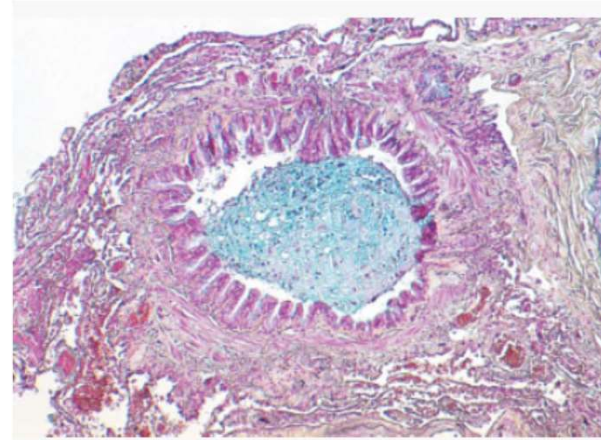


COPD: PAST, PRESENT & FUTURE



Don D. Sin, MD
De Lazzari Family Chair



Centre for
Heart Lung Innovation
UBC and St. Paul's Hospital

Providence
HEALTH CARE
How you want to be treated.

FACULTY/PRESENTER DISCLOSURE

Faculty: Don D. Sin

Relationships with commercial interests:

Grants/Research Support: AstraZeneca, Boehringer

Speakers Bureau/Honoraria: AstraZeneca, BI, Grifols

DISEASE SEVERITY BY SPIROMETRY



Classification by Impairment of Lung Function*

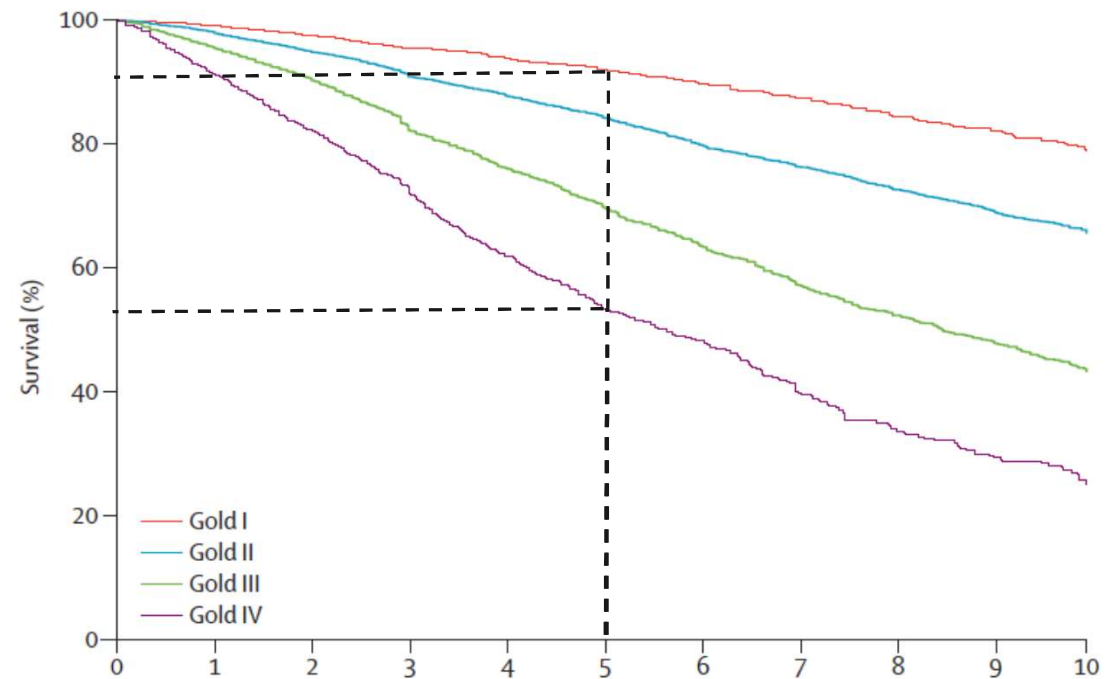
GOLD	Stage	Spirometry (post-bronchodilator)
1	Mild	$FEV_1 \geq 80\%$ predicted, $FEV_1/FVC < 0.7$
2	Moderate	FEV_1 50 – 79% predicted, $FEV_1/FVC < 0.7$
3	Severe	FEV_1 30 – 49% predicted, $FEV_1/FVC < 0.7$
4	Very Severe	$FEV_1 < 30\%$ predicted, $FEV_1/FVC < 0.7$

*In keeping with current GOLD guidelines classification system

Adapted from Can Respir J 2008;15(Suppl A):1A-8A.

GOLD STAGE & SURVIVAL

GOLD	Stage	FEV ₁	5 yr survival
1	Mild	≥ 80%	>90%
2	Moderate	50 – 79%	90%
3	Severe	30 – 49%	75%
4	Very Severe	< 30%	50%

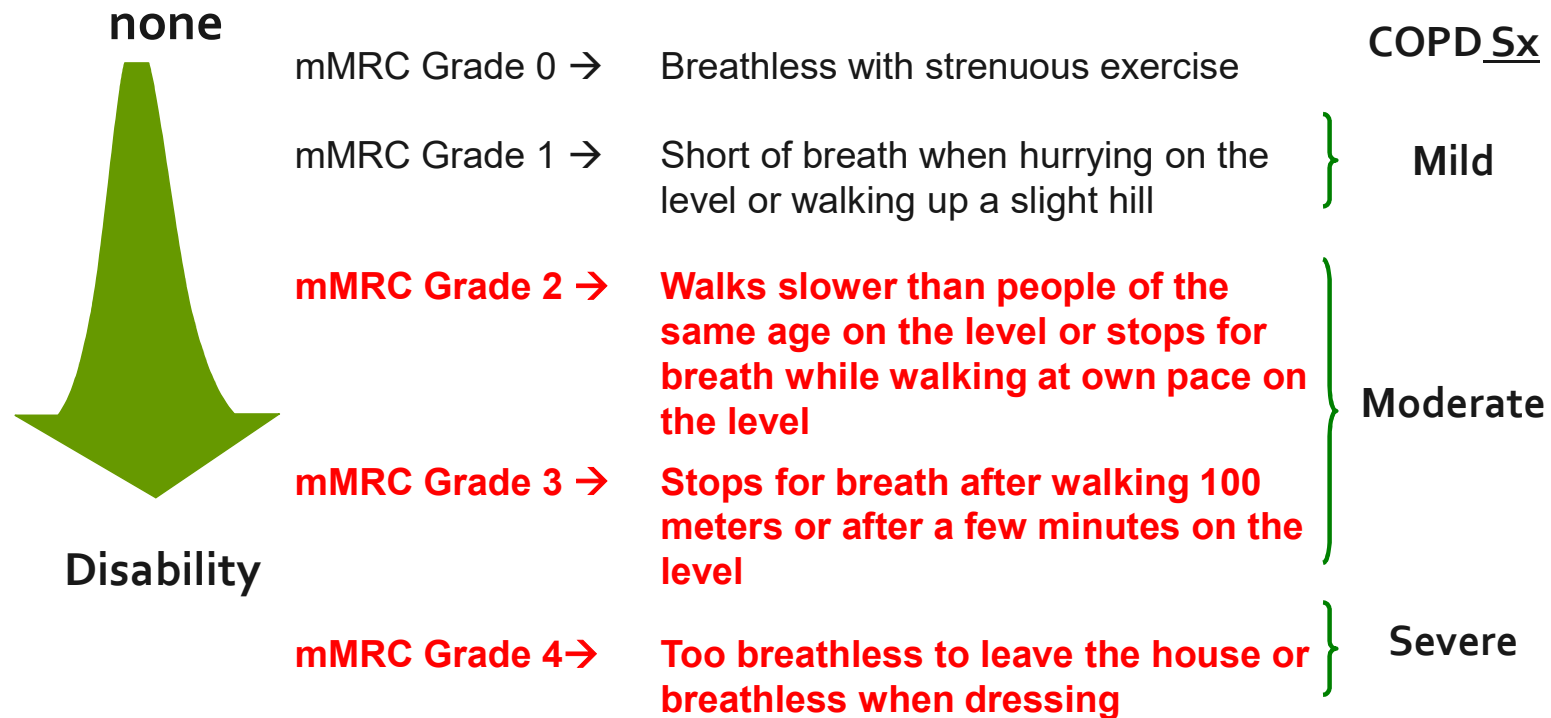


Number at risk	0	1	2	3	4	5	6	7	8	9	10
Group I	2260	2183	2068	1088	822	541	427	386	343	308	273
Group II	6731	6444	6036	5101	2963	2059	1611	1426	1264	1160	896
Group III	4131	3877	3537	2779	1538	1005	713	587	485	418	295
Group IV	1576	1417	1217	929	517	322	224	176	122	99	66

Soriano et al. *Lancet Resp Med* 2015;3: 443-50

ASSESSING SYMPTOMS IN COPD

Modified MRC Dyspnea Scale



Fletcher CM. *BMJ* 1960; 2:1662.

COPD ASSESSMENT TEST

Example: I am very happy 0 1 2 3 4 5 I am very sad

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

COPD Assessment Test and the CAT logo are trademarks of the GlaxoSmithKline group of companies.
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Scoring range of 0-40.

- MCID ≥ 2 .
- Score < 10 = low impact of COPD on health status.

