A 43-YEAR-OLD WOMAN WITH CHRONIC NASAL CONGESTION AND ASTHMA

OBJECTIVES

Following the completion of this program, the participant should be able to:

1. describe the differential diagnosis and underlying pathophysiology of nasal polyps, including AERD and associated eosinophilia.
2. design a medical treatment plan for a patient with severe asthma and CRScNP
3. discuss the optimal timing of medical and surgical treatment options for CRScNP/AERD

Pam is a 43-year-old elementary school teacher who presents to your office with chief complaint that "I always feel like I have a cold." She remembers developing a "bad sinus infection" 3 years ago, and since then she has seemed to have almost constant bilateral nasal congestion (blockage). Her symptoms are perennial, worse in the fall and winter. About twice per year she will develop acute worsening of nasal congestion in association with purulent nasal drainage (without fever). She has tried several OTC cold remedies, but they always seem to exacerbate her nasal congestion. Usually during these episodes an antibiotic will provide some relief; however, she says that she improves more quickly when prednisone is prescribed with the antibiotic. At the current time she has been off antibiotics for over a month and isn't sure that the last course of antibiotics helped that much. She is still very stuffy.

When her nasal symptoms worsen, her asthma often flares, requiring her to use an albuterol inhaler 2-3 times per day for a couple of weeks. She has tried OTC cetirizine on a daily basis without much benefit. For the last 3 months she has been on generic mometasone furoate 50mcg, 2 sprays per nostril twice daily, but she doesn't feel that it is working.

HISTORY (continued)

Review of Systems- Notable for greatly diminished sense of smell and taste for the last 3 years.

Past Medical History- She has "life-long" asthma, but it used to be worse (daily wheezing/SOB and nightly nocturnal albuterol use) prior to stepping up to a combination dry powder inhaler (DPI) containing fluticasone propionate/salmeterol (FP/SAL), 500/50 mcg, one puff twice a day. In recent years, except for during "sinus infections," she has needed albuterol, on average, no more than twice per week. However, whenever she tries to reduce the dose of her FP/SAL treatment, symptoms return with the previous frequency. No ER visits nor oral corticosteroids have been required specifically for asthma in the past year.

Drug Allergies- NKDA

Environmental History- She lives with her husband in a 5-year-old home in the suburbs. There are hard wood floors throughout the home and no pets. Her mattress and pillows are relatively new. She blames much of her illness on the old school building where she works. Apparently, it is “dirty and smells musty.” However, she is no better on the weekends away from the workplace. She denies any other environmental triggers.

Family History- Significant for her father having hay fever and her mother having osteoporosis.

PHYSICAL EXAM

Pam is a well appearing Caucasian female in no acute distress.

VS. RR 14 HR 82 Ht. 5' 10" Wt. 220 lb. (100 kg) T 98F

EYES- Bilateral infraorbital puffy/dark "shiners"

TMs- Normal

Nose- On nasal speculum exam, edematous mucosa is present bilaterally with scant purulent rhinorrhea on the right. There is glistening polypoid tissue present on the right, extending into the nasal cavity below the edge of the middle turbinate, but not below the inferior edge of the inferior turbinate. The septum is moderately deviated to the left. No polyps visualized on left.

Face- no tenderness to palpation over the maxillary areas bilaterally.

Pharynx- normal

Chest- clear

Extremities- normal

TEST RESULTS

SKIN TESTS- significant positives by prick testing (or serum IgE panel to respiratory allergens) include: Aspergillus fumigatus, as well as multiple pollens (tree, grass and ragweed).

