



ASTUR+IPS EN URGENCIAS

Broncodilatadores en pacientes con Insuficiencia Cardíaca Aguda.

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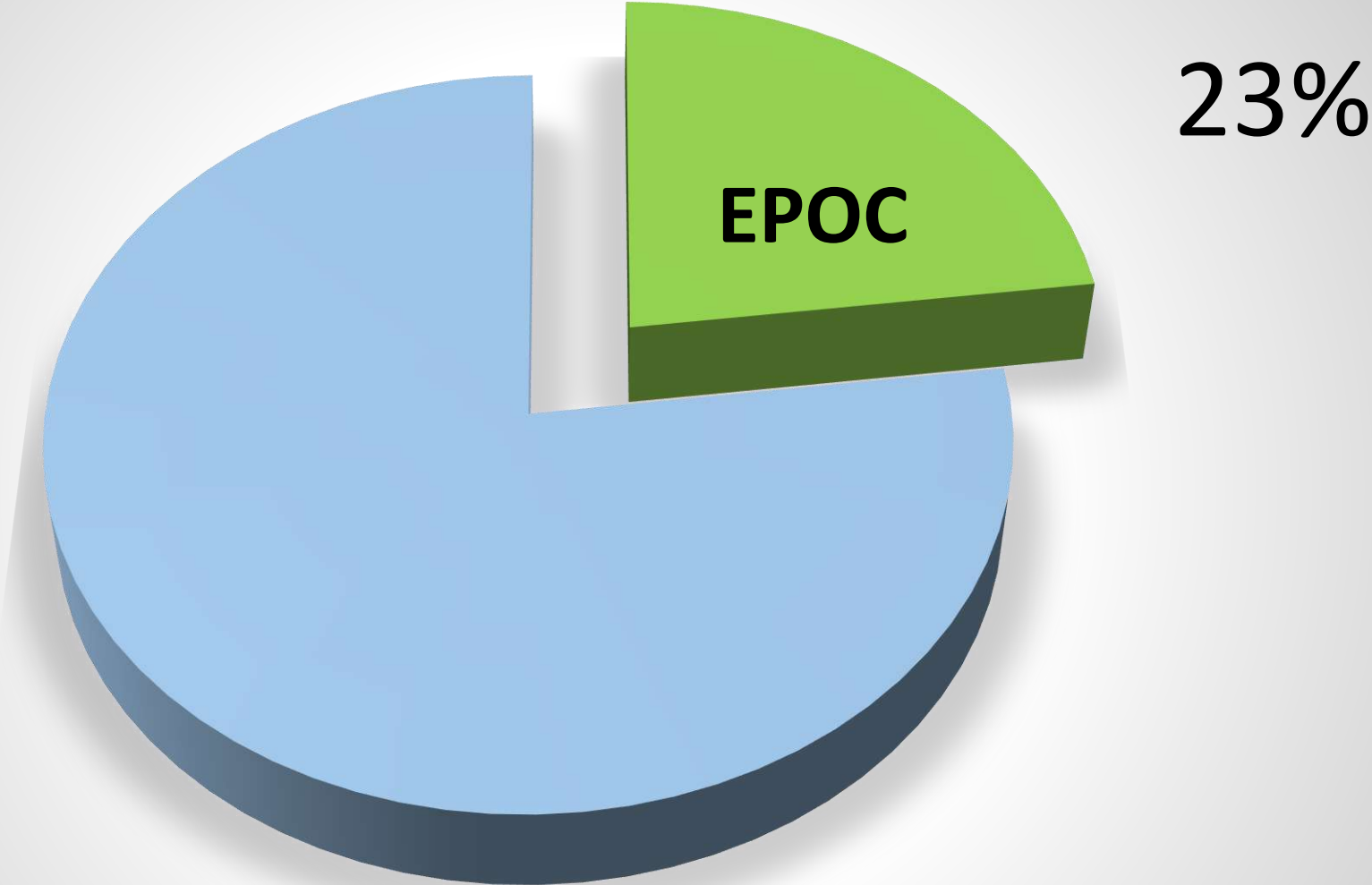
¿Qué nos lleva a usar
Broncodilatadores en
pacientes con ICA?