CTS COPD PHARMACOTHERAPY UPDATE-BASED ON SYMPTOMS

Mild
CAT <10, mMRC 1

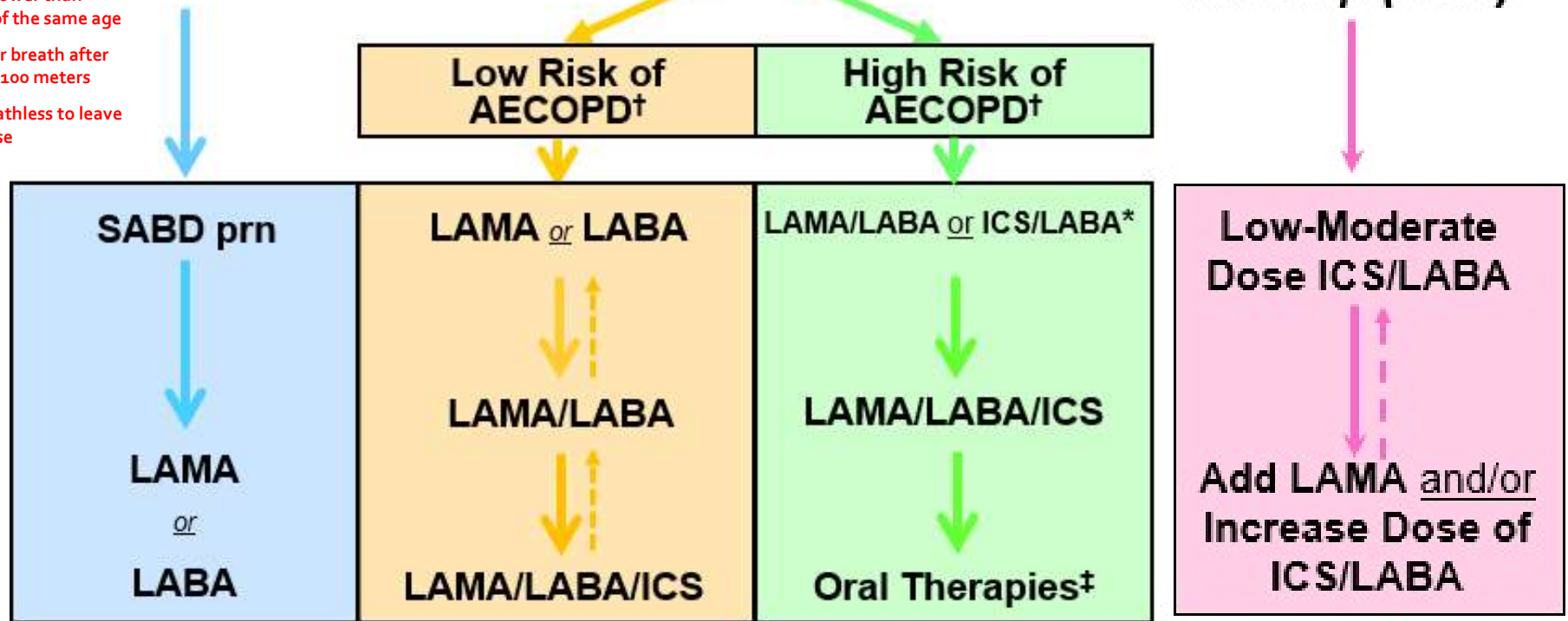
Moderate and Severe

CAT ≥10, mMRC ≥ 2

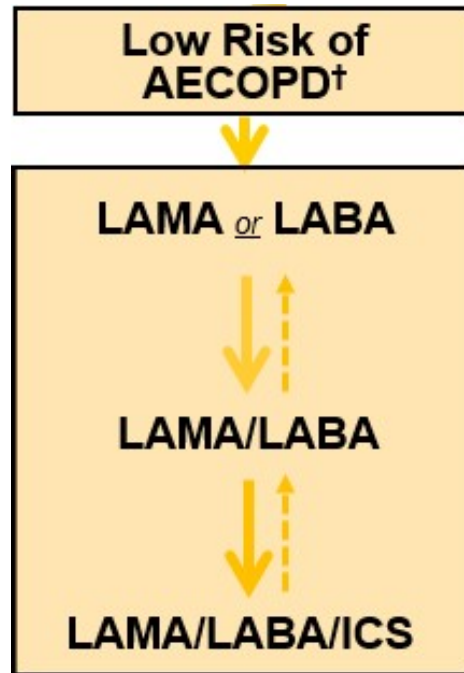
**Asthma-COPD
Overlap (ACO)**

mMRC
Grade 2 →
mMRC
Grade 3 →
mMRC
Grade 4 →

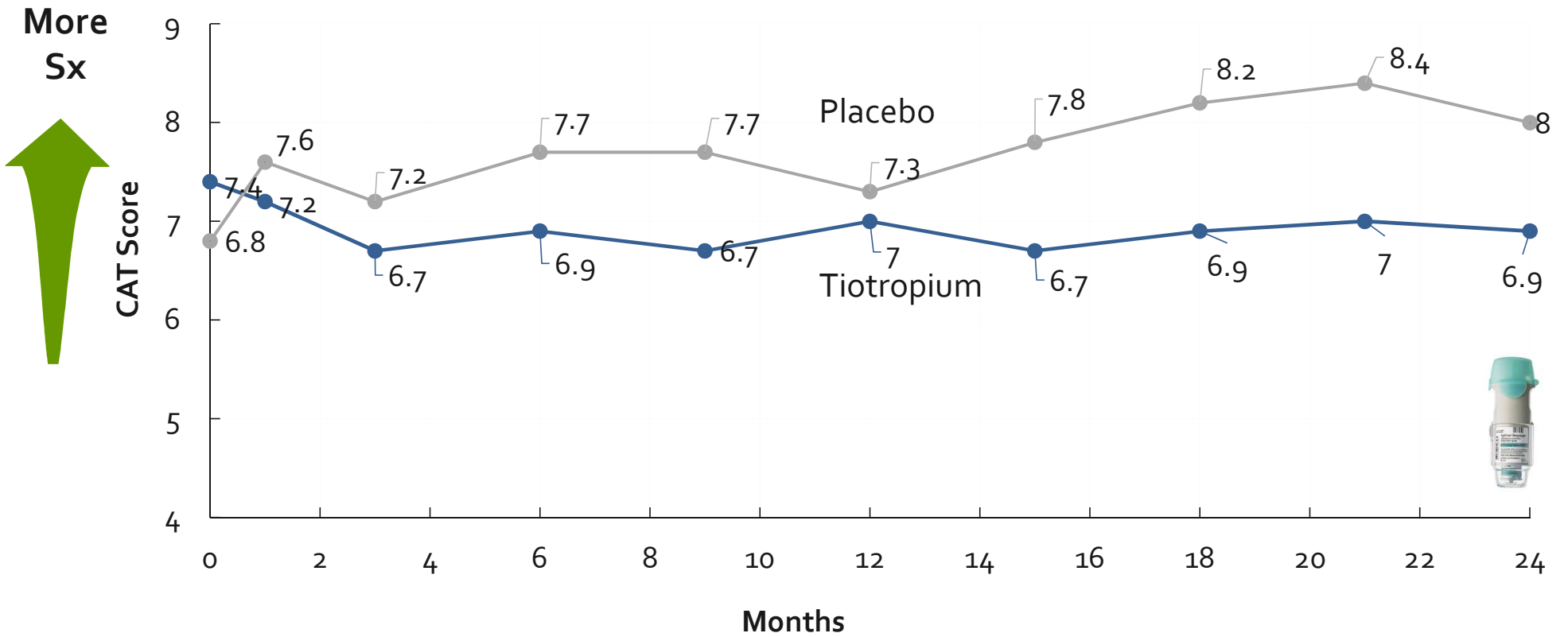
Walks slower than
people of the same age
Stops for breath after
walking 100 meters
Too breathless to leave
the house



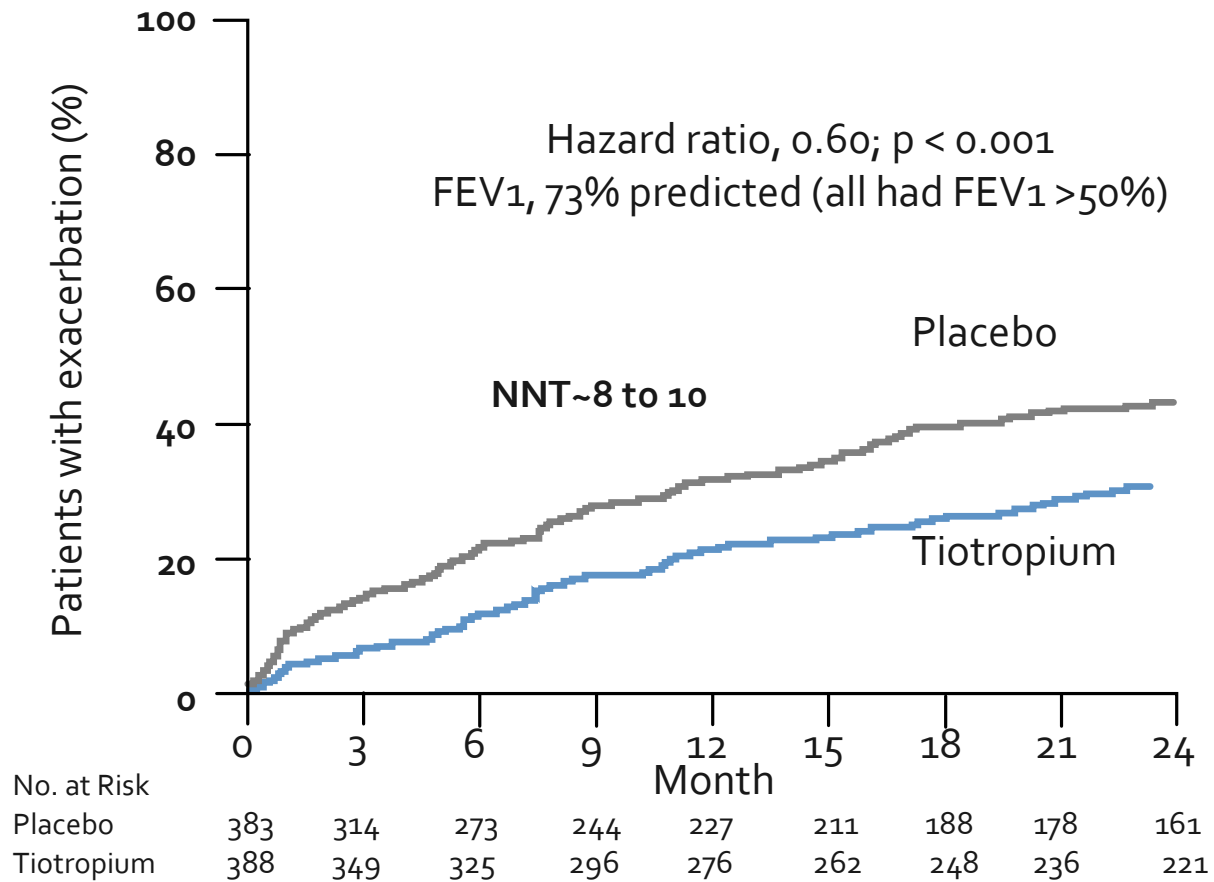
1ST LINE OF COPD THERAPY IS LAMA



LAMA & Sx (CAT Score)