SPIROMETRY-

BASELINE		POST B.D.
FVC	97 %(of predicted)	+ 2%
FEV1	75% (of predicted)	+ 13%
FEV1%	65%	incr. to 77%
FEF 25-75	55% (of predicted)	+ 30%

FeNO = 55ppb (Nl < 25ppb)

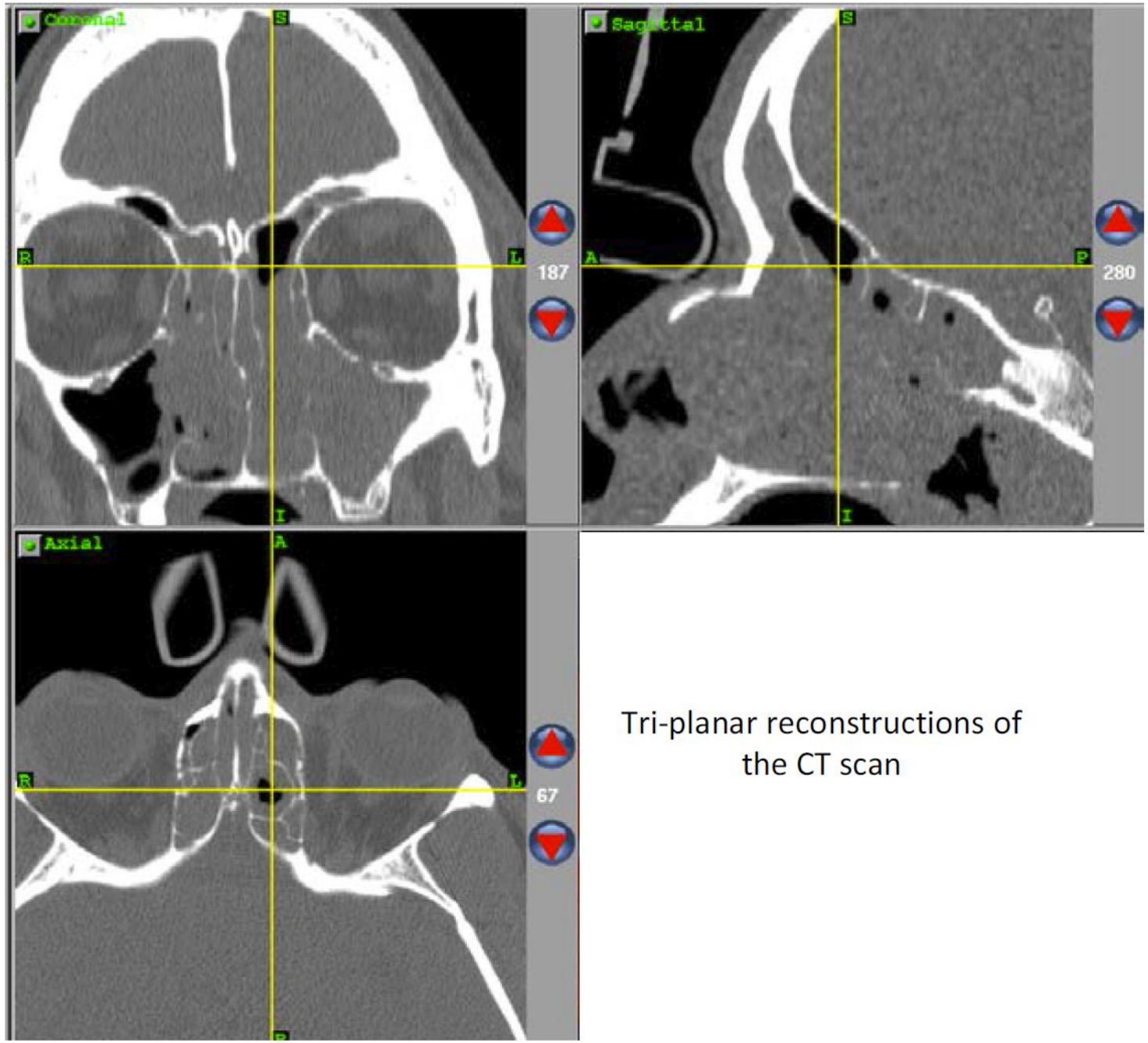
NASAL CYTOLOGY- Predominantly eosinophils with occasional clumps of neutrophils (some containing bacteria) and few mononuclear cells.

CHEST XRAY- previously done several months ago at a yearly physical exam was totally normal.

IMMUNE STUDIES-
CBC: CBC w/ DIFF: H/H = 14/42; WBC = 8,400; EOS = 4.8% (AEC = 400)

Normal Total IgG, A, & M; IgE=300 IU
Pneumococcal, H.Influenza B and Tetanus antibody titers = normal/protective levels.

