

# FAERS Database Insights:

## Revisiting the $\beta$ -Blockers and Asthma Association



### Background: The Study at a Glance

**Data Source:** 251,145 Adverse Event (AE) reports on beta-blockers.

**Asthma Cases Identified:** 4,104 (1.63%)

**Objective:** To assess the safety of beta-blockers in asthma

Analysed 251,145 AE reports on beta-blockers to interpret asthma-related risks

### Key Findings: Selective $\beta_1$ -Blockers: A Hidden Risk?

Higher risk of Asthma-related AEs despite cardioselectivity.

Reporting odds ratio (ROR):  
1.15→Patients were 15% more likely to develop Asthma symptoms.

#### High-Risk Drugs:

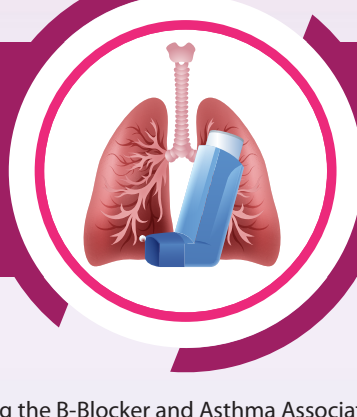
◆ Betaxolol (ROR: 2.60)

◆ Bisoprolol (ROR: 1.65)



### Non-Selective Beta-Blockers: Safer Than Expected?

Moderate risk, lower than selective  $\beta_1$ -blockers.  
ROR: 0.90→10% lower asthma risk than selective  $\beta_1$ -blockers.



#### Safer Choices:

○ Nadolol (ROR: 0.38)

○ Propranolol (ROR: 0.87)

### Dual $\alpha$ - & $\beta$ -Blockers: The Safest Option?

Lowest Asthma risk among all beta-blockers.

ROR: 0.51→49% lower risk of Asthma-related AEs.

#### Preferred Drugs:

◆ Labetalol (ROR: 0.66)

◆ Carvedilol (ROR: 1.52)



### Hydrophilic Beta-Blockers: Lower Lung Penetration = Lower Risk

Reduced bronchospasm risk due to minimal lung penetration.

#### Safer Choices:

Atenolol  
(ROR: 1.35)



Nadolol  
(ROR: 0.73)

### Lipophilic Beta-Blockers: Risk Varies!

Higher lung penetration = Increased Asthma risk in susceptible individuals.

High-Risk Drug:  
Propranolol (ROR: 2.10)