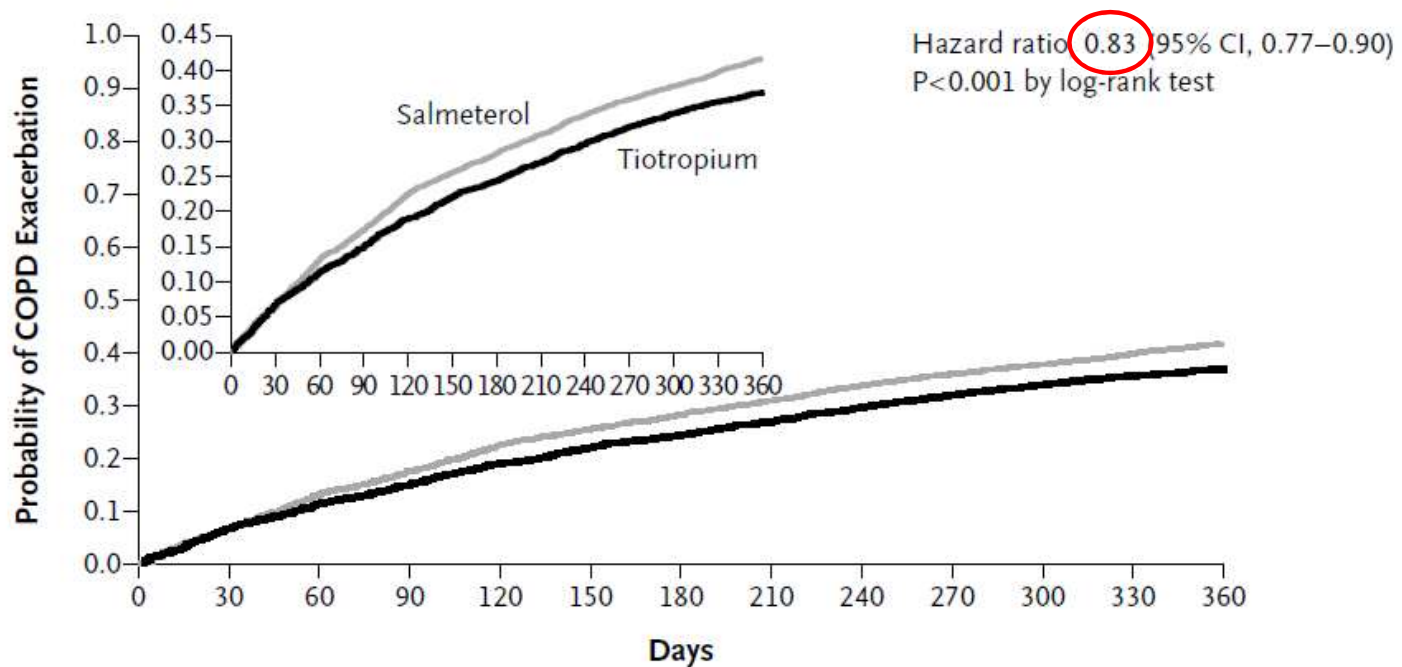


LAMA & Exacerbation



Zhou Y, et al. *N Engl J Med* 2017;377:923

LABA vs LAMA?

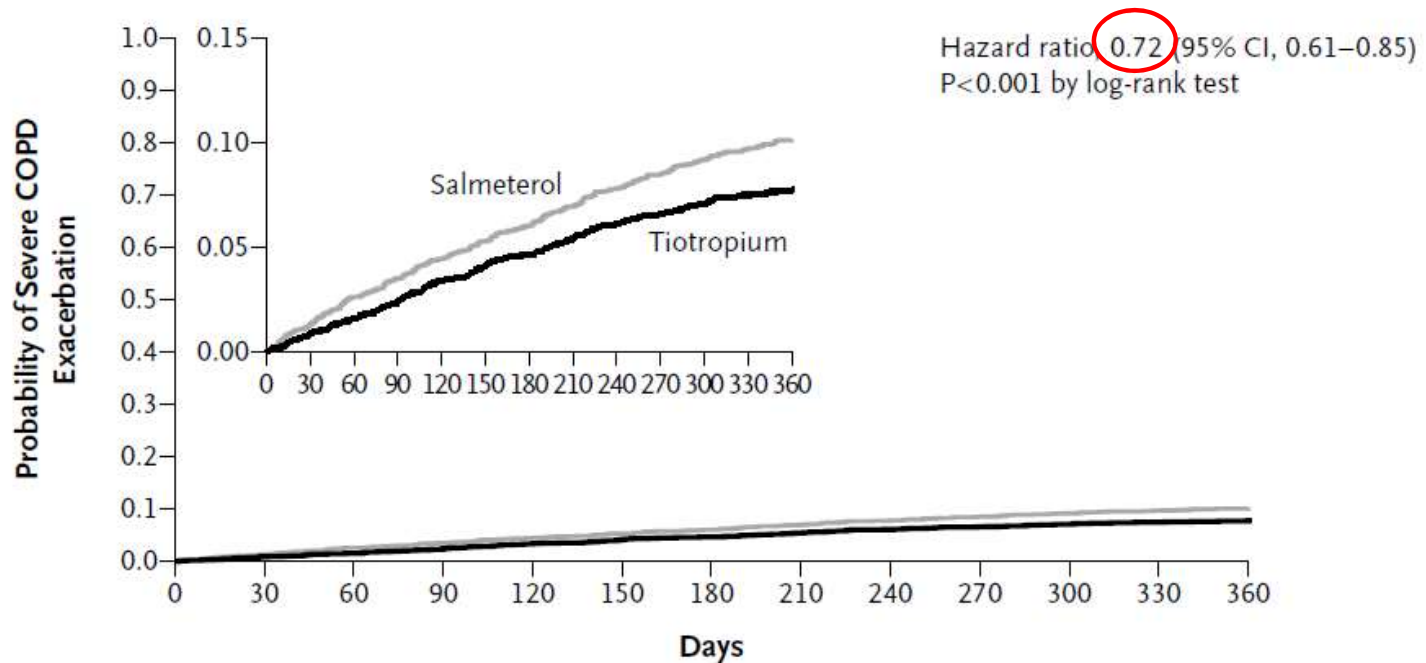


No. at Risk

Tiotropium	3707	3369	3136	2955	2787	2647	2561	2455	2343	2242	2169	2107	1869
Salmeterol	3669	3328	3028	2802	2605	2457	2351	2251	2137	2050	1982	1915	1657

Vogelmeier et al. NEJM 2011;364:1093-103

RISK OF HOSPITALIZATION



No. at Risk

Tiotropium	3707	3564	3453	3359	3285	3217	3177	3125	3066	3017	2977	2948	2663
Salmeterol	3669	3502	3362	3244	3172	3080	3032	2982	2921	2870	2834	2806	2489

CLINICAL CASE #1 - MICHEL

- A 67-year-old man presents with COPD.
- FEV₁ is 55% predicted.
- ipratropium bromide and salbutamol inhalers four times daily.
- Short of breath walking 50-75m on level ground at a slow pace.
- As a result, he has given-up golf and playing with his grandchildren.