Nasal endoscopy- reveals multiple nasal polyps bilaterally



Tri-planar reconstructions of the CT scan

ASSUME THAT YOU HAVE TRIED AGGRESSIVE MEDICAL THERAPY OVER SEVERAL MONTHS, BUT HER NASAL SYMPTOMS CONTINUE TO BE UNACCEPTABLY SYMPTOMATIC.

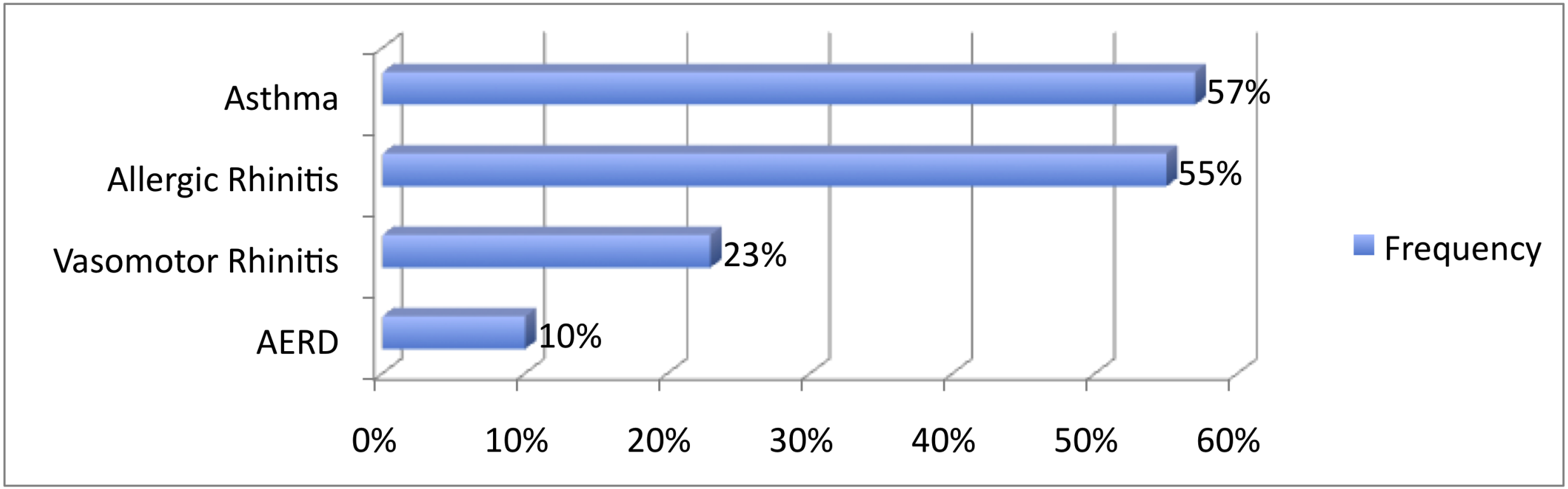
WHAT INTERVENTIONS WOULD YOU RECOMMEND FOR HER CRSwNP?

Interventions for Refractory Rhinosinusitis

- Enhancing topical corticosteroid therapy
  - Nebulized budesonide
  - Fluticasone delivered via Xhance
- Biologic agent
  - Duplilumab
  - Omalizumab
- Aspirin desensitization

Sinusitis in an Allergist's Office: 200 Cases

- Age = 3-80, mean = 43 years
- 62% female



McNally P, White M, Kaliner M. Sinusitis in an allergist's office. Allergy Asthma Proc 1997; 18: 169-75.

Immunodeficiency

- Important to consider in any patient with chronic refractory or recurrent sinusitis.
- Most common
  - IgA deficiency
  - Common Variable Immune Deficiency
    - Suspect in patients with concomitant otitis media, bronchitis, pneumonia, bronchiectasis.
    - Dx: Assessment of functional capacity.
- Others
    - Wiskott-Aldrich
    - Ataxia Telangiectasia

Slavin R, et al. The Diagnosis and Management of Sinusitis: A Practice Parameter. J Allergy Clin Immunol 2005; 116: S13-47.