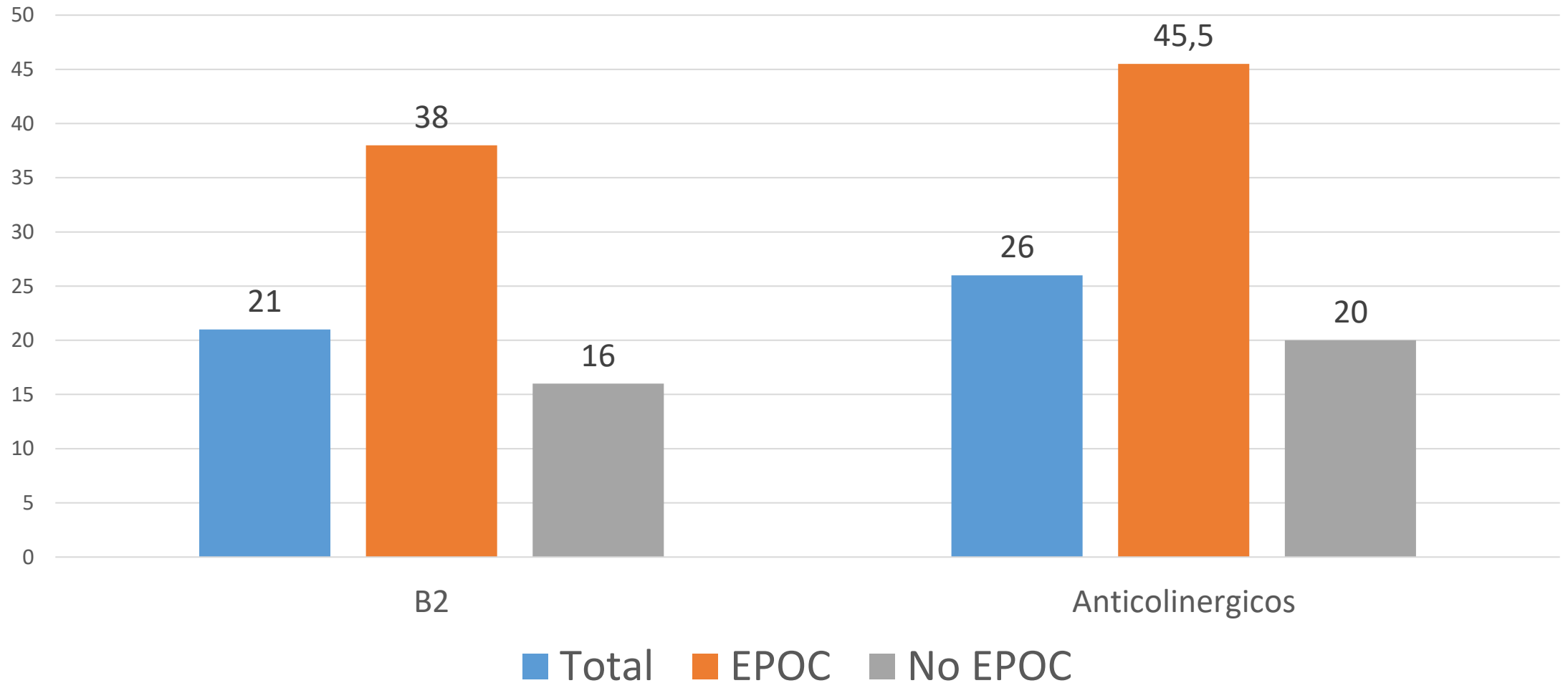
TABLE 26 Most Common Co-Occurring Chronic Conditions Among Medicare Beneficiaries With HF (N=4,947,918), 2011

