



BIOLOGICS CURRENTLY APPROVED OR IN PHASE III TRIALS FOR THE TREATMENT OF ASTHMA

Drug	Phase	Dosing	Frequency	Route	Exacerbation Reduction Rate	Increased from Baseline in FEV ₁
Omalizumab¹	Approved 2003	125mg – 375mg (depending on weight/ IgE level)	Q2W or Q4W (depending on weight/ IgE level)	Sub-Q	33-75%	Not Significant
Mepolizumab²	Approved 2015	100 mg	Q4W	Sub-Q	53%	98 ml
Reslizumab³	Approved 2016	3.0 mg/kg	Q4W	IV	50-59%	110-126 ml
Dupilumab⁴	Approved 2017 for Atopic Dermatitis; Phase III for asthma	Variable depending on study	Loading dose, then weekly, Q2W or Q4W depending on study	Sub-Q (self-administration at home for atopic dermatitis)	59.9-80.7%	390-430ml
Benralizumab⁵	Phase III	30 mg	Q4W or Q8W (first 3 doses every 4 weeks)	Sub-Q	36-55% (Q4W frequency) 28-70% (Q8W frequency)	0-125 ml

¹Busse W, Corren J, Lanier BD, et al. (2001). Omalizumab, anti-IgE recombinant humanized monoclonal antibody, for the treatment of severe allergic asthma. *The Journal of allergy and clinical immunology* 108:184-90.

²Hanania MA, Alpan O, Hamilos DL, et al. (2011). Omalizumab in severe allergic asthma inadequately controlled with standard therapy: a randomized trial. *Annals of internal medicine* 154:573-82.

³Rodrigo GJ, Nieffen H, Castro-Rodriguez JA. (2011). Efficacy and safety of subcutaneous omalizumab vs placebo as add-on therapy to corticosteroids for children and adults with asthma: a systematic review. *Chest* 139:28-35.

⁴Katyal, RK, Bensch GW, Busse WW, et al. (2016). Changing Paradigms in the Treatment of Severe Asthma: The Role of Biologic Therapies. *The Journal of Allergy and Clinical Immunology: In Practice*, 5(2), S1-S14.

⁵Wenzel S, Castro M, Corren J, et al. (2016). Dupilumab efficacy and safety in adults with uncontrolled persistent asthma despite use of medium-to-high-dose inhaled corticosteroids plus a long-acting β_2 agonist: a randomized double-blind placebo-controlled pivotal phase 2b dose-ranging trial. *Lancet* 388(10009):21-44.