MANAGEMENT OF RHINOSINUSITIS

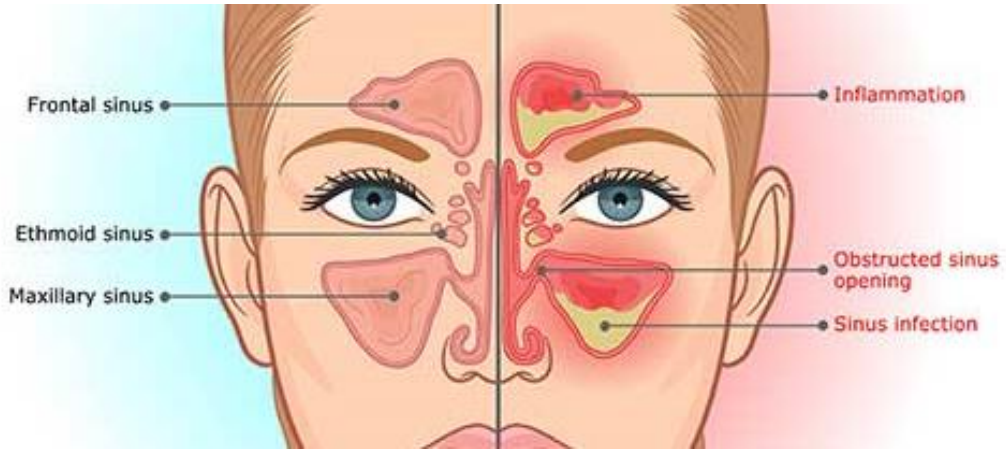
The Evidence

BSACI Guidelines

Therapeutic Agent	Grade of Recommendation
Nasal saline irrigation	A
Topical corticosteroid	A
Oral antihistamine (allergic patients)	A
Anti-mycotics (topical)	D
Oral antibiotics (short term)	C
Decongestant (oral/topical)	D
Mucolytics	C
Corticosteroid – oral	D
Proton pump inhibitors	D

Scadding G, et al. Clin Exp Allergy 2007; 38: 260-75.

RCT: Double-Blind



Rhinosinusitis: Biologic Agents

	No. of RCTs	Outcomes
Dupilumab	6	Symptom scores, polyp scores, olfaction, QOL, Imaging scores, OCS, Sinus surgery
Omalizumab	4	Symptom scores, polyp scores, olfaction, QOL, Imaging scores, OCS, Sinus surgery

https://www.oxygenconcentratorstore.com/breathe-easy/disease-info/sinutsitis/

Rhinosinusitis: Biologic Agents

	No. of RCTs	Outcomes
Dupilumab	Fujieda 2021 Laidlaw 2021 Maspero 2020 Bachert 2019 Bachert 2019 Bachert 2016	Symptom scores, polyp scores, olfaction, QOL, Imaging scores, OCS, Sinus surgery
Omalizumab	Gevaert 2020 Gevaert 2020 Gevaert 2013 Pinto 2010	Symptom scores, polyp scores, olfaction, QOL, Imaging scores, OCS, Sinus surgery

Rhinosinusitis: Biologic Agents & ASA Desensitization

	No. of RCTs	Outcomes
Dupilumab	Fujieda 2021 Laidlaw 2021 Maspero 2020 Bachert 2019 Bachert 2019 Bachert 2016	Symptom scores, polyp scores, olfaction, QOL, Imaging scores, OCS, Sinus surgery
Omalizumab	Gevaert 2020 Gevaert 2020 Gevaert 2013 Pinto 2010	Symptom scores, polyp scores, olfaction, QOL, Imaging scores, OCS, Sinus surgery
Aspirin desensitization	Stevenson 1984 Fruth 2013 Swierczynska-Krepa 2014 Esmaeilzadeh 2015 Mortazavi 2017	Symptom scores, polyp scores, olfaction, QOL, Imaging scores, OCS, Sinus surgery, Untoward effects of ASA

TABLE I. Consumption of medications at the time of entry into the study (25 patients)