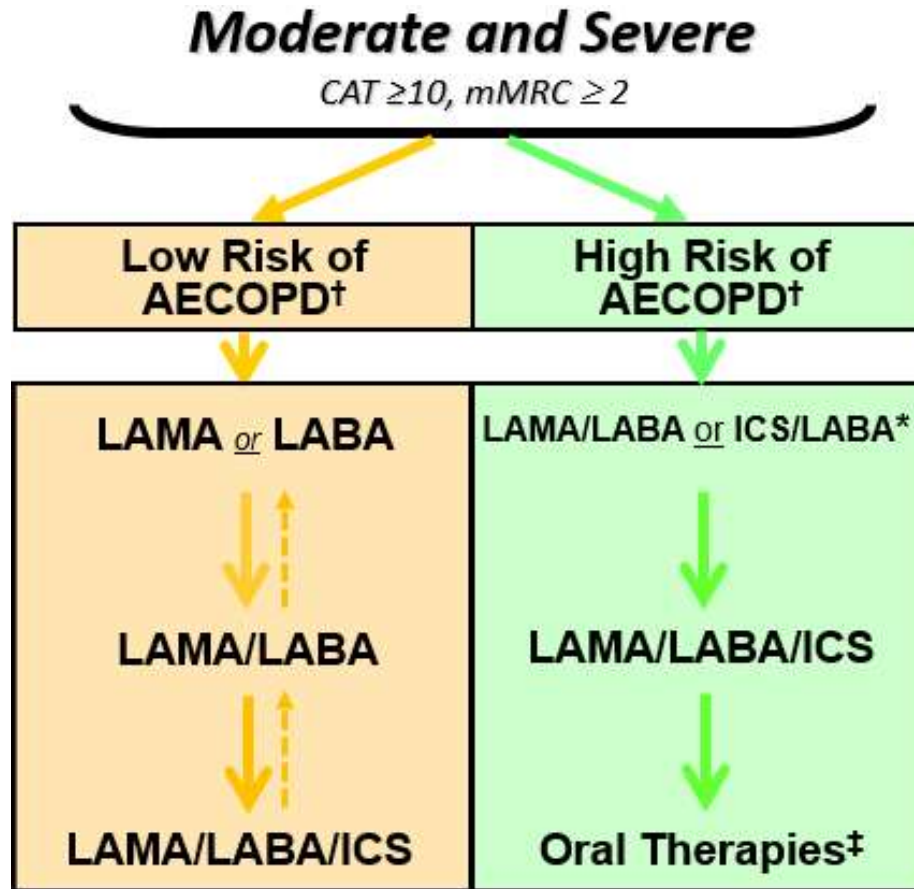
CLINICAL CASE #1 - MICHEL

Questions

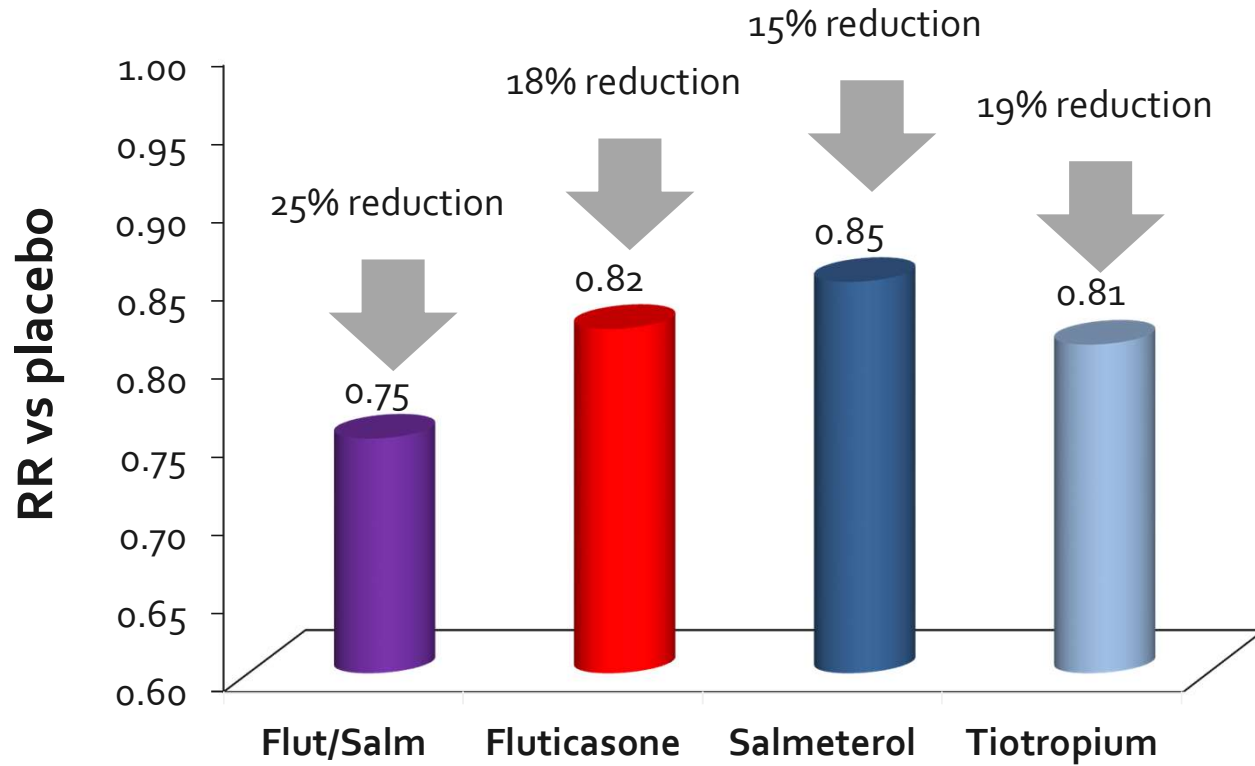
1. What initial changes to pharmacotherapy would you recommend to Michel?

LAMA (LABA)

>1 EXACERBATION/YR=HIGH RISK OF AECOPD



DRUGS & EXACERBATION

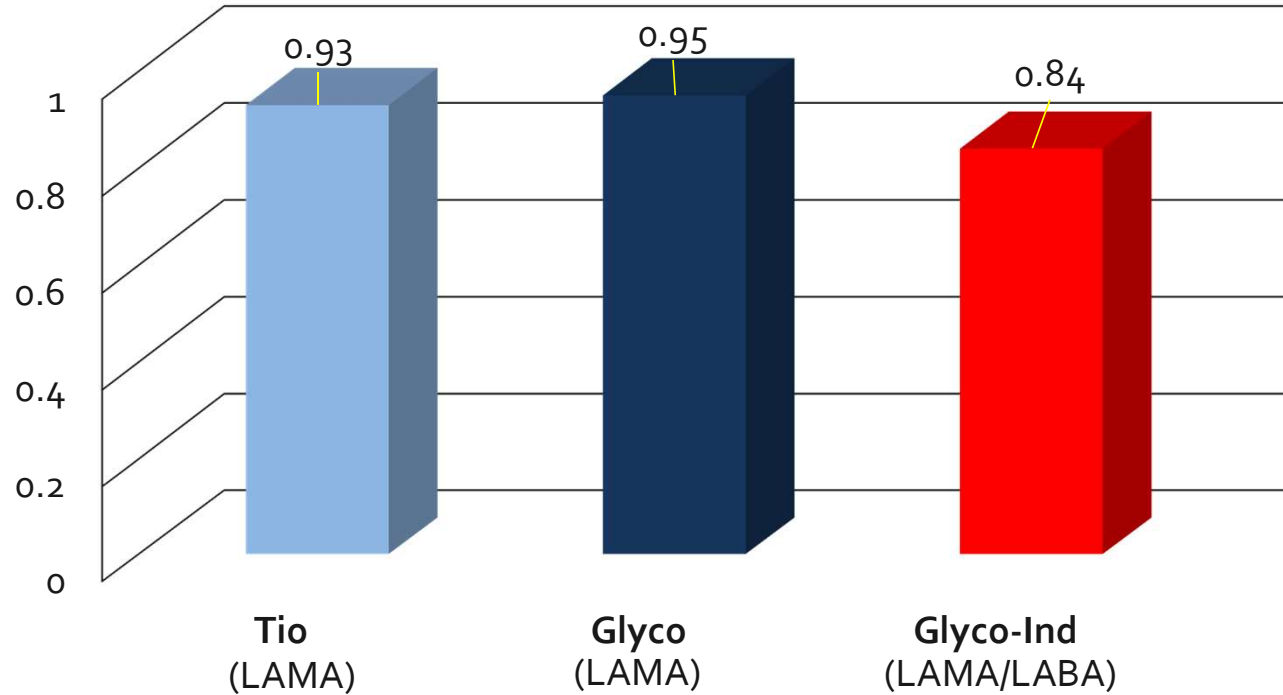


Calverley et al. NEJM 2007;356:775-89

Niewoehner et al. Ann Int Med 2005;143:317-26

LAMA/LABA

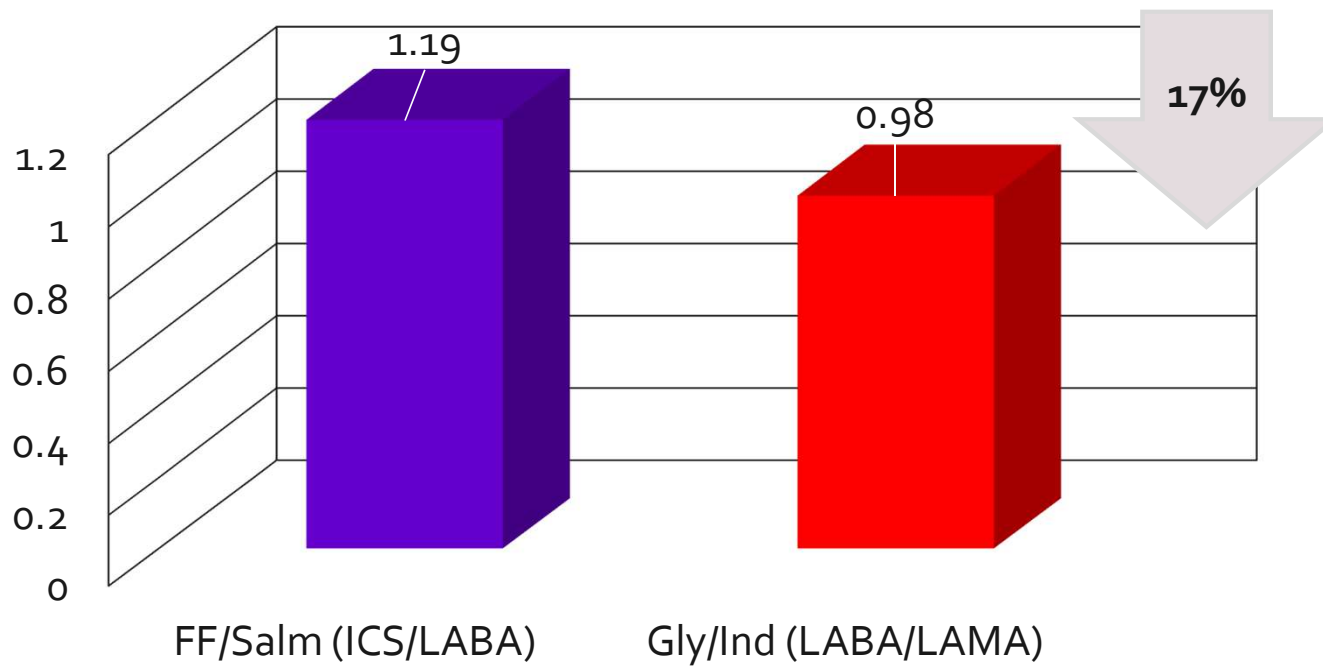
Exacerbations/person-year



Wedzicha et al Lancet RM 2013;1:199-209

LAMA/LABA OR ICS/LABA?