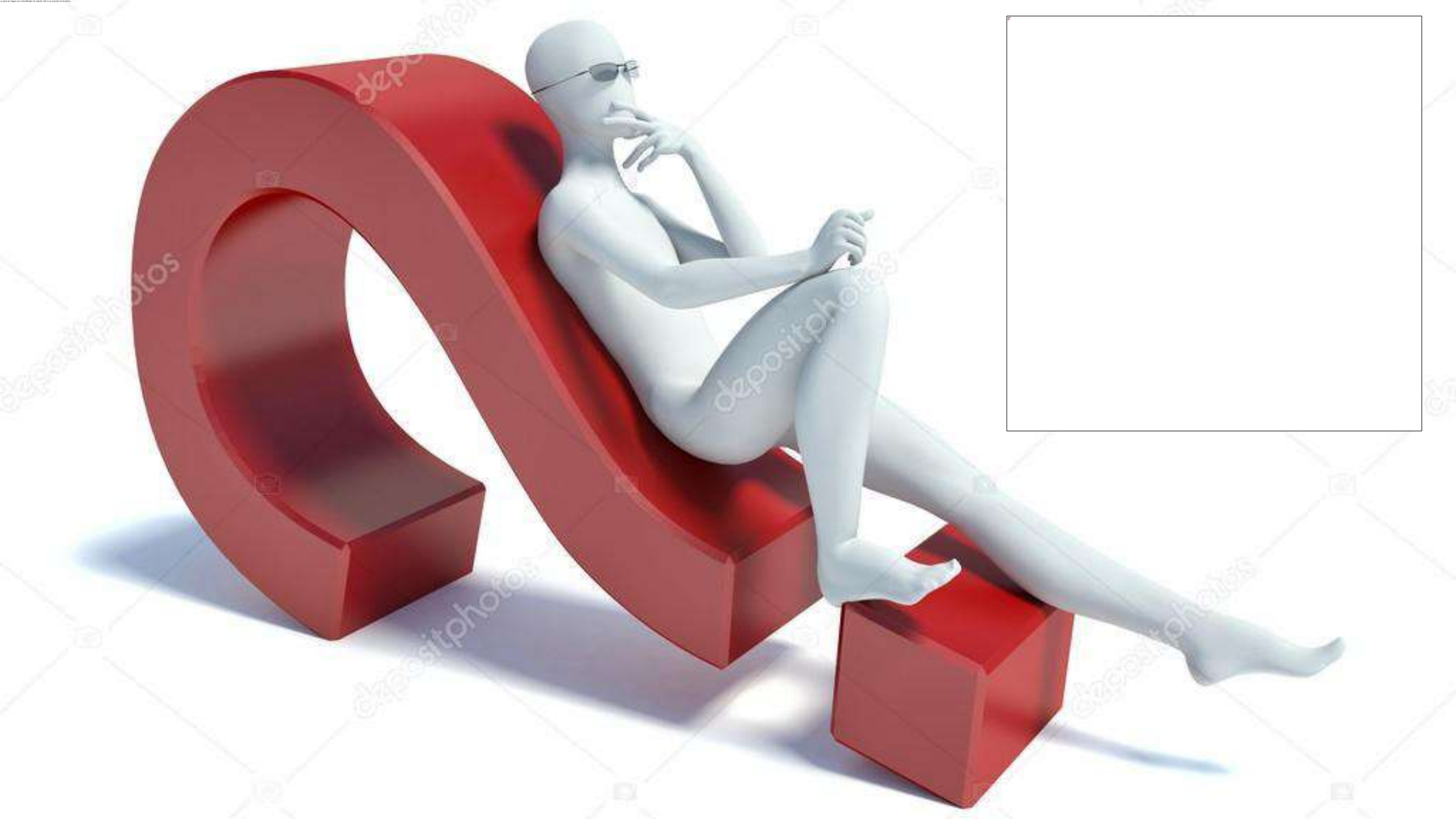
Beneficiaries Age ≥65 y (n=4,376,150)*			Beneficiaries Age <65 y (n=571,768)†		
	n	%		n	%
Hypertension	3,685,373	84.2	Hypertension	461,235	80.7
Ischemic heart disease	3,145,718	71.9	Ischemic heart disease	365,889	64.0
Hyperlipidemia	2,623,601	60.0	Diabetes	338,687	59.2
Anemia	2,200,674	50.3	Hyperlipidemia	325,498	56.9
CKD	1,851,812	42.3		284,102	49.7
				257,015	45.0
				207,082	36.2
				201,964	35.3
COPD	1,311,118	30.0		191,016	33.4
				88,816	15.5
Alzheimer's disease or dementia	1,207,704	27.6	Asthma	88,816	15.5

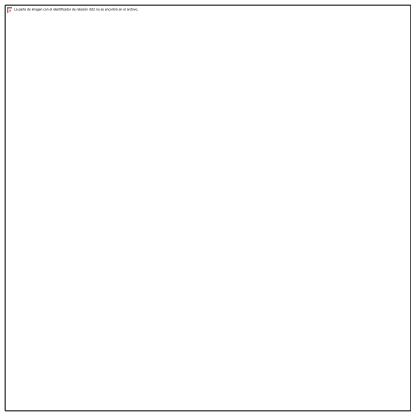
EPOC en pacientes con ICA: Registro EAHFE.