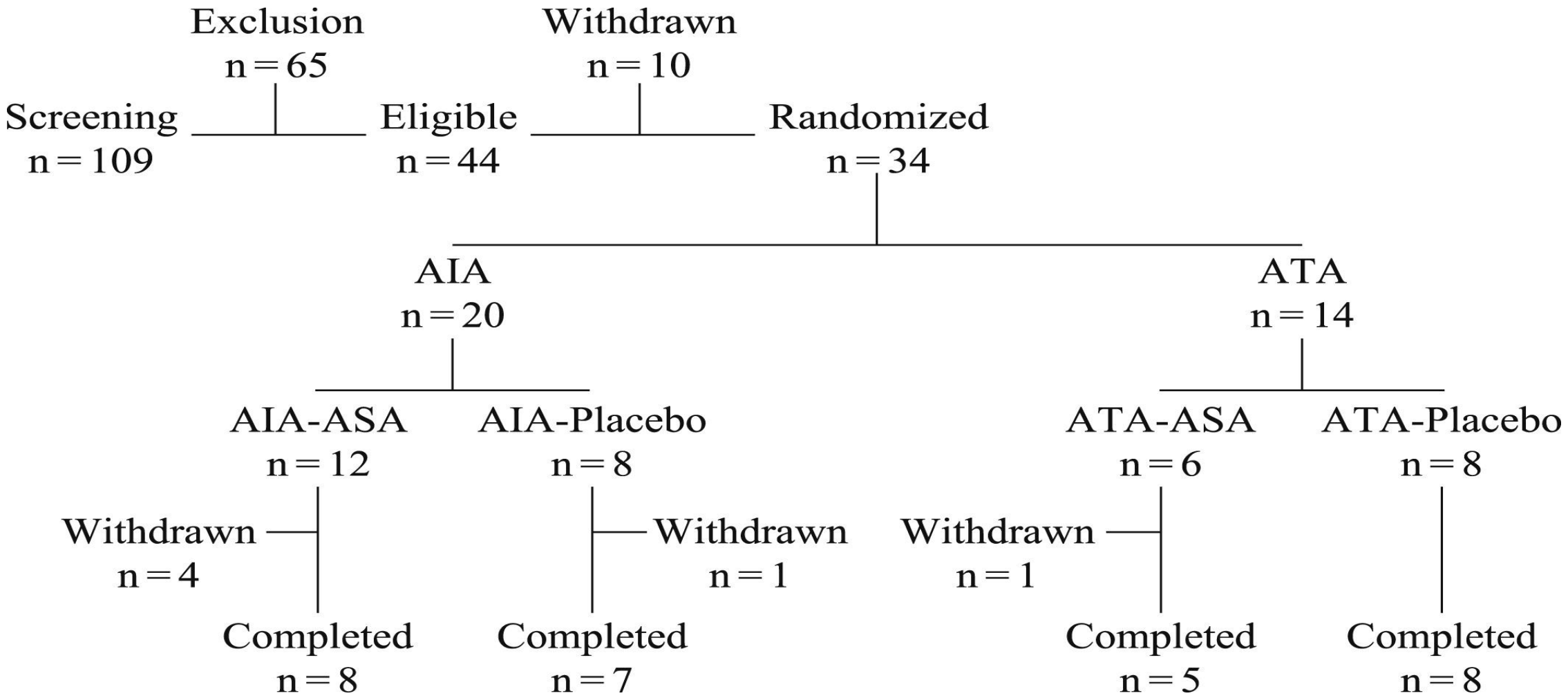
Medication	No. patients	Mean dosage per day
Prednisone (q.d.)	8	20 mg
Prednisone (q.o.d.)	8	9 mg*
Oral beclomethasone	14	361 μg
Nasal beclomethasone	12	188 μg
Theophylline	19	656 mg
Oral beta agonists	6	19 mg
Antihistamine/decongestant	13	—
Antibiotics	1	4 tablet
Cromolyn sodium	0	—

*q.o.d. = 18 mg.

Stevenson DD, et al. J Allergy Clin Immunol 1984; 73: 500-507.