Exacerbation per person per year

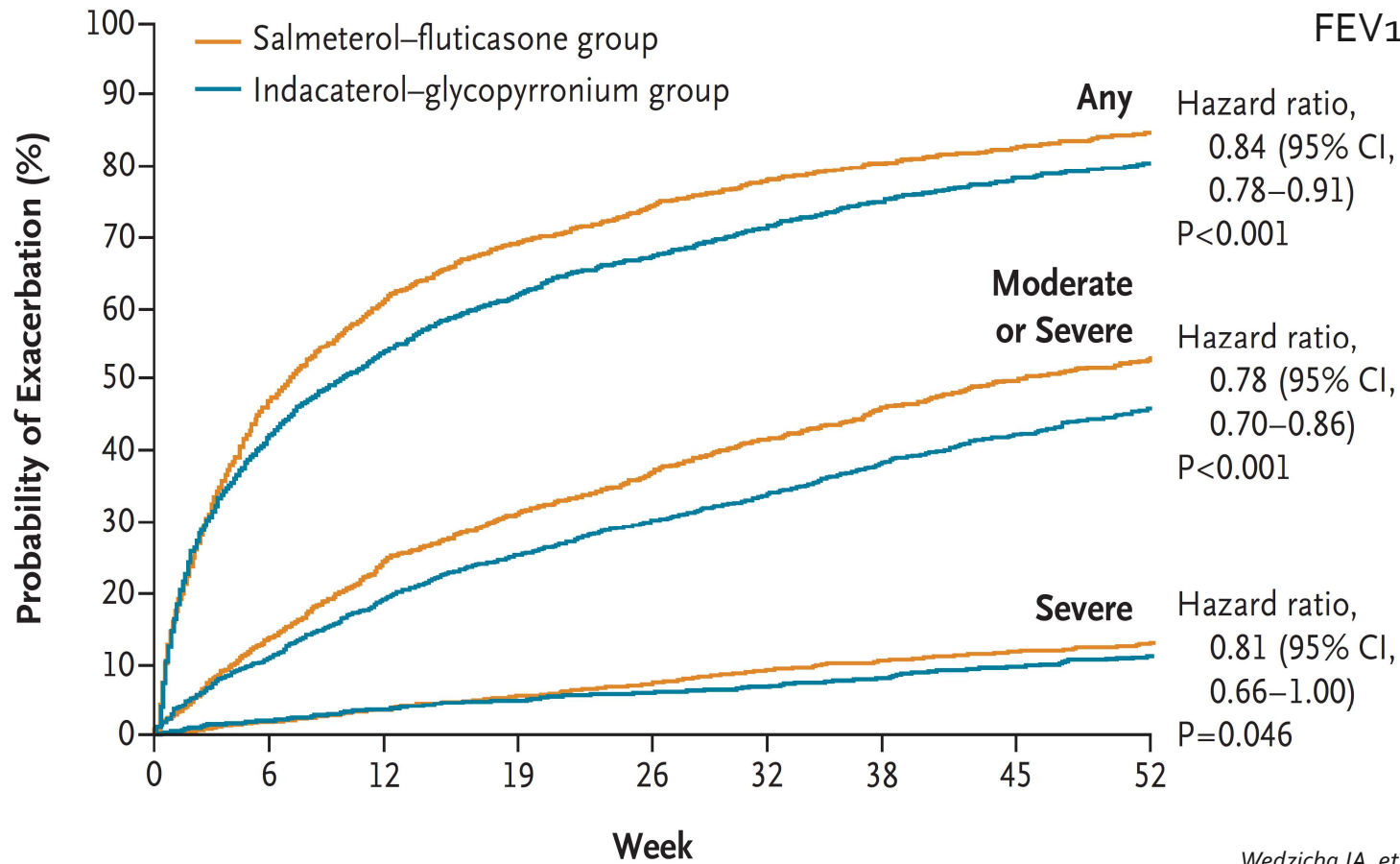


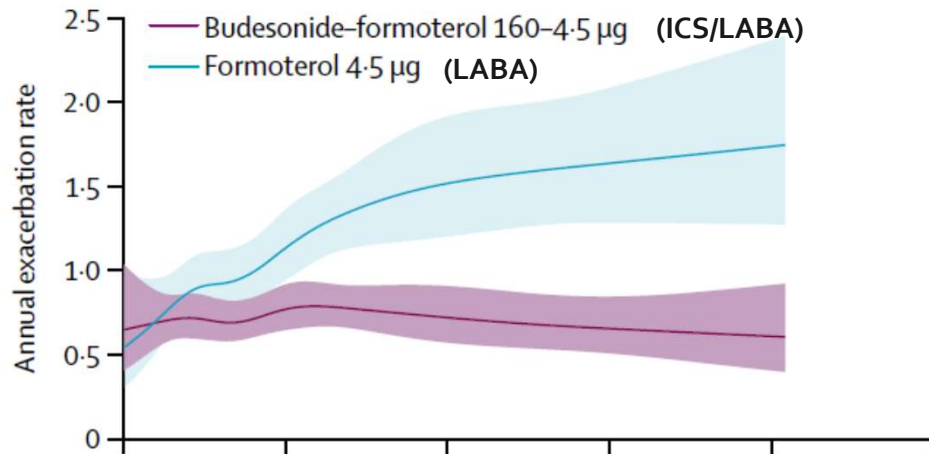
LAMA/LABA vs ICS/LABA

FLAME

FEV₁, 44% predicted (25-60%)

