# Keywords:

GOLD=Global Initiative for Chronic Obstructive Disease

SABA=Short-Acting Beta Agonist

SAMA=Short-Acting Muscarinic Antagonist

LABA=Long-Acting Beta Agonist

LAMA= Long-Acting Muscarinic Antagonist

ICS=Inhaled Corticosteroids

CAT = COPD Assessment Test

mMRC=Modified Medical Research Council Dyspnea scale

COPD group ranges from A to D

DUMMY PATIENT by Jesus Dominguez

# Patient Dummy



* Age: 76
* Sex: male
* smoking status: current smoker
* GOLD: 2
* Previous therapy: SABA
* Number of exacerbations in past 12 months at last visit (possibly non-existent if first visit): 0 (0 admissions)
* Previous CAT: 10
* Previous mMRC: 2
* *Previous COPD group: B*
* Exacerbations in past 12 months at current visit: 0 (0 admissions)
* Current CAT: 23
* Current mMRC: 2
* Comorbidities: Cardiovascular disease
* Asthma: Yes
* Flu jab: Yes
* Pneumococcal jab: no

Graphical user interface, text, application

Description automatically generated



Figure . COPD CDS system. This image shows the response from both CDS services. The COPD severity assessment CDS service suggests the patient should be identified within COPD group B and suggests three treatments in order of preference as stated in the GOLD 2017 guideline. The COPD treatment planning CDS service suggest a pair of personalised care plans based on the choices made by the pulmonologists. Notice the pulmonologists has selected only LABA and LAMA as preferable treatments for the current patient. [REMARK for Zeljko and Martin: I have discarded 2 recommendations that are not applicable -a previous error- and highlighted Asthma as being active. I have done it manually since I cannot currently access the Serbian EHR system to run the example again-]

Graphical user interface, text, email

Description automatically generated

Figure . A snippet based on Figure 1 that displays the reasons on why each recommendation was selected for the active patient (explainability)

Table

Description automatically generated with medium confidence

Figure . Similar to Figure 2, this snippet based on Figure 1 shows the potential conflicts between recommendations in distinct care plans and how the mitigation service solved them (basically by separating the recommendations into different proposals)

EVALUATION CASES

# Patient 1



* Age: 62
* Sex: male
* smoking status: current smoker
* GOLD: 2
* Previous therapy: SABA
* Number of exacerbations in past 12 months at last visit (possibly non-existent if first visit): 3 (0 admissions)
* Previous CAT: 6
* Previous mMRC: 0
* *Previous COPD group: C*
* Exacerbations in past 12 months at current visit: 2 (0 admissions)
* Current CAT: 10
* Current mMRC: 1
* *Current COPD group: D Martin, this is part of the outcome, derived from current CAT, mMRC and exacerbations, so do not add it as input at first. Same for all other use cases.*
* Comorbidities: hypertension
* Asthma: no
* Flu jab: no
* Pneumococcal jab: no

# Patient 2

* Age: 75
* Sex: male
* smoking status: ex-smoker (quit 2 years ago)
* GOLD: 4
* Previous therapy: LABA+ICS + LAMA
* Number of exacerbations in past 12 months at last visit (possibly non-existent if first visit): 4 (1 admission)
* Previous CAT: 25
* Previous mMRC: 3
* *Previous COPD group: D*
* Exacerbations in past 12 months at current visit: 5 (1 admission)
* Current CAT: 29
* Current mMRC: 3
* *Current COPD group: D*
* Comorbidities: coronary heart disease, TIA (cerebrovascular disease), chronic kidney disease stage 3, osteoarthritis
* Asthma: no
* Flu jab: yes
* Pneumococcal jab: yes