Uso de broncodilatadores en ICA: Registro EAHFE.







- Dificultad para establecer el diagnóstico de ICA vs. Agudización respiratoria.
- Formas mas graves de presentación de la descompensación de la IC.
- Presencia de hiperreactividad bronquial en la exploración.
- Mejorar la sintomatología de los pacientes.
-



¿Qué nos lleva a usar
mas anticolinérgicos en
pacientes con ICA?



Evidencia????

CARDIOLOGY/ORIGINAL RESEARCH

Bronchodilator Therapy in Acute Decompensated Heart Failure Patients Without a History of Chronic Obstructive Pulmonary Disease



21% de uso de broncodilatadores.

Table 3B. Clinical outcomes in patients with a history of COPD.

Outcome	Patients With COPD		
	Bronchodilator, N=1,275	No Bronchodilator, N=2,404	Adjusted OR (95% CI) *
Mortality, No. (%)	35 (2.7)	83 (3.5)	0.85 (0.55–1.32)
Discharged alive from ED, No. (%)	58 (4.5)	130 (5.4)	1.02 (0.72–1.46)
ICU admission, No. (%)	211 (16.5)	342 (14.2)	1.08 (0.89–1.32)
ED intravenous vasodilators, No. (%)	247 (19.4)	448 (18.6)	0.87 (0.73–1.05)
New dialysis, No. (%)	20 (1.6)	41 (1.8)	1.06 (0.60–1.87)
ED endotracheal intubation/mechanical ventilation, No. (%)	25 (2)	36 (1.5)	0.96 (0.56–1.65)
ED BiPAP, No. (%)	27 (2.1)	33 (1.4)	1.72 (1.28–2.32)
Inpatient mechanical ventilation, No. (%)	58 (4.5)	99 (4.1)	0.98 (0.69–1.38)
Median length of stay (days), median (Q1, Q3)	4.3 (2.9, 6.9)	4.3 (2.8, 7.0)	NA
Asymptomatic at discharge, No. (%)	529 (51)	989 (53.5)	0.88 [†] (0.76–1.04)

*Adjusted ORs included covariates for baseline BUN level, serum creatinine level, systolic BP, diastolic BP, pulse, age, sex, and the presence of dyspnea at rest.

[†]Denominator for bronchodilator-treated patients n=1,038; denominator for nonbronchodilator-treated patients n=1,847.

Table 3A. Clinical outcomes in patients without a history of COPD,

Outcome	Bronchodilator, N=1,042	No Bronchodilator, N=6,257	OR (95% CI) Unadjusted, Adjusted* Adjusted With Propensity Score
Mortality, No. (%)	35 (3.4)	165 (2.6)	1.28 (0.89–1.86) 1.35 (0.91–2.00) 1.02 (0.67–1.56)
Discharged alive from ED, No. (%)	48 (4.6)	443 (7.1)	0.63 (0.47–0.86) 0.82 (0.59, 1.13) 1.01 (0.72–1.41)
ICU admission, No. (%)	198 (19)	826 (13.2)	1.54 (1.3–1.83) 1.30 (1.08–1.55) 1.03 (0.85–1.25)
ED intravenous vasodilators, No. (%)	296 (28.4)	1,060 (16.9)	1.95 (1.67–2.26) 1.60 (1.36–1.87) 1.40 (1.18–1.67)
New dialysis, No. (%)	20 (2)	90 (1.5)	1.36 (0.83–2.21) 1.39 (0.83–2.32) 1.37 (0.81–2.32)
ED endotracheal intubation/mechanical ventilation, No. (%)	35 (3.4)	65 (1.0)	3.31 (2.18–5.02) 2.23 (1.45–3.45) 1.57 (0.97–2.54)
ED BiPAP	76 (7.3)	182 (2.9)	2.63 (1.99–3.46) 1.84 (1.38–2.46) 1.30 (0.95–1.78)
Inpatient mechanical ventilation, No. (%)	63 (6)	148 (2.4)	2.66 (1.96–3.59) 2.13 (1.55–2.92) 1.69 (1.21–2.37)
Median length of stay (days), median (Q1, Q3)	4.1 (2.7, 6.3)	3.9 (2.4, 6.1)	NA
Asymptomatic at discharge, No. (%) [†]	449 (55.5)	2,911 (60.1)	0.83 (0.71–0.96) 0.79 (0.68–0.92) 0.84 (0.71–0.99)

*Adjusted ORs included covariates for baseline BUN level, serum creatinine level, systolic BP, diastolic BP, pulse, age, sex, and the presence of dyspnea at rest.