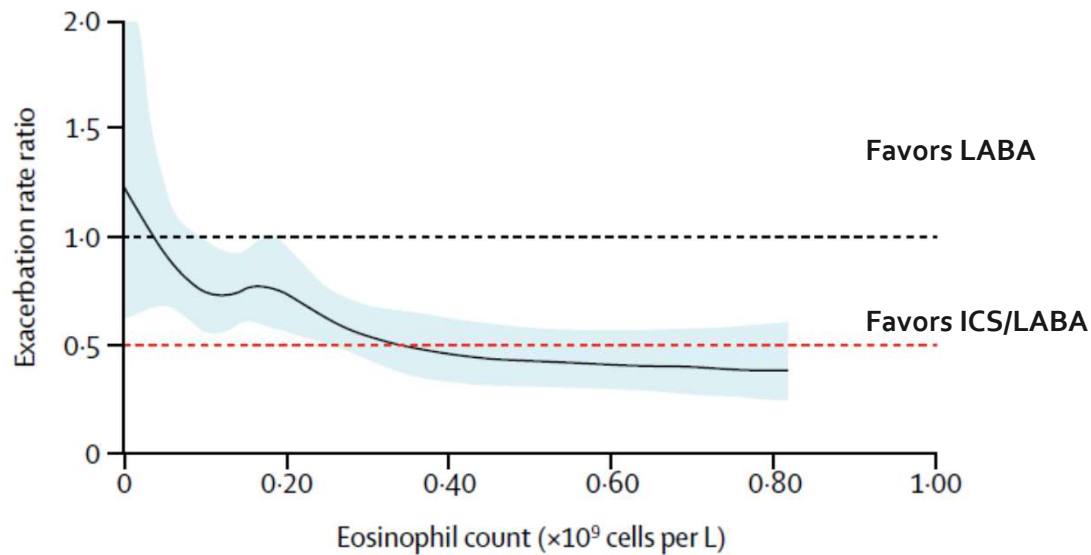
N=3,362



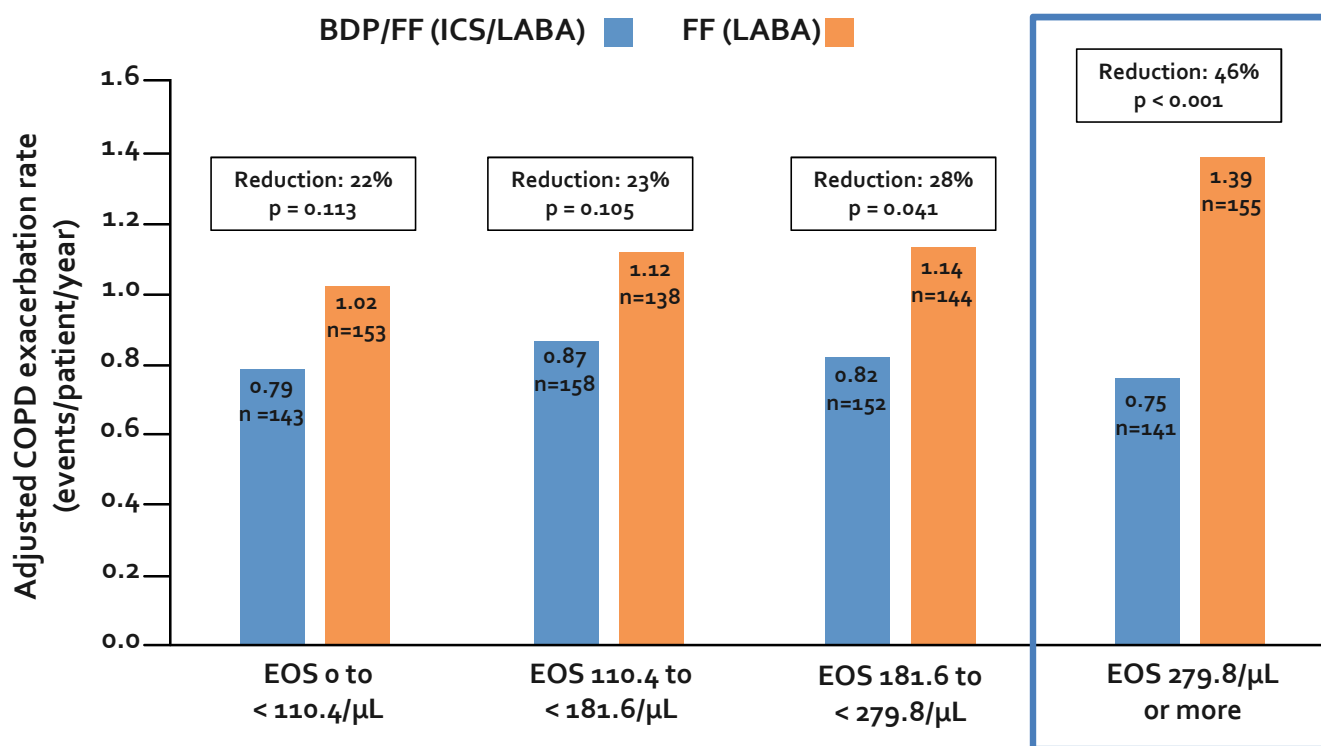


EXACERBATION RISK ACCORDING TO ICS AND BLOOD EOSINOPHILS

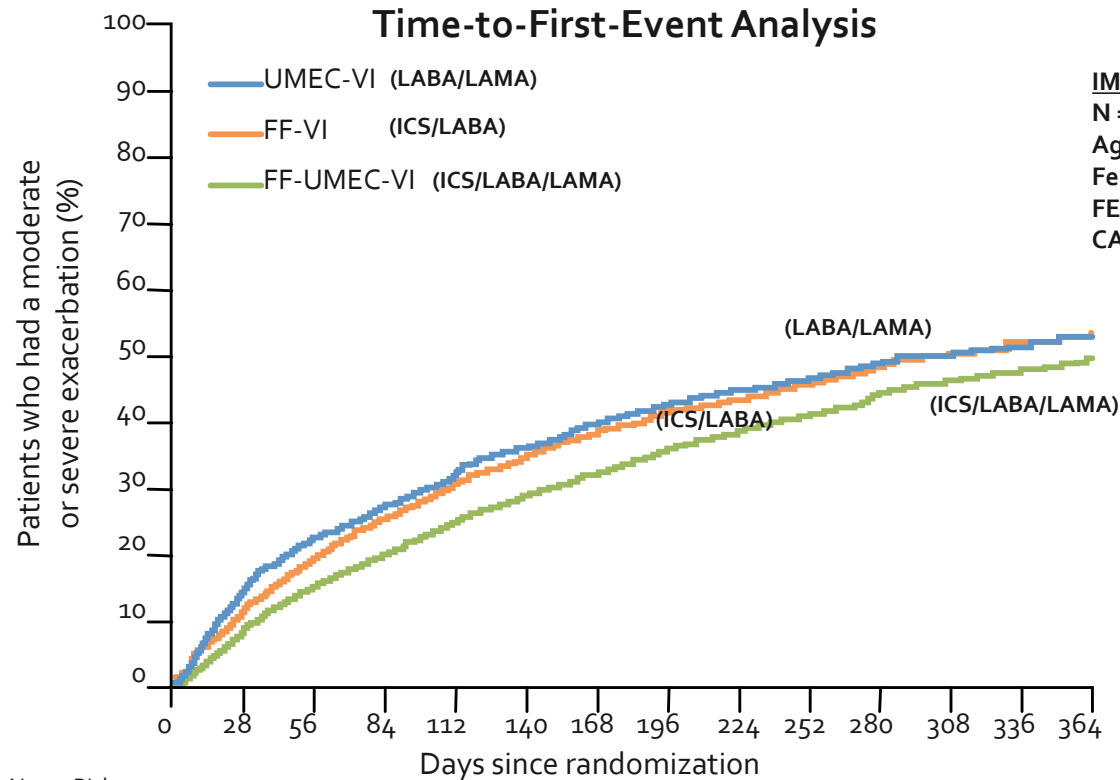
BLOOD EOS <100 → NO ICS
BLOOD EOS >300 → CONSIDER ICS
100-300 → UNCERTAIN



Stratification of Blood by Eosinophil Count



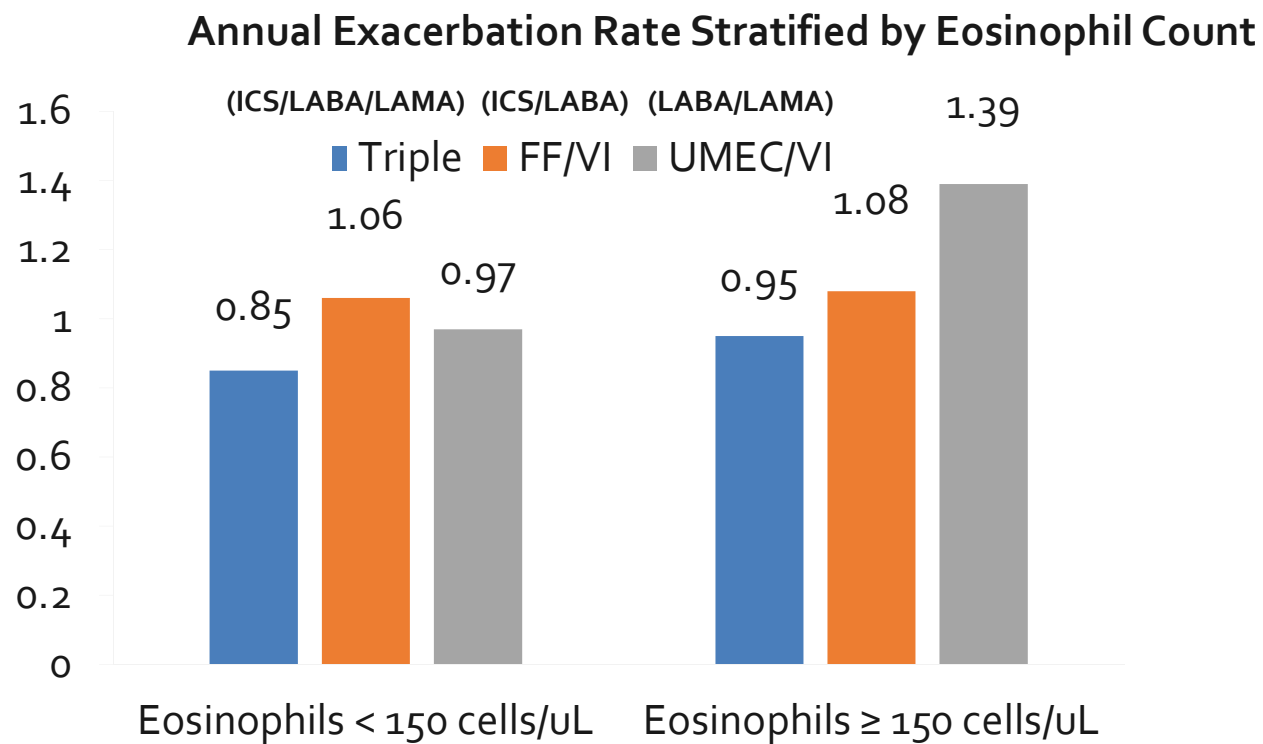
ICS/LABA/LAMA vs LABA/LAMA



No. at Risk	0	28	56	84	112	140	168	196	224	252	280	308	336	364
UMEC-VI	2,070	1,721	1,516	1,406	1,301	1,201	1,123	1,059	1,001	971	917	884	851	642
FF-VI	4,134	3,554	3,133	2,838	2,620	2,410	2,250	2,120	2,004	1,823	1,823	1,729	1,671	1,228
FF-UMEC-VI	4,151	3,758	3,408	3,186	2,954	2,752	2,614	2,457	2,324	2,216	2,085	1,988	1,919	1,419

Lipson DA, et al. *N Engl J Med* 2018;378:1671-80

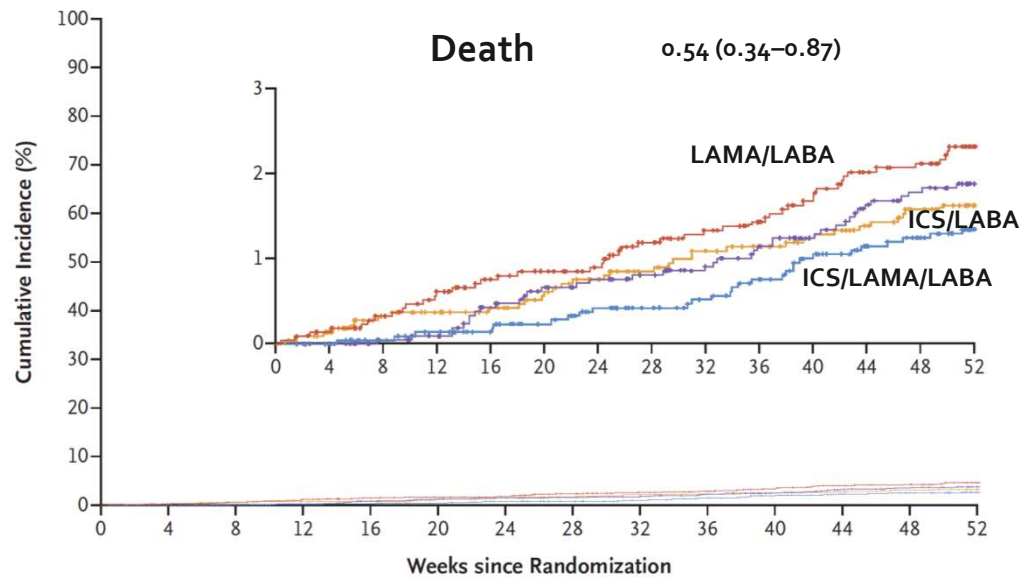
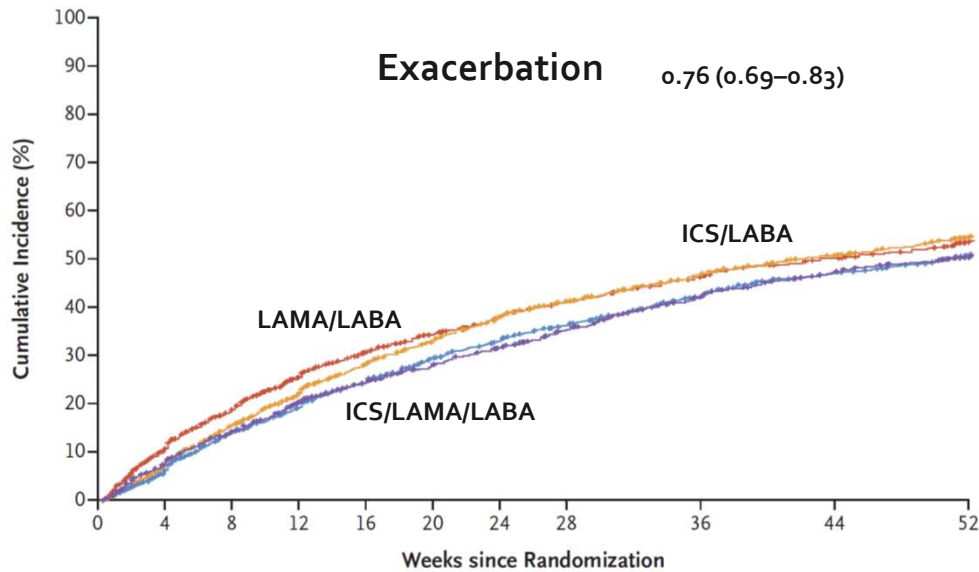
BLOOD EOSINOPHILS MATTER