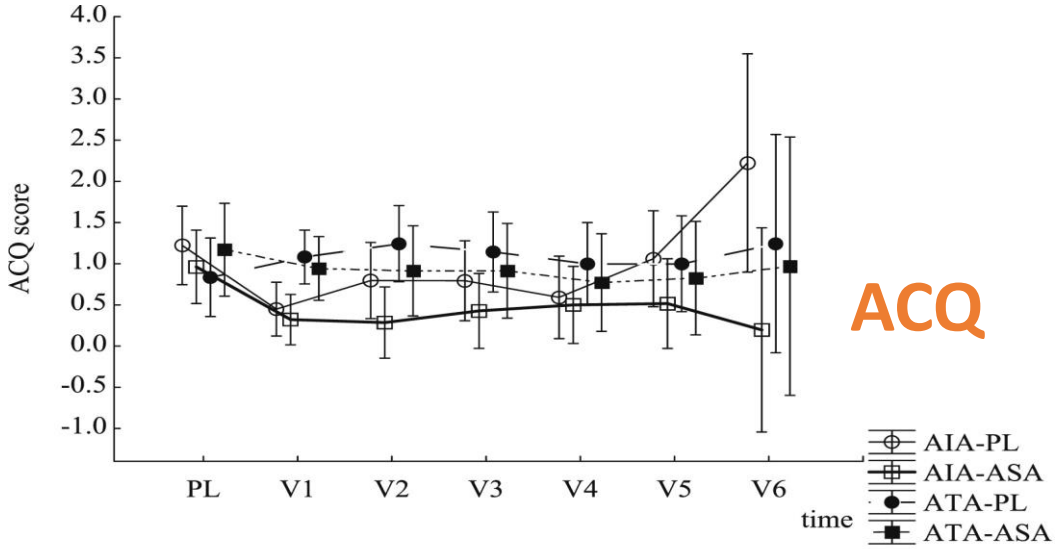
Aspirin Desensitization

Randomized Double Blind Placebo Controlled Study

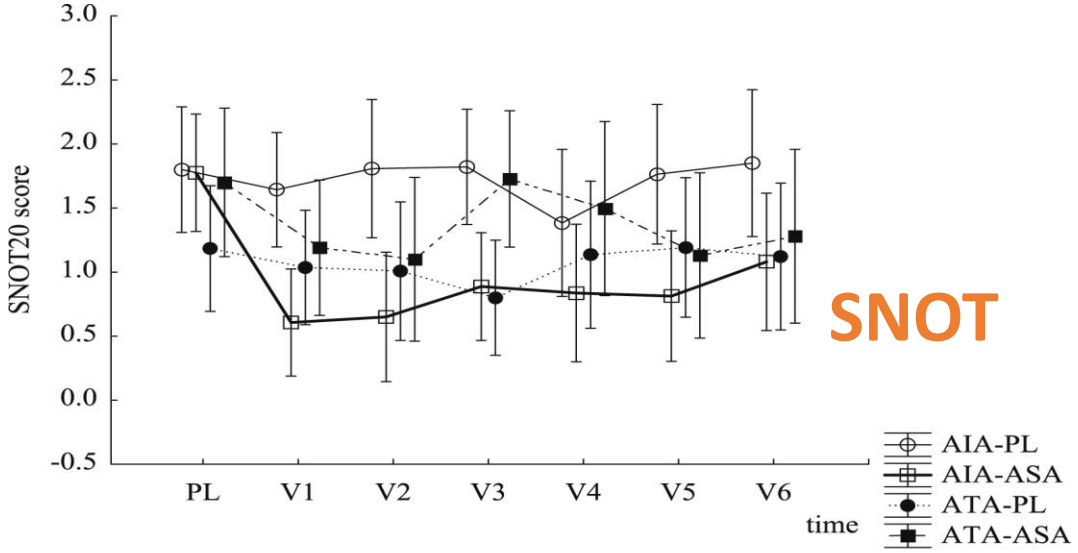


Swierczynska-Krepa M, et al. J Allergy Clin Immunol 2014; 134: 883-90.