[†]Denominator for bronchodilator-treated patients n=809; denominator for nonbronchodilator-treated patients n=4,846.

The BRONCH-AHF study: effects on short-term outcome of nebulized bronchodilators in emergency department patients diagnosed with acute heart failure.





Table 1 Unadjusted and adjusted ratios for primary and secondary endpoints for patients who were treated with bronchodilators compared to control group

	Raw (95% CI)	P-value	Adjusted* (95% CI)	P-value
Primary endpoint: 30-day mortality (HR)				
For patients treated with B2A	1.855 (0.944–3.644)	0.073	1.228 (0.618–2.440)	0.558
For patients treated with Ach	1.230 (0.681–2.222)	0.492	0.869 (0.478–1.582)	0.646
For patients treated with DN	1.829 (1.192–2.805)	0.006	1.398 (0.905–2.161)	0.131
Secondary endpoint: In-hospital mortality (OR)				
For patients treated with B2A	2.262 (1.027–5.005)	0.043	1.530 (0.671–3.489)	0.312
For patients treated with Ach	1.290 (0.618–2.695)	0.498	0.851 (0.396–1.830)	0.680
For patients treated with DN	1.832 (1.061–3.163)	0.036	1.345 (0.764–2.369)	0.304
Secondary endpoint: Length of stay (days) (AMD)				
For patients treated with B2A	0.510 (–1.000–2.019)	0.508	–0.350 (–1.809–0.638)	0.638
For patients treated with Ach	0.776 (–0.320–1.872)	0.165	0.121 (–0.926–1.168)	0.821
For patients treated with DN	2.427 (1.488–3.366)	<0.001	1.165 (0.239–2.090)	0.014

Ach, anticholinergics; AMD, absolute mean difference; B2A, beta2-adrenergics; CI, confidence interval; DN, dual nebulization; HR, hazard ratio; OR, odds ratio.

*The multivariate model was adjusted by age, co-morbidities such as hypertension, heart valve disease or dementia, baseline status indicators such as Barthel Index or New York Heart Association class III–IV, chronic treatment with digoxin or corticosteroids, air-room pulseoxymetry during acute episode, analytical data at the emergency department such as blood glucose, potassium or hyponatraemia, need for specific management at the emergency department with intravenous morphine, intravenous nitrates, non-invasive ventilation, and hospital admission.

Internal and Emergency Medicine
<https://doi.org/10.1007/s11739-025-04123-x>

ORIGINAL ARTICLES



Use of nebulized bronchodilators in acute heart failure: impact on outcomes



18,403 patients with AHF included in the EAHFE cohorts 4 to 8 (period of inclusion: 2014-2022)

- > 439 no data about chronic bronchodilator therapies
- > 1,003 no data about bronchodilator therapies at discharge
- > 620 no data about bronchodilator therapies used in the ED

16,609 patients with data about bronchodilator therapies

- > 3,723 with chronic pneumopathy
- > 70 with no data on comorbidities

12,816 patients without a previous diagnosis of chronic pneumopathy

- > 1,930 receiving chronic bronchodilator therapies at home
(despite not having a previous diagnosis of chronic pneumopathy)

10,886 patients not receiving chronic bronchodilator therapies at home

- > 372 discharged home with bronchodilator therapies

The BRONCH-AHF-2 study cohort:

10,514 patients with AHF and no data of chronic pneumopathy or need of bronchodilator therapy

No bronchodilator therapy in ED

8,308 (79.0%)

Bronchodilator therapy used in ED
2,206 (21.0%)

**Only beta-agonist
therapy**
305 (2.9%)

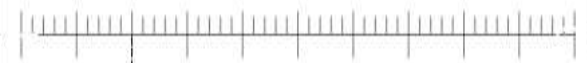
**Only anticholinergic
therapy**
776 (7.4%)