ICS/LABA/LAMA vs LABA/LAMA

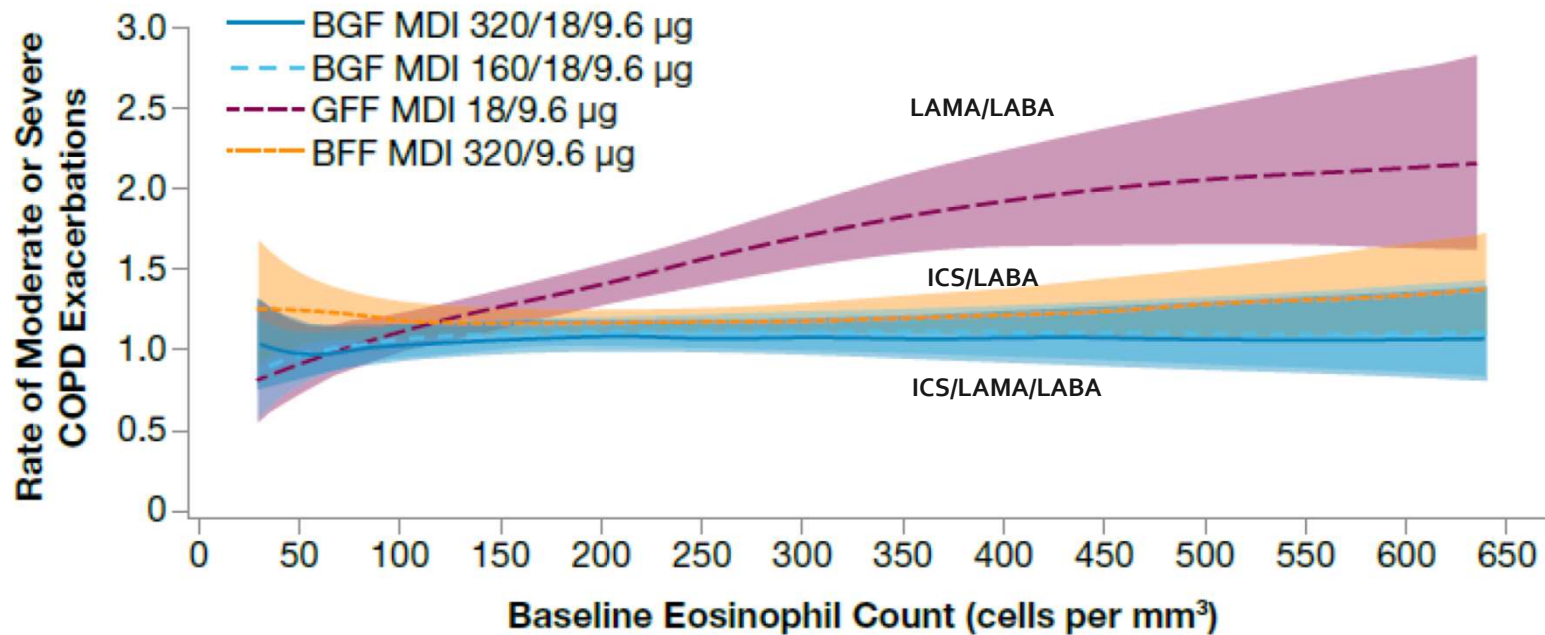
ETHOS
 N = 8,588
 Age, 65
 Female, 40%
 FEV₁, 43%
 CAT, 20

— 320- μ g-Budesonide triple therapy
 — 160- μ g-Budesonide triple therapy
 — Glycopyrrolate-formoterol
 — Budesonide-formoterol



Rabe et al. N Engl J Med 2020

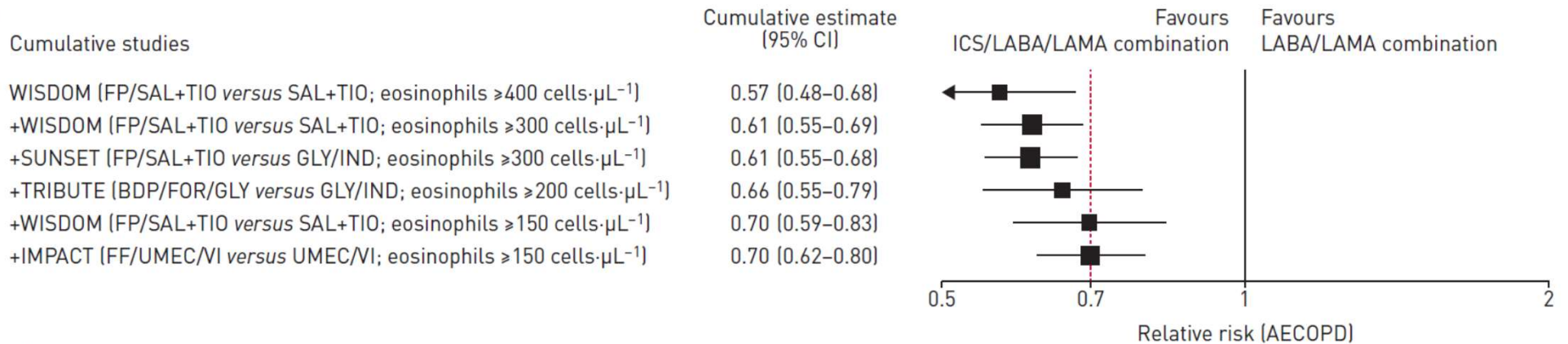
ICS/LABA/LAMA vs LABA/LAMA



BLOOD EOSINOPHILS & AECOPD RELATED TO ICS

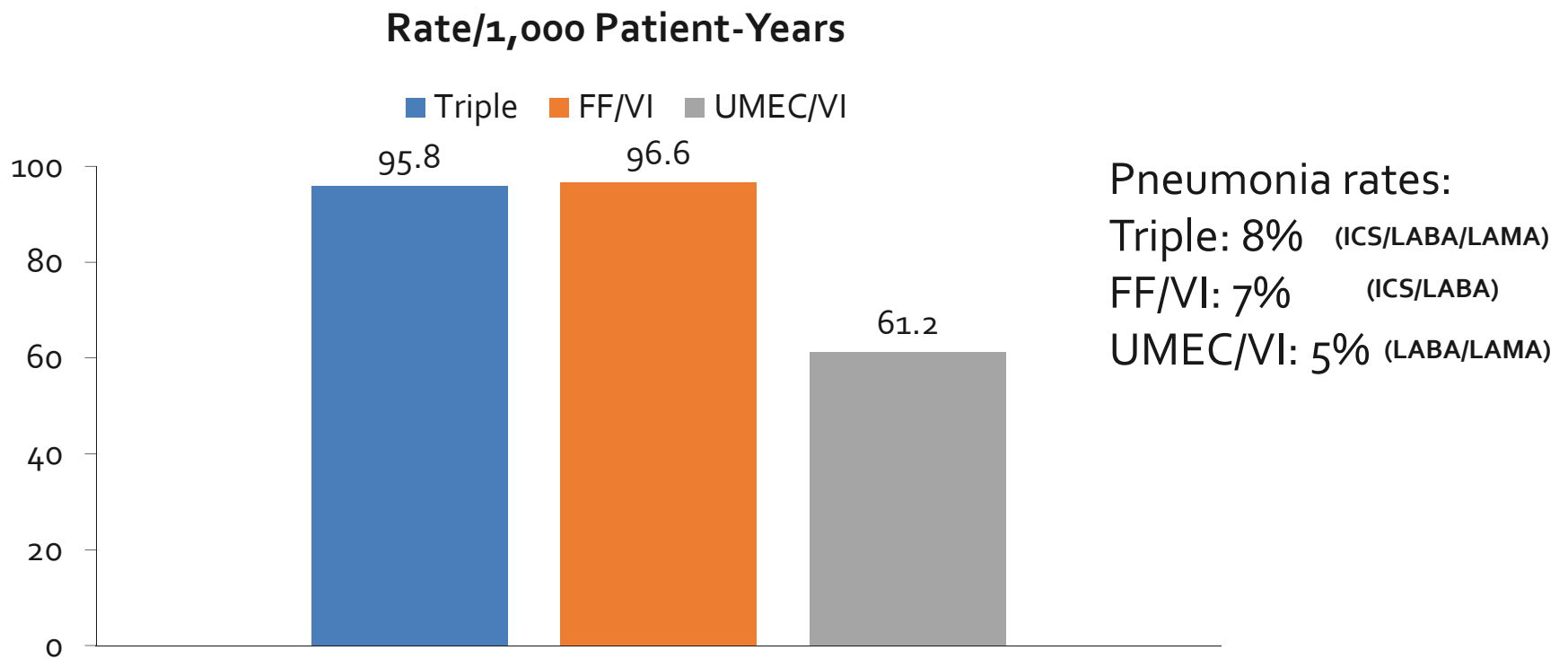
Triple therapy *versus* single and dual long-acting bronchodilator therapy in COPD: a systematic review and meta-analysis