# Patient 3

* Age: 64
* Sex: female
* smoking status: ex-smoker (quit 6 years ago)
* GOLD: 3
* Previous therapy: LABA
* Number of exacerbations in past 12 months at last visit (possibly non-existent if first visit): 1 (0 admission)
* Previous CAT: 17
* Previous mMRC: 1
* *Previous COPD group: B*
* Exacerbations in past 12 months at current visit: 4 (2 admissions)
* Current CAT: 20
* Current mMRC: 2
* *Current COPD group: D*
* Comorbidities: diabetes mellitus
* Asthma: no
* Flu jab: no
* Pneumococcal jab: no

# Patient 4

* Age: 50
* Sex: female
* smoking status: current smoker
* GOLD: 2
* Previous therapy: SABA
* Number of exacerbations in past 12 months at last visit (possibly non-existent if first visit): 1 (0 admissions)
* Previous CAT: 8
* Previous mMRC: 1
* *Previous COPD group: A*
* Exacerbations in past 12 months at current visit: 3 (0 admissions)
* Current CAT: 9
* Current mMRC: 1
* *Current COPD group: C*
* Comorbidities: rheumatoid arthritis
* Asthma: yes
* Flu jab: no
* Pneumococcal jab: no

# Patient 5

* Age: 62
* Sex: female
* smoking status: current smoker
* GOLD: 2
* Previous therapy: LAMA + SABA
* Number of exacerbations in past 12 months at last visit (possibly non-existent if first visit): 1 (0 admissions)
* Previous CAT: 18
* Previous mMRC: 2
* *Previous COPD group: B*
* Exacerbations in past 12 months at current visit: 3 (0 admissions)
* Current CAT: 26
* Current mMRC: 3
* *Current COPD group: D*
* Comorbidities: coronary heart disease, obesity, hypertension, obstructive sleep apnoea
* Asthma: no
* Flu jab: yes
* Pneumococcal jab: yes

# Patient 6

* Age: 57
* Sex: male
* smoking status: current smoker
* GOLD: 2
* Previous therapy: SABA + ICS
* Number of exacerbations in past 12 months at last visit (possibly non-existent if first visit): 0 (0 admissions)
* Previous CAT: 6
* Previous mMRC: 1
* *Previous COPD group: A*
* Exacerbations in past 12 months at current visit: 0 (0 admissions)
* Current CAT: 11
* Current mMRC: 1
* *Current COPD group: B*
* Comorbidities: depression
* Asthma: yes
* Flu jab: no
* Pneumococcal jab: no

# Patient 7

* Age: 68
* Sex: male
* smoking status: ex-smoker (quit 1 year ago)
* GOLD: 2
* Previous therapy: LAMA
* Number of exacerbations in past 12 months at last visit (possibly non-existent if first visit): 2 (0 admissions)
* Previous CAT: 9
* Previous mMRC: 1
* *Previous COPD group: C*
* Exacerbations in past 12 months at current visit: 4 (3 admissions)
* Current CAT: 16
* Current mMRC: 1
* *Current COPD group: D*
* Comorbidities: hypertension, hyperlipidaemia, atrial fibrillation, chronic kidney disease stage 3
* Asthma: no
* Flu jab: no
* Pneumococcal jab: no

# Patient 8

* Age: 78
* Sex: male
* smoking status: ex-smoker (quit 10 years ago)
* GOLD: 3
* Previous therapy: LAMA
* Number of exacerbations in past 12 months at last visit (possibly non-existent if first visit): 1 (0 admission)
* Previous CAT: 25
* Previous mMRC: 3
* *Previous COPD group: B*
* Exacerbations in past 12 months at current visit: 2 (1 admission)
* Current CAT: 27
* Current mMRC: 4
* *Current COPD group: D*
* Comorbidities: previous myocardial infarction, heart failure, hypertension, prostate cancer
* Asthma: no
* Flu jab: yes
* Pneumococcal jab: no