**Beta-agonist &
Anticholinergic**
1,125 (10.7%)

OR (99% CI) for unsustained use of any
bronchodilator in ED

OR (99% CI) for unsustained use of any
bronchodilator in ED

0 1 2 3 4 5

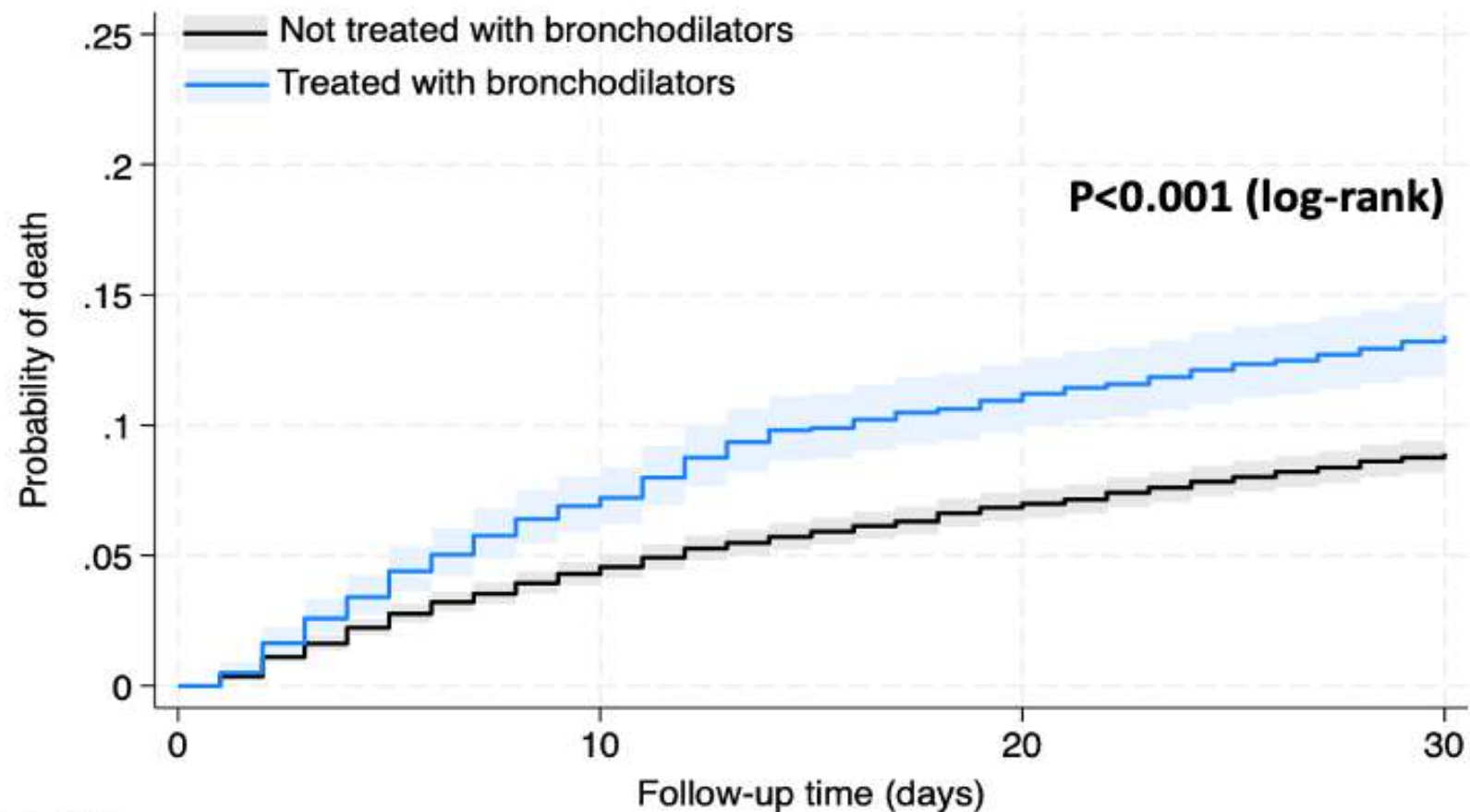


	OR	99% CI
Infection as trigger of decompensation	3.969	3.471-4.539
Low pulse-oxyetry at ED arrival	1.573	1.374-1.800
Functional impairment at baseline	1.319	1.120-1.553
Signs of low cardiac output	1.268	1.058-1.520
Hyponatremia	1.230	1.021-1.481
Hypertension (as comorbidity)	1.214	0.991-1.487
Cerebrovascular disease	1.059	0.871-1.287
Chronic kidney disease	1.050	0.888-1.240
Age ≥80 years	1.026	0.875-1.203
On chronic treatment with MRA	1.026	0.847-1.244
Sex male	1.011	0.870-1.174
NT-proBNP >5.000 pg/mL	1.004	0.831-1.212
Valve heart disease	0.989	0.846-1.157
Hypertension at ED arrival (>160 mmHg)	0.987	0.833-1.170
Previous episodes of AHF	0.984	0.849-1.142
Renal dysfunction (creatinine >1.3 mg/dL)	0.980	0.832-1.155
Pulmonary congestion on chest X-ray	0.967	0.827-1.130
Anemia	0.952	0.827-1.096
Reduced LVEF (<50%)	0.948	0.781-1.150
On chronic treatment with beta-blockers at home	0.929	0.806-1.071
Pleural effusion on chest-X ray	0.915	0.776-1.078
Atrial fibrillation (as comorbidity)	0.914	0.771-1.083
Atrial fibrillation in the ECG	0.899	0.760-1.065
Coronary artery disease	0.862	0.730-1.017
Leg edema	0.862	0.749-0.992
On chronic treatment with digoxin at home	0.840	0.661-1.067

Subgroup analysis according to the type of bronchodilator

Subgroup analysis according to the type of bronchodilator

