

SELECTION CRITERIA FOR PERSONALIZED TREATMENT IN SEVERE ASTHMA

Start with non-invasive testing

(allergy testing, IgE level, blood eosinophil count and FeNO level)

- If poor response to therapy continues, consider induced sputum differential for eosinophil and neutrophil counts and/or bronchoscopy with endobronchial biopsy and BAL



Non-Type 2 Endotype

Neutrophilic airway inflammation or Paucigranulocytic (non-inflammatory)

Biomarkers

- No T2 biomarkers
- Blood eosinophil <150 μ L **AND**
- FeNO < 20 ppb **AND**
- Sputum or BAL eosinophil < 2%

OR

If sputum BAL neutrophils also < 40-60% = paucinflamatory

Associated Phenotypes

- Obesity
- Smoking History
- Infections
- Lack of response to corticosteroids

Treatment

- Weight loss
- Bariatric surgery
- Macrolide antibiotics
- Bronchial Thermoplasty
- Secretion clearance
- Pulmonary rehabilitation
- Possible Anti-TSLP or other non-experimental therapies such as Anti-IL-6 or Anti-IL-17



Type 2 Endotype

IL-4, IL-5, IL-13 or IgE mediated inflammation with high eosinophils or FeNO*
*Fractional nitric oxide concentration in exhaled breath.

Biomarkers

- Blood eosinophils > 150 μ L
- FeNO > 20 ppb
- Sputum or BAL eosinophils > 2%
- Elevated IgE

Associated Phenotypes

- Early age onset
- History of allergies
- Chronic Rhinosinusitis/Nasal Polyps

Patient-centered consideration for choosing a biologic:

1. Frequency of administration
2 vs 4 vs 8 weeks
2. Location of administration Home vs. Office
3. Insurance and co-payment
4. Other comorbidities
5. Pregnancy*

*Only omalizumab is assigned to pregnancy category B by the FDA

Type 2 patients with:

Select Add-on Biologic Therapy

Allergic Eosinophilic Asthma

Anti-IgE	Omaliuzumab
Anti-IL-5	Mepolizumab, Reslizumab
Anti-IL-5Ra	Benralizumab
Anti IL-4/13	Dupilumab

Allergic Noneosinophilic Asthma

Anti-IgE	Omaliuzumab
Anti IL-4/13	Dupilumab

Eosinophilic Asthma who:

- Are nonallergic **OR**
- Do not respond to anti-IgE treatment **OR**
- Are out of dosing range for anti-IgE treatment

Anti-IL-5	Mepolizumab, Reslizumab
Anti-IL-5Ra	Benralizumab
Anti IL-4/13	Dupilumab

OCS Dependence

Anti-IL-4/13	Dupilumab
Anti-IL-5	Mepolizumab*
Anti-IL-5Ra	Benralizumab*

*but other Anti-IL-5 and Anti-IL-5Ra have shown efficacy

Considerations for Related Type 2 Phenotypes

- Atopic Dermatitis Anti-IL-4/13 Dupilumab
- Chronic Idiopathic Urticaria Anti-IgE Omaliuzumab
- Chronic Rhinosinusitis and Nasal Polyps Anti-IL-4/13 Dupilumab*