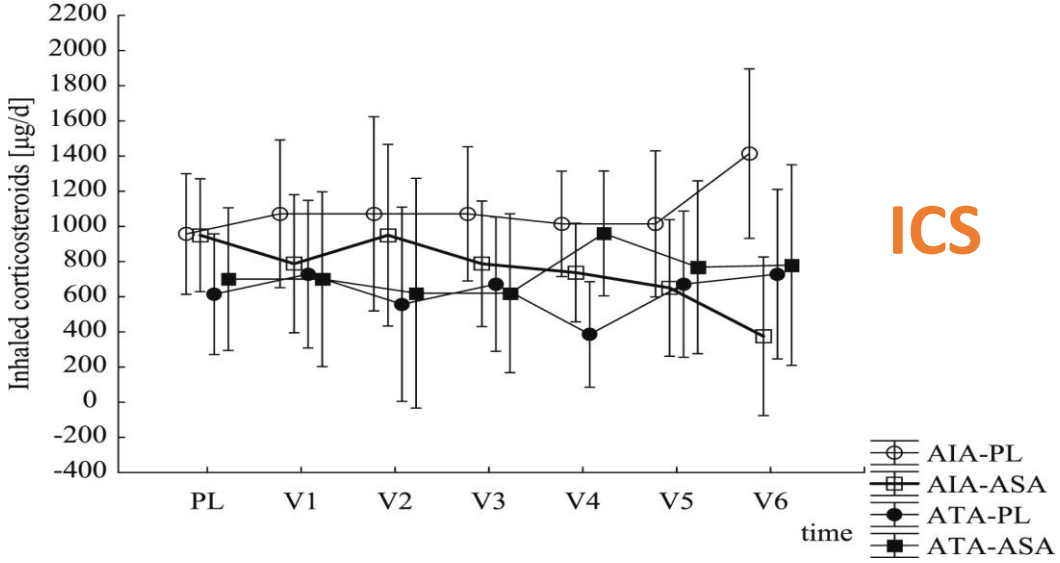
Statistically Significant Improvement at 6 Months in Subjects Randomized to Aspirin Desensitization Treatment



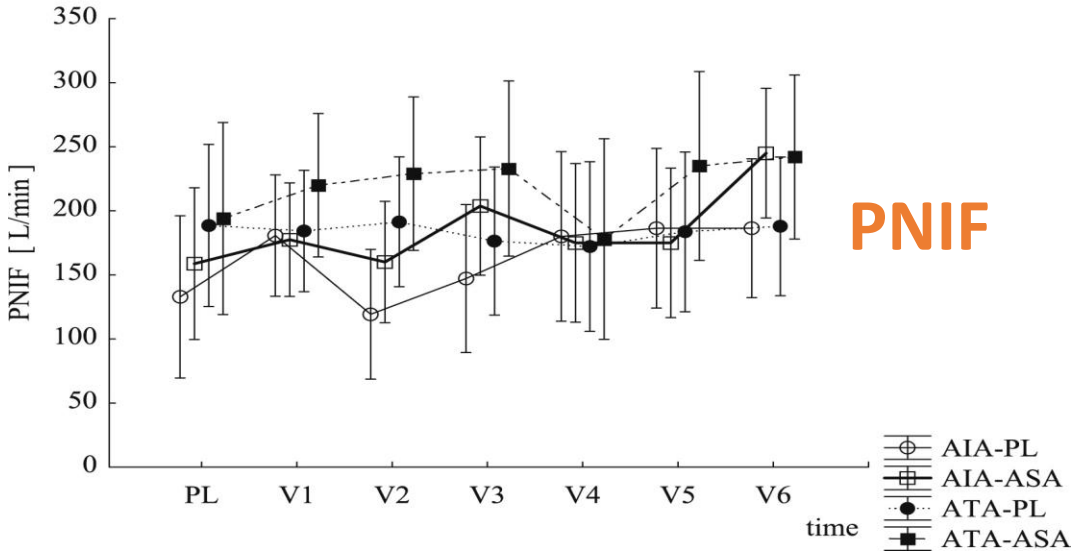
ACQ



SNOT



ICS



PNIF

Swierczynska-Krepa M, et al. J Allergy Clin Immunol 2014; 134: 883-90.

https://www.nationalelfservice.net/populations-and-settings/poverty/can-shared-decision-making-reduce-health-inequalities/