Only Beta-agonists		Only Anticholinergics		Beta-agonists & Anticholinergics	
OR	99% CI	OR	99% CI	OR	99% CI
3.803	2.763-5.234	3.058	2.491-3.754	4.865	4.054-5.839
1.740	1.253-2.417	1.409	1.147-1.730	1.652	1.378-1.980
1.336	0.894-1.997	1.329	1.030-1.716	1.281	1.028-1.596
1.282	0.855-1.923	1.209	0.919-1.592	1.259	0.994-1.593
0.979	0.627-1.527	1.198	0.905-1.585	1.359	1.077-1.716
1.314	0.810-2.133	1.106	0.814-1.503	1.274	0.971-1.671
1.011	0.648-1.579	1.186	0.891-1.579	0.945	0.727-1.228
0.946	0.641-1.395	0.977	0.758-1.260	1.130	0.910-1.403
1.415	0.949-2.112	0.863	0.682-1.092	1.112	0.898-1.378
1.255	0.819-1.921	1.088	0.820-1.444	0.903	0.692-1.180
1.062	0.750-1.505	0.993	0.792-1.246	1.024	0.840-1.247
1.125	0.769-1.647	1.019	0.733-1.417	0.951	0.749-1.208
0.921	0.635-1.335	0.937	0.740-1.188	1.080	0.879-1.327
1.285	0.884-1.867	0.849	0.649-1.109	1.004	0.804-1.253
0.916	0.648-1.293	0.844	0.674-1.055	1.102	0.906-1.341
0.900	0.615-1.317	0.958	0.748-1.226	1.011	0.815-1.255
0.961	0.675-1.370	1.017	0.798-1.296	0.920	0.743-1.140
0.926	0.667-1.285	1.082	0.874-1.341	0.869	0.721-1.047
1.013	0.663-1.546	0.949	0.725-1.242	0.935	0.716-1.222
1.038	0.746-1.445	1.016	0.819-1.259	0.853	0.706-1.031
1.022	0.697-1.500	0.784	0.611-1.007	0.997	0.804-1.236
0.885	0.595-1.317	0.906	0.700-1.171	0.916	0.732-1.147
1.064	0.720-1.572	1.124	0.869-1.454	0.751	0.602-0.937
1.006	0.690-1.465	0.767	0.594-0.990	0.904	0.727-1.123
0.751	0.545-1.036	0.950	0.766-1.177	0.830	0.691-0.998
1.155	0.693-1.925	0.815	0.568-1.169	0.790	0.566-1.103



Patients at risk (n)