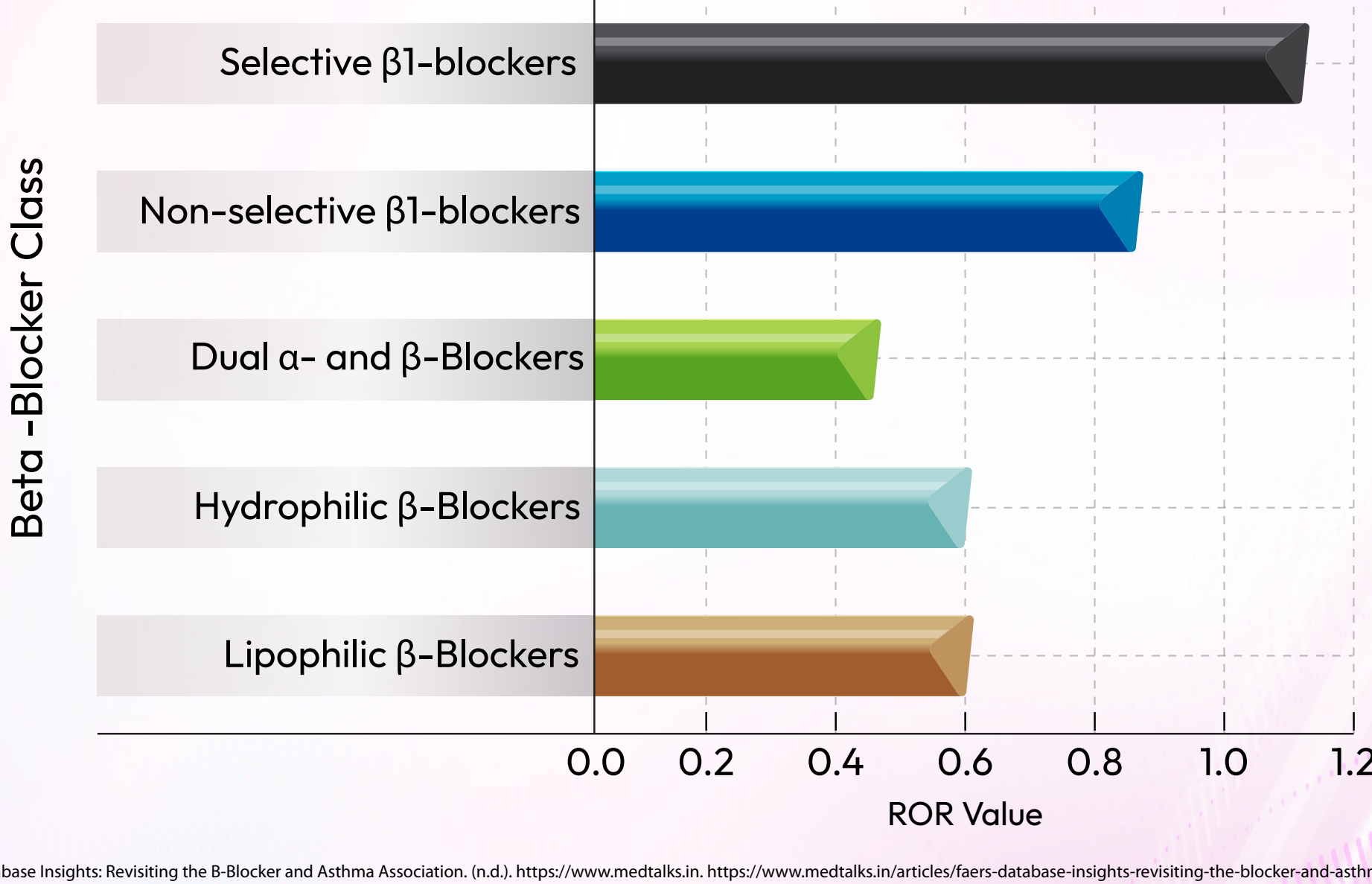


Lower-Risk Drug:  
Labetalol (ROR: 0.44)

### Summary: Beta-Blocker Safety in Asthma

Beta-Blocker Class	ROR Value	Asthma Risk Level
Selective $\beta_1$ -Blockers	1.15	High Risk
Non-Selective $\beta$ -Blockers	0.90	Moderate Risk
Dual $\alpha$ - & $\beta$ -Blockers	0.51	Low Risk
Hydrophilic $\beta$ -Blockers	0.71	Low-Moderate Risk
Lipophilic $\beta$ -Blockers	0.76	Low-Moderate Risk

#### Reporting Odds Ratio (ROR) of Beta-Blockers and Asthma Risk



### Beta-Blocker Selection in Asthmatics: Safe vs. High-Risk Choices

#### Preferred Agents (Lower Risk)

Esmolol, Metoprolol, Nebivolol, Nadolol  
→ Safer with minimal respiratory impact

#### Caution Required (Higher Risk)

Betaxolol, Bisoprolol, Timolol, Propranolol  
→ Associated with increased bronchospasm risk

#### Clinical Takeaway

Choose beta-blockers strategically to balance cardiovascular benefits with pulmonary safety.

#### Conclusion

Thoughtful beta-blocker selection is essential to optimize cardiovascular benefits while minimizing pulmonary risks in asthmatic patients.

Striking the right balance—cardiovascular care without compromising breath.