manage worsening of symptoms
  - Contact information in the event of an exacerbation once ICS has been withdrawn

The Global Initiative for Chronic Obstructive Lung Disease (GOLD) 2020. Available at: https://goldcopd.org/.

Next steps for Mrs Vitalina

ICS should be withdrawn for Mrs Vitalina as:

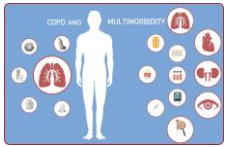
- There is no indication of clinical benefits for Mrs Vitalina
- ICS are contraindicated for Mrs Vitalina given her current comorbidities (diabetes, osteoporosis)

Mrs Vitalina should be initiated on LABA+ LAMA

- She should be trained/assessed for her inhaler techique and ideally maintain the same inhaler when possible

Mrs Vitalina should be referred for pulmonary rehabilitation

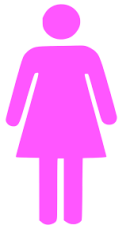
Thinking about Mrs Vitalina's other medical conditions



What else can her doctor do?

- **Diabetes**: Assess therapy and adjust dose or add a new class of antidiabetic therapy (e.g.iDDP4, iSGLT2)
- **Depression**: Increased escitalopram dose to 20 mg and offer psychological support? Referral to a psychiatry appointment?
- Adjust **hypertension and dyslipidemia** treatment?
  - Perindopril 5+ amlodipine 5 mg → perindopril 10 mg + amlodipine 5 mg
  - Atorvastatin 10 mg → Atorvastatin 20 mg as patient doesnt meet the goals
- **Atrial fibrilation**: Maintain warfarin
- **Osteoporosis**: Maintain alendronic acid 70 mg + cholecalciferol 5600 UI (weekly), for how long?

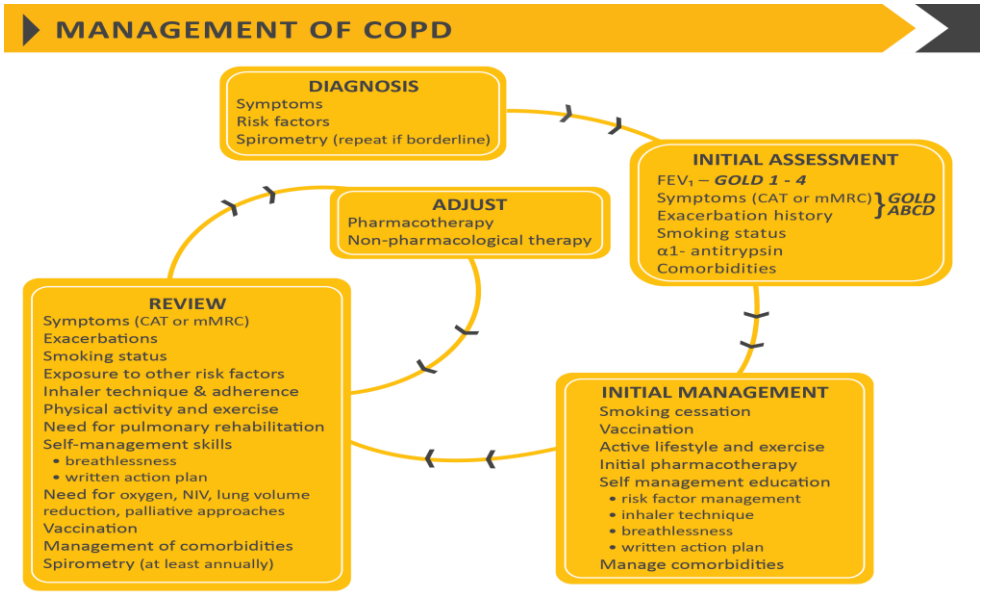
Mrs Vitalina’s pharmacological plan



- **Withdraw ICS and initiate LAMA + LABA treatment**
- Assess inhaler technique
- Assess Diabetes therapy
- Escitalopram 20 mg
- Perindopril 10 mg + Amlodipine 5 mg
- Atorvastatin 20 mg
- Maintain Warfarin
- Check next appointment to re-evaluate

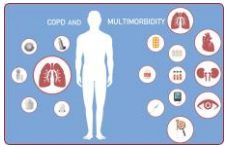
When managing the patient with COPD and comorbid conditions

1. Reaffirm DIAGNOSIS
2. Make a INITIAL ASSESSMENT
3. Re-evaluate MANAGEMENT
4. Always ADJUST and REVIEW



The Global Initiative for Chronic Obstructive Lung Disease (GOLD) 2020. Available at: https://goldcopd.org/.

Frailty and COPD (I)



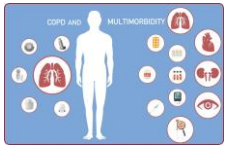
- Frailty is considered highly prevalent in old age and confers high risk for falls, disability, hospitalization, and mortality. It has been considered synonymous with disability, comorbidity, and other characteristics, but it is recognized that it may have a biologic basis and be a distinct clinical syndrome[1]

- It is an independent risk factor for the development and progression of COPD, and COPD can lead to frailty[2]

- Frailty and COPD affect each other, both frailty and respiratory impairment can be modulated and treated. When one is treated and/or prevented, the other may be improved[2]

1. Fried et al. Frailty in Older Adults: Evidence for a Phenotype. J Gerontol: Series A, Volume 56, Issue 3, 1 March 2001, Pages M146–M157. Available at: https://doi.org/10.1093/gerona/56.3.M146; 2.Guan & Nui. Frailty assessment in older adults with chronic obstructive respiratory diseases. Clin Interv Aging 2018;29:1513-1524.

Screening tools for frailty

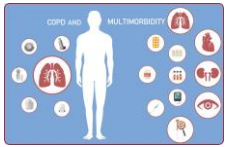


- Most of tools exist for screening of frailty in clinical settings are not designed to be self-administered[1]
- The FRAIL scale (fatigue, resistance, ambulation, illnesses and loss of weight) is a rapid screen for frailty that has been shown to identify persons at risk for functional deterioration, hospitalization and mortality[2]
- The Fried frailty phenotype (FFP) is the most frequently cited frailty tool and has been used to predict mortality and adverse clinical outcomes in large cohorts of community-dwelling elders''[2]
- The "Frail non-Disabled" (FiND) questionnaire is constructed based on the widely used frailty phenotype (including 5 main criteria: unintentional weight loss (4.5 kg in past year), self-reported exhaustion, weakness (grip strength), slow walking speed, and low physical activity), but it also includes a specific section for exploring the presence of mobility disability (an early stage of the disabling process)[1]
- Consider using one of these questionnaires to assess frailty

1. Ierodiakonou et al. Determinants of frailty in primary care patients with COPD: the Greek UNLOCK study. BMC Pulm Med **19,** 63 (2019). Available at: https://doi.org/10.1186/s12890-019-0824-8; 2. Guan & Nui. Frailty assessment in older adults with chronic obstructive respiratory diseases. Clin Interv Aging 2018;29:1513-1524

International Primary Care Respiratory Group

IPCRG work locally collaborate globally



Thank you!