# Patient 9

* Age: 69
* Sex: female
* smoking status: current smoker
* GOLD: 2
* Previous therapy: LABA+ICS
* Number of exacerbations in past 12 months at last visit (possibly non-existent if first visit): 0 (0 admissions)
* Previous CAT: 22
* Previous mMRC: 1
* *Previous COPD group: B*
* Exacerbations in past 12 months at current visit: 0 (0 admissions)
* Current CAT: 20
* Current mMRC: 1
* *Current COPD group: B*
* Comorbidities: anxiety, hypothyroidism
* Asthma: no
* Flu jab: no
* Pneumococcal jab: no

# Patient 10

* Age: 65
* Sex: male
* smoking status: ex-smoker (quit 5 years ago)
* GOLD: 1
* Previous therapy: none
* Number of exacerbations in past 12 months at last visit (possibly non-existent if first visit): N/A first visit
* Previous CAT: none
* Previous mMRC: none
* *Previous COPD group: N/A*
* Exacerbations in past 12 months at current visit: 0 (0 admissions)
* Current CAT: 12
* Current mMRC: 1
* *Current COPD group: B*
* Comorbidities: hypertension, hypercholesterolaemia, angina (coronary heart disease)
* Asthma: no
* Flu jab: no
* Pneumococcal jab: no

# Patient 11

* Age: 71
* Sex: female
* smoking status: current smoker
* GOLD: 3
* Previous therapy: LAMA + LABA
* Number of exacerbations in past 12 months at last visit (possibly non-existent if first visit): 2 (0 admissions)
* Previous CAT: 9
* Previous mMRC: 1
* *Previous COPD group: C*
* Exacerbations in past 12 months at current visit: 1 (0 admissions)
* Current CAT: 26
* Current mMRC: 2
* *Current COPD group: B*
* Comorbidities: previous CVA (cerebrovascular disease), hypertension, osteoporosis, anaemia, depression, chronic kidney disease stage 3
* Asthma: no
* Flu jab: yes
* Pneumococcal jab: no

# Patient 12

* Age: 76
* Sex: male
* smoking status: ex-smoker (quit 3 years ago)
* GOLD: 3
* Previous therapy: SAMA
* Number of exacerbations in past 12 months at last visit (possibly non-existent if first visit): 1 (0 admission)
* Previous CAT: 5
* Previous mMRC: 1
* *Previous COPD group: A*
* Exacerbations in past 12 months at current visit: 1 (1 admission)
* Current CAT: 8
* Current mMRC: 2
* *Current COPD group: D*
* Comorbidities: diabetes mellitus, previous CVA (cerebrovascular disease), hypertension, chronic kidney disease stage 4
* Asthma: no
* Flu jab: yes
* Pneumococcal jab: no

# Patient 13

* Age: 42
* Sex: female
* smoking status: current smoker
* GOLD: 2
* Previous therapy: none
* Number of exacerbations in past 12 months at last visit (possibly non-existent if first visit): N/A first visit
* Previous CAT: none
* Previous mMRC: none
* *Previous COPD group: N/A*
* Exacerbations in past 12 months at current visit: 1 (0 admissions)
* Current CAT: 6
* Current mMRC: 1
* *Current COPD group: A*
* Comorbidities: none
* Asthma: yes
* Flu jab: no
* Pneumococcal jab: no

# Patient 14

* Age: 59
* Sex: female
* smoking status: current smoker
* GOLD: 2
* Previous therapy: LABA + SABA
* Number of exacerbations in past 12 months at last visit (possibly non-existent if first visit): 1 (0 admission)
* Previous CAT: 20
* Previous mMRC: 1
* *Previous COPD group: B*
* Exacerbations in past 12 months at current visit: 3 (0 admission)
* Current CAT: 21
* Current mMRC: 2
* *Current COPD group: D*
* Comorbidities: obesity, hypercholesterolaemia, peripheral vascular disease
* Asthma: no
* Flu jab: no
* Pneumococcal jab: no