No bronchodilators. 8293

Bronchodilators. 2204

7932

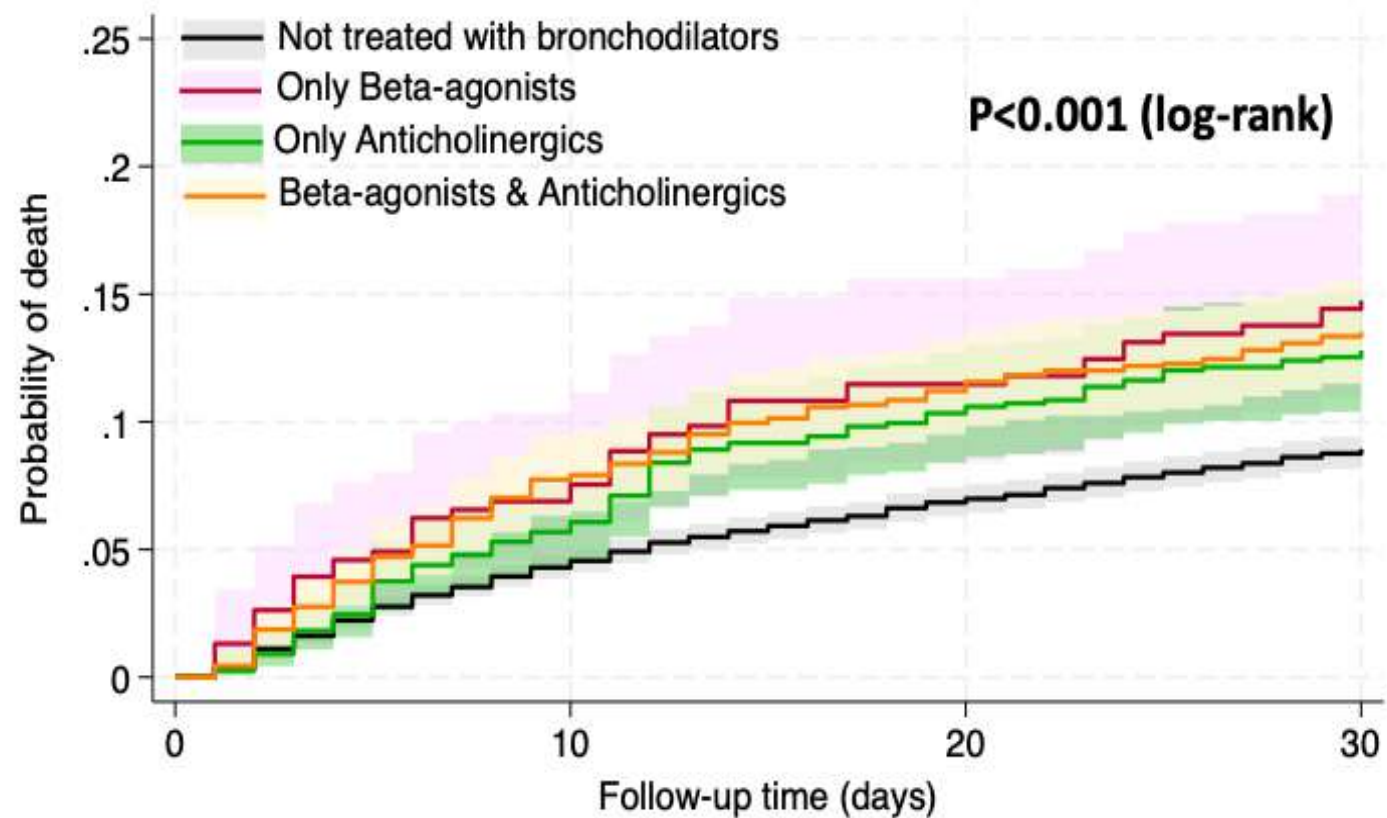
2051

7715

1961

7545

1907



Patients at risk (n)				
No bronchodilators.	8293	7932	7715	7545
Only Beta-agonists.	305	284	270	261
Only Anticholinergics.	774	730	694	677
Beta-agonists & Anticholinergics.	1125	1037	997	969

Conclusión

- 1.
- 2.
- 3.

1.

Los médicos de urgencias deberíamos **dejar de pautar** broncodilatadores a pacientes con ICA sin antecedentes de patología pulmonar, porque esta práctica se relaciona con un aumento de eventos adversos.