Mario Cazzola¹, Paola Rogliani¹, Luigino Calzetta¹ and Maria Gabriella Matera²



Cazzola et al ERJ 2018;52:1801586

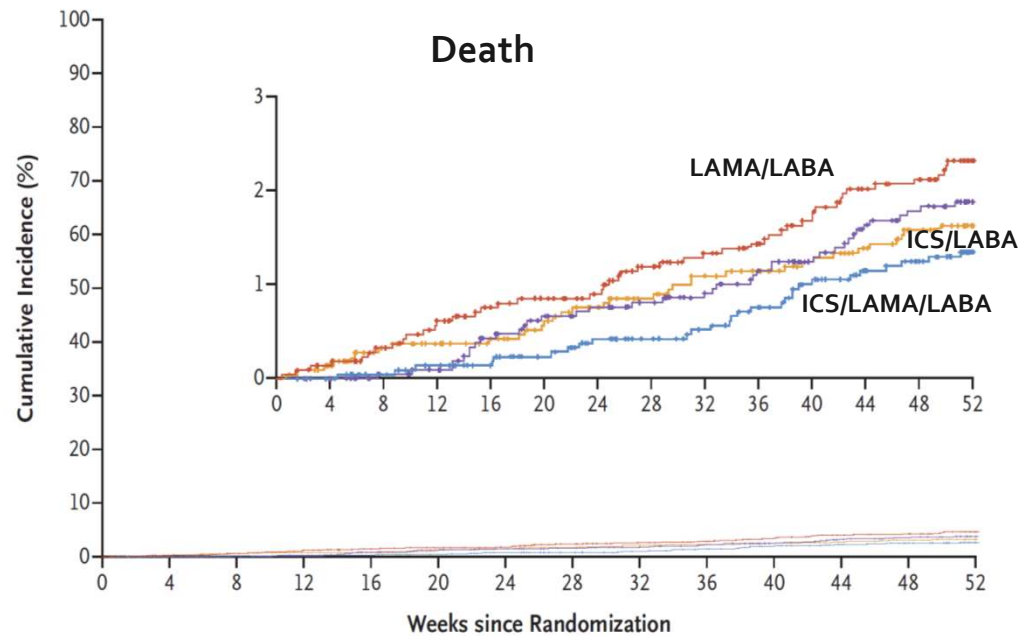
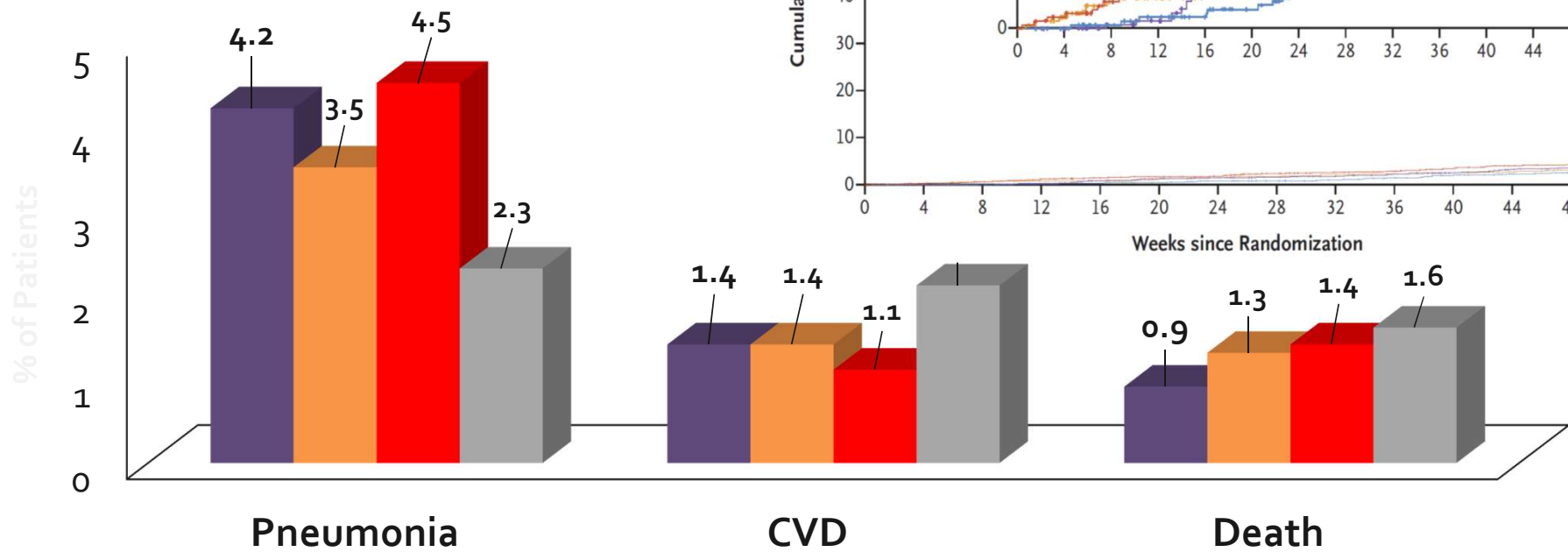
ICS INCREASES PNEUMONIA RISK



Lipson DA, et al. *N Engl J Med* 2018;378:1671-80

TRIPLE THERAPY 8

■ Triple (high) ■ Triple (lo)



CLINICAL CASE #2 - BETTY

- 73-yr-old with COPD diagnosed 5 years ago
 - post-bronchodilator FEV₁ 1.33 L (59% pred), FEV₁/FVC 0.58
- Tiotropium (Spiriva) and prn salbutamol (Ventolin)
- Recently has noticed increased SOB and activity limitation - has to stop walking after ~100 meters
- In the past 2 years...has had chest infections **3 times/year**, each eventually responding to courses of antibiotics and prednisone
- Received her pneumococcal vaccination, but won't get the 'flu shot', as it only made her sick in the past

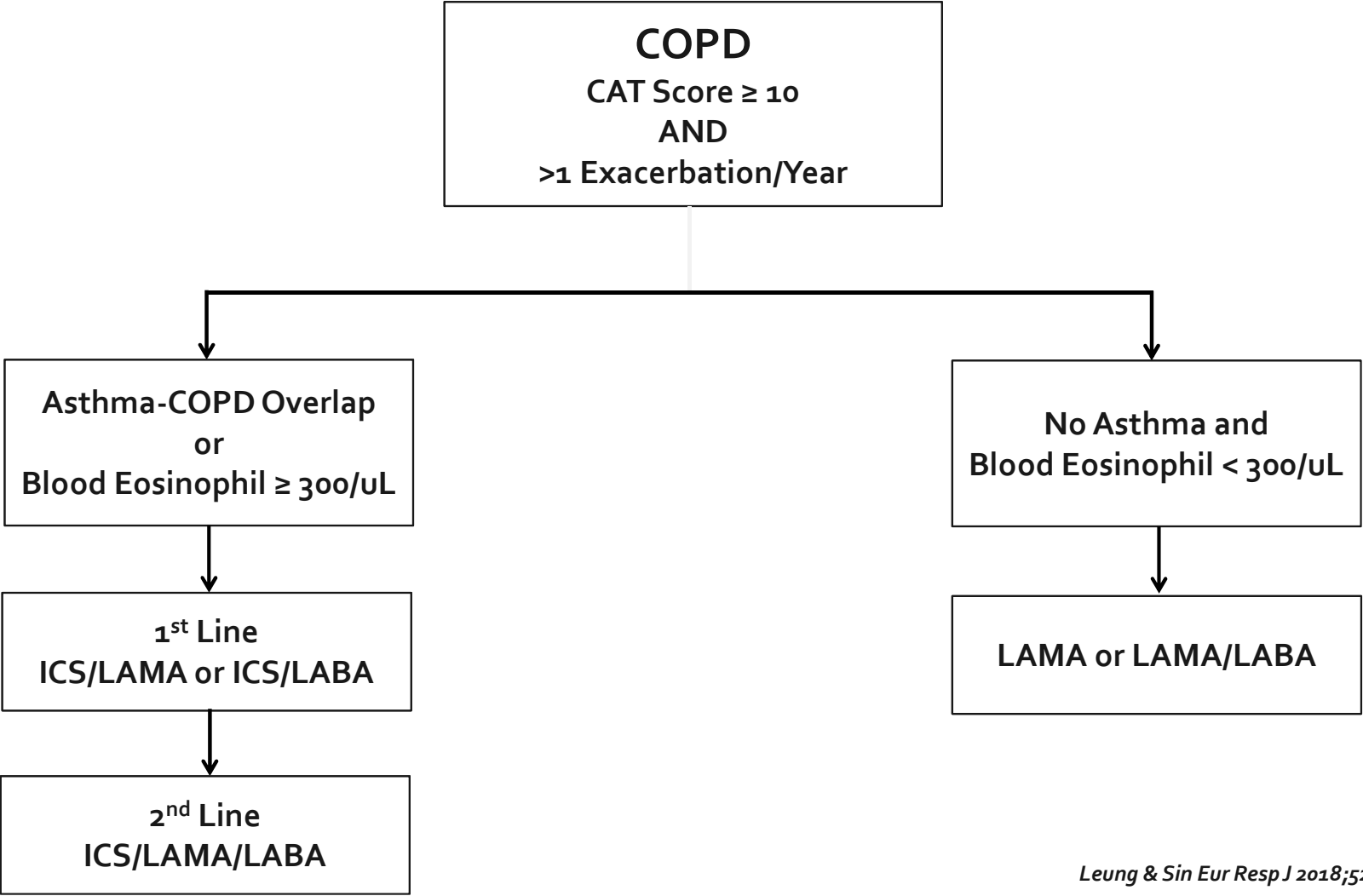
CLINICAL CASE #2 - BETTY

Question:

1. What changes, if any, would you make to Betty's pharmacologic management?

If eos $\geq 300/\mu\text{L}$ \rightarrow ICS/LABA or ICS/LAMA/LABA

If eos $< 300/\mu\text{L}$ \rightarrow LAMA/LABA



CLINICAL CASE #3 - JENNIFER

- 48-year-old female with shortness of breath, cough and wheezing that have persisted over the past 6 months.
- She is a current smoker of 1 pack of cigarettes a day and has been smoking for the last 32 years.
- She's been noticing her breathing becomes more difficult with exercise for the last year, however since a cold 6 months ago, her symptoms have progressed even further
- Does remember having some **similar symptoms as a child** but she thought she had outgrown it.
- Her spirometry shows a post bronchodilator FEV₁/FVC ratio of 0.65
 - post bronchodilator FEV₁ is 77% of predicted
 - a 12% and 265 ml increase in the FEV₁ post-bronchodilator

CLINICAL CASE #3 - JENNIFER

Question

1. How would you approach her inhaled pharmacotherapy? Justify your approach

Probably ICS/LABA or ICS/LAMA

Exciting Changes to BC COPD PharmaCare Inhaler Criteria

Home > Events > Exciting Changes to BC COPD PharmaCare Inhaler Criteria



Program

- ▶ Special Authority
 - ▶ Pharmacies
 - ▶ Device Providers
 - ▶ Health Industry Professionals
 - ▶ PharmaCare Publications
 - ▶ PharmaNet - BC's Drug Information Network
- Resources Related to Drug Programs and Policies in B.C. and Canada

Mild COPD



Moderate-to-very-severe COPD

What are the regular benefit options for monotherapy?

Regular Benefit SAMA, SABA, SAMA-SABA

Regular Benefit LAMA

What are the Limited Coverage options for monotherapy?

Limited Coverage LABA

Limited Coverage LAMA

What are the options for dual therapy?
Six-month trial of LAMA or LABA required.

Limited Coverage ICS-LABA

Limited Coverage LAMA-LABA

What are the options for triple therapy?
Six-month trial of ICS-LABA or LAMA-LABA required.

Limited Coverage ICS-LAMA-LABA

SUMMARY

- LAMA is 1st line therapy for COPD even in mild cases
- LAMA/LABA & ICS/LABA are 2nd line therapy
 - Blood eosinophils <300 cells/uL: Use LABA/LAMA
 - Blood eosinophils ≥300 cells/uL: Use ICS/LAMA
- ICS/LAMA/LABA 3rd line therapy
 - Reserved for refractory COPD
 - Hospitalized COPD
- ICS increases pneumonia risk
- ICS/LABA or “Triple Therapy” for asthma-COPD overlap