# Patient 15

* Age: 61
* Sex: male
* smoking status: ex-smoker (quit 4 years ago)
* GOLD: 2
* Previous therapy: SABA
* Number of exacerbations in past 12 months at last visit (possibly non-existent if first visit): 0 (0 admission)
* Previous CAT: 9
* Previous mMRC: 1
* *Previous COPD group: A*
* Exacerbations in past 12 months at current visit: 0 (0 admission)
* Current CAT: 14
* Current mMRC: 2
* *Current COPD group: B*
* Comorbidities: diabetes mellitus, previous community acquired pneumonia
* Asthma: no
* Flu jab: yes
* Pneumococcal jab: no

# Patient 16

* Age: 46
* Sex: male
* smoking status: ex-smoker (quit 1 year ago)
* GOLD: 1
* Previous therapy: LABA+ICS
* Number of exacerbations in past 12 months at last visit (possibly non-existent if first visit): 0 (0 admissions)
* Previous CAT: 8
* Previous mMRC: 0
* *Previous COPD group: A*
* Exacerbations in past 12 months at current visit: 3 (0 admissions)
* Current CAT: 9
* Current mMRC: 1
* *Current COPD group: C*
* Comorbidities: allergic rhinitis
* Asthma: yes
* Flu jab: no
* Pneumococcal jab: no

# Patient 17

* Age: 77
* Sex: female
* smoking status: current smoker
* GOLD: 3
* Previous therapy: LAMA + LABA
* Number of exacerbations in past 12 months at last visit (possibly non-existent if first visit): 2 (0 admissions)
* Previous CAT: 27
* Previous mMRC: 2
* *Previous COPD group: D*
* Exacerbations in past 12 months at current visit: 4 (1 admission)
* Current CAT: 26
* Current mMRC: 3
* *Current COPD group: D*
* Comorbidities: previous breast cancer, chronic kidney disease stage 4
* Asthma: no
* Flu jab: yes
* Pneumococcal jab: yes

# Patient 18

* Age: 62
* Sex: female
* smoking status: ex-smoker (quit 6 months ago)
* GOLD: 3
* Previous therapy: LABA+ICS
* Number of exacerbations in past 12 months at last visit (possibly non-existent if first visit): 2 (0 admissions)
* Previous CAT: 6
* Previous mMRC: 1
* *Previous COPD group: C*
* Exacerbations in past 12 months at current visit: 4 (0 admissions)
* Current CAT: 7
* Current mMRC: 1
* *Current COPD group: C*
* Comorbidities: osteoporosis
* Asthma: no
* Flu jab: no
* Pneumococcal jab: no

# Patient 19

* Age: 58
* Sex: male
* smoking status: ex-smoker (quit 2 months ago)
* GOLD: 4
* Previous therapy: LABA+ICS + LAMA
* Number of exacerbations in past 12 months at last visit (possibly non-existent if first visit): 4 (2 admissions)
* Previous CAT: 32
* Previous mMRC: 2
* *Previous COPD group: D*
* Exacerbations in past 12 months at current visit: 6 (5 admissions)
* Current CAT: 37
* Current mMRC: 3
* *Current COPD group: D*
* Comorbidities: hypertension, ischaemic heart disease, diabetes mellitus, chronic kidney disease stage 3, sciatica
* Asthma: no
* Flu jab: yes
* Pneumococcal jab: yes

# Patient 20

* Age: 55
* Sex: male
* smoking status: current smoker
* GOLD: 2
* Previous therapy: SAMA
* Number of exacerbations in past 12 months at last visit (possibly non-existent if first visit): 1 (0 admissions)
* Previous CAT: 7
* Previous mMRC: 0
* *Previous COPD group: A*
* Exacerbations in past 12 months at current visit: 2 (0 admissions)
* Current CAT: 6
* Current mMRC: 1
* *Current COPD group: C*
* Comorbidities: hypertension, hyperlipidaemia, previous myocardial infarction
* Asthma: yes
* Flu jab: no
* Pneumococcal jab: no